

ABSTRACT

The current project springs from a tradition of naming a building on the UFS main campus for a former vice chancellor. Here this tradition is used to inform a proposed heritage project for the current vice chancellor, Jonathan Jansen. Historically, these buildings have not necessarily had any relation to the academic or social contribution of the rector it represents. This project argues for greater synergy between the naming and claiming of physical space on campus and the embodiment of the vice chancellor for whom it is traditionally named. The present project illustrates this by embodying the pedagogical ethos of the current vice chancellor in the design of a "human library" which combines his public emphasis on social transformation and the merging of the "human" and "academic project" on campus. Integral to the design is Jansen's iden-

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HUMAN LIBRARY

A Knowledge Navigation Centre
for the University of the Free State

Markus L. Jordan
2012

ABSTRACT

The current project springs from a tradition of naming a building on the UFS main campus for a former vice chancellor. Here this tradition is used to inform a proposed heritage project for the current vice chancellor, Jonathan Jansen. Historically, these buildings have not necessarily had any relation to the academic or social contribution of the rector it represents. This project argues for greater synergy between the naming and claiming of physical space on campus and the embodiment of the vice chancellor for whom it is traditionally named. The present project illustrates this by embodying the pedagogical ethos of the current vice chancellor in the design of a "human library" which combines his public emphasis on social transformation and the merging of the "human" and "academic project" on campus. Integral to the design is Jansen's iden-

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PART 1:

The Human Library

“The University is seen as a place where difficult issues are confronted. It is an institution where social issues are studied, but it is also an institution that sees itself as a community where ideas can be tried, and, further, which is not ashamed to put itself too under the academic microscope. ... These two aspects are characterised as the Academic and the Human Projects respectively. They form the key thread throughout ...,”

(University of the Free State, 2012:3).

Chapter 1: Introduction

An expression of “profound change”

Jonathan Jansen took office as vice chancellor of the University of the Free State (UFS) in 2009 at a time of turmoil on campus in the wake of the so-called “Reitz-incident” (cf. Soudien, 2010). Already a public intellectual of note, Jansen would go on to identify “single-discipline thinking” and the absence of a mechanism to teach students that “most complex social and human problems cannot be solved except through interdisciplinary thinking that crosses ... disciplinary boundaries” as a crucial “failure” of South African universities (Jansen, 2011:115).

This argument for an intertwining of knowledge bases becomes emblematic of Jansen’s strategic vision of a merging of the “Academic Project” (e.g. academic excellence and the establishment of a campus wide academic culture, etc.) and the “Human Project” (confronting prejudice and nurturing a culture of inclusion and social engagement, etc.) (cf. University of the Free State, 2012).



Figure: Portrait of Prof. Jansen
Source: <http://www.dgmt.co.za>

1.1 Knowledge in the blood: Mapping a common “dialogic space”

The current project springs from a longstanding tradition of naming a building on the main campus for a former vice chancellor. Historically, these buildings have not necessarily had any relation to the academic or social contribution of the rector it represents. The Wynand Mouton Theatre, for example, is named for the ninth rector (1976-1988), a physicist. The naming of the Health Sciences headquarters for Francois Retief (tenth rector, 1989-1997) by contrast does at least reflect his disciplinary background (cf. *Van Sink tot Sandsteen tot Graniet*, 2006).

The current project is a call for a more pronounced synergy between the naming and claiming of physical space on campus and the embodiment of the vice chancellor for whom it is named. It conceives of creating a building as emblematic of Jansen's pedagogy and his investment in the public and social space of South African society. As such it is a heritage project conceived to best embody the values and ethics of the UFS vice chancellor in a knowledge commons that would marry the academic and the

human project. More so, although integrally part of the campus infrastructure, the building should also reflect the ethos of Jansen as public intellectual, claiming space for the academy in the community at large.

In his magnum opus on the post-Apartheid historically white Afrikaner university, Jansen considers the power dynamics inherent to social and political change among students of the new South Africa and states:

“Undoing oppression in dangerous and divided communities requires bringing together the perpetrators and the victims in the same dialogic space. This means there is diminished opportunity for such a dialogic encounter in segregated classrooms, for the presence and the passion of the Other enables the clash and engagement with conflicting and conflicted knowledges.” (2009:260).

From this Jansen continues to argue for nine key elements emblematic of the narratives embodied in his study of postconflict pedagogy (Jansen, 2009:260-276):

- The Power of Indirect Knowledge
- The Importance of Listening
- Disruption of Received Knowledge
- The Significance of Pedagogic Dissonance
- Reframing Victors and Victims
- Acknowledgment of Brokenness
- The Importance of Hope
- The Value of Demonstrative Leadership
- The Necessity of Establishing Risk-Accommodating Environments

These key elements will offer direction and provide the creative impetus for a space that would best embody and entrench Jansen's strategic vision by symbolising social transformation through dialogue on the post-Apartheid campus of a historically Afrikaans and white South African university.

1.2 The Human Library (formerly, “Living Library”)

In 2000 the Roskilde Music Festival in Denmark became the first incarnation for the itinerant “human” or “living library” as conceived by the NGO, *Stop Volden* (English: “Stop the Violence”) (Abergel *et al.*, 2005:13-14). The purpose was to enable young individuals to have short conversations that would give voice to “difference”. Young “readers” were invited to pair up with “human books”, namely, people who have experienced prejudice or stereotyping in life:

“The Human Books tell their story and then receive questions from participating Readers. Putting a human face to prejudice and stereotypes challenges people to think differently and to support and advocate more accepting and supportive environments for all,” (Goebel, 2011:161).

The organizers thereby challenged the participants to “[m]eet your own prejudice! Instead of talking *about* it, simply *meet* it,” (Abergel *et al.*, 2005:9). The human books included members of groups who may have been subject to discrimination, stereotyping, or have lived through significant life experiences. The NGO’s handbook, *Don’t judge a book by its*

cover! The Living Library Organizer’s Guide (Abergel *et al.*, 2005) and the website, <http://humanlibrary.org/>, have become instrumental for the dissemination of the idea in various incarnations across the globe. The concept of the human library is also foregrounded in the Council of Europe’s All Different – All Equal youth campaign against racism, anti-Semitism, xenophobia and intolerance.



Figure: “Stop The Violence” 1993.
Source: www.walesonline.co.uk



Figure: "Human book" telling her story
Source: www.humanlibrary.uk

From the first experimental venture a little more than ten years ago, human library projects soon proliferated worldwide and morphed and adapted to changing circumstances and requirements. These human libraries are most often comprised of living books representing individuals with varying backgrounds. They assign themselves "book titles" according to intersections of, for example, ethnicity, religion, sexuality or experience. Some living libraries, such as the first at Roskilde, are organized for special events such as music festivals, while others operate on a regular, ongoing basis. In all circumstances the intention is to provide "ordinary" readers with the opportunity for a conversation with a person they may not typically meet in order to disperse damaging stereotypes and prejudice (Garbutt, 2008:271).





Figures: "Human books" telling their stories

Source: www.humanlibrary.org

The appearance of human library programmes as advocates for social reconciliation in an academic environment such as university libraries is gradually becoming a more common occurrence as the concept grows in global popularity (cf. e.g. Goebel, 2011). In Australia, for example, Sabina Baltruweit, a community activist, was inspired by a newspaper article describing a human library functioning in the Malmö library in Sweden. Her aim was to address the level of community fear directed at "the Other" in Australia. This human library operates on a monthly and ongoing basis. By November 2008, Karyn Rendall reported the existence of as many as 70 human library projects in Australia alone (Garbutt, 2008:271).

The premise for the transfer of what was initially conceived as an ephemeral, time limited community based concept into a permanent, academically grounded project, is taken from a recent Japanese study reported by Kudo et al. (2011) on the outcomes derived from human libraries in a university setting and Canadian incarnations of university based human libraries (cf. Goebel, 2008).

Chapter 2: Theoretical Overview

Change in the order of things

*"In the wonderment of this taxonomy, the thing that we apprehend in one great leap, the thing that, by means of this fable is demonstrated as the charm of another system of thought, is the limitation of our own, the stark impossibility of thinking **that**," (Foucault, 1970:xv).*

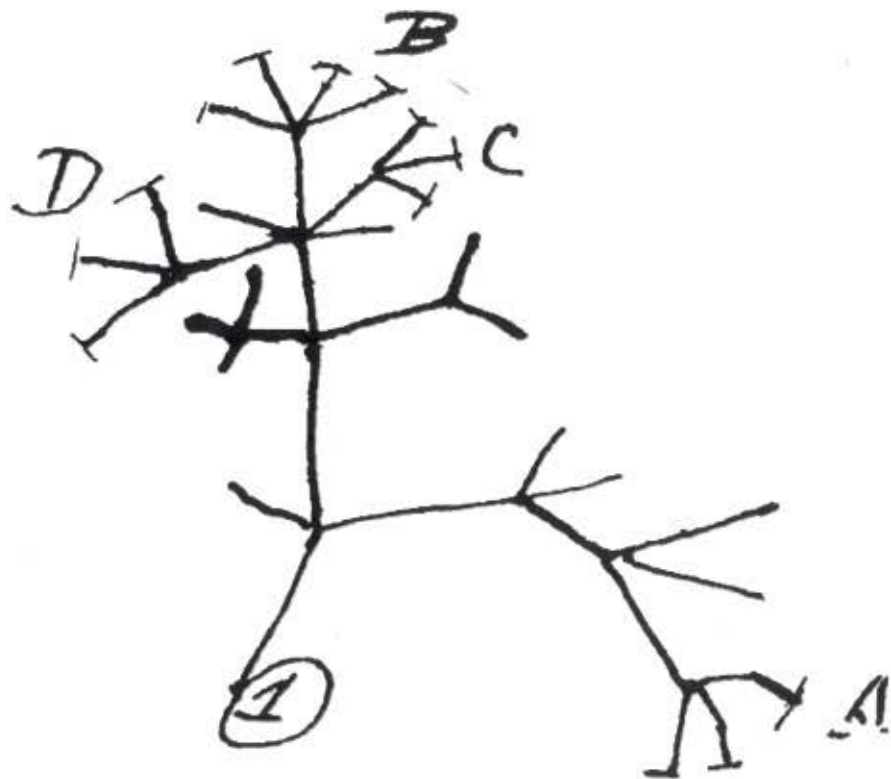
"[A]ny point of a rhizome can be connected to anything other, and must be. This is very different from the tree or root, which plots a point, fixes an order. ... There is always something genealogical about a tree. It is not a method for the people," (Deleuze & Guattari, 1987:7-8).

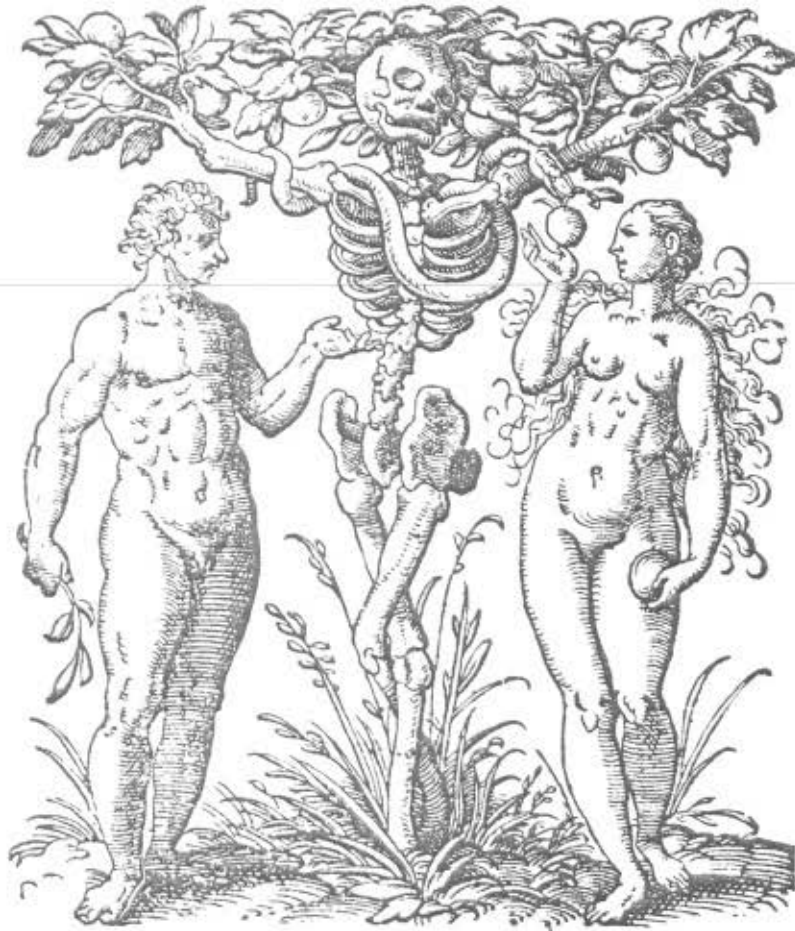
Darwin's "tree of life" or "evolutionary tree":

"In July 1837, Charles Darwin had a flash of inspiration. In his study at this house in London, he turned a new page in his red leather notebook and wrote, 'I think'. Then he drew a spindly sketch of a tree. ... Ever since Darwin the tree has been the unifying principle for understanding the history of life on Earth. At its base is LUCA, the Last Universal Common Ancestor of all living things, and out of LUCA grows a trunk, which splits again and

again to create a vast, bifurcating tree. Each branch represents a single species; branching points are where one species becomes two. Most branches eventually come to a dead end as species go extinct, but some reach right to the top - these are living species. The tree is thus a record of how every species that ever lived is related to all others back to the origin of life," (Lawton, 2009:34).

I think





192. Macabre representation of the Tree of Knowledge and Death. Woodcut by Jost Amman, from Jacob Ruoff's *De conceptu et generatione hominis*, printed by Peter Fabricius, Frankfurt, 1567.

Figure: "Tree of Knowledge and Death"

Source: www.sysnevo.thu.edu.tw

Introduction to rhizome

This chapter elaborates on French philosophers, Deleuze and Guattari's (1987), metaphor of the rhizome as theoretical basis for a transformational pedagogy as represented by the human library. It proposes the consideration of an unconventional mix of linear and non-linear educational pedagogical strategies. As such, Deleuze and Guattari's rhizome is a radical model that could contribute to the representation of Jansen's ideas for the future of higher education.

Historically, western knowledge systems were organised by means of hierarchical structures most often depicted as tree-like or *arboreal*. Genealogies and biological taxonomies are but two examples of arboreal representations of how the western mind traditionally made sense of the known world and in turn this was imprinted on universities' segmentation and segregation of knowledge into disciplines and sub-disciplines. These representations, going back to the mythological tree of knowledge in the Garden of Eden, are per definition hierarchical. It also implies an inherent power dynamics implicit to the vertical transfer of knowledge and the possibility of knowledge withholding as much as distribution (cf. Derrida, 1996).

In 1980 Gilles Deleuze and Felix Guattari published *A Thousand Plateaus* (English translation: 1987) and with it introduced the concept of the "rhizome" as an alternative organisational principle for knowledge systems and human knowledge distribution. In the *Deleuze Dictionary*, Felicity Colman (2005:231) explains: "Deleuze and Guattari's concept of the 'rhizome' draws from its etymological meaning, where 'rhizo' means combining form and the biological term 'rhizome' describes a form of plant that can extend itself through its underground horizontal tuber-like root system and develop new plants. In Deleuze and Guattari's use of the term, the rhizome is a concept that 'maps' a process of networked, relational and transversal thought, and a way of being without 'tracing' the construction of that map as a fixed entity."

This horizontal, rather than vertical, non-hierarchical approach to knowledge classification found resonance and anticipated the development of the World Wide Web with its organic proliferation of hyperlinks and the semantic web where concepts and classifications occur at the same level: "Any point of a rhizome can be connected to any other, and must be. This is very different from the tree or root, which plots a point, and fixes an order," (Deleuze and Guattari, 1987:7). Coincidentally, in January 2009, Graham Lawton published "Axing Darwin's Tree" in *New Scientist*, arguing for a different representational understanding of biological interrelationships than Darwin's tree-of-life. It is much similar to Deleuze and Guattari's perception of a multidimen-

sional, flat structure. Lawson's argument was based on observations from horizontal gene transfer (HGT) which led biologist, W. Ford Doolittle, to observe in *Science* (1999:2124) that: "The tree of life is not something that exists in nature, it's a way that humans *classify* nature." [my emphasis]

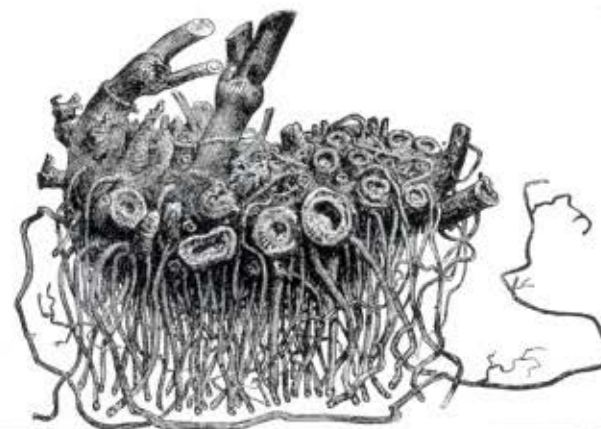


Figure: "Cimivuga Racemosa" - biological rhizome
Source: www.curationculture.org

Precedent study: pierresvives (“living rock”)

Project: pierresvives Building for
the department de
l’Herault

Location: Montpellier, France

Architects: Zaha Hadid Architects



Figure: Concept sketch
source: <http://www.zaha-hadid.com/>

Overview

It is in this context that Zaha Hadid offers an the architectural precedent. She translates the tree motif in the recently inaugurated (September 2012) pierresvives Building for the Département of Hérault in Montpellier, France. Her brief demanded a building that would incorporate three civic institutions, the archives, a library and the sports department in one building. Hadid chose the motif of a “large tree-trunk that has been laid horizontally” as organizational principle, creating a sense of knowledge and people distribution more resonant of the rhizome

than the tree, yet retained the tree metaphor as central to her design:

“The archive is located at the solid base of the trunk, followed by the slightly more porous library, with the sports department and its offices on top where the trunk bifurcates and becomes much lighter. ‘Branches’ project vertically off the main trunk to articulate points of access to the various institutions.”
(Zaha Hadid Architects, 012:n.p.).

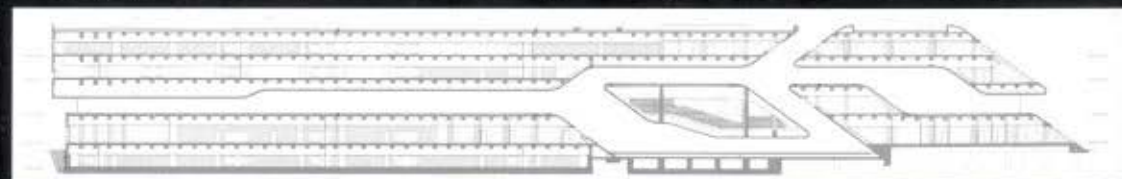


Figure: Longitudinal section showing “tree on its side”
source: <http://www.archdaily.com/>



Figure: Exterior view of finished building.
source: <http://www.archdaily.com/>

Design relevance

Hadid's design offers a prototype for the idea of the order of knowledge as design principle. Her choice of a tree on its side and the reinforcement of the tree-motif in the description of the flow inside the structure, emphasizes the limitations this project identified with the rigid hierarchical nature of the vertical "tree of knowledge" and favours the rhizome as overarching design principle to represent Jansen's pedagogy of change and transformation.

Her signature choice of concrete and glass, in their unbending rigidity, despite the fluidity of her design, offers an interesting counter argument for the current project's choice of a more amenable, flexible design skin as alternative to model social change and transparency.



Figure: Night view of finished building.
source: <http://www.archdaily.com/>

2.1 The rhizome as vehicle for knowledge transformation

In Jansen's discussion of the "problem of change" (2009:187) he describes the knowledge-power nexus created by Apartheid and reinforced by the institutional curriculum as implied certainty, especially in the social sciences: "Knowledge for these colleagues was positive and accumulated on the basis of scientific principles, not constructed, tentative, and changing as a consequence of human endeavour. Even when there was an intellectual understanding of such a new orientation toward knowledge, it was very difficult to change toward ways of thinking and seeing that required a more tentative understanding of knowledge and authority." The post-Apartheid move toward postmodern pedagogy and the resultant breakdown in hierarchical and binary certainties (truth vs. falsehood) is also best expressed by a multi-dimensional, non-hierarchical organising principle for knowledge in the university. To Jansen's reference to "thinking" and "seeing", may also be added "lis-

tening" (Jansen, 2009:260), as attributes of alternative knowledge distribution. This alternative way of knowing is best served in this context by a physical incarnation, a building (Jansen's "risk-accommodating environment" [2009:260]), that would conceptually and architecturally represent the transformational nature of knowledge distribution and educational interchange in the twenty-first century university and society.

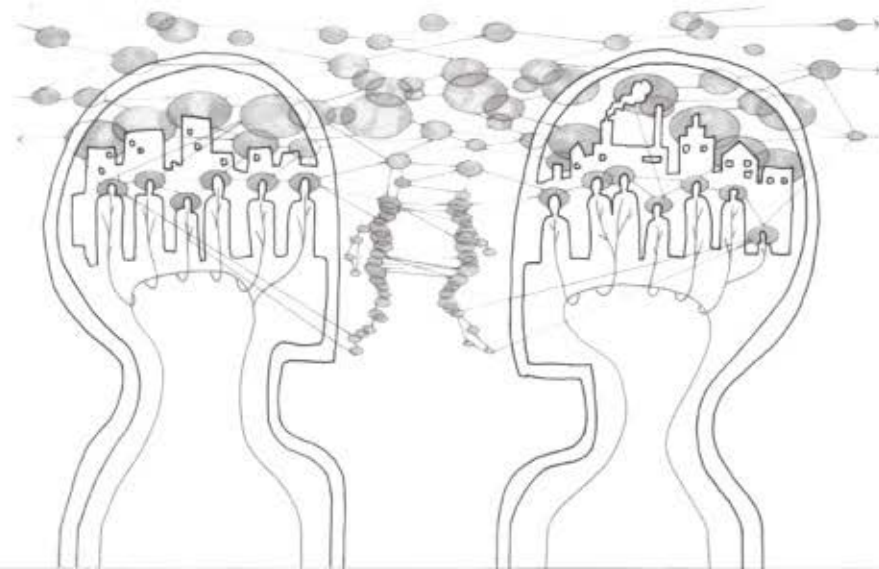


Fig: Knowledge transfer as rhizomatic process
Source: www.senselab.ca/marcngui

Rhizome + postmodern pedagogy

In the context of postmodern pedagogy, Senagala (1999) has pointed to the relevance of the application of Deleuze and Guattari's rhizome to Jean-François Lyotard expression of the longevity of transformational knowledge: "[A]nything in the constituted body of knowledge that does not allow translation and transformation will be simply abandoned ... Deleuze and Guattari's poststructural notions of knowledge exchange as rhizome and the postmodern epistemological propositions of Jean-François Lyotard interact in ways that lead us to novel pedagogical paradigms. A rhizomatic studio (within a rhizomatic curriculum) would be predicated not on 'training,' but on establishing new and multiplicitous connections with the world, bodies of knowledge, people and things." This, Senagala explains (1999), is a marriage of Lyotard's "scientific/technical knowledge" and "narrative knowledge": "So instead of becoming trees in themselves, scientific knowledge and narrative knowledge could form rhizomes with the world and grow together."

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marriage of Lyotard's "scientific/technical knowledge" and "narrative knowledge": "So instead of becoming trees in themselves, scientific knowledge and narrative knowledge could form rhizomes with the world and grow together." In finding architectural expression for this heritage project, Deleuze and Guattari's rhizome becomes the metaphor for social and knowledge transformation advocated by Jansen, but also for the acknowledgment of narrative as of equal importance to traditional understandings of the "scientific/technical" knowledge base foundational to western institutions of learning.

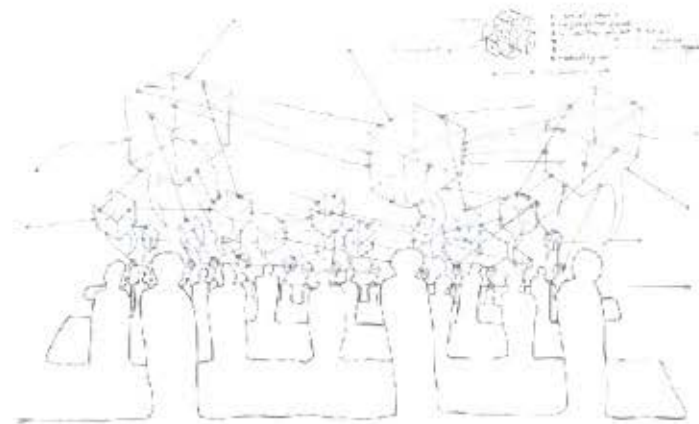
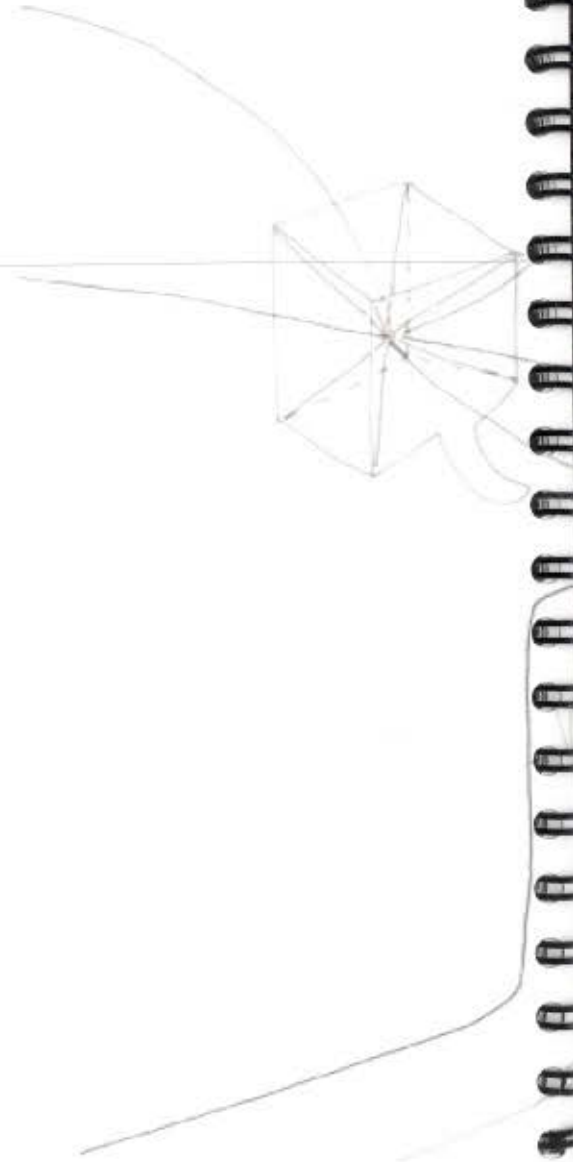


Fig: Horizontal (Non-hierarchical) Rhizomatic network with human as nodes.
Source: [www.senselab.ca/marc ngui](http://www.senselab.ca/marc-ngui)

2.2 The rhizome as metaphor





Gilles Deleuze and Felix Guattari (1987) offer metaphors to explain the changing environments in which Jansen's post-Apartheid university and library needs to operate. They (Deleuze & Guattari, 1987:7-14) describe the rhizome in terms of the following "characteristics" or "principles":

Fig: Horizontal (Non-hierarchical) Rhizomatic network with human as nodes.

Source: www.senselab.ca/marc/ngui

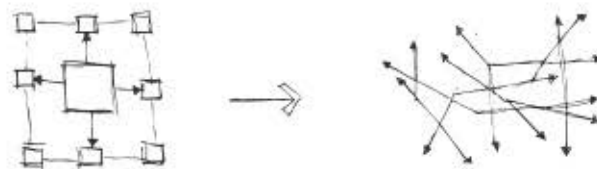
Connection and heterogeneity



- **Connection and heterogeneity:** "A rhizome ceaselessly establishes connections between semiotic chains, organizations of power, and circumstances relative to the arts, sciences, and social struggles. ... A method of the rhizome type, ... can analyze language only by decentering it onto other dimensions and other registers," (1987:7-8).

Conventional academic libraries function according to the tree-like structures of the Dewey decimal and similar classification systems which regulate the organization of the knowledge they have in custody. This weakness has been recognized by the so-called Library 2.0 movement (cf. e.g. Albanese, 2004). Apart from antiquated knowledge organization, these institutions fail to form rhizome-like relationships with their users and surroundings, but rather mimic "isolationist" or silo-like, arboreal structures: the library serves as the root system with the students/users branching out from it. Alternatively, a rhizomatic model would establish multiple, non-hierarchical and horizontal connections between all of its nodes, or users, with the hope of diminishing the knowledge hierarchy.

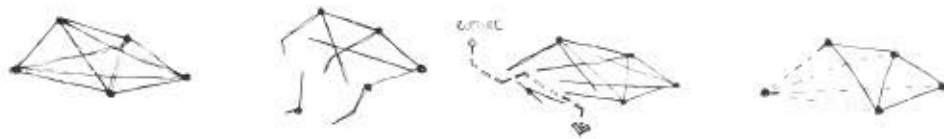
Multiplicity



- **Multiplicity:** A rhizome replaces interdependence with interconnection and an emphasis on decentralization: "There is no unity to serve as a pivot in the object, or to divide in the subject. ... A multiplicity has neither subject nor object, only determinations, magnitudes, and dimensions that cannot increase in number without the multiplicity changing in nature (the laws of combination therefore increase in number as the multiplicity grows). ... There are no points or positions in a rhizome, such as those found in a structure, tree, or root. There are only lines," (Deleuze & Guattari, 1987:8).

The flows of the conventional library have distinct directions, orders and hierarchies structured according to unifying organizational principles prescribed by the classification systems (Dewey, Library of Congress, etc.). The librarian is the centralized gatekeeper with the traditional user conceptualized as an apprentice who needs to be trained to navigate the "branches" of the knowledge structures. Alternatively, in a rhizomatic model the depiction of the relationship between the user, the librarian and the process of knowledge transfer is entirely flat with multiple entry points: "Perhaps one of the most important characteristics of the rhizome is that it always has multiple entryways," (Deleuze & Guattari, 1987:12).

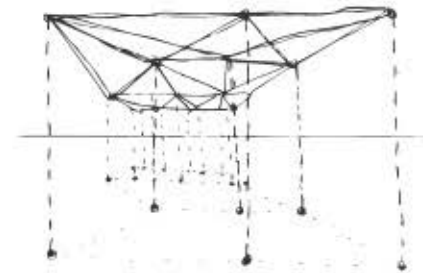
Signifying rupture



Signifying rupture: "A rhizome may be broken, shattered at a given spot, but it will start up again on one of its old lines, or on new lines. ... Every rhizome contains lines of segmentarity according to which it is stratified, territorialized, organized, signified, attributed, etc., as well as lines of deterritorialization down which it constantly flees. ... These lines always tie back to one another. That is why one can never posit a dualism or a dichotomy, even in the rudimentary form of the good and the bad. You may make a rupture, draw a line of flight, yet there is still a danger that you will reencounter organizations that reterritoryalize everything, formations that restore power to a signifier, attributions that reconstitute a subject - anything you like, from Oedipal resurgences to fascist concretions," (Deleuze & Guattari, 1987:9).

Traditional university curricula are based on the principle of building blocks, whereby one piece of foundational knowledge informs the progression to the next. The absence of any of these "blocks" destroys the attainment of the educational goal. It seems that in Jansen's postconflict pedagogy's (Jansen, 2009:260-276) rupture of the status quo through the "disruption of received knowledge" in narratives and an emphasis on "indirect knowledge", "the significance of pedagogic dissonance" and the "acknowledgment of brokenness" is well represented by Deleuze and Guattari's description of the rhizome as signifying rupture. While the ever-present "danger" or "risk" of the "restratification" and the "restoration of power", as Jansen indeed acknowledges in the final "key element", the necessity of establishing "risk-accommodating environments".

Cartography and decalcomania



Cartography and decalcomania: "The rhizome is altogether different, a map and not a tracing. ... What distinguishes the map from the tracing is that it is entirely oriented toward an experimentation in contact with the real. The map does not reproduce an unconscious closed in upon itself; it constructs the unconscious," (Deleuze & Guattari, 1987:12).

A rhizomatic building, the proposed human library, would be a "map" of multiple, and often "conflicted knowledges" (Jansen, 2009:260), but not a "tracing" or arboreal reproduction thereof. Rather, the human library is complete in and of itself. It maps "thought" and "memory" and the multiplicity of interconnected linkages between thoughts and memories in the human mind: "Thought is not arborescent, and the brain is not a rooted or ramified matter," (Deleuze & Guattari, 1987:15).

Precedent study:

Corpora in Si(gh)te

Project: Commissioned media architecture installation for the Yamaguchi Centre for Arts and Media (YCAM)

Location: Yamaguchi Prefecture, Japan

Architects: doubleNegatives Architecture (dNA)

Fig. Horizontal (Non-hierarchical) Rhizomatic network with human as nodes.

Source: www.sense-lab.ca/marc-ngui



Overview

The architects created an environment composed of a mesh architectonic organism "living" in the museum:

"A number of sensors are set up forming a mesh network through the area of YCAM in order to collect and distribute real-time environmental information such as temperature, brightness, humidity, wind direction, and sound," (Perez, 2007).

This information, in turn, is processed by the shifting structure which responds to it. This result in a form independent of the architect's conception and entirely based on each structural node's responses to the sensor information. In the architects' description, the alignment with Deleuze and Guattari's (1987:7-14) characteristics/principles of the rhizome is easily detectable:

"In 'Corpora in Si(gh)te,' the autonomous structural nodes programmed in the software are able to become subjective viewpoints in the space, which ceaselessly adjusts the relationship between each surrounding structural node. They are newly reproducing

and arranging their own copies or destroying themselves based on changes in the physical environment.

In addition, the act of re-designing is continuously occurring within the space surrounding each node. Such a process enables the state of 'the whole body to form by autonomous generation' to finally develop, as the title 'Corpora' symbolically suggests," (<http://corpora.ycam.jp/en/work.html>).

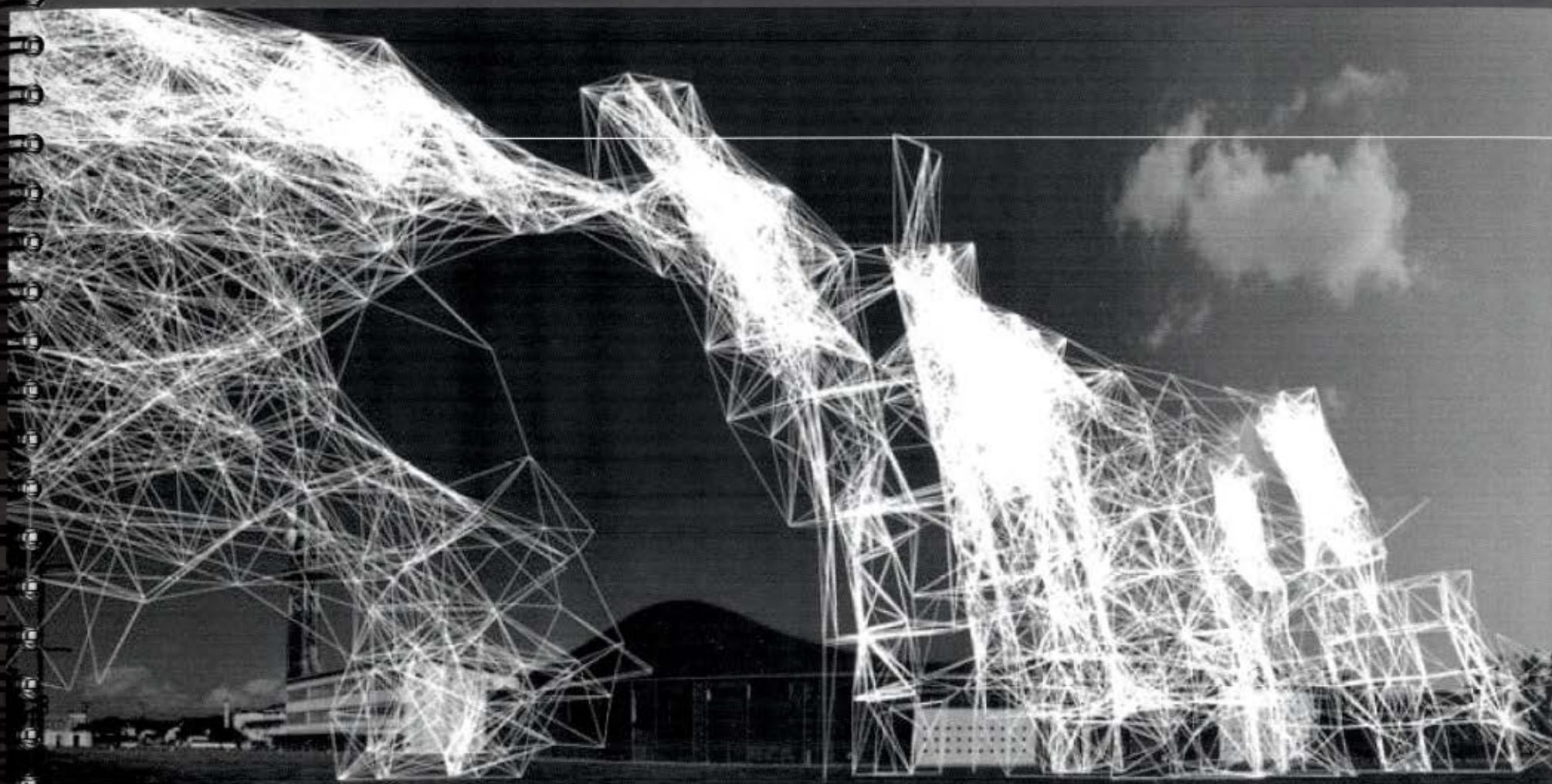


Fig: "Digital facade" represented by augmented reality.
Source: <http://corpora.hu/en/images-and-videos/>

Overview

The “shifting structure” does not exist physically, but is represented by a scale model located in the foyer. Projectors produce real-time imagery inside the space showing the second “digital façade” as it reacts to the physical structure according to information collected by its sensors. This façade can radically alter scale, form and state in response to its environment, as it is only a digital representation and does not physically exist. The fact that it’s augmented reality makes it very interesting. It suggests the idea that the data around the building is in fact another façade. Supposedly the informational weight and density of this façade would be far more significant than its physical façade for some users. It suggests an architecture which is purely informational, yet not without an implied physical form and aesthetic appeal.



Fig. “Digital façade” diagram showing system components.
Source: <http://corpora.hu/en/images-and-videos>

Design Relevance:

The project embodies every principle/characteristic of the rhizome, as set out by Deleuze and Guattari (1987) and discussed in the previous section.

More importantly, it gives an example of how digital information and relationships can be expressed by physical form, even though it does not entirely cross into the physical realm. In the following section the use of tensegrity will be explored as a means of expressing the rhizome as change agent and dynamic non-hierarchical network of social relationships.



Fig: Scale model inside museum
Source: www.senselab.ca/marc-ngui

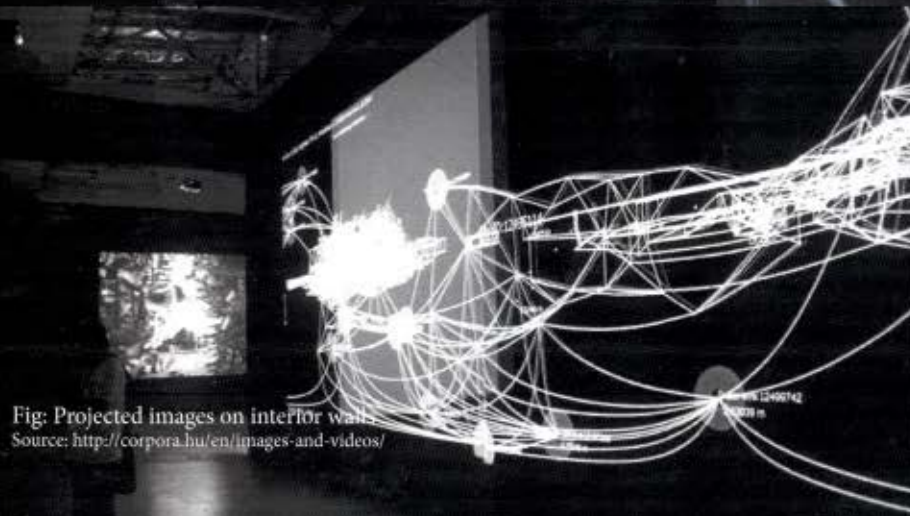


Fig: Projected images on interior walls
Source: <http://corpora.hu/en/images-and-videos/>

2.3 Tensegrity: a “logical beauty”

The inventor, artist, self-styled architect and mathematician, R. Buckminster Fuller, created the term tensegrity from a contraction of “tension” and “integrity” to describe a structure first developed by the young artist Kenneth Snelson in 1948.

Fuller adopted Snelson’s flexible invention for his system of “synergetics” in order to construct his “geodesic domes”:

“Snelson’s sculptures, in which rigid sticks or ‘compression members’ (as an engineer might call them) are suspended in midair by almost invisible cables or very thin wires, can still be seen around the world.” (Connelly & Back, 1998:142).

Connelly and Back (1998:148) mention as examples the Needle Tower in the Hirshhorn Museum and Sculpture Garden in Washington, D.C., but also more mundane examples such as baby toys, and from moon landing devices to geographical maps (Espinosa & Harnden, 2007:1057).

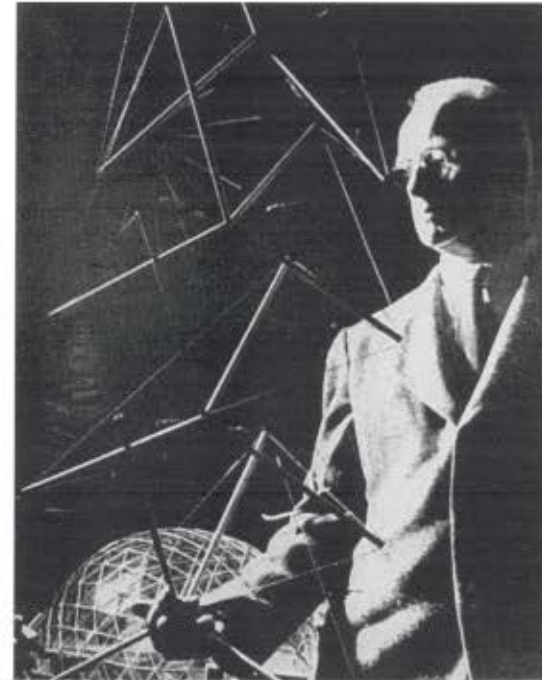


Figure : Fuller holding a tensegrity model
Source: www.dexigner.com

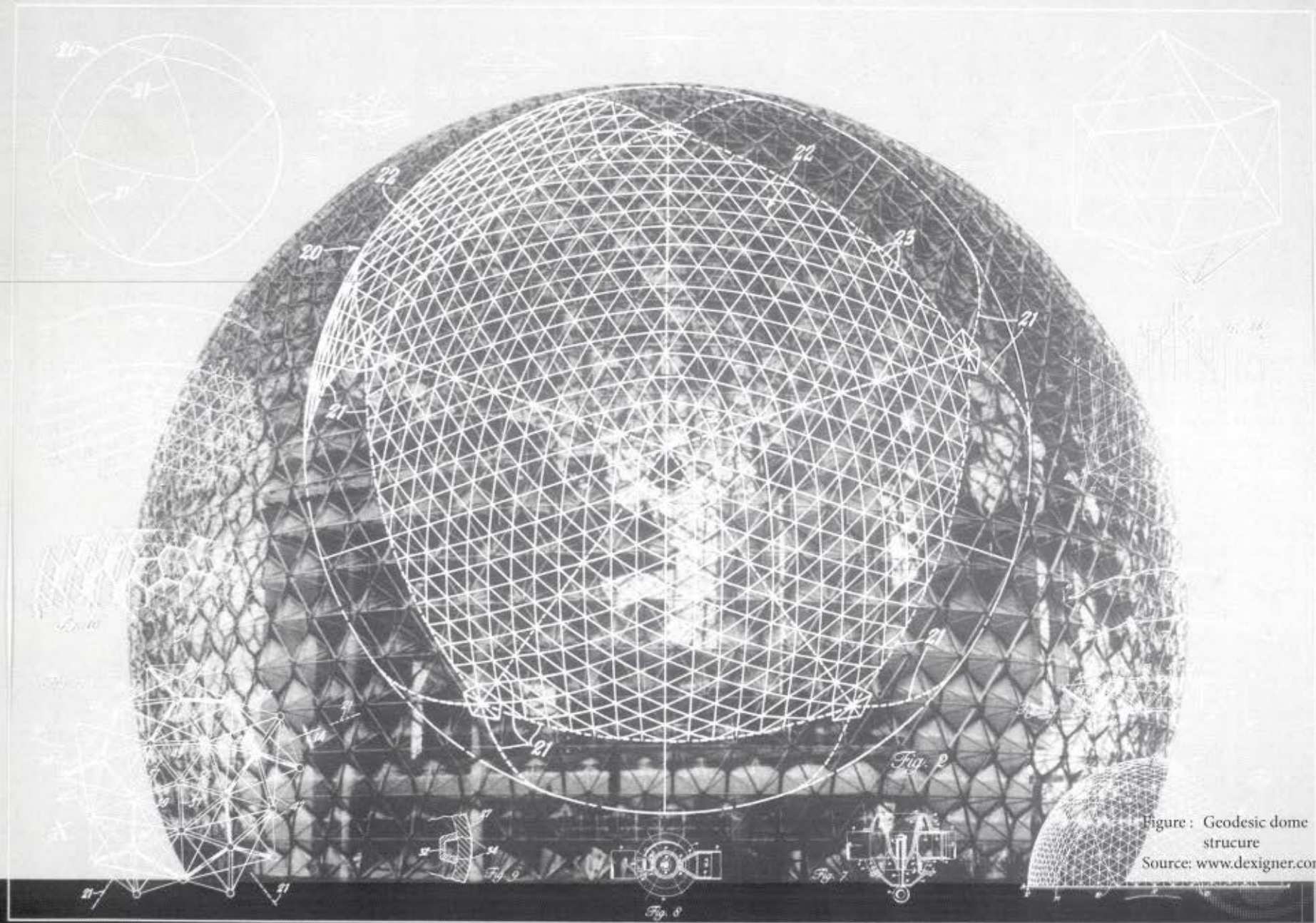


Figure : Geodesic dome structure
Source: www.dexigner.com

2.3 Tensegrity: a “logical beauty”

Tensegrity is most prevalent in nature. Connelly and Back (1998:144) refers to spider's webs, but some of the most interesting examples are to be found in multi-dimensional cellular biology: “the cytoskeleton exhibits tensegrity (tensional integrity) architecture, the concept behind Buckminster Fuller's geodesic domes. ... Cells are built on a cytoskeleton following similar principles,” writes Carolyn Strange (1997:8). Reminiscent of Deleuze and Guattari's rhizome, the biologists often refer to tensegrity structures as “web-like” networks. Mathematical descriptions (cf. Connelly & Back, 1998) are revealing about their strength and stability: “Such networks exert no bending moments in their elements and, like the spider web, offer great strength with little material. ... In sum, the cytoskeleton is an armature organized into tensegrity structures that can be understood mathematically. *Cellular biological form reflects principles of the fractal, tensegrity subcellular structures,*” (Nettleship & Penman, 1989:23).

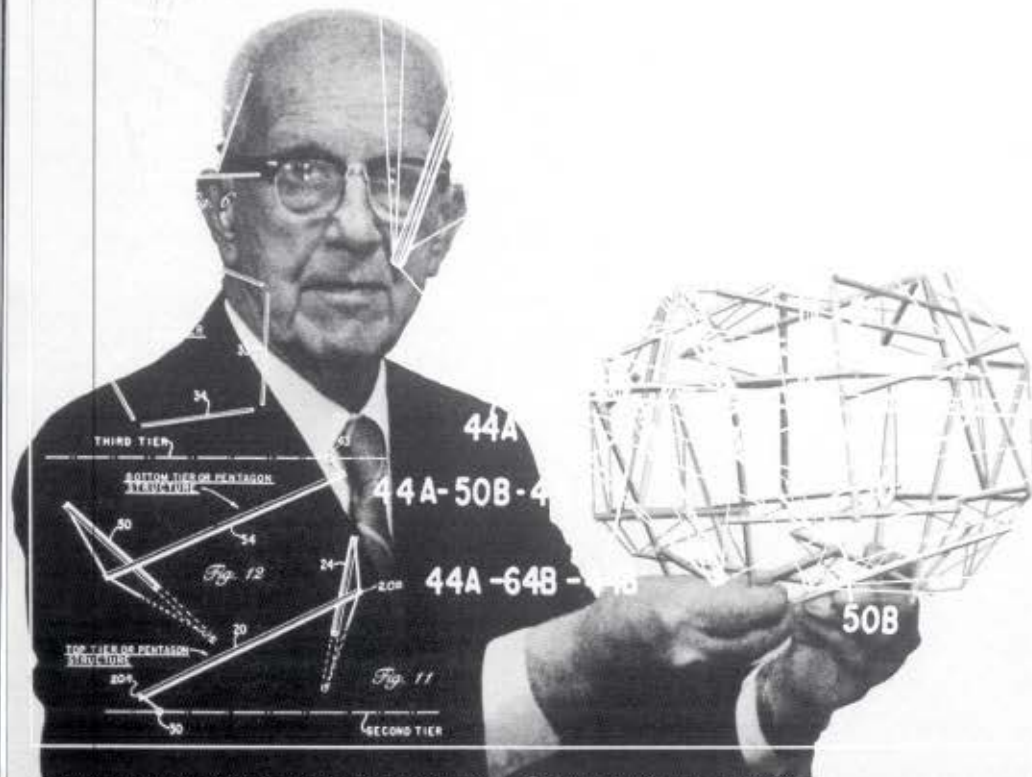


Figure : Fuller holding a tensegrity model
Source: www.designer.com

Connelly and Back (1998:142) offers a useful description of how Snelson's structures worked: "Snelson's structures are held together with two types of design elements (engineers say members), which can be called cables and struts. The two elements play complementary roles: Cables keep vertices close together; struts hold them apart. Two vertices connected by a cable may be as close together as desired ... but they may never be farther apart than the length of the cable joining them. Similarly, two vertices joined by a strut may never be closer than the length of the strut, but may be arbitrarily far apart."

In short, tensegrity in architecture refers to Fuller's development of a structural system to combine discontinuous compression and continuous tension by means of cables and struts. It is highly imaginative, yet practical. Economical in design and execution, it models itself on nature. The Walker Art Center (1969:23), e.g., compares the "efficiency, strength and flexibility" of tensegrity structures with the "kind of logical beauty that one associates with crystal formations."

The opposing forces of compression and tension represented by the two design elements, cables and struts, offer

a contrast to what we are used to when thinking of building structures that rely primarily on compression for support. The brick wall is the classic example: one brick is piled on top of the other. This is a "continuous compression" structure - where the compression created by gravity is carried from one brick to another, all the way to the ground. The bottom brick has to be compressively strong enough to carry all the bricks above it. By the same token arboreal, vertical structures depend on the same. However, at cellular level, balance between contrasting forces to create structure is evident and so too in the architectural designs that uses the same principles.

Similarly, we have traditionally conceived of the human body as a structure that gains its stability from a connected framework of skeletal bones, carrying loads from one to the next. This approach does not account of many other human design elements such as ligaments and muscle. More recently however scholars have started to accept the complex inherent relationships and interconnections between the different systems in the body in order to make sense of body mechanics (musculoskeletal structure) by means of so-called "biotensegrity" (cf. Levin, 2002).

By the same token, tensegrity has been introduced to our understanding of social dynamics. Stafford Beer, working on complexity management, urged a more organic and holistic understanding of organizational dynamics (Espinosa & Harnden, 2007:1056): "Team Syntegrity (TS) provides a model of non-hierarchical social interactions, that facilitates a participatory and equitable dialogue among a group representing different interests and holding a diversity of views." Beer developed TS as a result of Fuller's principle of tensegrity, applying Fuller's architectural use thereof to the social setting: "Fuller's insight was that a combination of difference and commonality permeates human experience ... of the universe, and hypothesized that this has something to do with the external ... complementary interplay of forces of compression and tension. The integrity of any recognizable structure is because of a particular mix of local compressive stress where structural members are joined together, and also an overall tensile stress that characterizes the entire system (Tensegrity), and humankind's capacity to appreciate this," (Espinosa & Harnden, 2007:1056-1057).

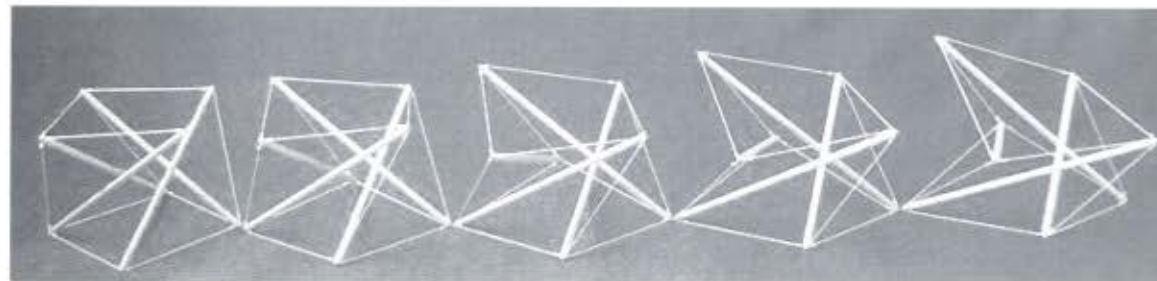
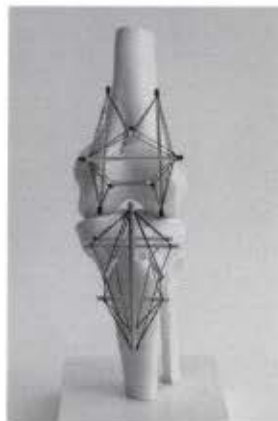


Fig: Tensegrity represented as structure of the human body
Source: www.dexigner.com

Fig: Tensegrity progression
Source: www.dexigner.com

Precedent study: Archi/e Machina

Project: Interactive student art work installation- an archetype for Biotic Interactive Architecture (2009 & 2010)

Location: Tokyo, Japan (various locations: Museum of Contemporary Art Tokyo; Haneda Airport; iii Exhibition 11 Tokyo)

Architects: Yosuke Ushigome (Hirose Tanikawa Lab) and Ryuma Niiyama (Intelligent Systems and Informatics Lab)

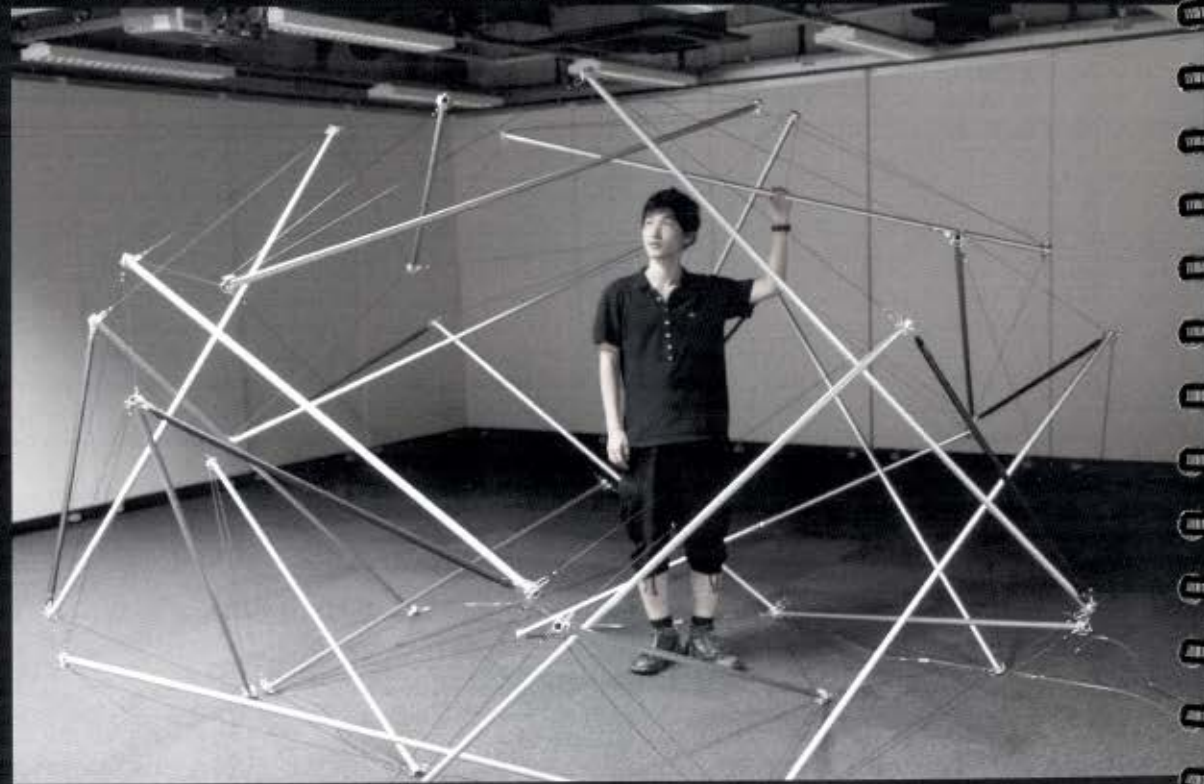


Fig: Yosuke Ushigome inside the installation
Source: <http://www.cyber.t.u-tokyo.ac.jp/~ushi/>

Overview

Graduate students, Ushigome and Niiyama, in Information Science and Technology at the University of Tokyo, deployed a 21-strut tensegrity sculpture dome by replacing the tension elements with “pneumatic muscles”, a computer-driven air compressor, pneumatic valves and human-activity sensors. They named it *Archi/e Machina*: “In contrast to conventional static architecture, the form of robotic tensegrity can dynamically change response to movements of a human within its space,” (Ushigome & Niiyama, 2009:n.p.).

This experimental project served as the basis for the concept of using tensegrity to physically embody the non-hierarchical (rhizome) network idea in a physi-

cal structure. *Archi/e Machina* comprises of 21 aluminium struts held in suspension via 84 steel cables that connect the members. By replacing 12 of the connections with pneumatic muscles that work on air compression, Ushigome brings these structures to life, creating a responsiveness that mimics accommodation and change, so-called “interactive architectural-space” or “interactive architecture” (Ushigome et al., 2010)

Prototype Overview

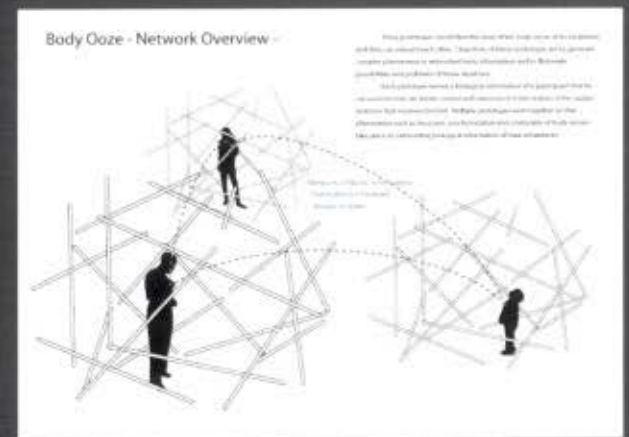
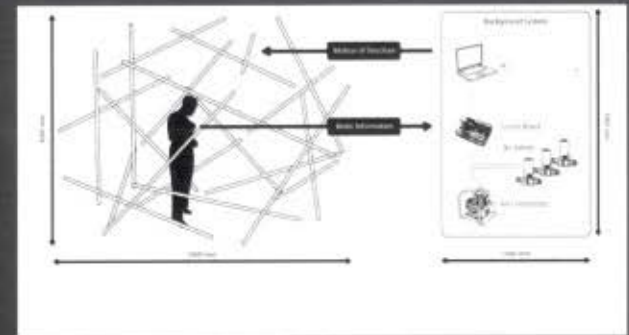


Fig: Diagram of tensegrity system design
Source: <http://www.cyber.t.u-tokyo.ac.jp/~ushi/>

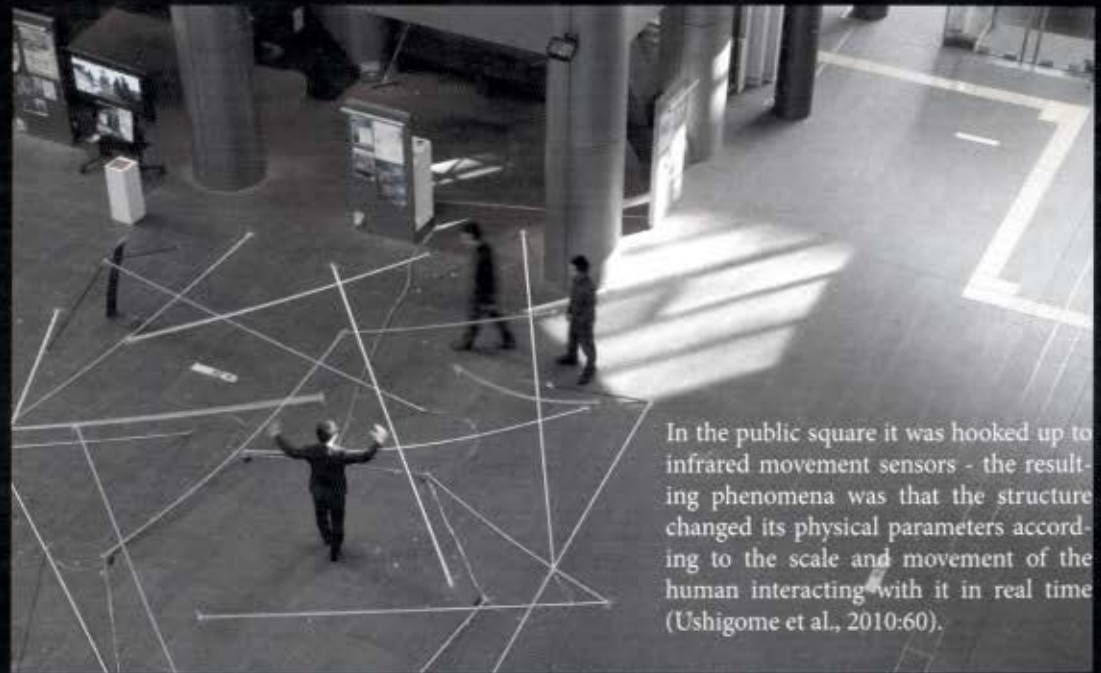
Sound

Using the same structure, the students explored varying possibilities by installing it in environmentally different locations that include an airport, a busy public square, and a residential park. In the Haneda airport terminal the system was hooked up to microphones which made the structure respond to acoustics, namely, varying noise levels as well (Ushigome et al., 2010:59-60).



Fig: Young girl engaging with structure
Source: <http://www.cyber.t.u-tokyo.ac.jp/~ushi/>

Movement



In the public square it was hooked up to infrared movement sensors - the resulting phenomena was that the structure changed its physical parameters according to the scale and movement of the human interacting with it in real time (Ushigome et al., 2010:60).

Fig: Structure deployed in public square
Source: <http://www.cyber.t.u-tokyo.ac.jp/~ushi/>

Design Application

Ushigome et al. (2010:61) discovered that responsive, interactive, architectural-space is experienced by people as an "augmentation of personal space". The human library project will attempt to recreate this effect by incorporating tensegrity into the building structure itself in order to allow parts of the building to move and the interior space to shift according to human activity. This In simpler terms, the idea is implemented by means of the Eastern facade expanding under loud and eventful interior activity, and contracting in reaction to more intimate and quiet conditions.



Fig: Structure with pneumatic muscles and sensors

Source: <http://www.cyber.t.u-tokyo.ac.jp/~ushi/>

Chapter 3:

Conclusion

“How could movements of deterritorialization and processes of reterritorialization not be relative, always connected, caught up in one another? The orchid deterritorializes by forming an image, a tracing of a wasp; but the wasp reterritorializes on that image. The wasp is nevertheless deterritorialized, becoming a piece in the orchid’s reproductive apparatus. But it reterritorializes the orchid by transporting its pollen. Wasp and orchid, as heterogenous elements, form a rhizome,” (Deleuze & Guattari, 1987:10).

“The point to amplify is that this was not simply change within the context of normal organizational life, the cycles of change and restructuring that tend to overwhelm universities everywhere. This was university change in the context of a country that was itself transforming dramatically in the aftermath of Apartheid. What happened inside took its cue, and gained legitimacy, from what was happening outside. What happened outside heralded clear expectations about what should happen inside,” (Jansen, 2009: 15).



Fig: Horizontal (Non-hierarchical) Rhizomatic network with human as nodes.
Source: [www.senselab.ca/marc ngui](http://www.senselab.ca/marc-ngui)

The first paragraph of the prologue to *Knowledge in the Blood* reads:

"It will never happen again. This is the first and only generation of South Africans that would have lived through one of the most dramatic social transitions of the twentieth century. Nobody else

would be able to tell this story with the direct experience of having lived on both sides of the 1990s, the decade in which everything changed," (Jansen, 2009:1).

The current project's attempt to propose a heritage project that would embody Jansen's contribution to the UFS, takes Jansen's first paragraph as emblematic of a number of markers:

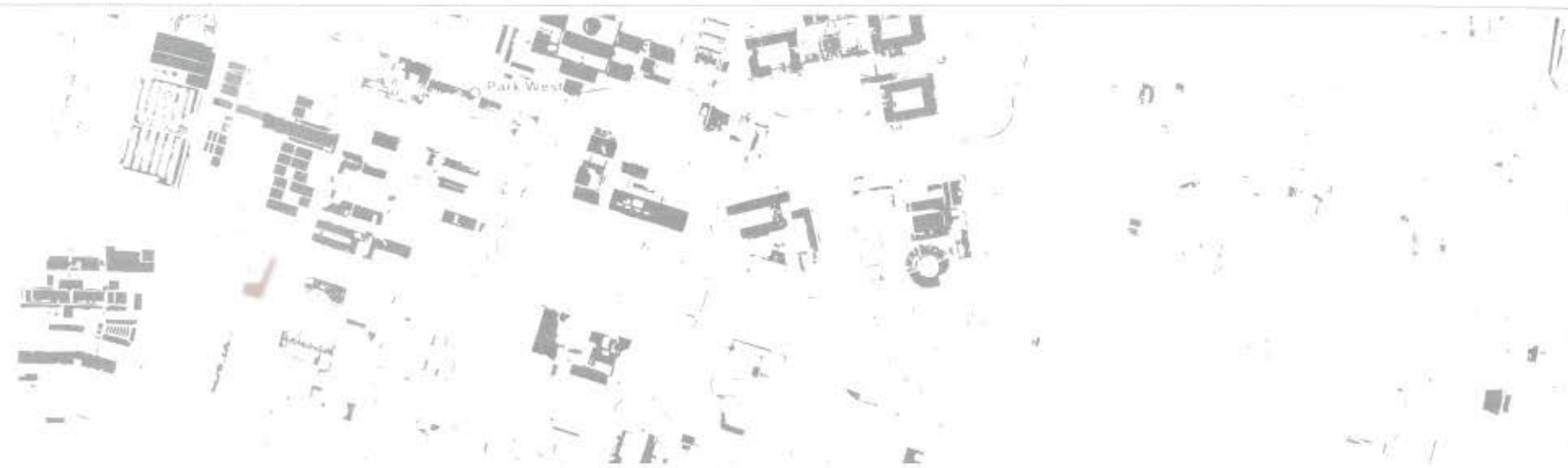
- ***A sense of historical significance*** ("it will never happen again"). The human library, born from transitory roots in the music festival circuit and devoid of initial physical space, concerns itself with addressing suspicions and ignorance of the Other. In this context, a keen awareness of the Apartheid roots of the current educational milieu results in the need for a "reterritorialization" of traditional pedagogies and hierarchical power dynamics in the structuring of knowledge dissemination.
- ***A sense of uniqueness*** ("this is the first and only generation of South Africans"). The human library will be a first on a South African campus and its emphasis on a web-like network of knowledge interchange will hopefully shape new approaches to the academic library of the twenty-first century.
- ***A symbol of change*** ("dramatic social transition"). The choice of a responsive, tensegrity inspired skin for the building is important to create a psychological awareness of the individual's responsibility for effecting change. The tensegrity principles of discontinuous compression and continuous tension resonates Jansen's emphasis of the push and pull of the Apartheid/post-Apartheid dichotomy in understanding the social mapping of South African society. At the same time the non-linear network of struts and cables mimic and predict a more egalitarian social network for knowledge exchange in the post-Apartheid university.
- ***The importance of the narrative as vehicle for knowledge transfer*** ("no body else would be able to tell this story"). The human library, with its emphasis on people, rather than objects, and the interactive quality of the knowledge interchange lends itself to the embodiment of Jansen's emphasis on narrative.

To Conclude

Part One of this document argues that the human library offers an appropriate typology for use as heritage project in the light of Jansen's strategic plan for 2012-2016. The building design is informed by Jansen's pedagogic ethos as set out as nine key elements in *Knowledge in the Blood* (2009). This is mapped onto Deleuze and Guattari's rhizome as alternative for the traditional western hierarchical understanding of knowledge exchange ("UP [read: all historical Afrikaans universities] is a top-down, hierarchical organization with all authority vested in a single leader at the apex," [Jansen, 2009:15]).

In turn, Fuller's tensegrity structure is conceived as architectural embodiment of the rhizome in order to represent the above.

In sum, tensegrity offers an architectural and social model to represent Jansen's advocacy for difficult dialogues to effect knowledge and social transformation in elegant simplicity through its resonance with the web-like rhizome of Deleuze and Guattari. The equal distribution of compression inside a net of continuous tension beautifully recalls Jansen's call for a risk accommodating environment and the ever present possibility of rupture to which the French philosophers (1987:10) refer: "The dynamics of power trouble all our doing and all our knowing. Knowledge is always contingent, always standing above an abyss," (Jansen, 2009:1).



PART 2:

A Knowledge Navigation Centre for the University of the Free State

... Once we surveyed the emotional, cultural, and political landscape of this all-white university, I recognized that the challenge facing us ... was as complex as it was clear: how to do reparation and reconciliation at the same time. It was a formulation that resonated with my own understanding of social and educational change: that it was unnecessary and in fact would be disastrous to choose between the options of redress or reunion. ... In other words, the process I was to lead within the institution would find its political corollary within the surrounding society, and this knowledge gave me courage and direction," (Jansen, 2009:203).

"Writing has nothing to do with signifying. It has to do with surveying, mapping, even realms that are yet to come," (Deleuze & Guattari, 1987:4-5).

Chapter 4: Brief and accommodation

4.1 Brief

The brief calls for a design that rethinks current practice regarding development of campus architecture, knowledge systemization and classification, as well as the embodiment of the vision of the vice chancellor for whom it is named.

The aim is to create a design that is emblematic of Jansen's pedagogy and his investment in the public and social space of South African society. As such it is a heritage project conceived to best embody the values and ethics of the UFS vice chancellor in a knowledge commons that would marry the academic and the human projects set out in the strategic plan for 2012-

2016 (University of the Free State, 2012).

More so, although integrally part of the campus infrastructure, the building should also reflect the ethos of Jansen as public intellectual, claiming space for the academy in the community at large.



The UFS Knowledge Navigation Centre (Human Library) will consist of the following:

- **Knowledge sharing space (*Reading space*)**
Refers to spaces where users read human books. These spaces will vary in terms of scale and privacy level to accommodate different encounters, be it one-on-one conversation or a group of participants engaging in the activity.
- **Reflective space (*Quiet space*)**
These spaces are for users to reflect or calm down after possible encounters of difficult dialogue or heated conversations. Because of the unpredictable nature of social interaction and the aim at social reconciliation and the challenging of prejudice, heated conversations may arise which may cause users to need a moment of reflection.
- **Administrative space (*Librarian stations*)**
Research assistants, or 'new age librarians', will be stationed throughout the building to ensure ease of access for users and proper security and administration throughout.
- **Archive access points (*Digital hotspots*)**
An important function of the building is the creation and organisation of a digital archive of information for the University. Users should have quick and easy access to these archives for research or reference purposes. This may include a "memory bank" of historic "public readings" on a very small scale comparable to the University of Southern California Shoah Foundation Institute for Visual History and Education's interviews of holocaust victims (University of Southern California, n.d.).
- **Scanning and archiving facilities (*Digitizing space*)**
Spaces where physical material such as books, DVD's, tapes, artworks, and other information-containing entities can be scanned, photographed or converted in order to be uploaded and archived as a part of the University's online digital archive, or cloud.
- **Interactive networking facilities (*Skype lounge*)**
The online archives and human library system are not limited to campus users. These facilities enable the Human Library to reach far beyond its physical barriers and use technology to become part of a larger global network, allowing users access to members from anywhere in the world via the internet.

4.2 Client

The client is the University of the Free State (Bloemfontein Main Campus).

The main objective of the building is to form an integral part of the strategic plan as the next large-scale development of the campus master plan, and to stand not only as heritage to the vice chancellor but as public symbol, showcasing change in the university and placing it at the forefront of developing academic institutions worldwide.

UNIVERSITY OF THE
FREE STATE
UNIVERSITEIT VAN DIE
VRYSTAAT
YUNIVESITHI YA
FREISTATA



Fig: UFS Logo
Source: www.ufs.ac.za

4.3 Functions

Lower Ground Floor Level:

- Skype Lounge
- Digitizing space
- Librarian station

Lower First Floor Level:

- Reading space
- Librarian Stations
- Digital Hotspots

Upper Ground Floor Level:

- Foyer: Self-help Information point
- Information desk
- Waiting lounge
- Knowledge commons:

- Reading space
- Digital Hotspots
- Wi-Fi Access
- Charge Points

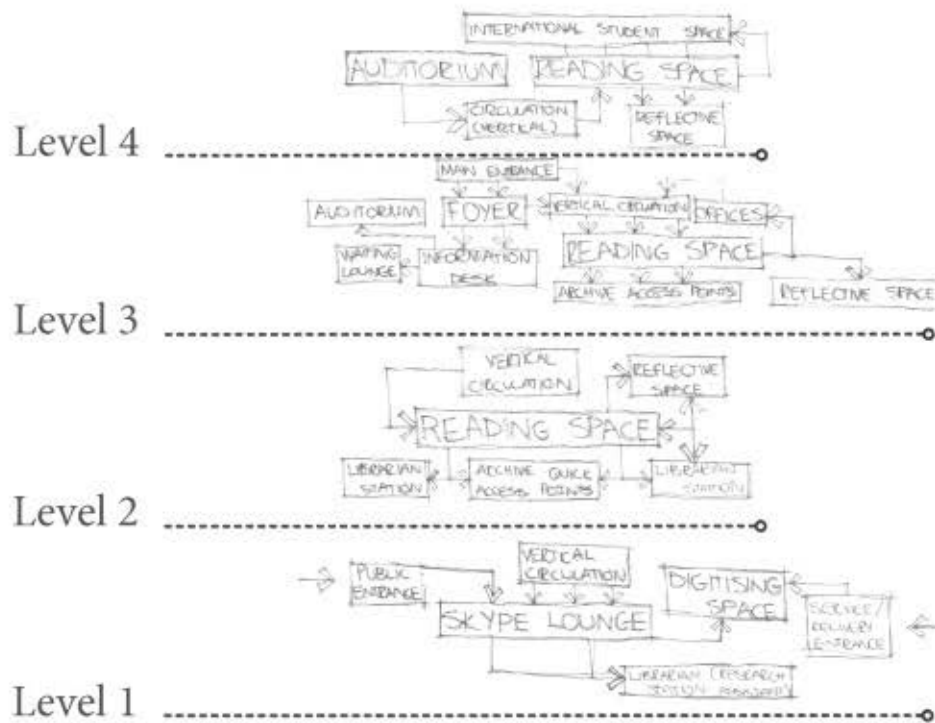
Office space

Upper First Floor Level:

- Auditorium
- International student research stations
- Reading space

Difficult dialogue reflective space

Spatial Organisation



UV - UFS
BLOEMFONTEIN
BIBLIOTEK - LIBRARY

Fig: Early mind map diagram, starting to determine spatial relationships.

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Chapter 5: Historic Overview

"The knowledge of an Afrikaner past as well as an Afrikaner present is ubiquitously posted ... It is represented in the architecture of the campus ... it is given in the names of buildings ... It is fixed in the university flag and the wapen (coat of arms or, literally, weapon)," (Jansen, 2009:216).

"... [A]part from the intense reaction against revealing knowledge, another more common response was indifference, expressed in withdrawal of responsibility. What happened is in the past, and so 'with a shrug of the shoulders the young repudiate any imputation of responsibility for the infamous behaviour of their elders.' Indifference is not the result of lack of knowledge; it is often a response to shameful knowledge, a protective shield," (Jansen, 2009:67).

5.1 Historical development of the library on the UFS main campus

The human library on the UFS campus is envisioned both as a counterpoint to the existing main library, the UFS Sasol Library (tension vs. compression), and as complement, acknowledgment and culmination of an existing knowledge hub. In order to physically situate the human library therefore, it is important to map the historic and physical footprint of the main library on campus. In the process some contextual commentary will be offered on the repositioning of the library from central to the periphery of the campus perimeter vis-à-vis the movement of the student centre. The question posed is whether a pairing of the human library with the Sasol library would by extension assign peripheral value to the human library?

Visual Timeline of the Library on Campus: from the centre to the periphery



Fig: 1974 Aerial photograph of UFS

Source: (Van Sink tot Sandsteen tot Graniet, 2006)

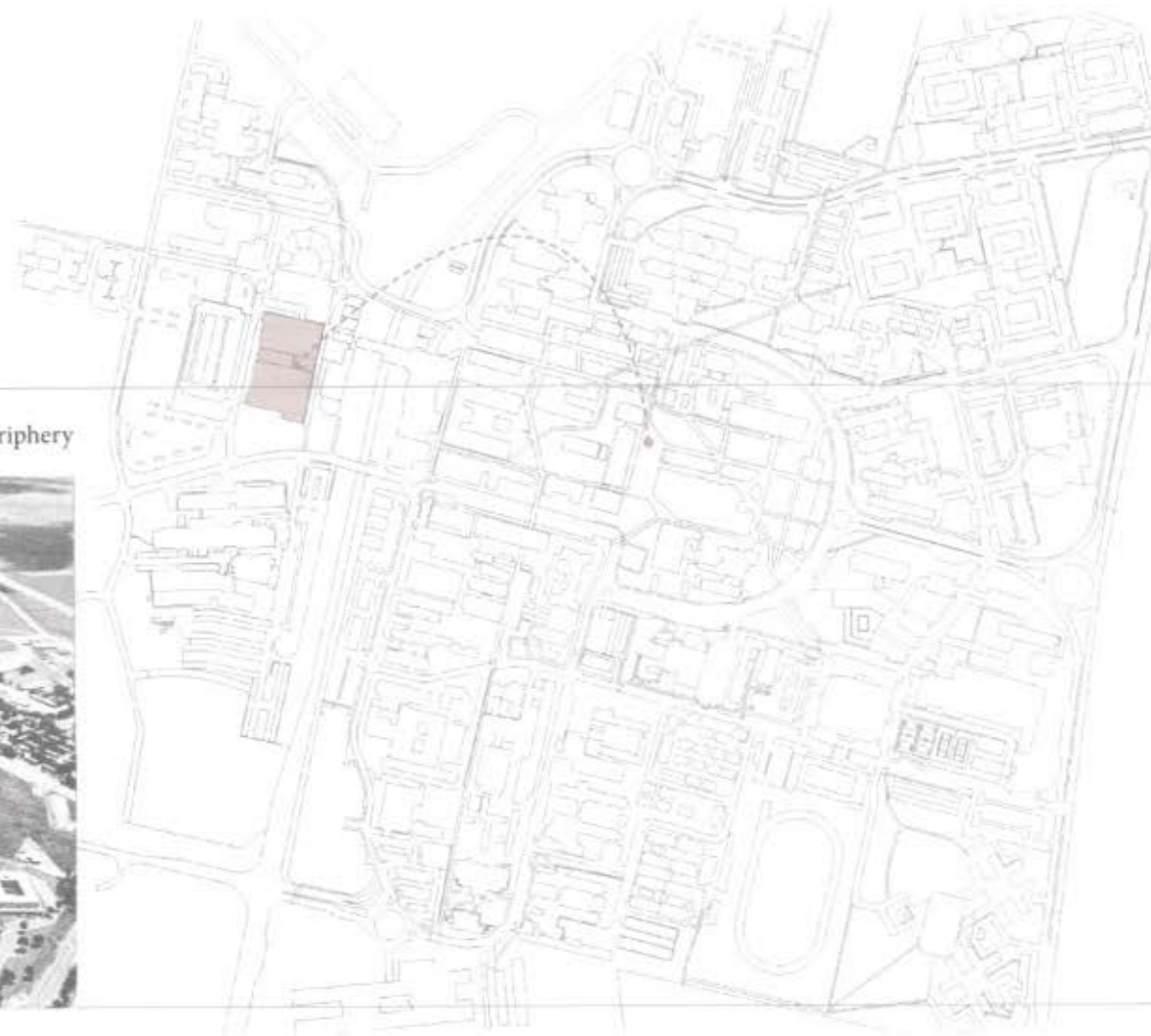


Fig: Plan diagram of UFS showing Library from heart to periphery

Visual Timeline: 1909-2012

1909

For the first five years of the university's existence the library is located in the main building. Its original position within the building is unknown.

1914

As the university grows, additions are made to the main building and the library is moved to the newly completed Noordblok. Also to be included in the Noordblok the first student centre.

1945

The student centre ('Intersaal') is moved from the Noordblok in order to make room for administrative offices. It is moved to a temporary building located behind the Abraham Fischer Building. It is christened "the stables" by its users. This would later be known as the Stabilis.



Fig: 1951: Areal photograph

Source: (Van Sink tot Sandsteen tot Graniet, 2006)



Fig: Northblock right after its completion, shown with main building

Source: (Van Sink tot Sandsteen tot Graniet, 2006)

1953

The library is moved from the Noordblok to the "library building", which would later come to be known as the Johannes Brill building, named in honour of the very first rector of the UFS.

1954

The student centre is once again moved to the Scholtz Hall.

1973-1974

Decision is made to expand UFS grounds to the West of the main building. Two bridges are built crossing DF Malherbe road. The UFS aims to build new sports facilities, a new library, new facilities for the drama department, and a building for the department of architecture and quantity surveying on the remaining land. Due to financial reasons many of these plans did not realise. The largest single task accomplished during period was to be the UFS Sasol Library.



Fig: 1963
View showing undeveloped land to West.
Source: (Van Sink tot Sandsteen tot Gramiet, 2006)



1978

Henk de Bruin and Partners are commissioned to do the design for the new library building.



Fig: 1984: West facade of new Sasol Library

Source: (Van Sink tot Sandsteen tot Graniet, 2006)

2003

Complete integration of west and east campuses was only achieved upon completion of the Thakaneng bridge and student center.



Fig: 2004: Areal view of campus with Thakaneng Bridge

Source: (Van Sink tot Sandsteen tot Graniet, 2006)

1979

Construction begins on the new library building after plans are finalised.

1983

The new library building is completed and books and other material moved in. Pedestrian movement on campus is disrupted by the locating of the new student centre in the Benedictus Kock building, to the east of the main building and on the opposite end of campus. With the new 'heart of

campus' gradually moving toward the new western developments across from DF Malherbe road, planners soon realised that it had been a mistake to separate these two institutions as the student centre was underutilised and too far from the Sasol Library.

2012

Jansen releases the strategic plan for 2012-2016, focusing on the Human Project and Academic Project.

5.2 Historical development of the university crest

As an incidental aside, some reference to the development of the university crest proves important as it aligns again the argument for an alternative conceptualization of the knowledge platform from the tree-like (first crest), to the rhizome (2011 rendition):

1912

Initially, the university simply made use of the Grey College School crest.



Fig: The 1935 University Crest

Source: (Van Sink tot Sandsteen tot Graniet, 2006)

1935

Upon changing the name to University College of the Orange Free State, the need for a new crest became apparent. The image below displays the crest of this period, bearing the motto "vorentoe boontoe" (English: "forward and upward"). The prominent tree motif symbolises arboreal thinking at the time, as well as the a comment on the Afrikaner social move towards dominance.



Fig: UFS Logo
Source: www.ufs.ac.za

2011

After the appointment of Jonathan Jansen as new vice chancellor, the university logo and crest were changed to showcase the transformed vision and mission of the University. In contrast to the 1935 crest, the flowing lines of the current crest moves away from the vertical, to an emphasis of the horizontal, flowing and less hierarchical (rhizomatic) approach.

5.3 The UFS Sasol University Library

In July 1983, when the UFS Sasol University Library was inaugurated, it was situated west of DF Malherbe Road and on the periphery of the university campus, linked by two access roads and quite a distance from its formerly central location off the main square.

The decision to remove the library from the centre of campus life has to be compared to the contemporaneously inaugurated J.S. Gericke Library at the University of Stellenbosch which was deliberately kept central to the campus by building underground (University of Stellenbosch Library and Information Service, n.d.). No formal study could be discovered on the effect this move had on student use of the library facilities, but the allocation of space on campus is nevertheless important as commentary.

Nevertheless, as one of the few products of optimistic expansion plans in the early 1970s, the establishment of a high calibre research library was considered essential to Prof Wynand Mouton, the vice chancellor, irrespective of budgetary constraints (Van Sink tot Sandsteen tot Graniet, 2006:297).

The imposing concrete and glass building of Brutalist design is not atypical of the era for university campus architecture across the world, beginning with Paul Rudolph's Yale Art and Architecture Building. The library design is also not unique, several university libraries across the world of the 1960s and 1970s reflect a Brutal-

ist design, e.g. University of Toronto's Robarts Library, the University of California, San Diego's Geisel Library and the Joseph Regenstein Library at the University of Chicago. In fact, New Brutalism proved quite popular on university campuses in South Africa as well, with the most iconic example probably the Unisa main campus on Muckleneuk Ridge in Pretoria.

But dating from the heyday of early 1980s Apartheid, the fortress-like, menacing edifice of sprayed (to hide the flawed and uneven surface) raw concrete, with small windows, tends to echo the power dynamics inherent to the Apartheid-government's negative attitudes towards transparency and open access. This was the time of P.W. Botha's "total onslaught", as the official history of the university reminds us (Van Sink tot Sandsteen tot Graniet, 2006) and the library's design seems to suggest exactly this bunker-mentality, rigidity and resistance to change which Jansen (2009:216) alludes to on the University of Pretoria campus. It becomes, as building, the perfect foil for the flexibility and openness the human library is designed to represent.

Situating the human library adjacent to the Sasol Library was therefore a deliberate decision of counter positioning. The flexible tensegrity skin, responsive to change, with multiple entryways and glass curtain wall (facing the Sasol Library) to reinforce transparency, becomes

the evident representation of Jansen's post-Apartheid pedagogy. Furthermore, utilising the space next to the bridge, offers a metaphor for what the human library will symbolize: a link to the main campus and a bridge over Jansen's "abyss" in his preface to Knowledge in the Blood: "The dynamics of power trouble all our doing and all our knowing. Knowledge is always contingent, always standing above an abyss," (2009:1).



Figs: The Sasol Library in relation to campus context Photograph taken: 10/08/2012.



Fig: Sketch of Eastern approach to library



Fig: Western facade of Sasol Library
Source: (Van Sink tot Sandsteen tot Graniet, 2006)

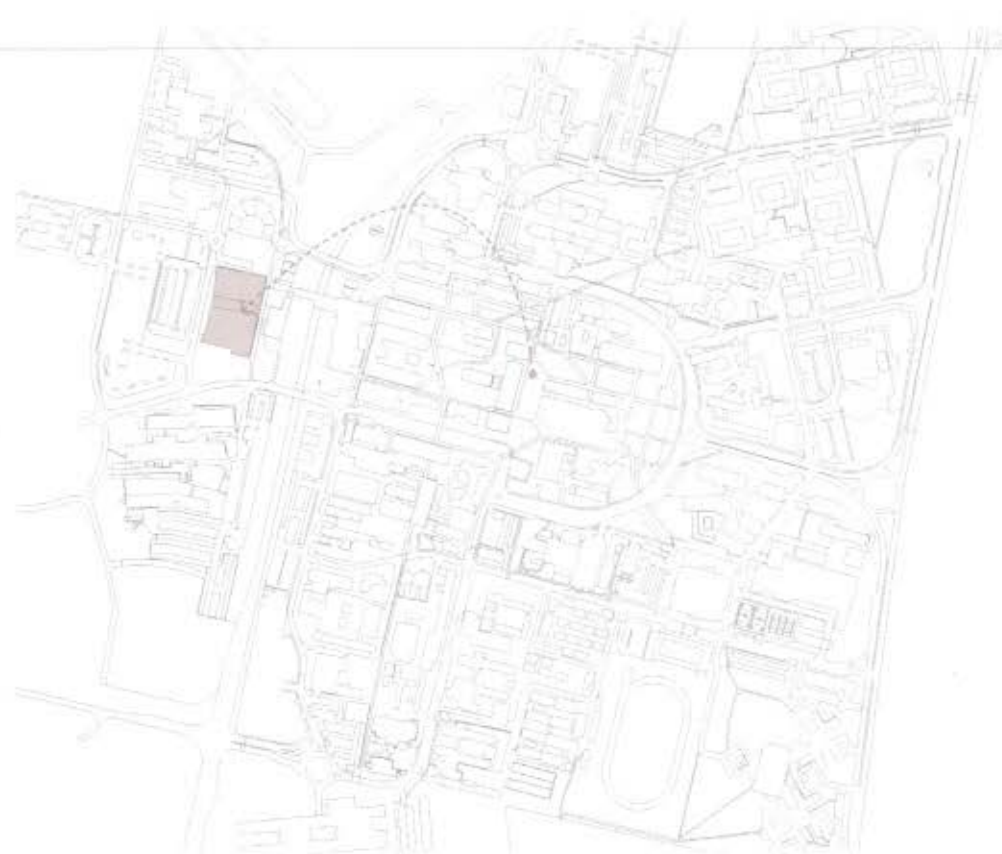


Fig: Sasol Library move from heart of campus
Source: (Van Sink tot Sandsteen tot Graniet, 2006)

Precedent Study: Vittra School for Vittra Telefonplan

Project: Vittra School (2011)

Location: Hägersten, Stockholm, Sweden

Architects: Rosan Bosch

The Swedish free school organisation, Vittra, offers the ideal precedent to consider the break-down of rigid demarcations and “walls” and the creation of deliberate openness. The school’s pedagogical philosophy demands alternative, non-traditional learning and teaching situations. This in turn directs the design: classrooms are replaced by organised spaces, e.g. “... the wateringhole, the show-off, the cave, the campfire, and the laboratory,” (Jett, 2012).

CN

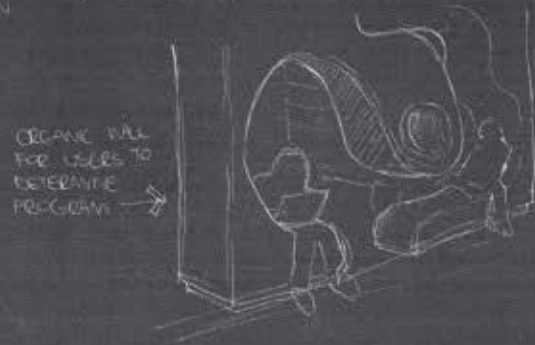


Fig: Interior view of school with learners
Source: <http://www.archdaily.com>

Project Overview

The school's philosophy overlaps on many levels with the principles set out in the UFS Strategic Plan 2012-2016 (2012). Rhizomatic principles of non-hierarchy and interconnection are applied by doing away with divided classrooms or visible spatial hierarchy. The belief is the child cannot be inculcated into real life by separating all elements of knowledge into isolated compartments. The same is true for the traditional silo-like divisions of subject matter such as mathematics, science or languages: life is a complex overlapping of many dualities and dynamic relationships. This same approach seems to be what Jansen is aiming for by including the "human project" in the strategic plan, the creation of a holistic educational environment that readies students for life rather than just a profession.



Fig: Media viewing space
Source: <http://www.archdaily.com>

Learners are not separated into groups according to age, but according to progress. Thus each learner can work at a pace which suits him/her working style. This opposition to segregation also creates the opportunity for organic knowledge transfer and education between learners that would otherwise not have been able to interact in a segregated environment. Upon enrolment each learner is equipped with their own personal computer, and the entire (open plan) school has wireless internet access. In allowing this level of freedom to the learners, Vittra strives to create relaxed environments where learn-



Fig: Organic Furniture
Source: <http://www.archdaily.com>

ers interact with each other and their environment in a dynamic way, and learn from and help one another with the guidance of teachers, instead of being spoon-fed while gaining no substantial knowledge or independent skills (Jett, 2012).

These aims correlate well with what the Human Library project aims to achieve on a tertiary level for the University of the Free State: to create a living network between users where people can learn from and build upon their collective knowledge, expertise and experiences.

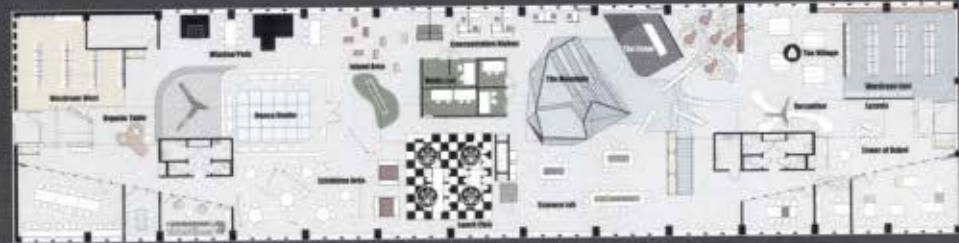
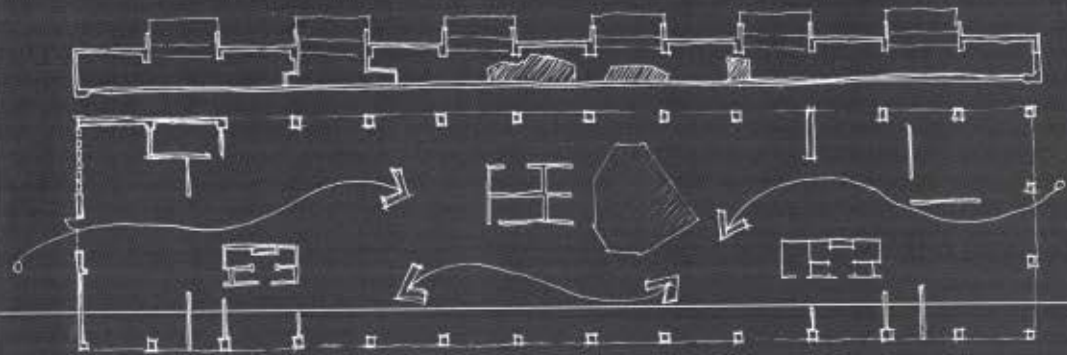


Fig: Users interpreting dspace as they see fit
Source: <http://www.archdaily.com>

Project Overview

Learners are not separated into groups according to age, but according to progress. Thus each learner can work at a pace which suits him/her working style. This opposition to segregation also creates the opportunity for organic knowledge transfer and education between learners that would otherwise not have been able to interact in a segregated environment. Upon enrolment each learner is equipped with their own personal computer, and the entire (open plan) school has wireless internet access. In allowing this level of freedom to the learners, Vittra strives to create relaxed environments where learners interact with each other and their environment in a dynamic way, and learn from and help one another with the guidance of teachers, instead of being spoon-fed while gaining no substantial knowledge or independent skills (Jett, 2012).

These aims correlate well with what the Human Library project aims to achieve on a tertiary level for the University of the Free State: to create a living network between users where people can learn from and build upon their collective knowledge, expertise and experiences.



Ground Floor



First Floor



First Floor

Fig: Plans + sections showing openness of design, dynamic spaces, not to scale.
Source: <http://www.archdaily.com>



Design Application

To achieve the same level of non-hierarchy and openness to interpretation towards users, principles from this precedent are used in the design of the human library, focussing mainly on interior layout:

- Open plan layout:

Interior walls are kept to a minimum as to symbolise the opposition of segregation, and allows space to flow freely.

- Organic/ Dynamic furniture use:

Gives users opportunity to interpret space as they see fit, does away with hierarchy.

- Double volume spaces

- User Participation



Fig: Early sketch of function segregation
Source: <http://www.archdaily.com>

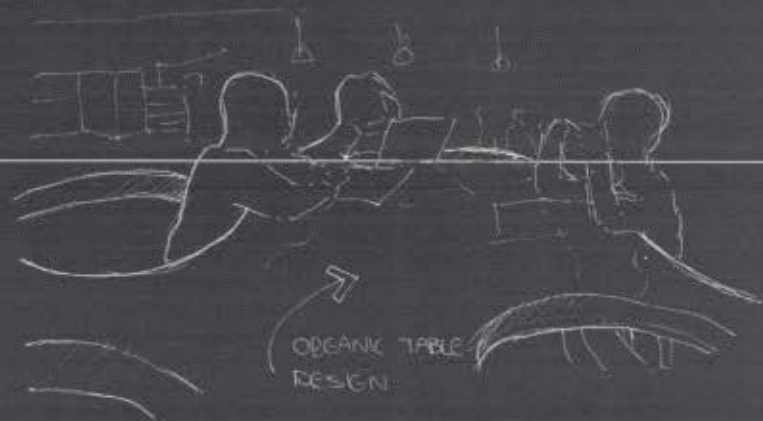


Fig: Interaction between users, chalk wall in background promotes participation from users.
Source: <http://www.archdaily.com>

Chapter 6: Contextual analysis

6.1 University Of The Free State in relation to greater Urban Context



Fig: Satellite imagery of bloemfontein in relation to campus context.
Source: www.earth.google.com



Tempe Military
Base

Showgate
Centre

Mimosa Mall

Grey College

Loch Logan

Stadium

Suburbs



Fig: Satellite imagery of bloemfontein
in relation to campus context.
Source: www.earth.google.com

6.1 University Of The Free State in relation to greater Urban Context

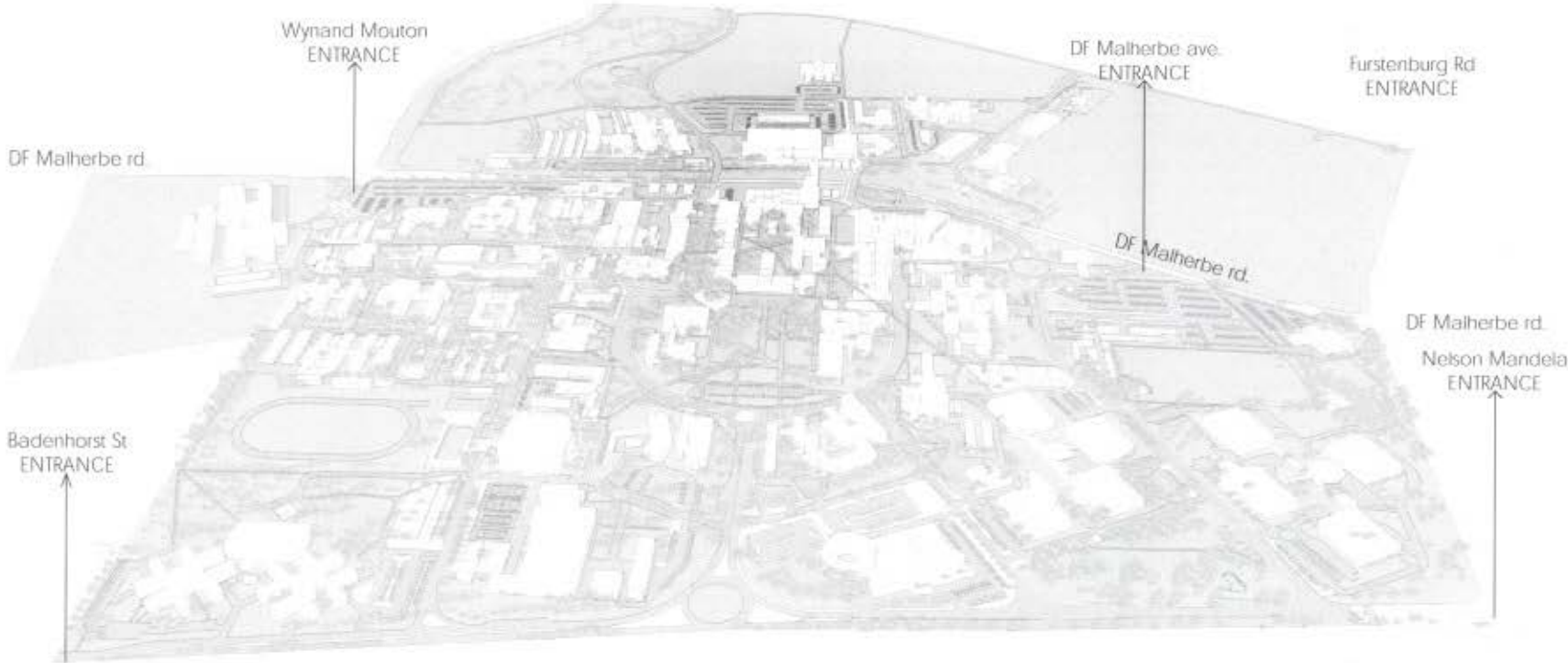
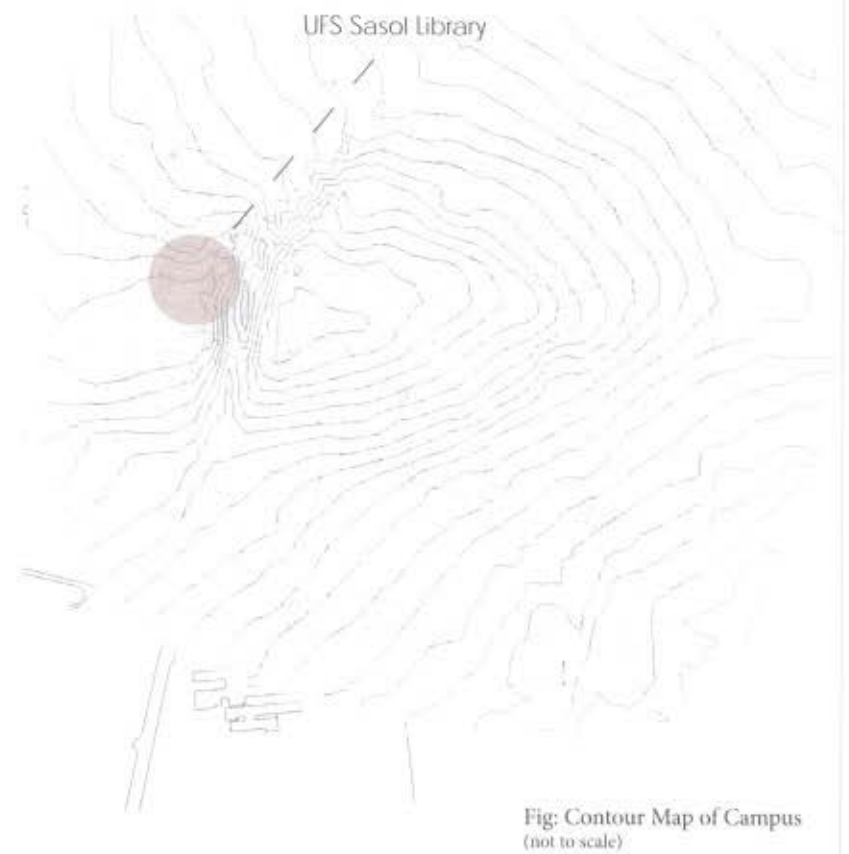
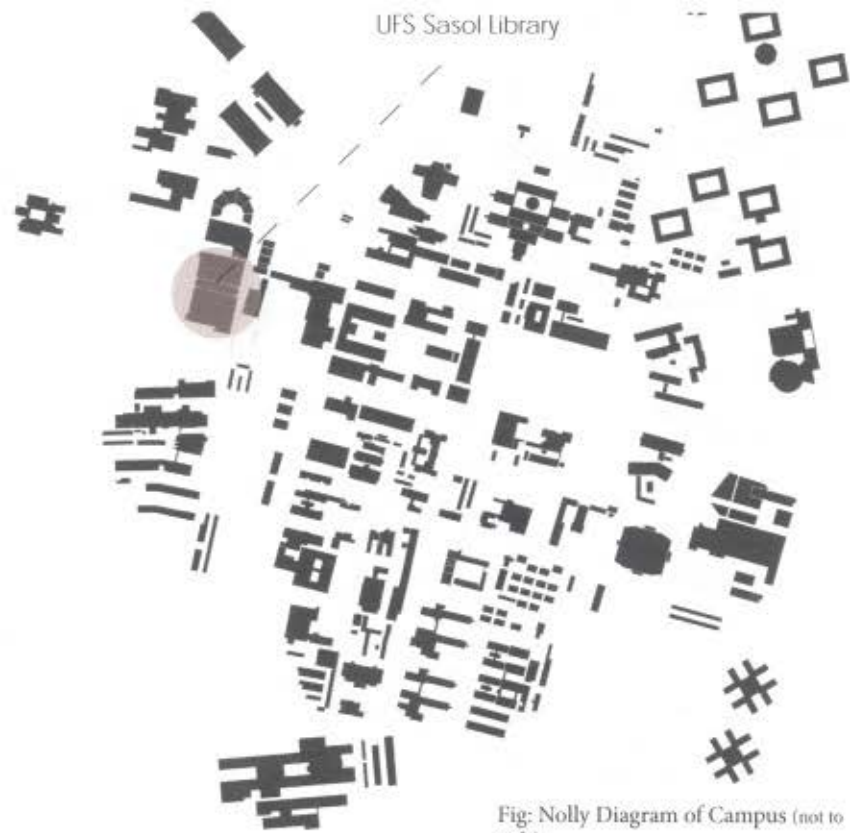


Fig: Campus map of UFS showing urban layout and building scale

Buildings + Contours



6.2 Sasol Library as largest collection of knowledge in Bloemfontein

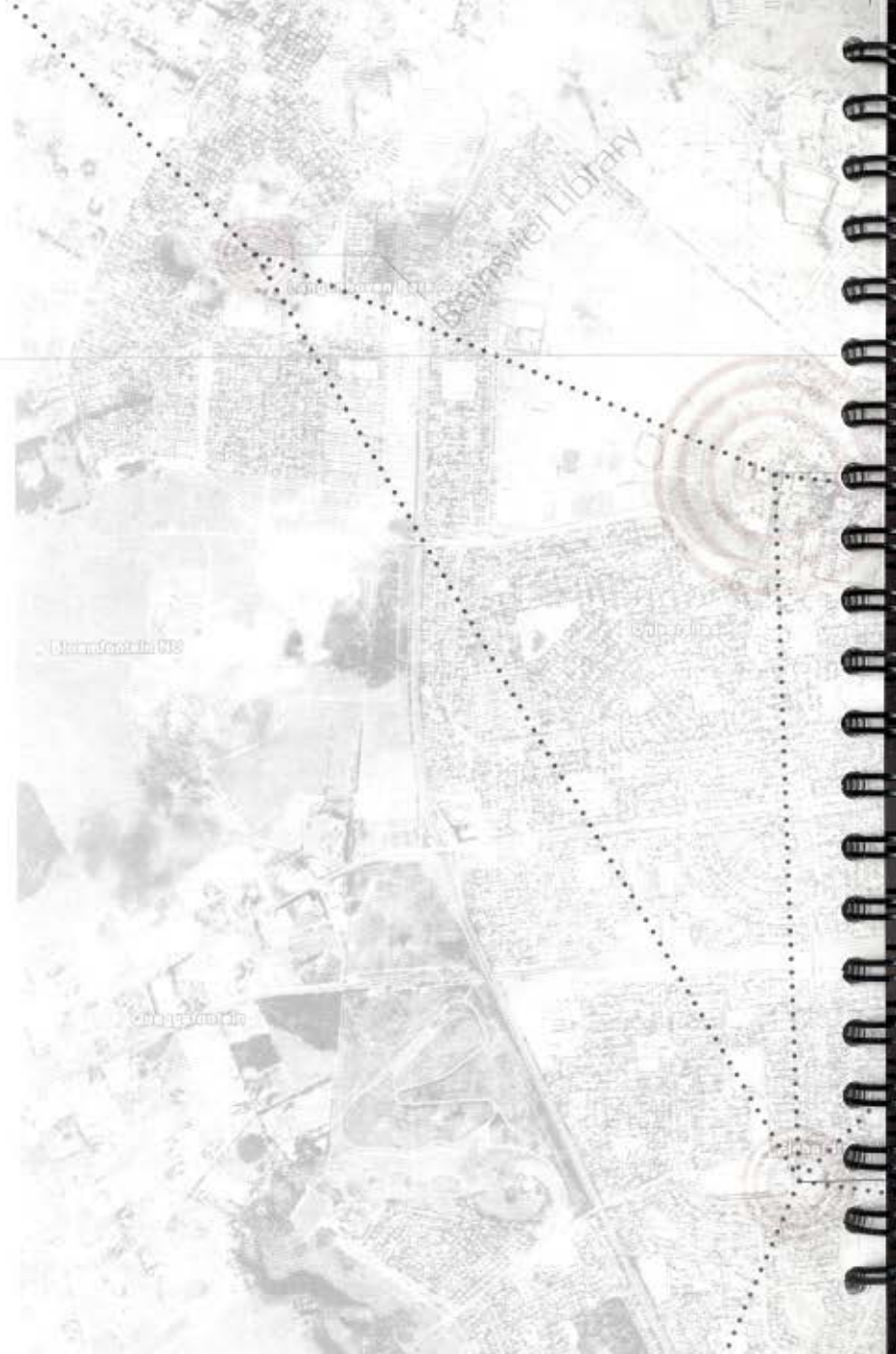
To propose a new library for the greater Bloemfontein, the macro context had to be taken into consideration. And because the human library, though situated on the UFS campus, has because of its ethos both an academic and public face, the context refers here not only to the physical, but also to the informational situatedness.

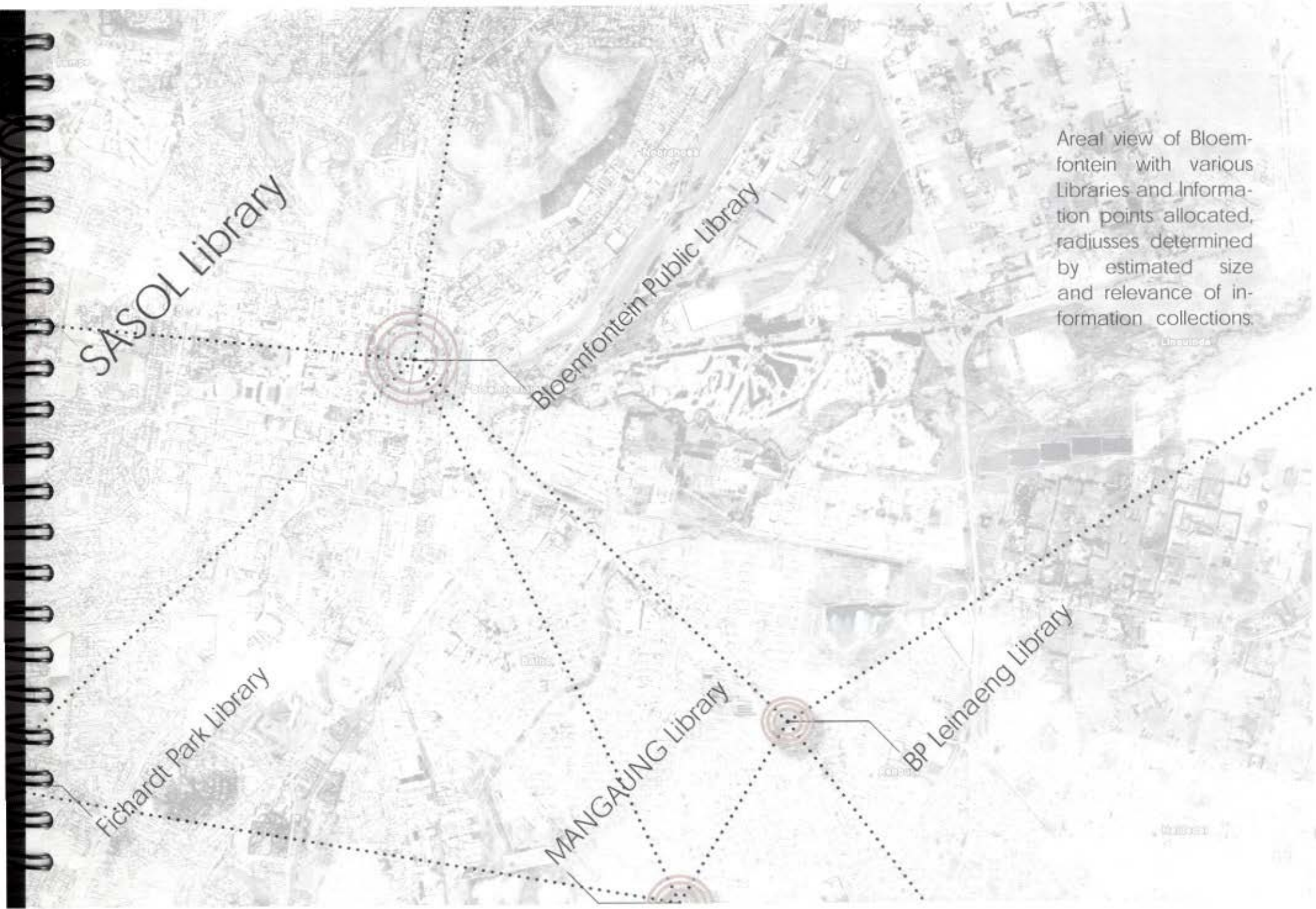
Cognisance has to be taken of where major information hubs and access points are physically located in the broader Bloemfontein area.

Currently, the largest collection is the UFS Sasol Library. The adjacent map of Bloemfontein indicates these locations and the approximate size of other collections. The UFS Sasol Library is not only superior in collection size but also in terms of currency, it is technologically enabled and all information

is securely preserved.

However, university affiliation proves a severe gatekeeper restricting broader access by the public to the collection. Furthermore, budgets and current information dissemination systems are not keeping abreast with the rapidly changing information technologies and innovations of current information sharing trends among universities the world over (cf. e.g. Albanese, 2004).





SASOL Library

Bloemfontein Public Library

MANGAUNG Library

BP Leinaeng Library

Aerial view of Bloemfontein with various libraries and information points allocated, radiusses determined by estimated size and relevance of information collections.



6.3 Site Selection and Analysis

As mentioned, the SASOL Library was completed in the early 1980's. It expresses the contemporary style of buildings of that era on university campuses. These monumental modernist masses made simple use of geometry by means of strong, clean lines and allowed an even greater perceptual footprint because the building is surrounded by open "garden space".

The simplicity, yet heaviness of the building evokes permanence and monumentality, but it also overwhelms and intimidates. All of this adds up to a building which lends itself to little possibility for alteration or adaptation. Although, as already mentioned, the Sasol Library will be used as foil, the new human library would have to be distanced from the Sasol Library in such a way as not to be overshadowed by its sheer overbearing monumental-

ity, yet close enough to form a workable urban plan with the adjacent complex of buildings. The human library therefore needs to spatially fit within a cohesive whole with the Student Centre, Computer Laboratory, Staff Restaurant and Sasol Library in order to improve rather than impede existing flows and routes.

With this in mind, a number of possible sites in the vicinity of the Sasol Library were considered for the human library. Only one presented itself for serious consideration: the cliff face on the eastern side of the library.

Fig: Satellite images of site
(www.earth.google.com)

Option 1: Psychology Building Parking lot

Too far away from Student Center
Too far away from Sasol Library entrances
Western exposure
Would not form logical part of campus master plan
No public access

OPTION 2: Library Parking lot

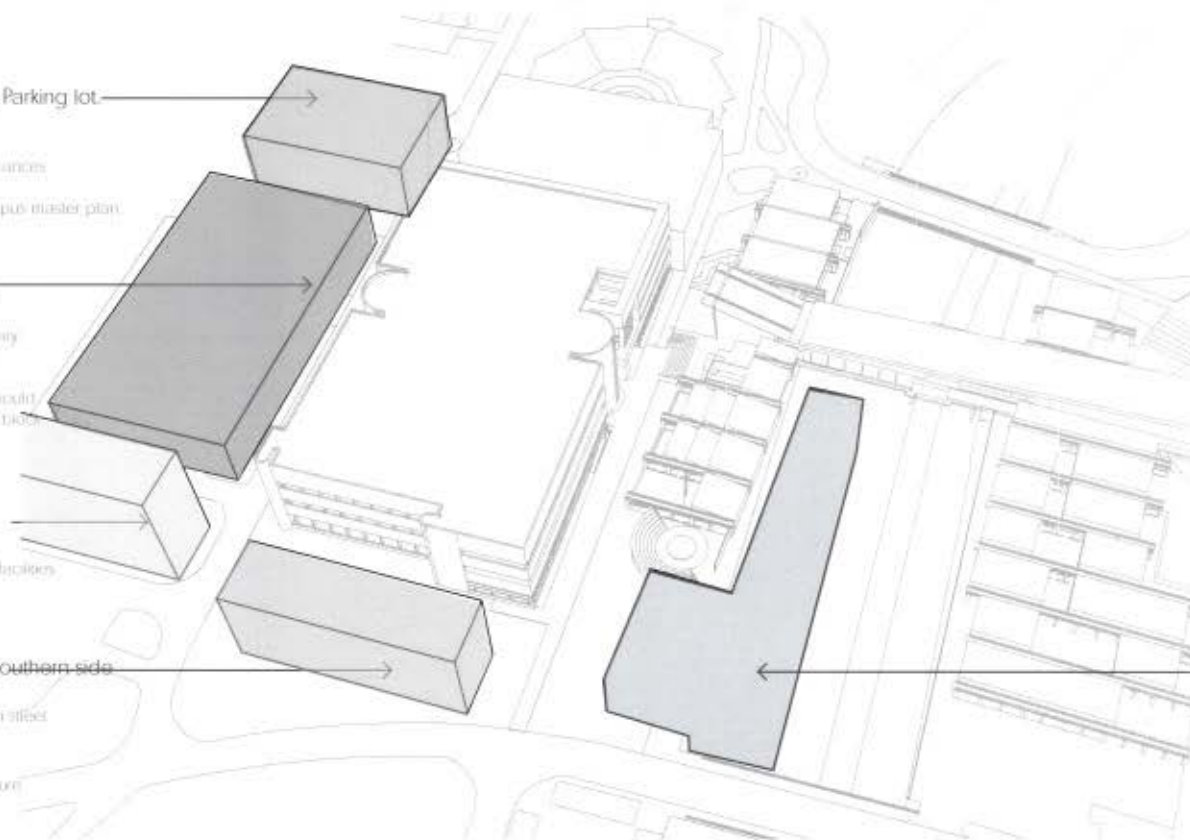
Blocks Western view of existing library
Too close, competes with central
Western exposure
Takes away important parking or would
have to be lifted from ground and block
views
No public access

OPTION 3: Parking Lot Island

Too small and far away from other facilities
Western exposure
No public access

OPTION 4: Green Space on Southern side

Blocks important view of library from street
Competes with monumentality
Far away from other facilities
Bad orientation, no Northern exposure



The terrain offers the opportunity of multiple floors without competing with the existing, by retreating the structure over the edge of the cliff face. It embraces the second bridge and could lessen congestion on Thakaneng.

It gives the opportunity to directly benefit from the public via access to DF Malherbe. This also gives the opportunity for a 'new public face' to showcase themselves as world-class institution.

Very importantly the 6meter level change allows a large building with multiple floors without it having to compete with the existing Library.

Selected Site:
Cliff face On Eastern side of Sasol Library

Fig: Site selection/ massing exercise diagram
not to scale

Selected Site

The selected site is located on the western side of a public road, dividing the university campus in two. Two bridges (one being the Thakaneng Bridge) span the public road. The site is adjacent to the southern bridge. The new building is to occupy the no man's land between the public road and open space adjacent to the Sasol Library and staff restaurant.

The dramatic level-change of the site (more than 6 meters) presents itself as rock face, which serves as physical embodiment of the divide between the public and campus grounds. The envi-

sioned human library building will reach into this gap, thereby creating public access, additional to campus access to make the space available as much to members of the public as to the UFS staff and student body.

"We don't need new cities, we need to make better use of our existing urban areas. We don't need to take new land, we need to reclaim wasted land." (Stein, 2003: 20)

(Stein, 2003: 20)



Fig: Areal image of site
(www.earth.google.com)

Context

Diagrammatic representation of proposed site in relation to immediate context, and representation of differentiated levels created by rock face running through site.

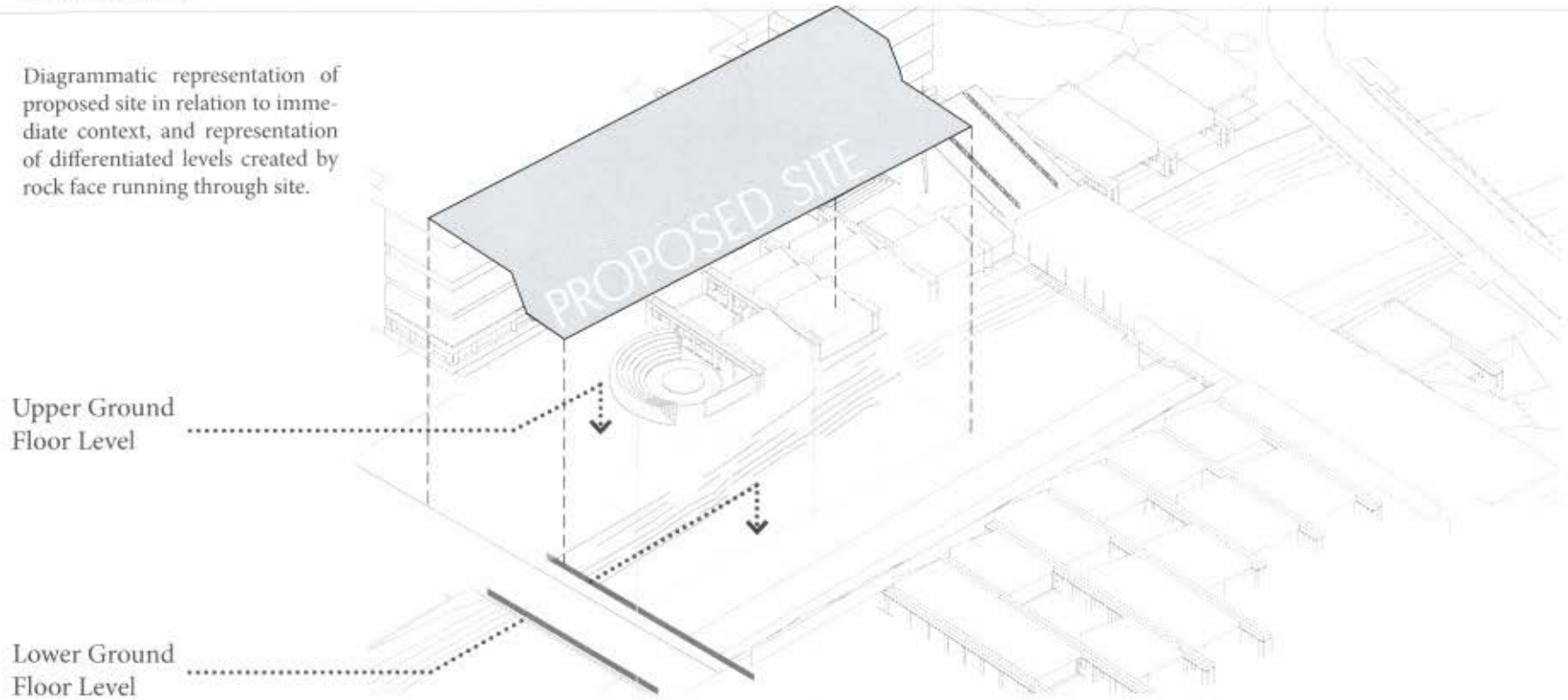


Fig: Diagram: Site location on campus map

Two Faces

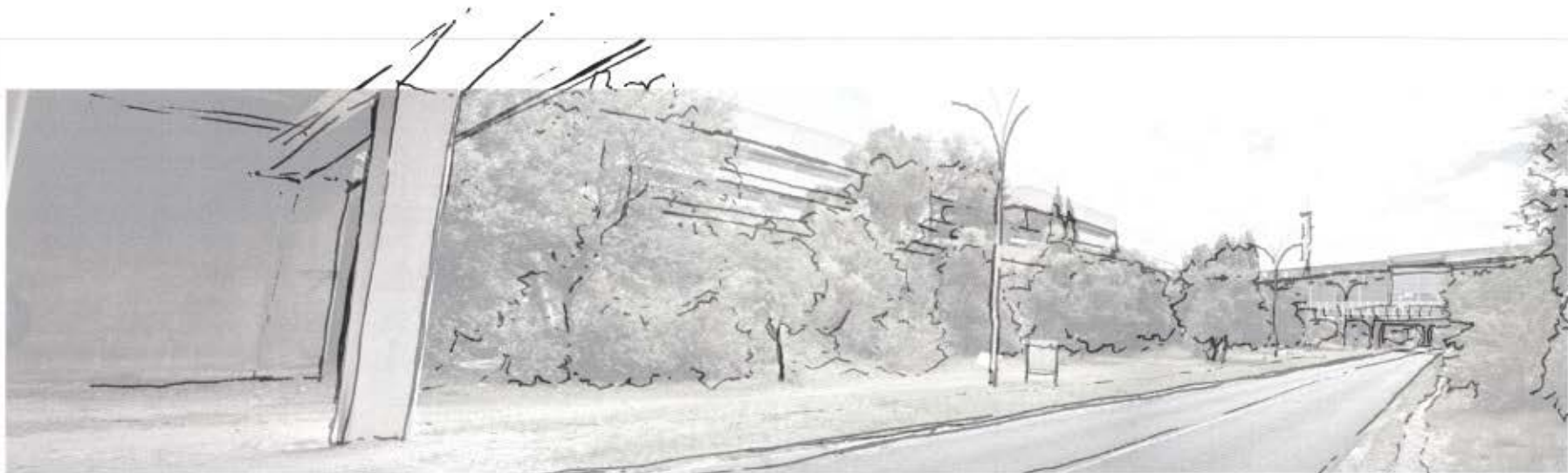


Fig: View from DF Malherbe ave. showing Thakaneng Bridge and Sasol Library



Fig: Exposed rock face dividing public from campus grounds.

The sits on the divide between the university grounds and public space. This is consciously incorporated in the design as a means of giving voice to calls for the academy to engage with society at large and hence counter the remote, elitist, and ivory tower perception of universities. This is particularly necessary for the UFS, as the campus is physically fenced off from the broader Bloemfontein community. Other

South African universities such as the University of Stellenbosch or the Potchefstroom campus of Northwest University is far more integrated within the physical fabric of the host town/city. This site therefore presents a unique opportunity to utilize the liminal space offered by rock face and the public road in order to engage Bloemfontein society at large.

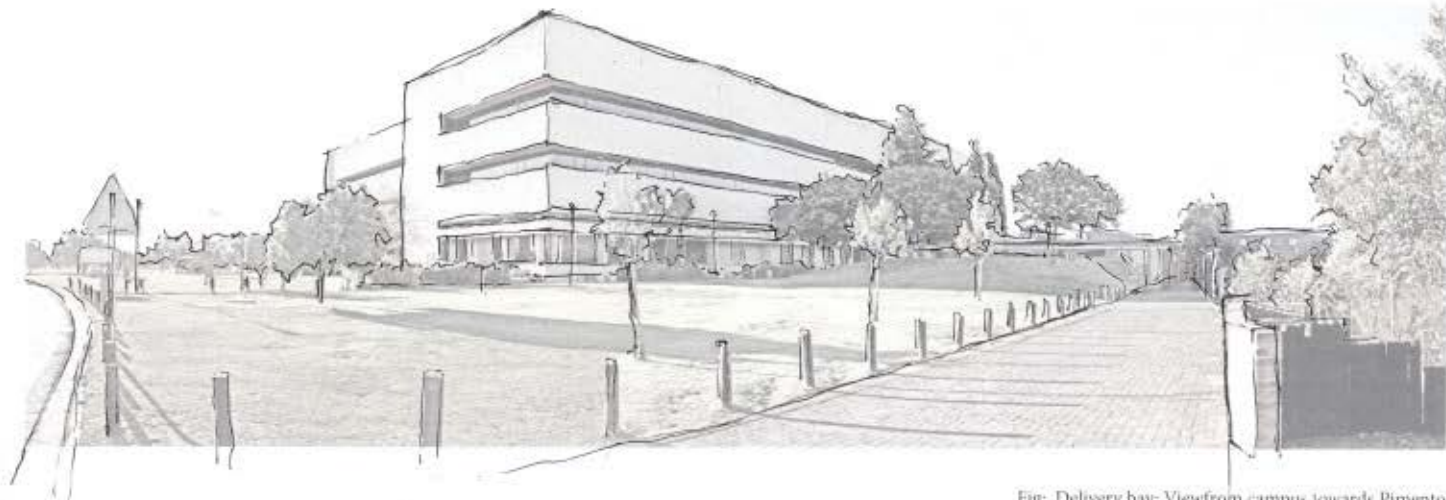


Fig: Delivery bay: View from campus towards Pimento Staff Restaurant, auditorium and Sasol Library

This also means that the building will have two very different, but equally important facades: a public and a campus facade.

The level-change allows the public facade dramatic prominence, a public statement. The western, campus facade, in turn is modest, open and transparent. It is deliberately designed not to intimidate or compete with surrounding buildings for

prominence.

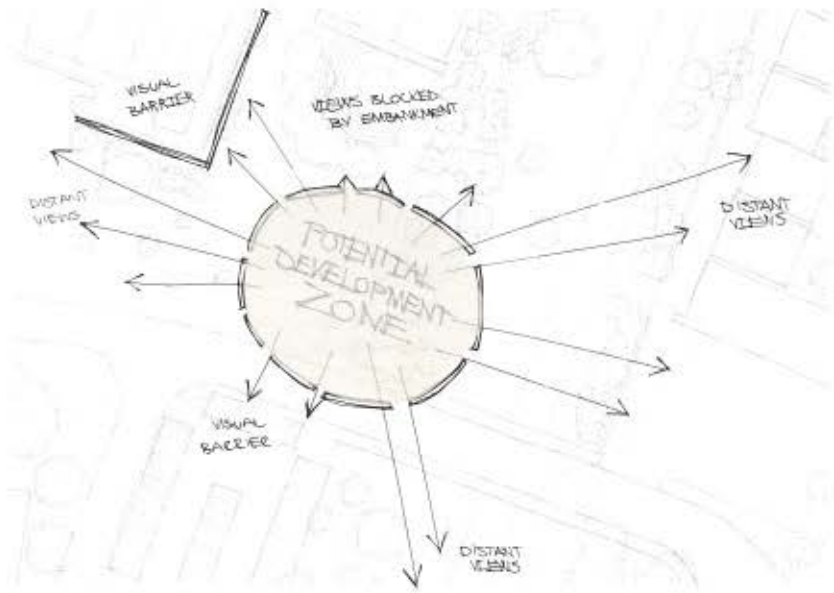
These differing approaches will inevitably influence the design of the building as a whole.



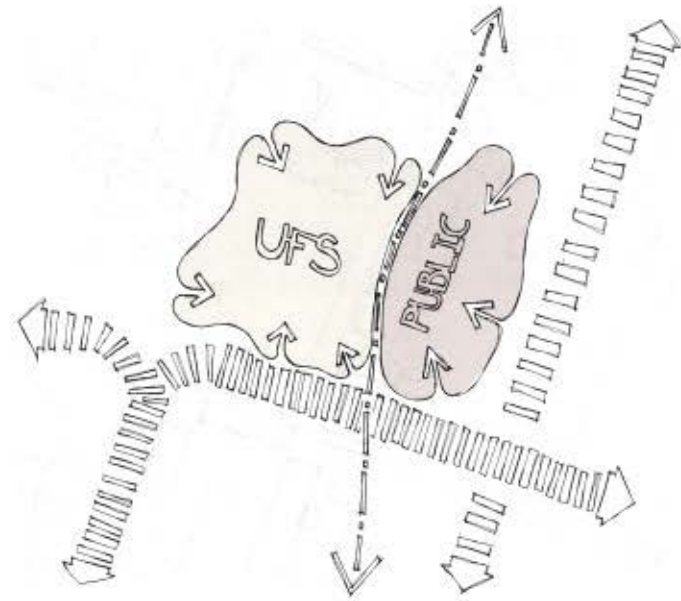
Fig: View from Amphitheatre towards staff restaurant

Plan Analysis

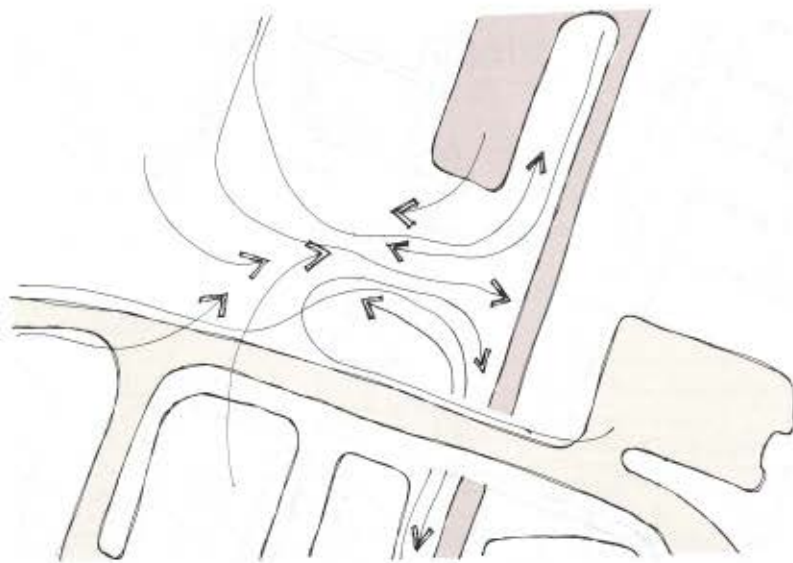
Site to be developed with views



Public / UFS divide on site, split by fence



Possible parking and flows



Pedestrian vs. vehicular movement

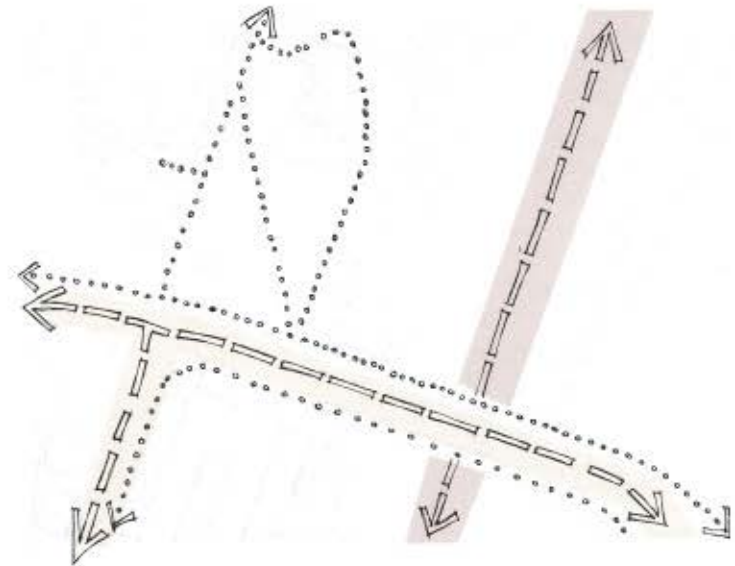


Fig. Hand-drawn site analysis sketches

North-South / Longitudinal site section (not to scale)

Proposed Site

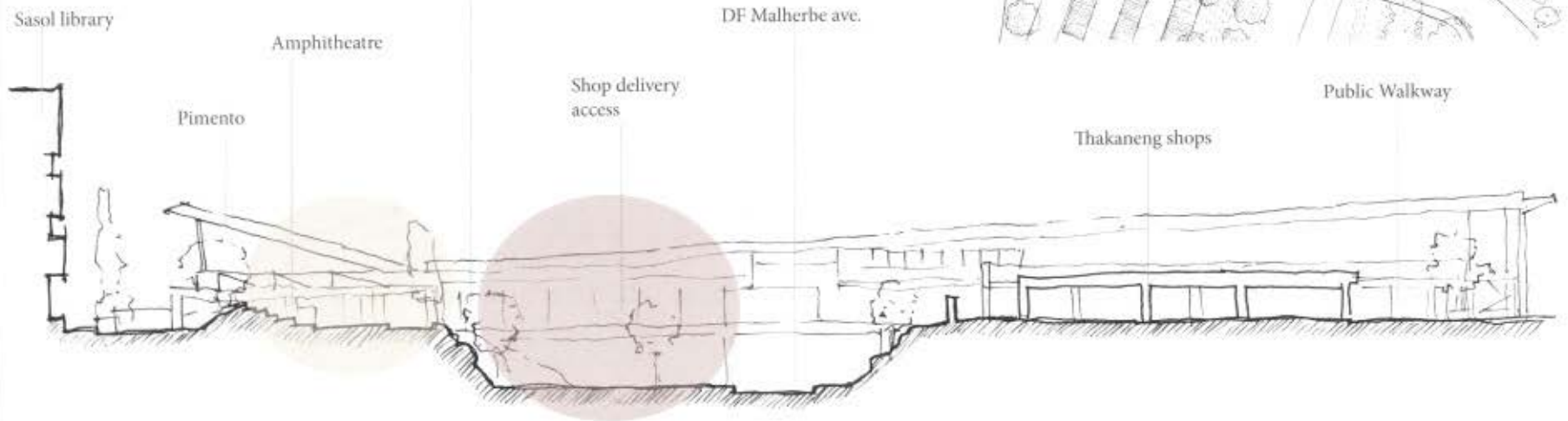
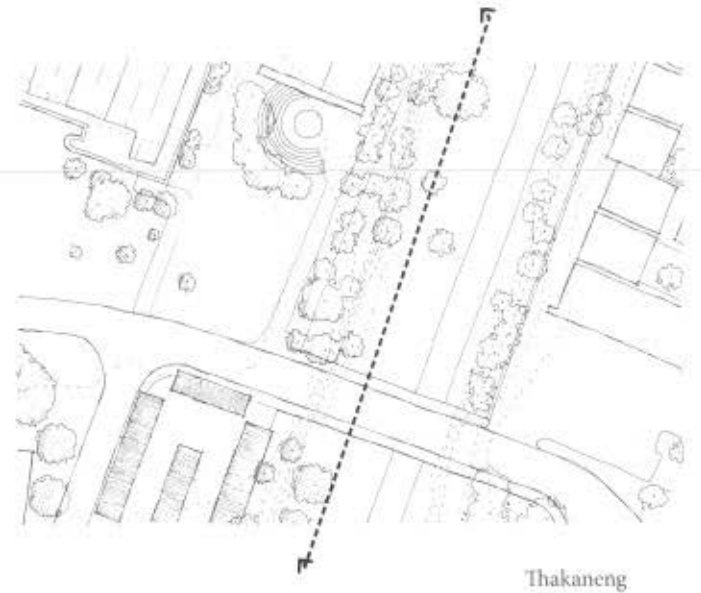


Fig: N/S Section, showing horizontal divide of campus and public space

East-West / Cross site section (not to scale)



Proposed Site

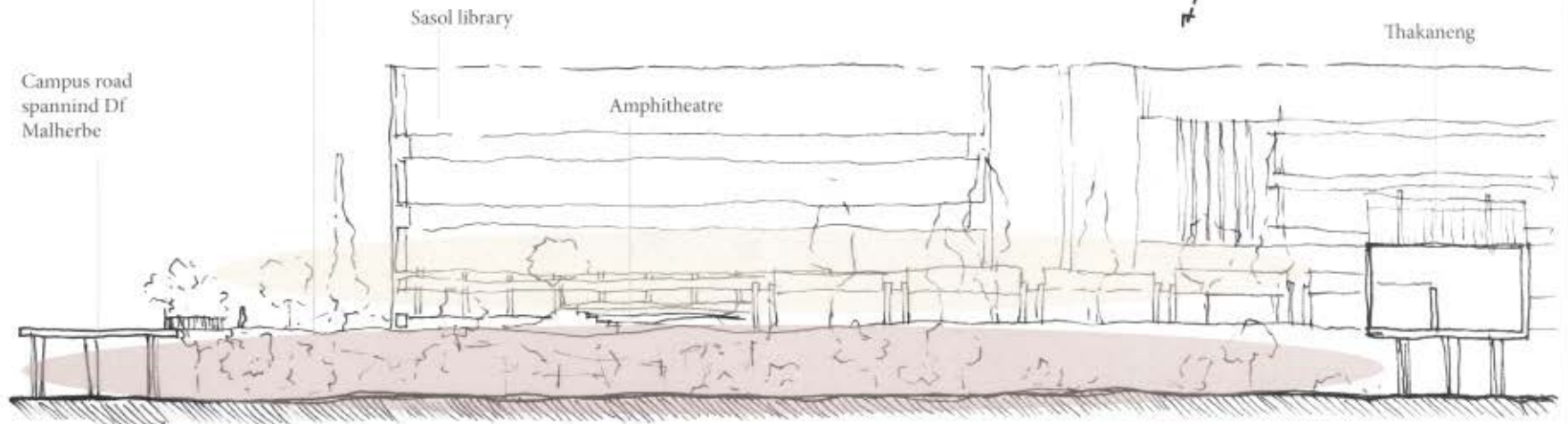


Fig: E/W Site section, showing vertical divide of campus and public space

Chapter 7: Design Development

This chapter will show how the theoretical investigation combined with site influences were used to generate the final design of the building.

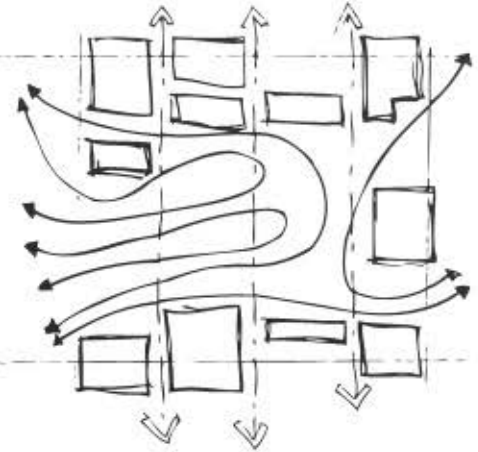
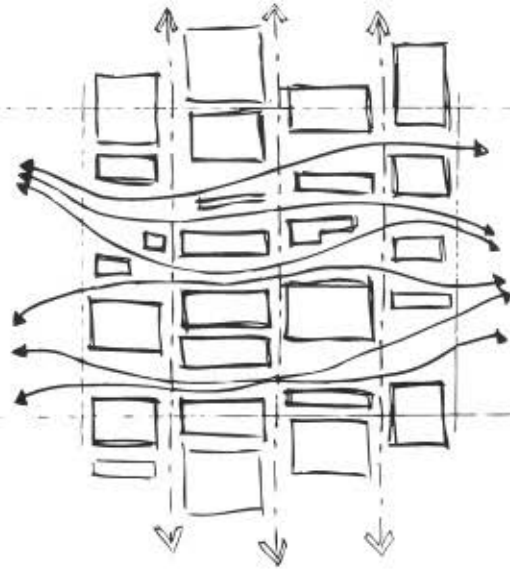
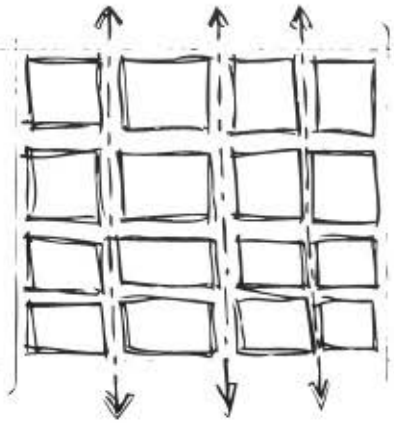


Fig: Concept diagram of institutionalism of site being 'broken' and 'morphed' by user interaction. (rhizome theory applied to UFS context)

7.1 Concept models and drawings

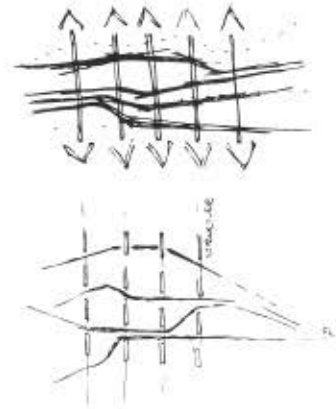


Fig: concept sketches of different axis on site. (Institutional, Thakaneng rythm, vs. pedestrian movement).

BUILDING FORMGIVING :

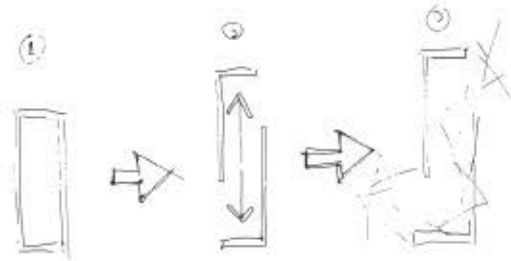


Fig: Illustrating the idea of breaking institutional form, introducing 'human' interactions as means of creating more dynamic form.

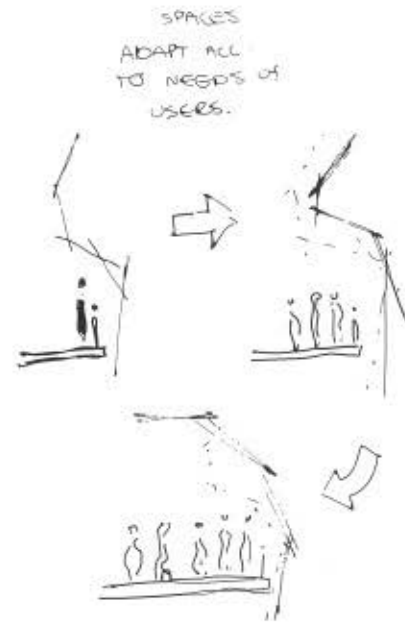


Fig: Diagram of building responding to users by means of possible moving facade, or 'skin' (Later realised by tensegrity)

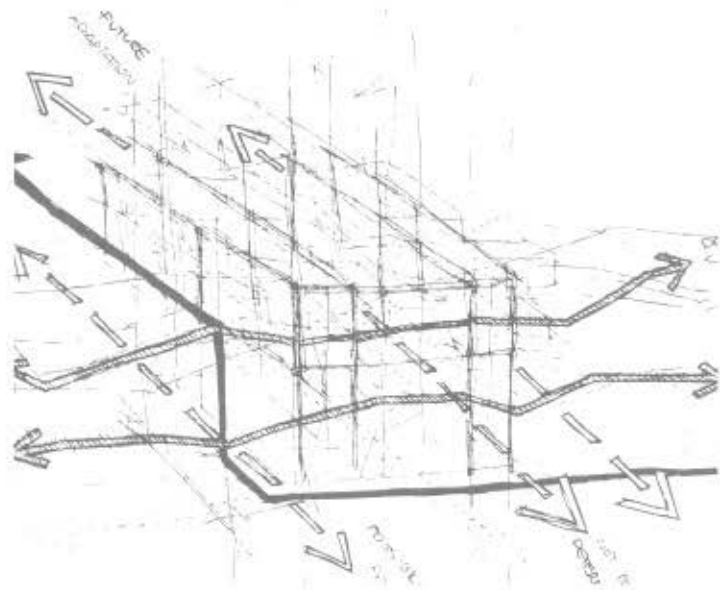


Fig: 3 Dimensional representation of institutional (block like, grid-like) formgiving (Sasol Library), beginning to explore ways of introducing movement and dynamics into the solidity.

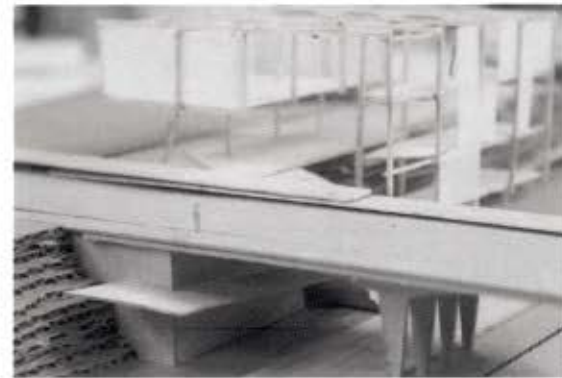


Fig: Early balsa wood concept model. 3D grid was used as abstraction of institutionalism, however the design lacked dynamicism and flow- which would later be achieved by the addition of the 'human' factor to the project.

Concept models and drawings

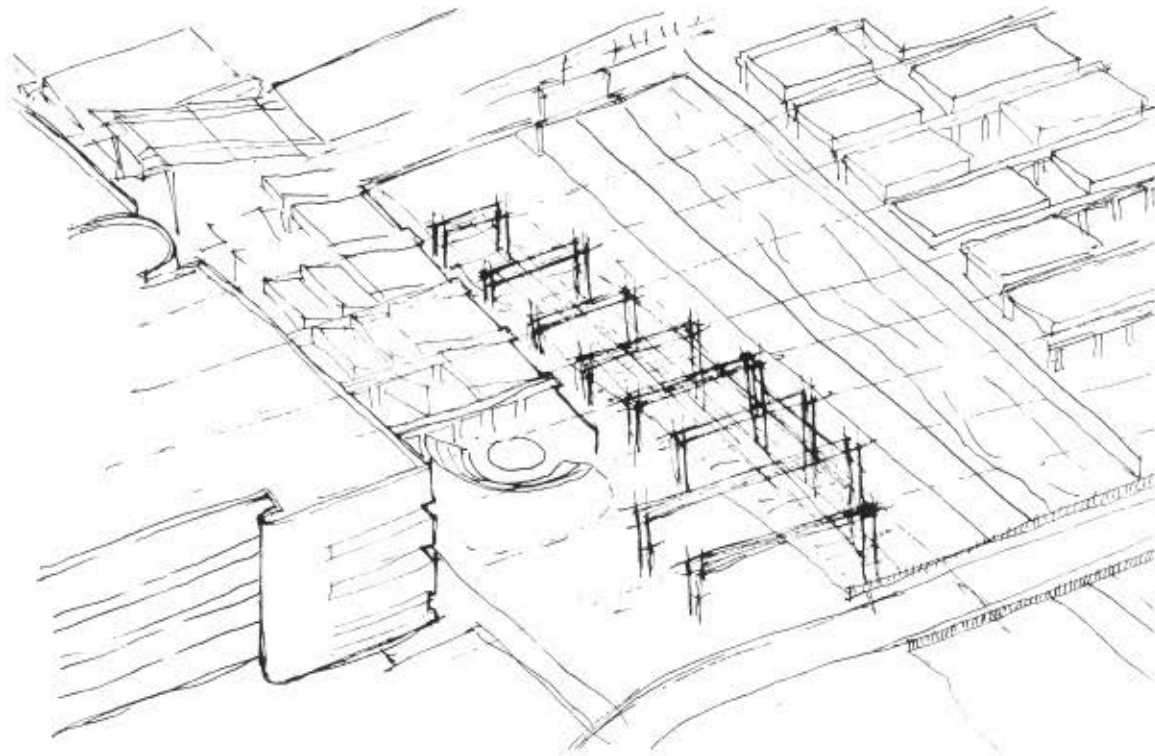


Fig. Early massing sketch using rhythm of Thakaneng bridge rainwater elements to create rhythm and human movement as axial opposite.

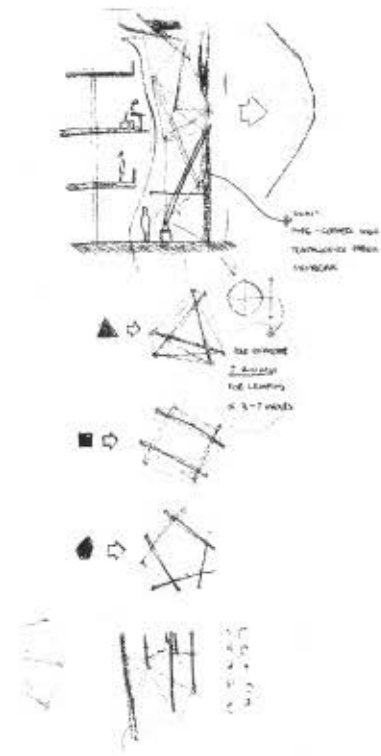


Fig. Exploring basic tensegrity shapes and structural methods + materials

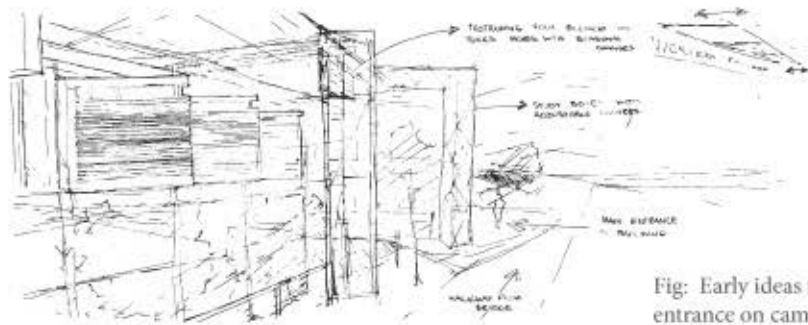


Fig: Early ideas for West elevation and public entrance on campus level

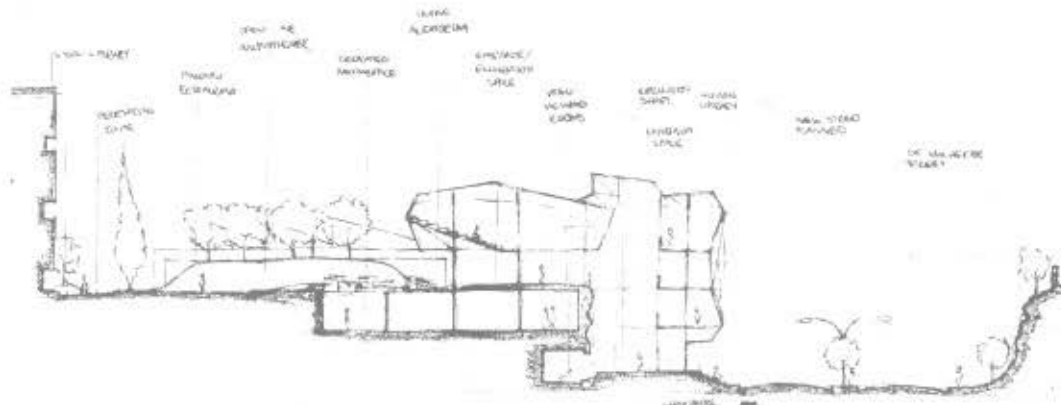


Fig: Early section sketch, trying to console scale difference between Thakaneng and Library.



Fig: Section drawing exploring spatial possibilities of responsive tensegrity skin

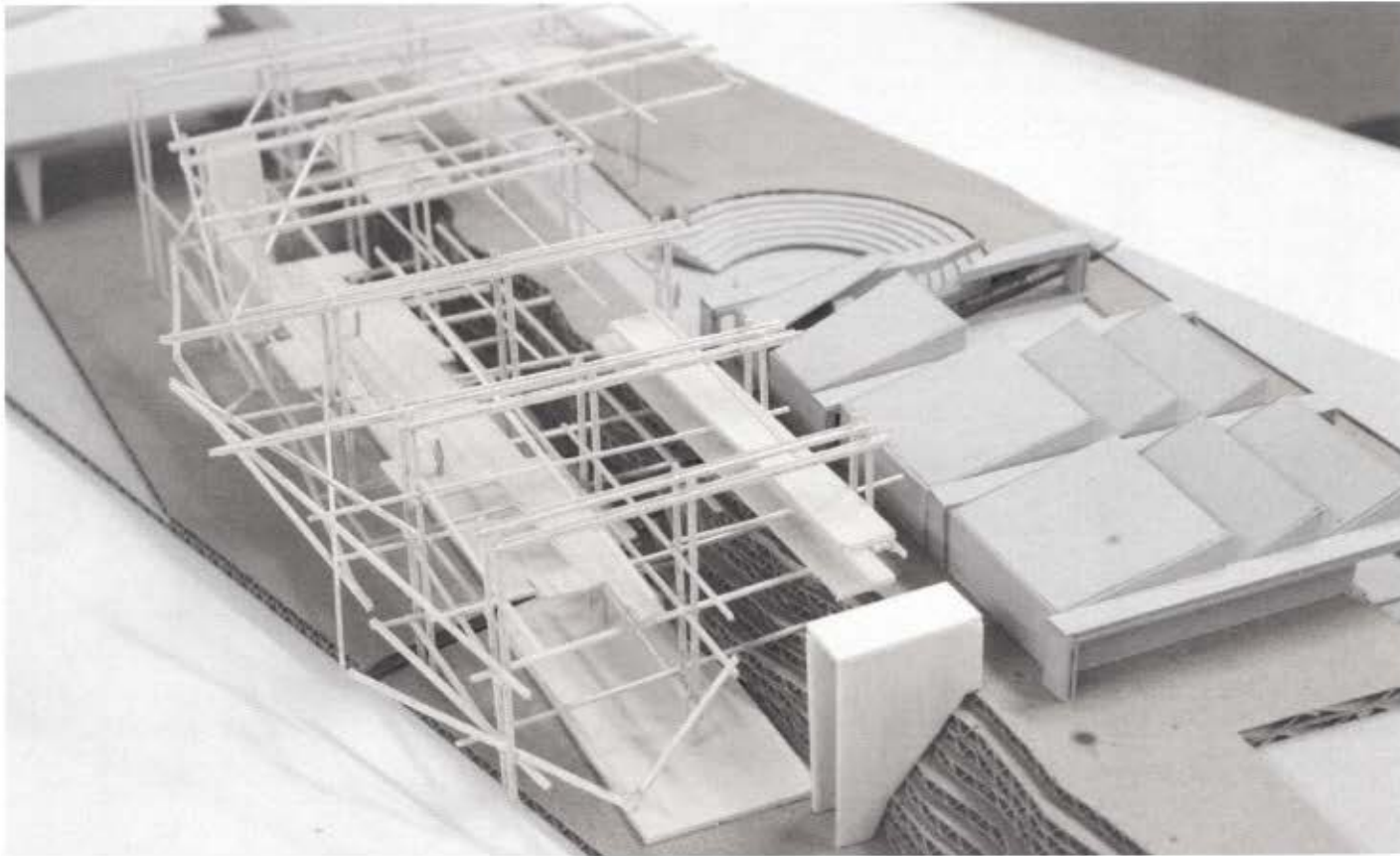


Fig: Balsa wood concept model combining
rythm of existing and introducing a new facade.

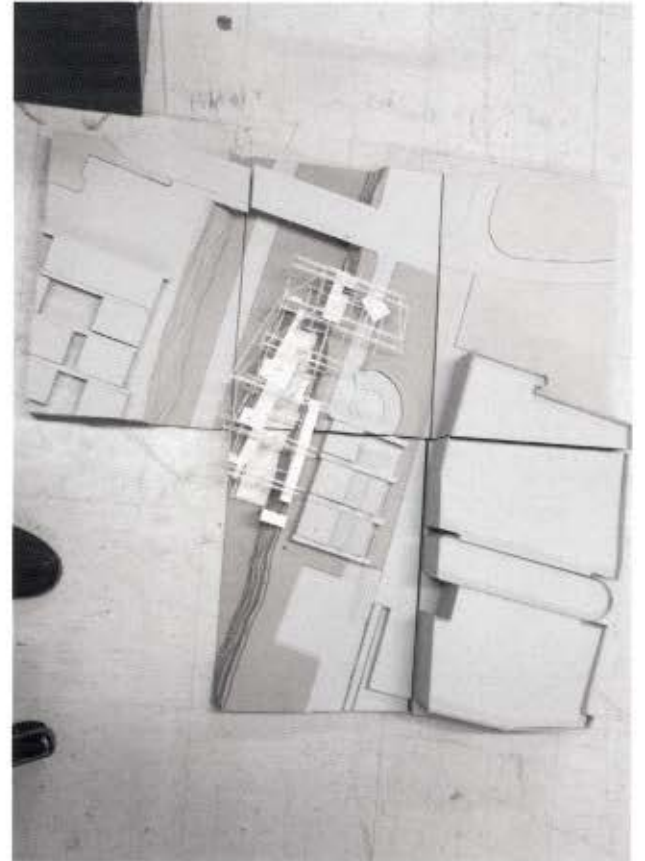
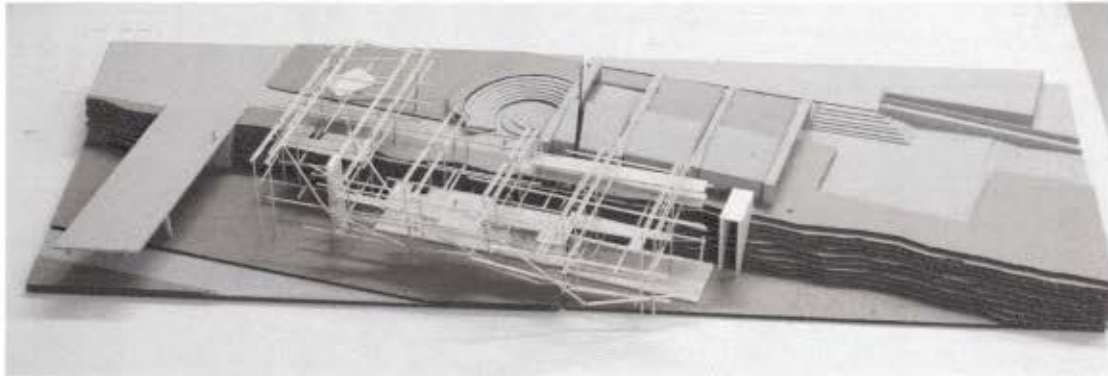
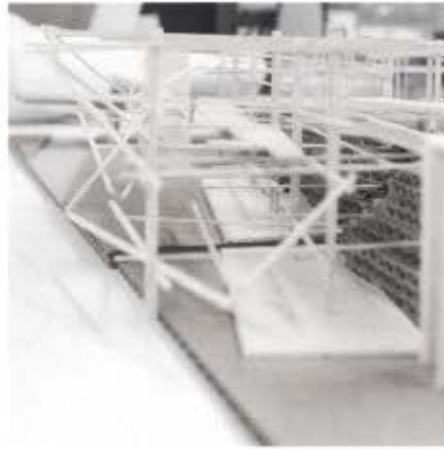
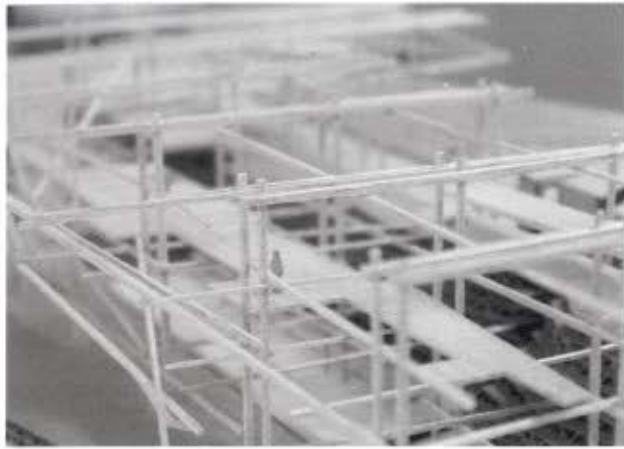
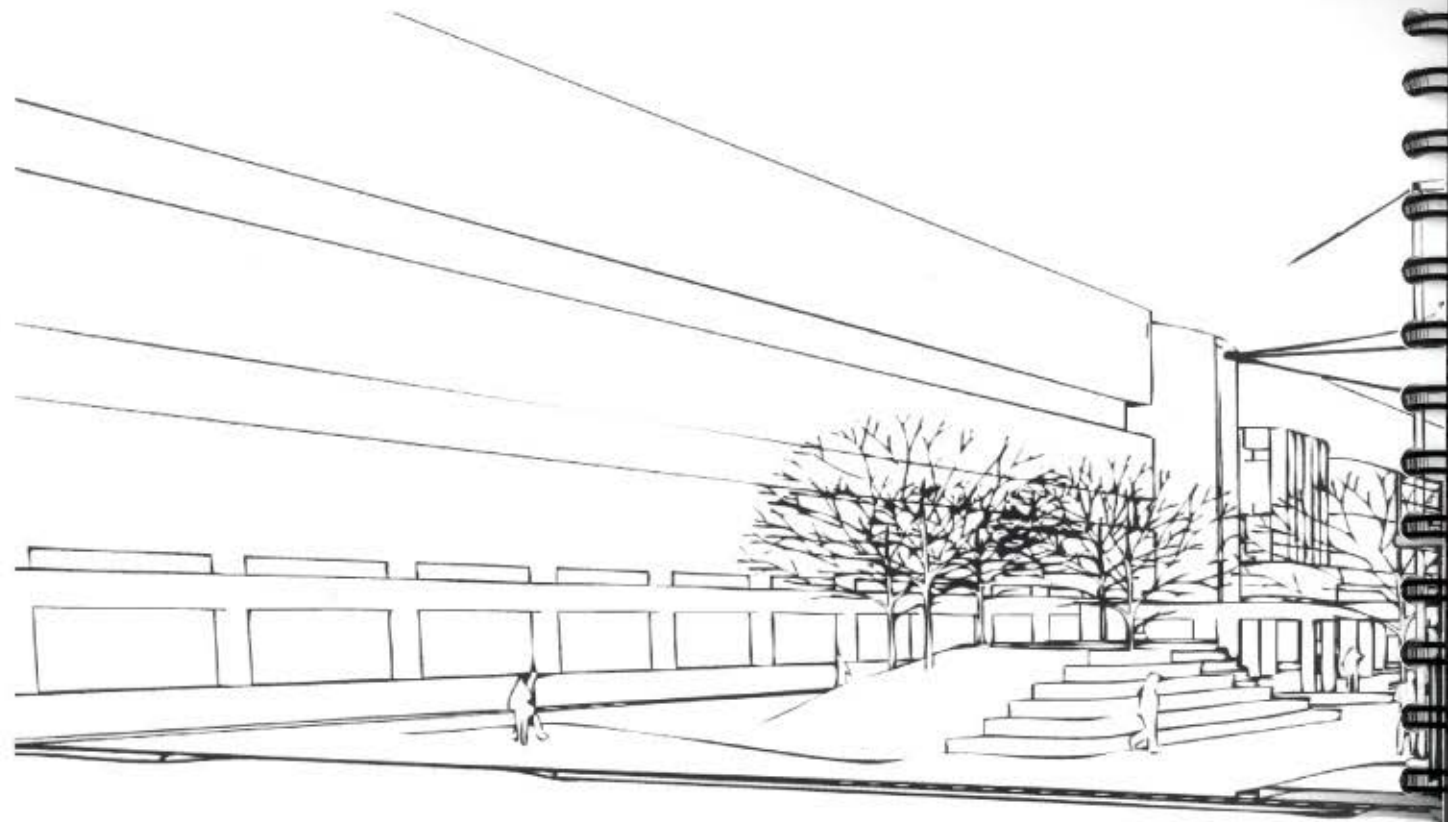


Fig: Different views of balsa concept model

Fig: Balsa model from top showing reaction to campus context



7.2 Program and Functions

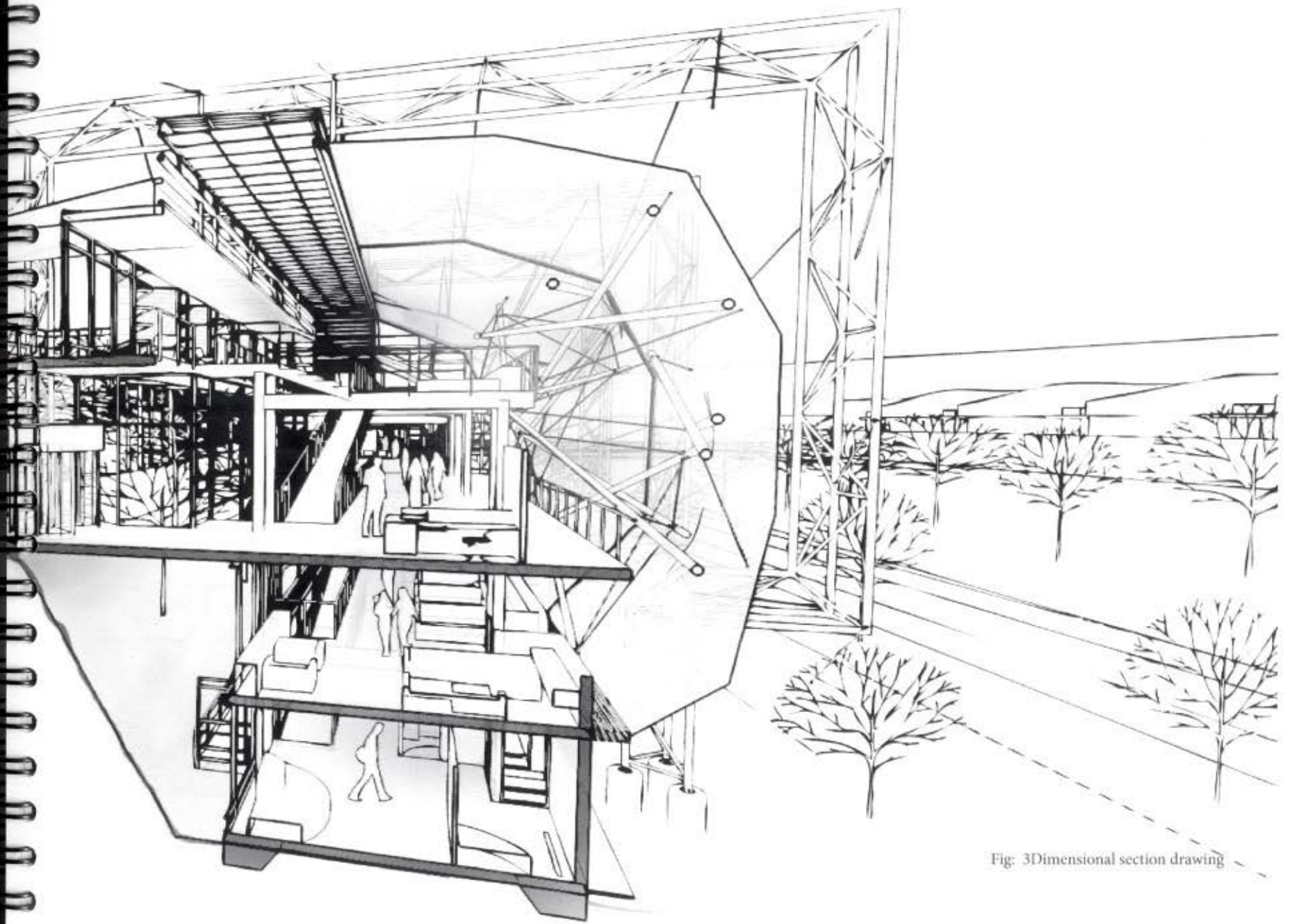


Fig: 3Dimensional section drawing

Program: Lower Ground Floor

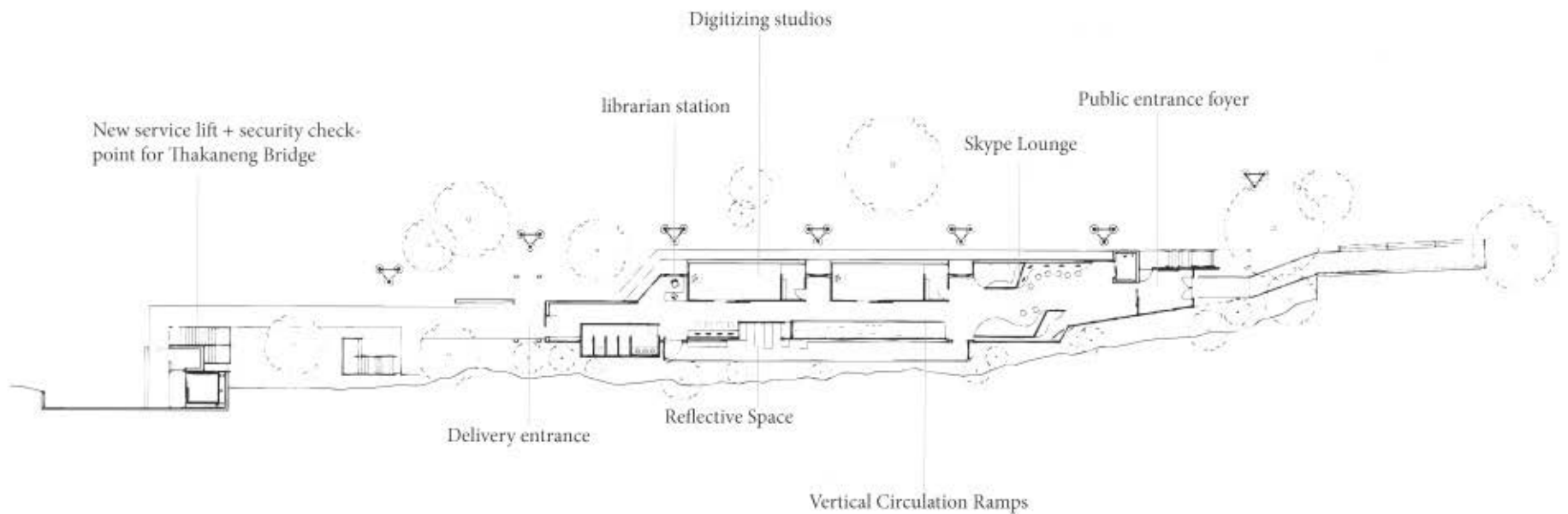


Fig: Lower Ground Floor Plan sketch
(not to scale)

Program: Lower First Floor

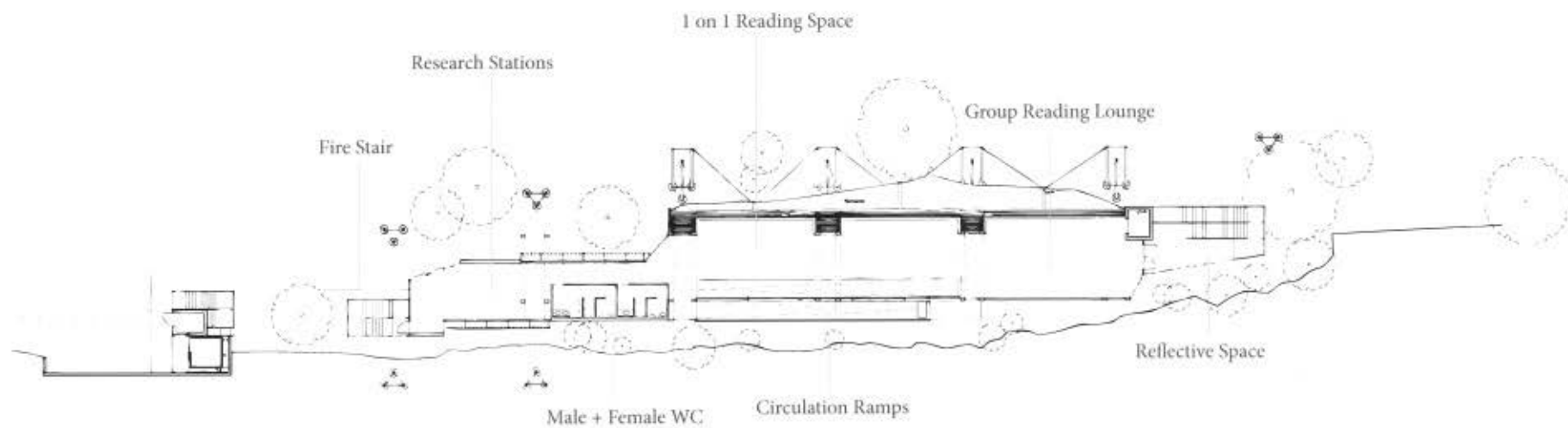


Fig: Lower First Floor Plan sketch
(not to scale)

Program: Upper Ground Floor

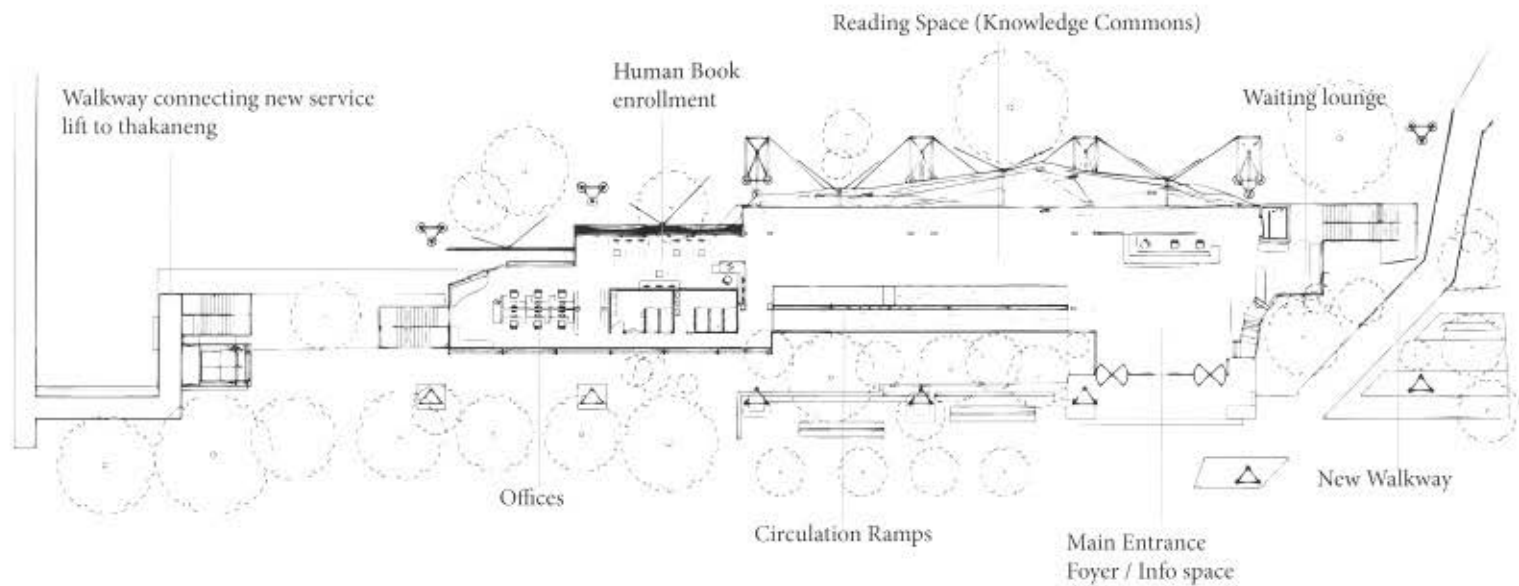


Fig: Upper Ground Floor Plan sketch
(not to scale)

Program: Upper First Floor

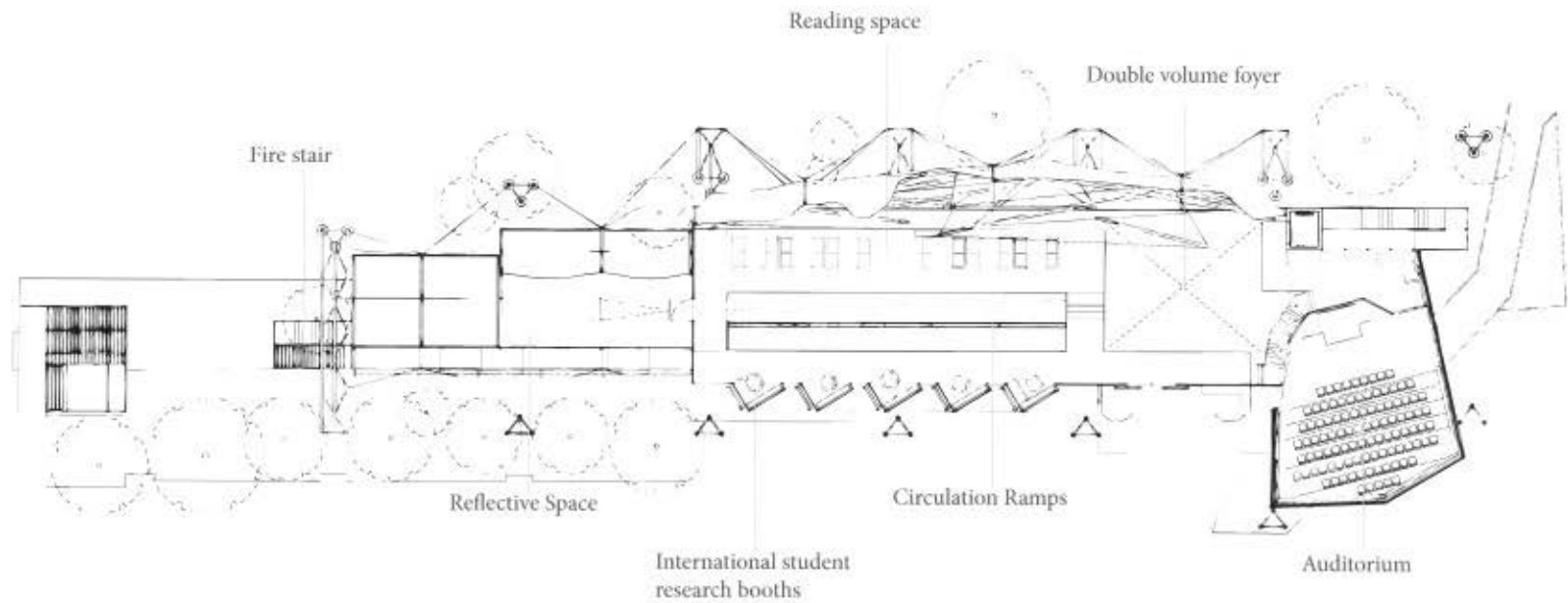
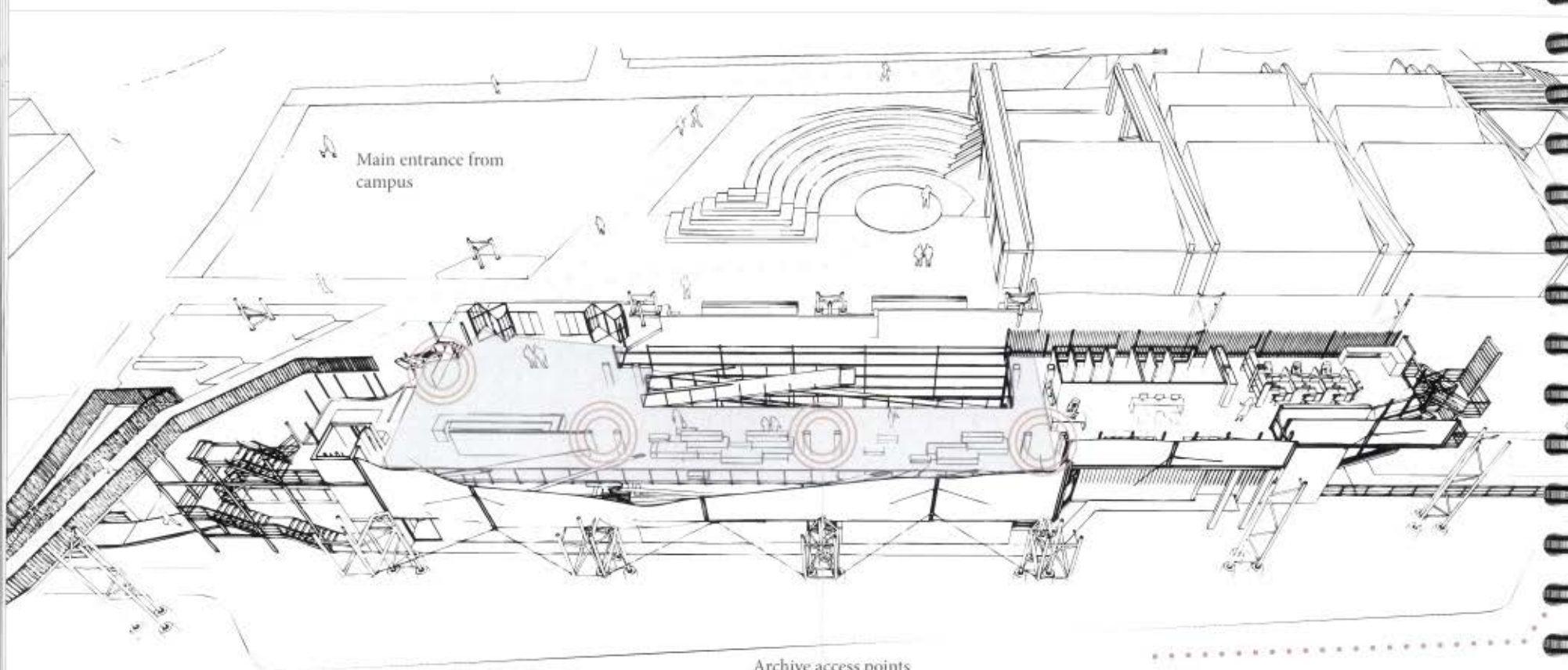


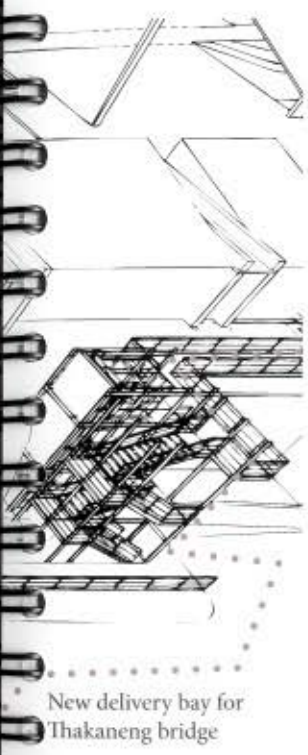
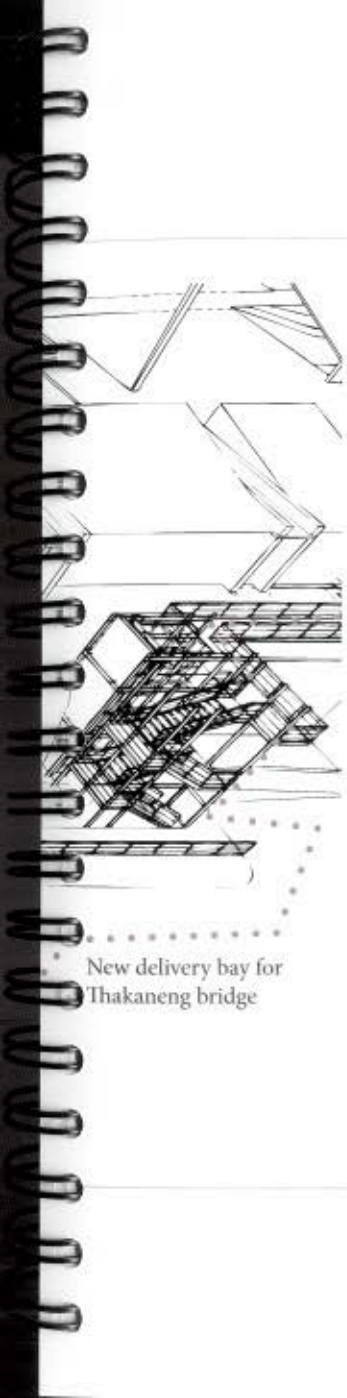
Fig: Upper First Floor Plan sketch
(not to scale)



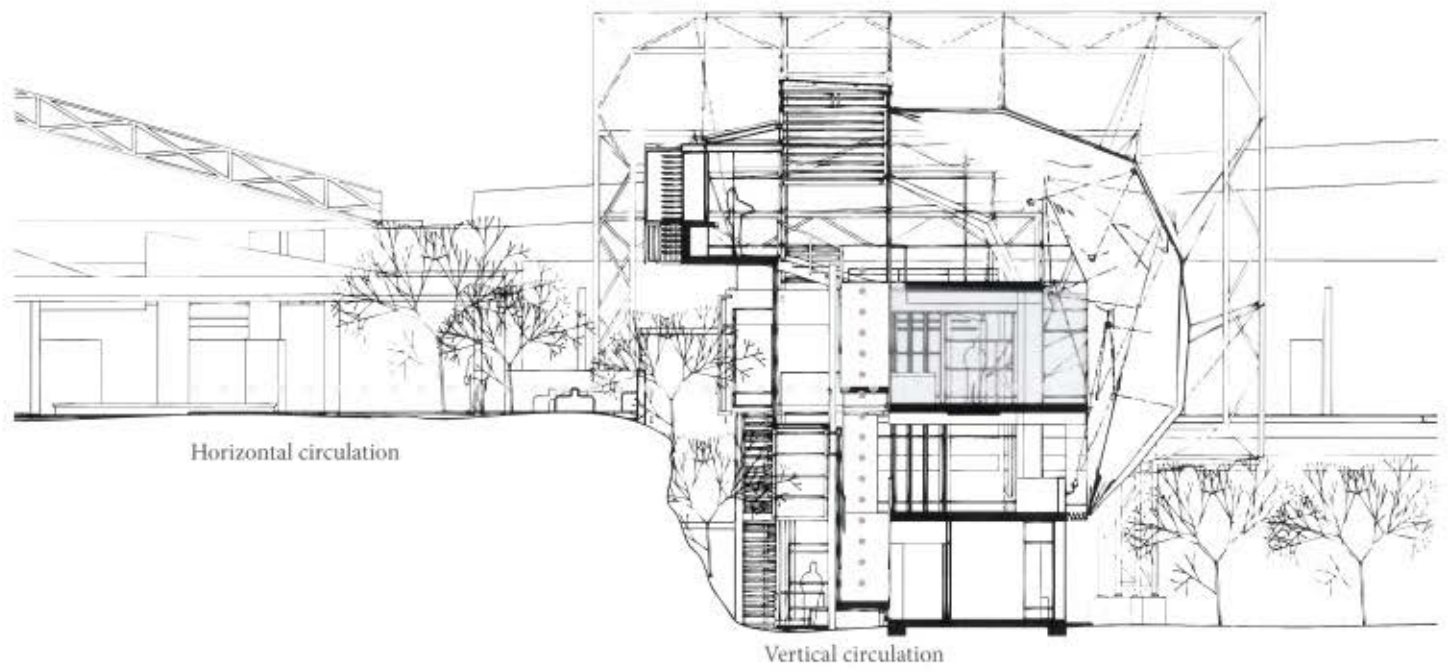
Main entrance from campus

Archive access points
(digital hotspots)

Fig: 3D plan: Upper ground floor
(not to scale)



New delivery bay for Thakaneng bridge

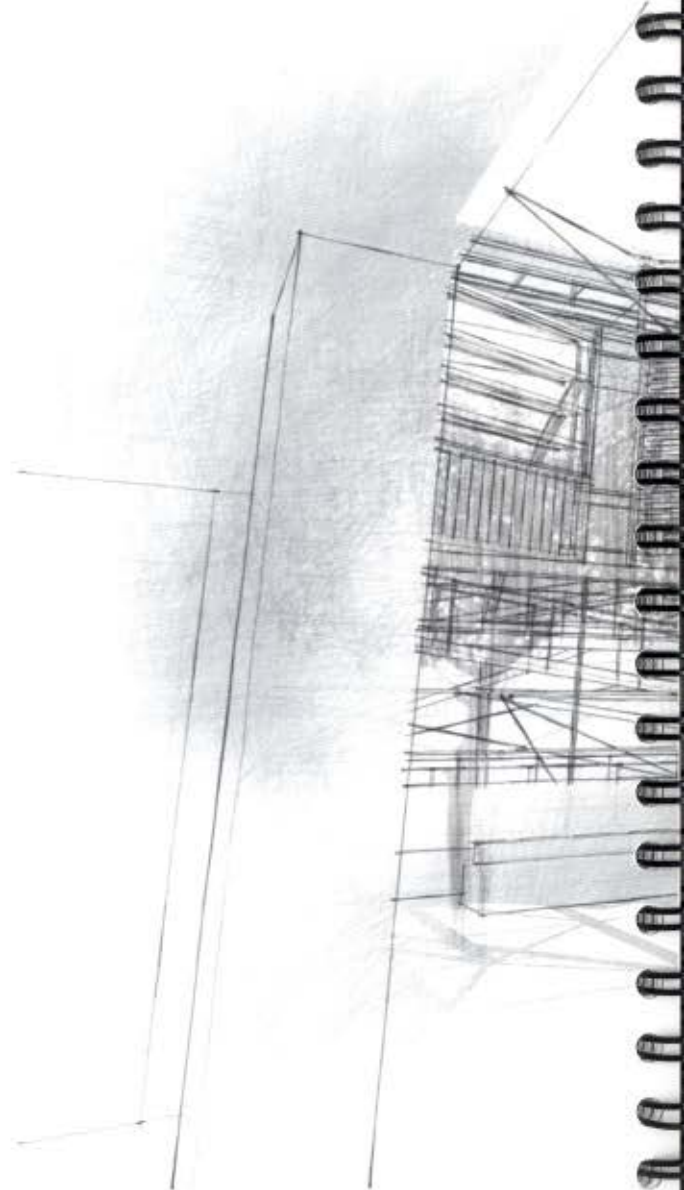


Horizontal circulation

Vertical circulation

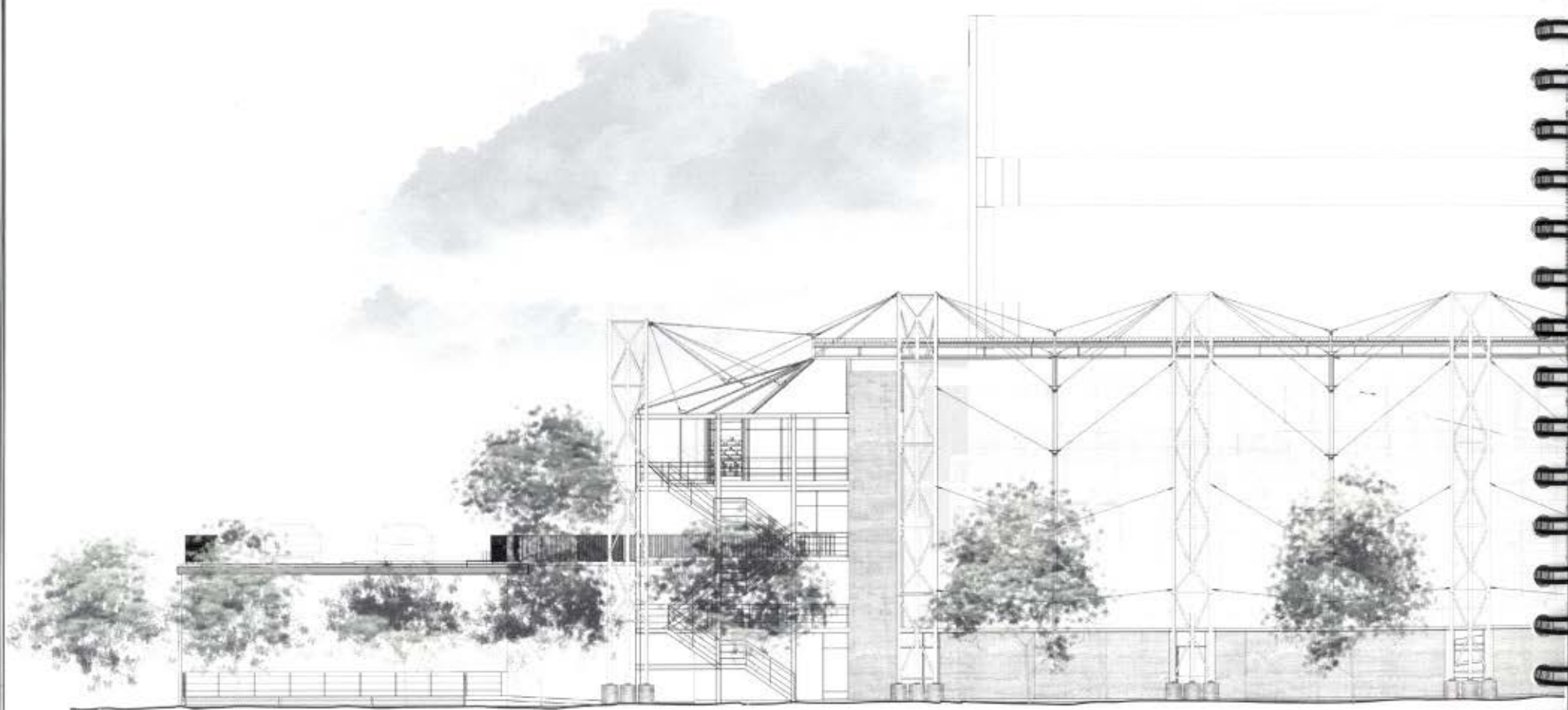
Fig: Cross section of building in context

Fig: View of West facade from amphitheatre,
main campus approach and entrance





FINAL DRAWINGS



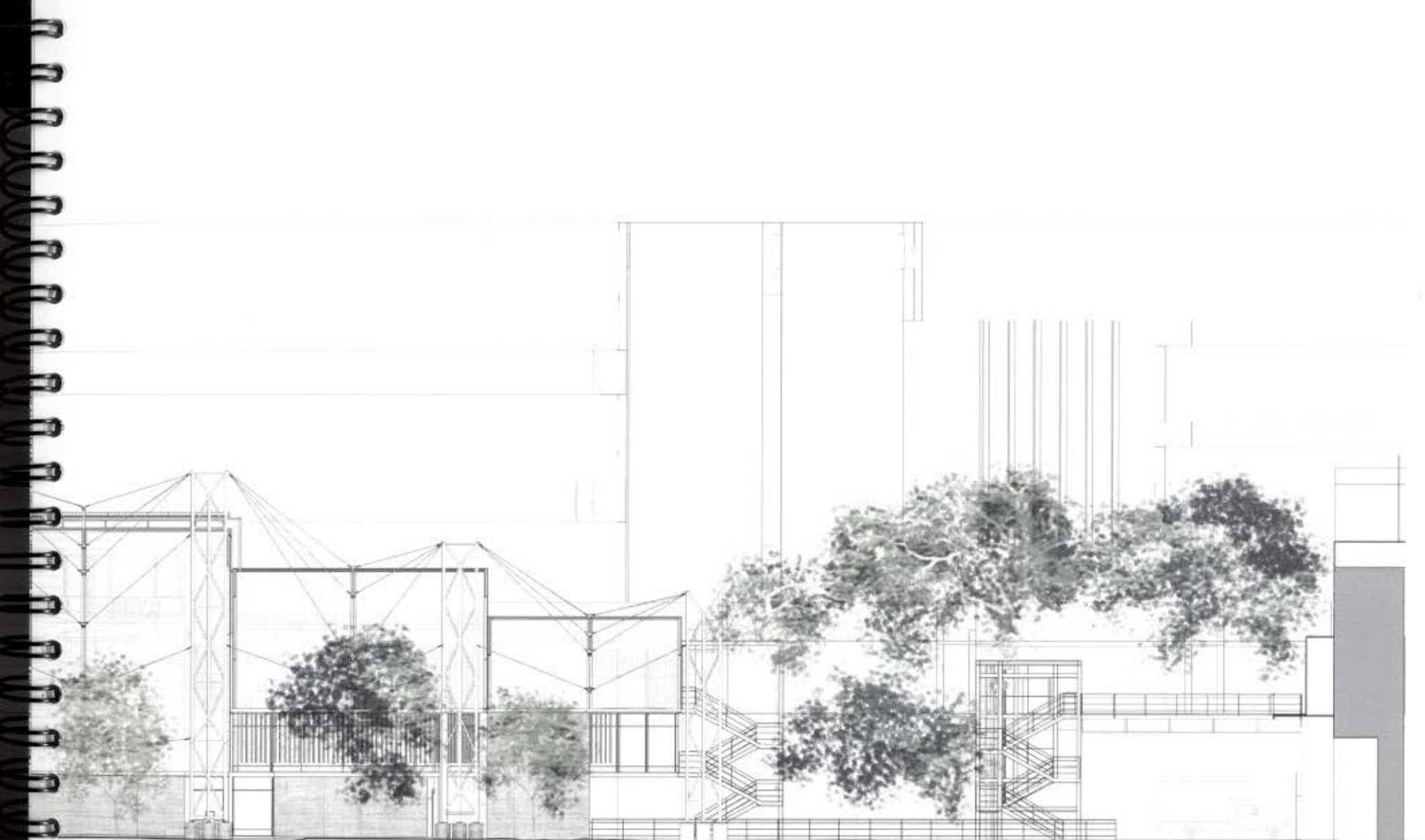
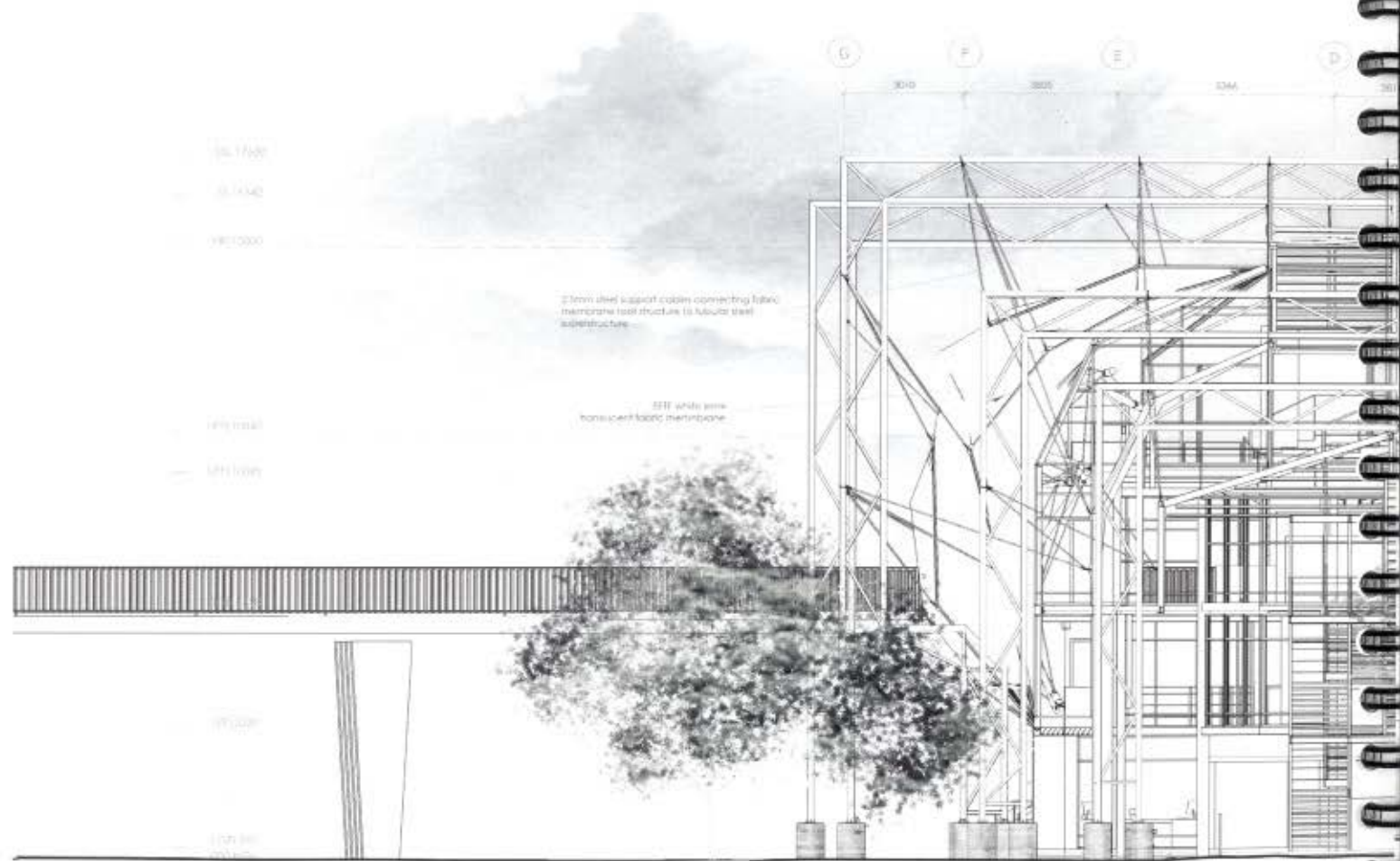


Fig: East elevation rendering, not to scale



0.000

0.000

0.000

2.5mm steel support cabin connecting fabric membrane roof structure to fabric steel substructure

0.000

2.5mm steel support cabin connecting fabric membrane roof structure to fabric steel substructure

0.000

0.000

0.000

G

F

E

D

3000

3000

3000

3000



Fig: North elevation rendering, not to scale





Fig: West elevation rendering, not to scale

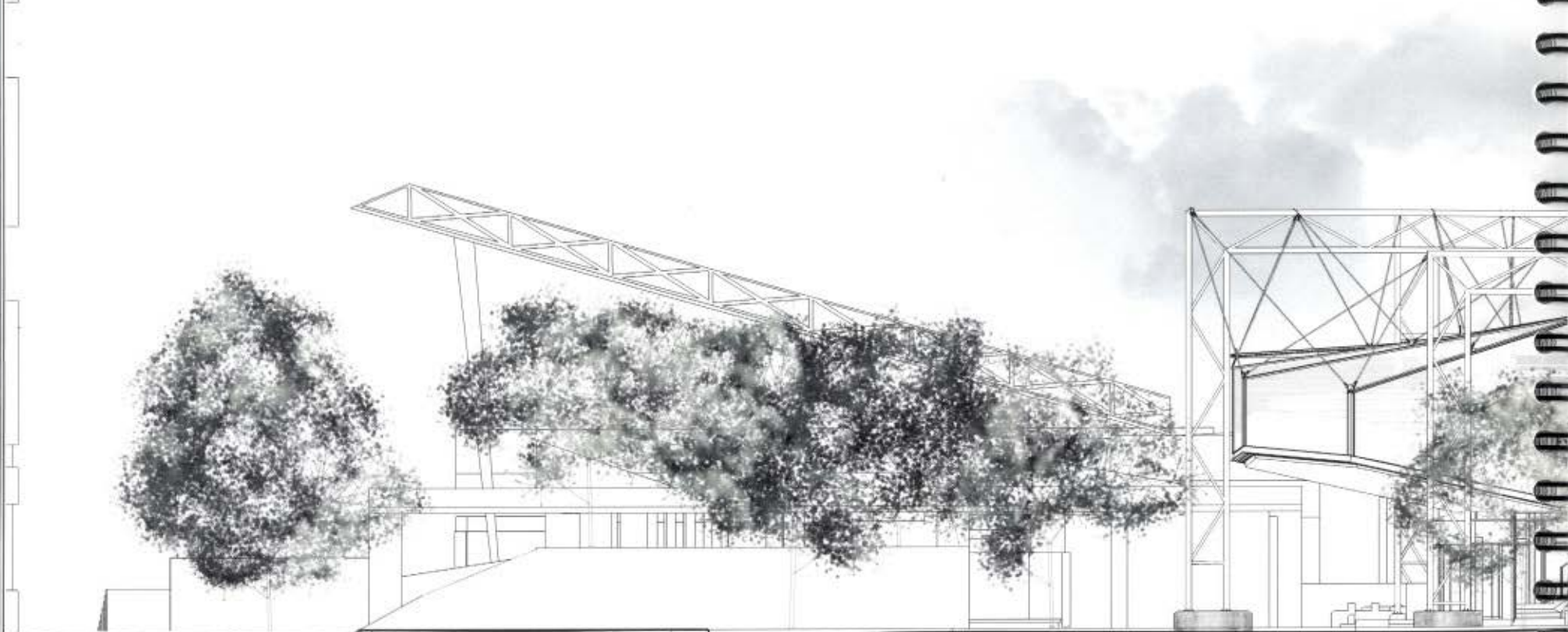


Fig: North elevation rendering, not to scale





Fig: View from Thakaneng delivery / service deck

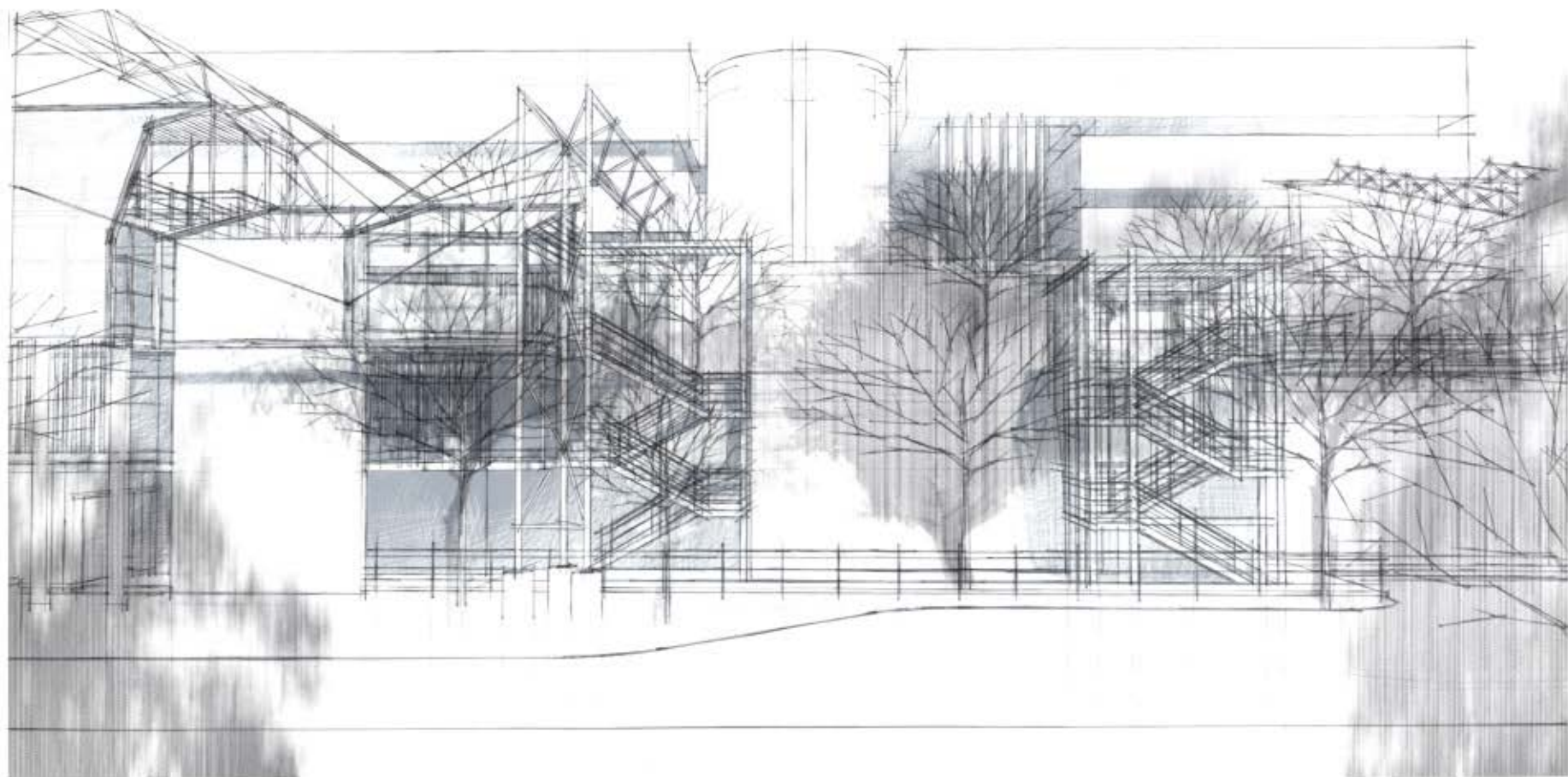
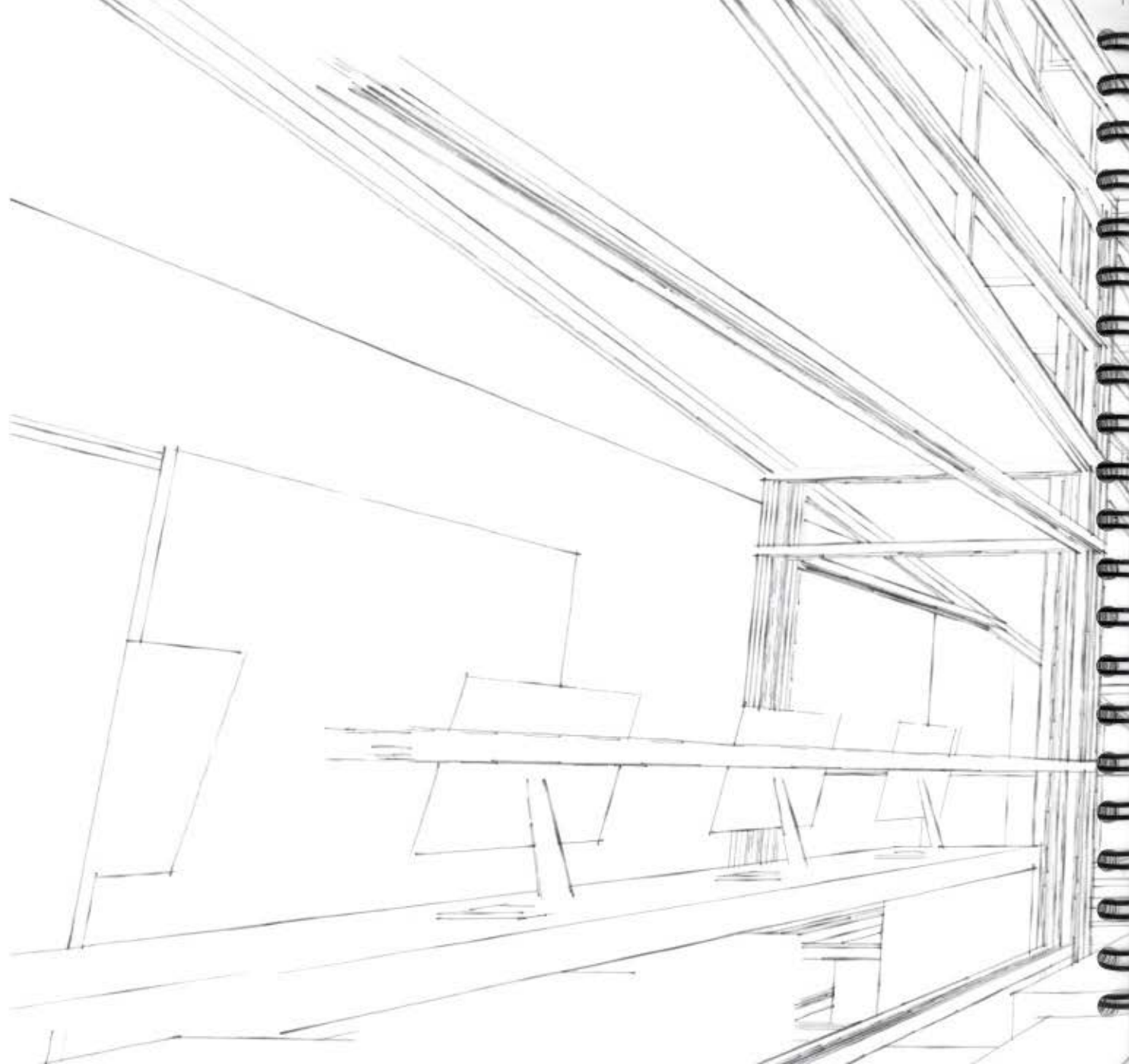


Fig: View from DF Malherbe of service and delivery entrances, Sasol bib in background

Fig: Lower ground floor reflective space
next to exposed cliff face





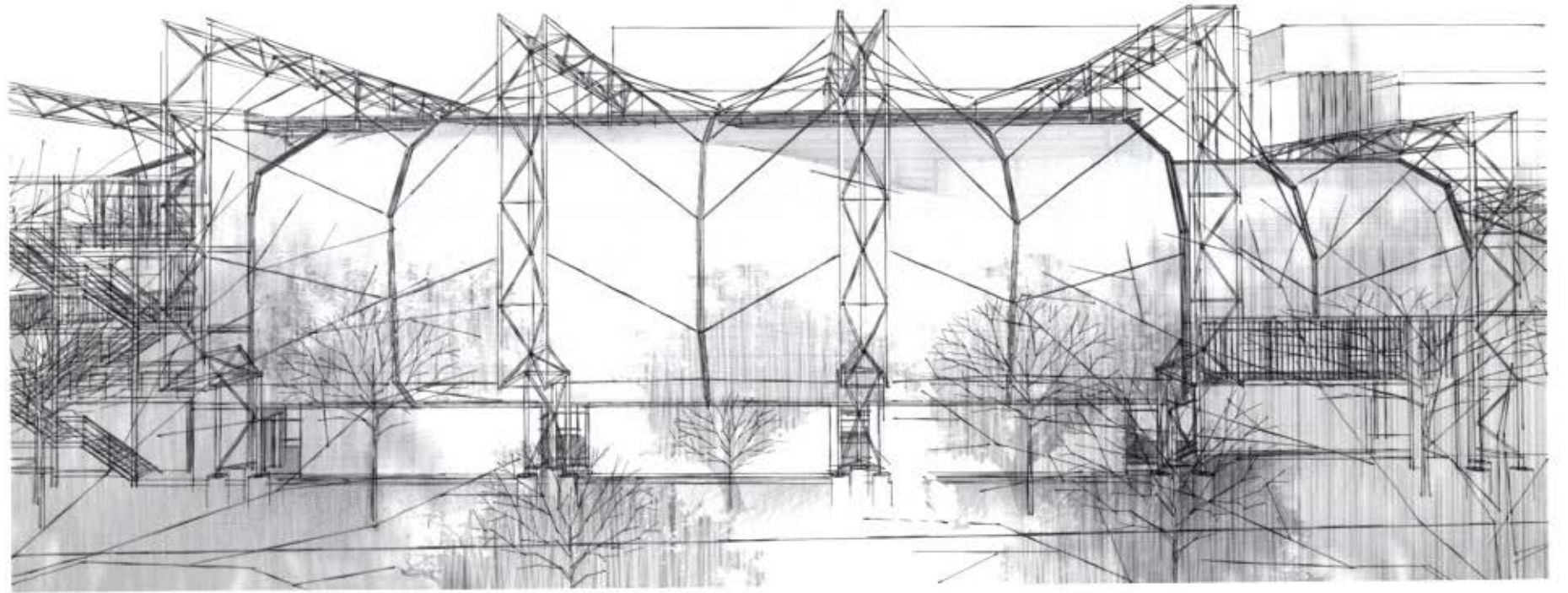


Fig: View of Eastern facade

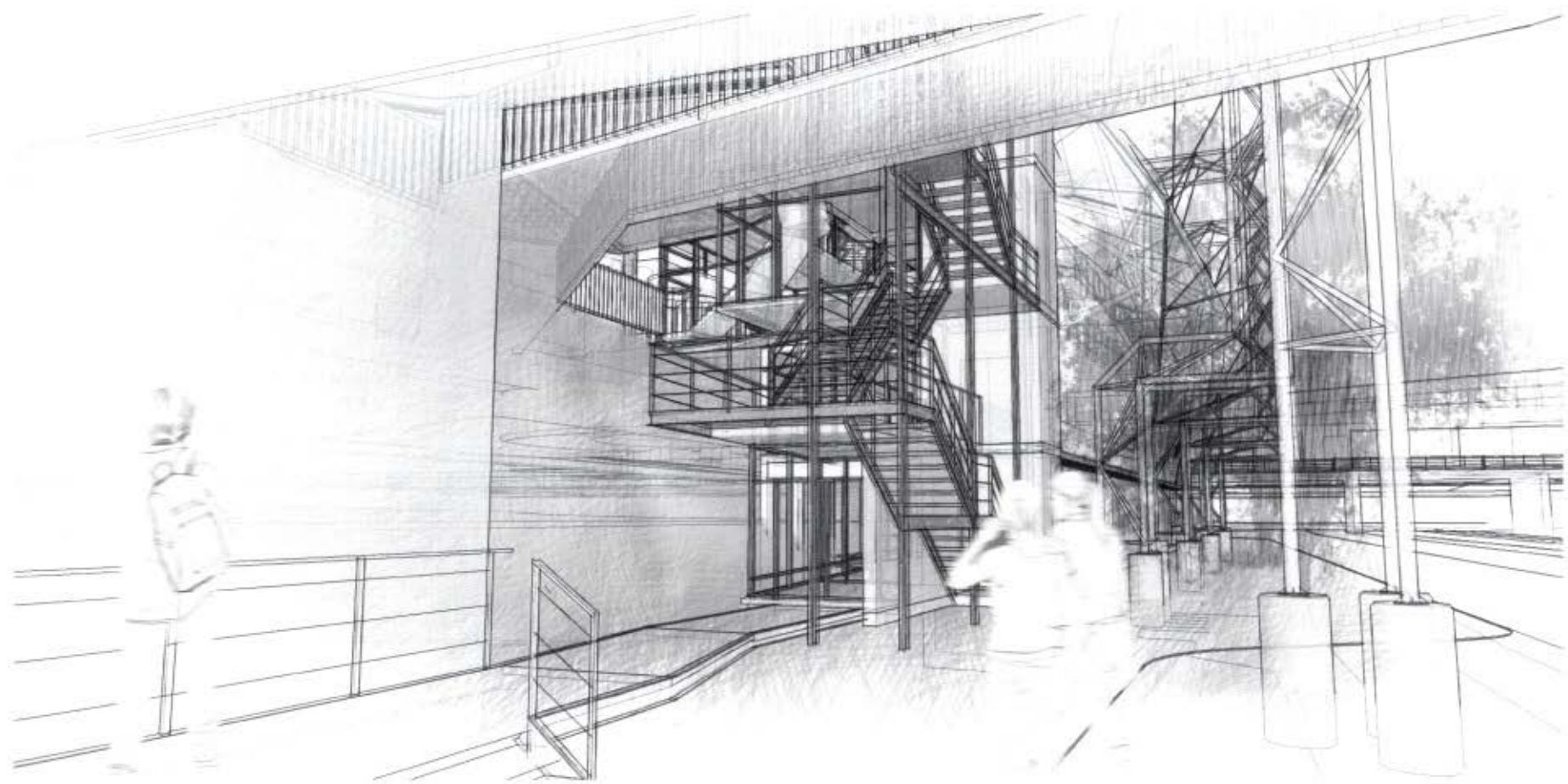


Fig: Public entrance

Chapter 8: Design Synthesis

8.1 Synthesis

This design is embedded in *human* knowledge: collection, preservation, dissemination, withholding and sharing. "Brave, discerning, and deeply affecting. ... An act of empathy as well as penetrating analysis, *Knowledge in the Blood* is an inspiring blueprint for thinking about social and personal transformation," writes historian, academic and author, Eva Hoffman, as blurb on the back of Jansen's *Knowledge in the Blood* (2009). In many respects Hoffman's remarks are used to evaluate the end product: this is very much a "human" library to reflect Jansen's amalgamation of the academic and human project and as such the design and the theory in which it is grounded needs to evoke more than dispassionate resonance. In other words, for it to succeed the design needs to do more than fulfil utilitarian function. The end product needs to evoke emotions, in Hoffman's words, it needs to be "deeply affecting" and the design itself needs to echo the demand on the user to "think about social and personal transformation".

The tensegrity skin on the eastern façade represents the "tension" and "integrity" of the South African past and present, while also representing a physical embodiment of the opposing tension and co-responsibility for weight

bearing (read: individual responsibility for common responsibility all individual South Africans carry to effect a future good). The fact that the tensegrity skin is also responsive to what is happening inside the structure, reminds the individual user that their mere presence effects change. The dynamic relationship between the concrete substructure, which provides the user with a feeling of safety and solidarity, is heavily contrasted against the dynamic tectonic skin and roof membrane which represents the continual state of change of South African society.

Organising vertical circulation ramps along the western facade offers maximum transparency from the campus into the building. Not only does this make the building easy to navigate and inviting to the user, it also signifies transparency, openness and the absence of secrets; vis-à-vis the brutalist Sasol library on the other side with its fortress-like structure and small, shaded windows. Also, this acts as filter for deep penetrating western sun during the winter, which means that the western facade can be more open than expected. The building levels are layered according to privacy requirements - the further away from the core one moves, the more the privacy

awarded. Spaces become more intimate and specified toward the higher and lower floors, such as the individual study cubicles on Upper Ground 1 and the Skype lounge on Lower Ground.

The significance of the design lies in its recognition of the importance of embodying the university as change agent within the design itself and emphasizing this message by means of deliberate counter positioning with the brutalist design of its companion-predecessor: the Sasol Library. The Jonathan Jansen human library is a heritage project par excellence because the design itself embodies the values and principles of the marriage of the academic and human project. The building is designed to "listen" and respond, effecting change in much the same way as the human library project anticipates its readers to do: "When human beings from opposite sides of a divided community begin to honestly engage one another, they are often drawn toward the core of each other's humanity. In witnessing the weaknesses of others, we see their humanity reflected within our own," (Jansen, 2009:267).

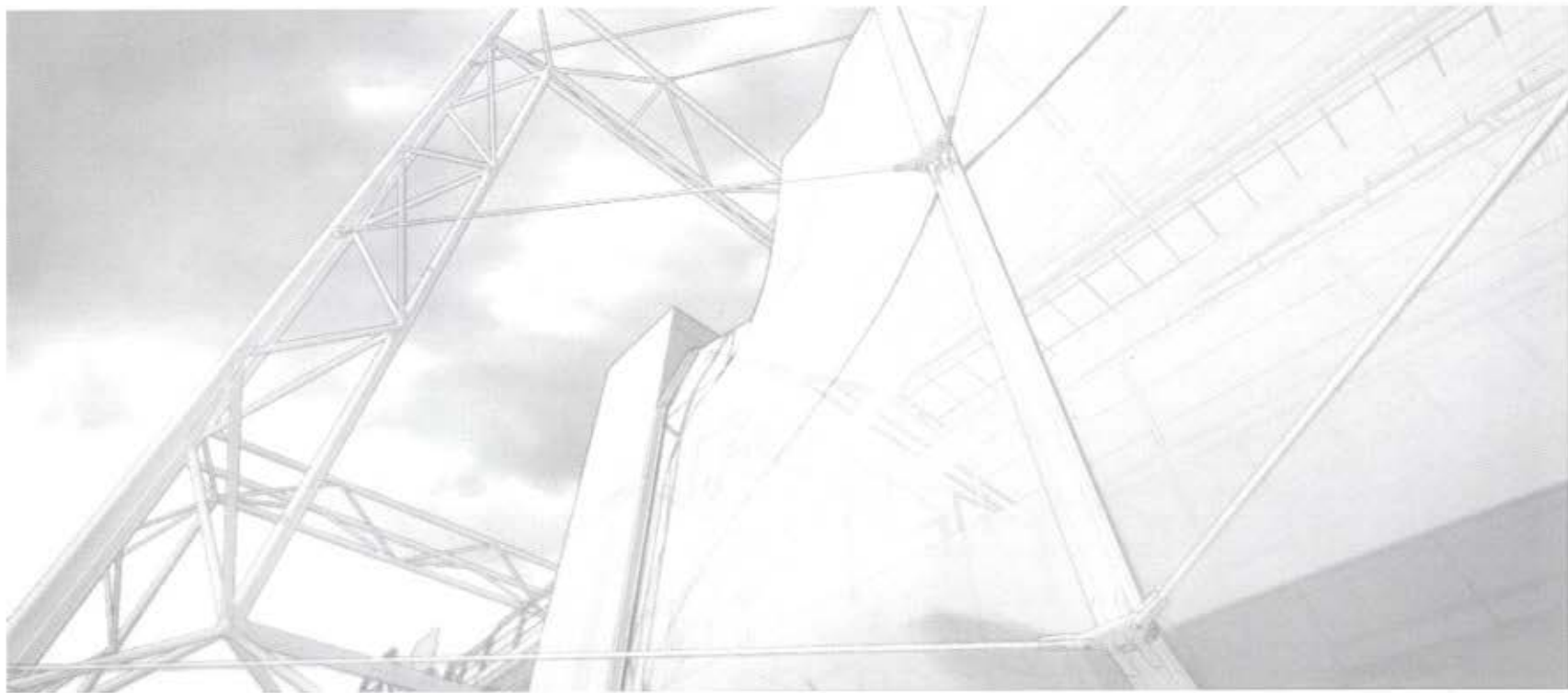


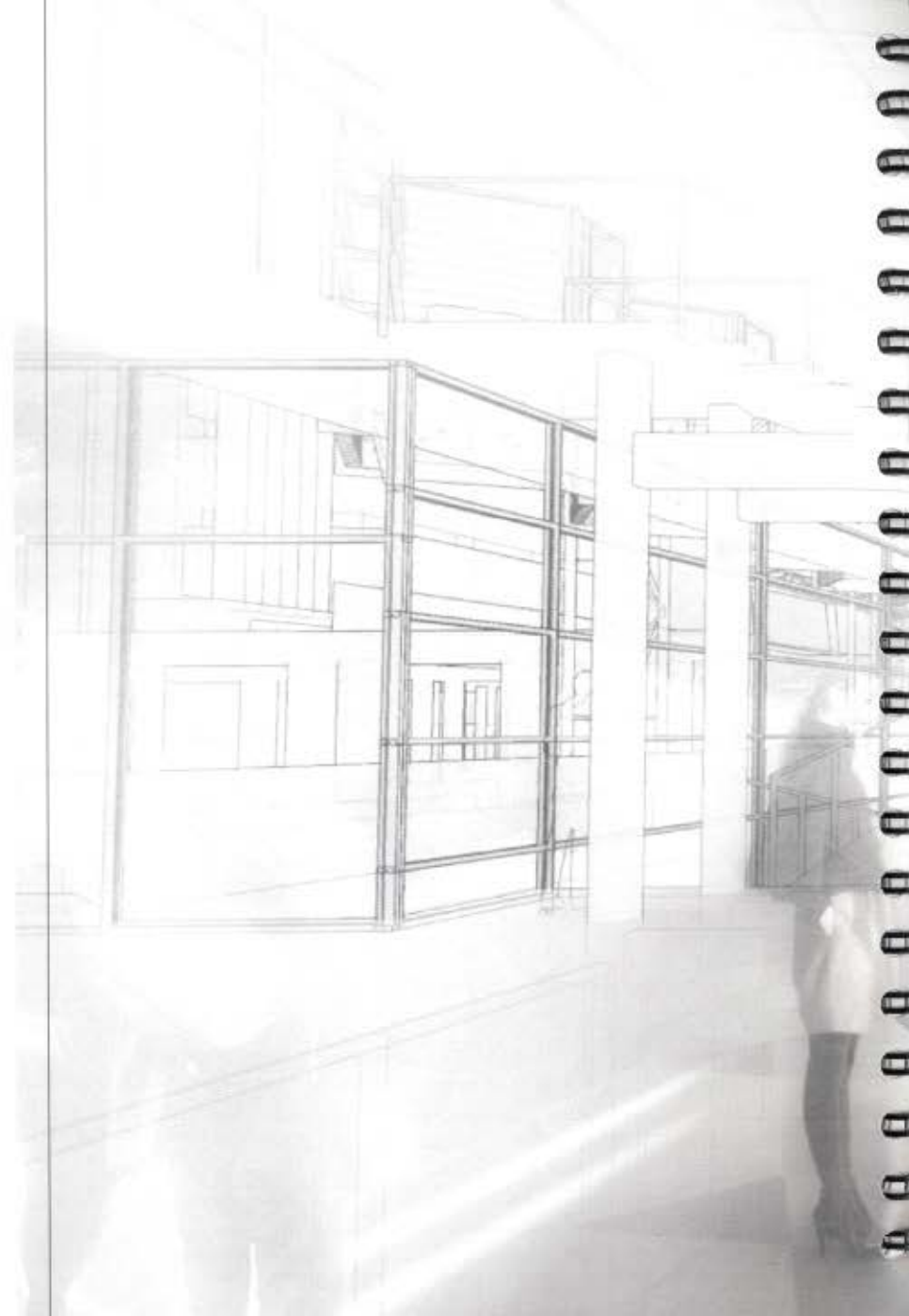
Fig: Exterior rendering

8.2 Conclusion

In closing, Jansen speaks in *Knowledge in the Blood* (2009:276) of establishing risk-accommodating environments:

"Long before the pedagogic encounter, the atmosphere should have been set, the terms of engagement explained, the rules of dialogue shared. Such difficult dialogues can take place only if trust in the teacher-leader is already ensured through demonstration of an example of conciliation within and outside the classroom. The notion that 'the lesson' starts in the classroom is misguided."

As heritage project the human library becomes a bold statement of investment by the post-Apartheid university in a different way of knowing: an alternative to the power dynamics of the traditional approach to knowledge construction and dissemination. The human library heralds the future for Jansen's postconflict pedagogy that encompasses more than just the classroom and re-introduces the value of narrative to education.



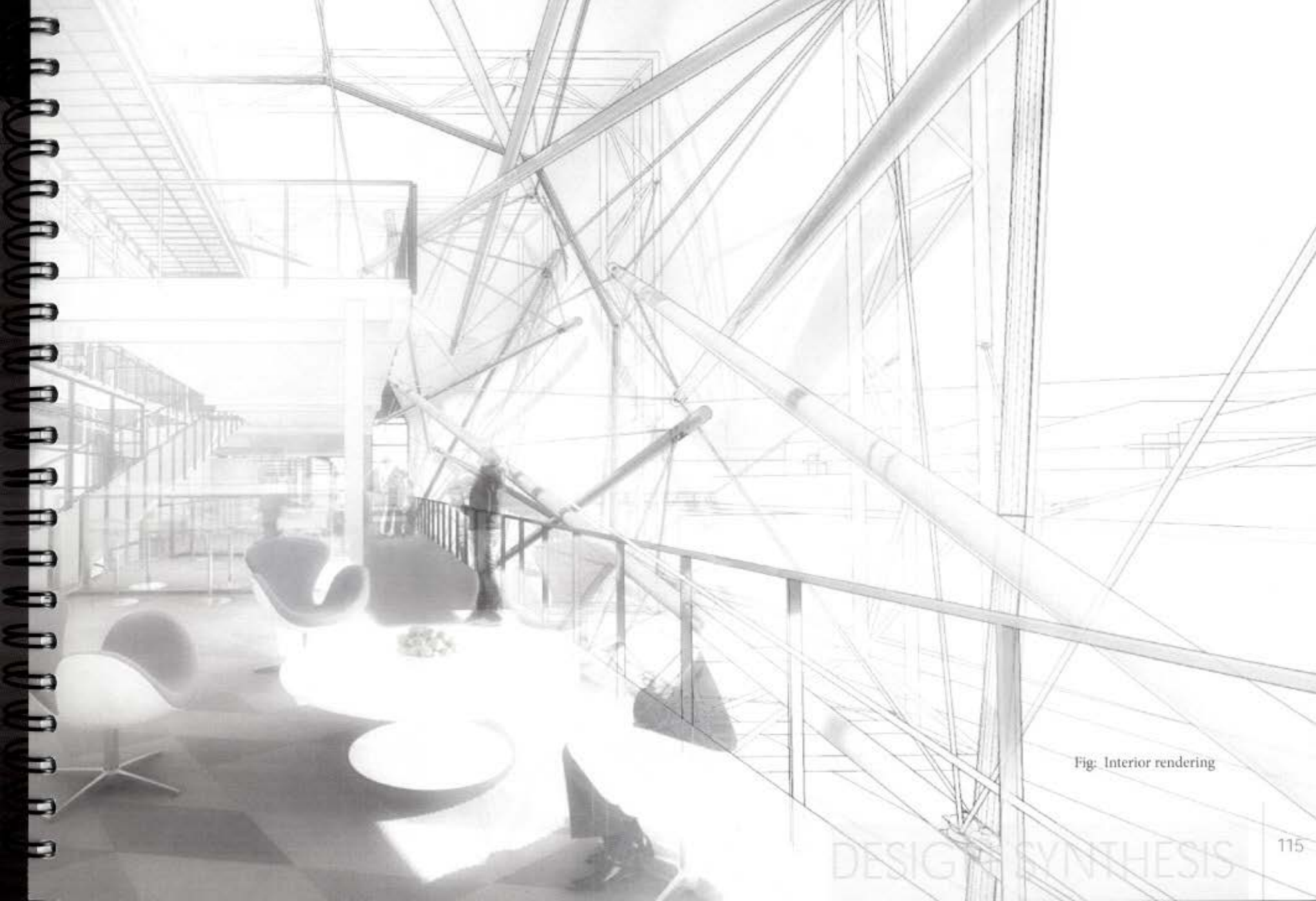


Fig: Interior rendering

Chapter 9: Technical Report

Phase 1: Concrete substructure

Phase 2: Walls and infill structure

Phase 3: Tensegrity Installation

Phase 4: EFTE Membrane

Phase 5: Steel Superstructure

Phase 6: Services

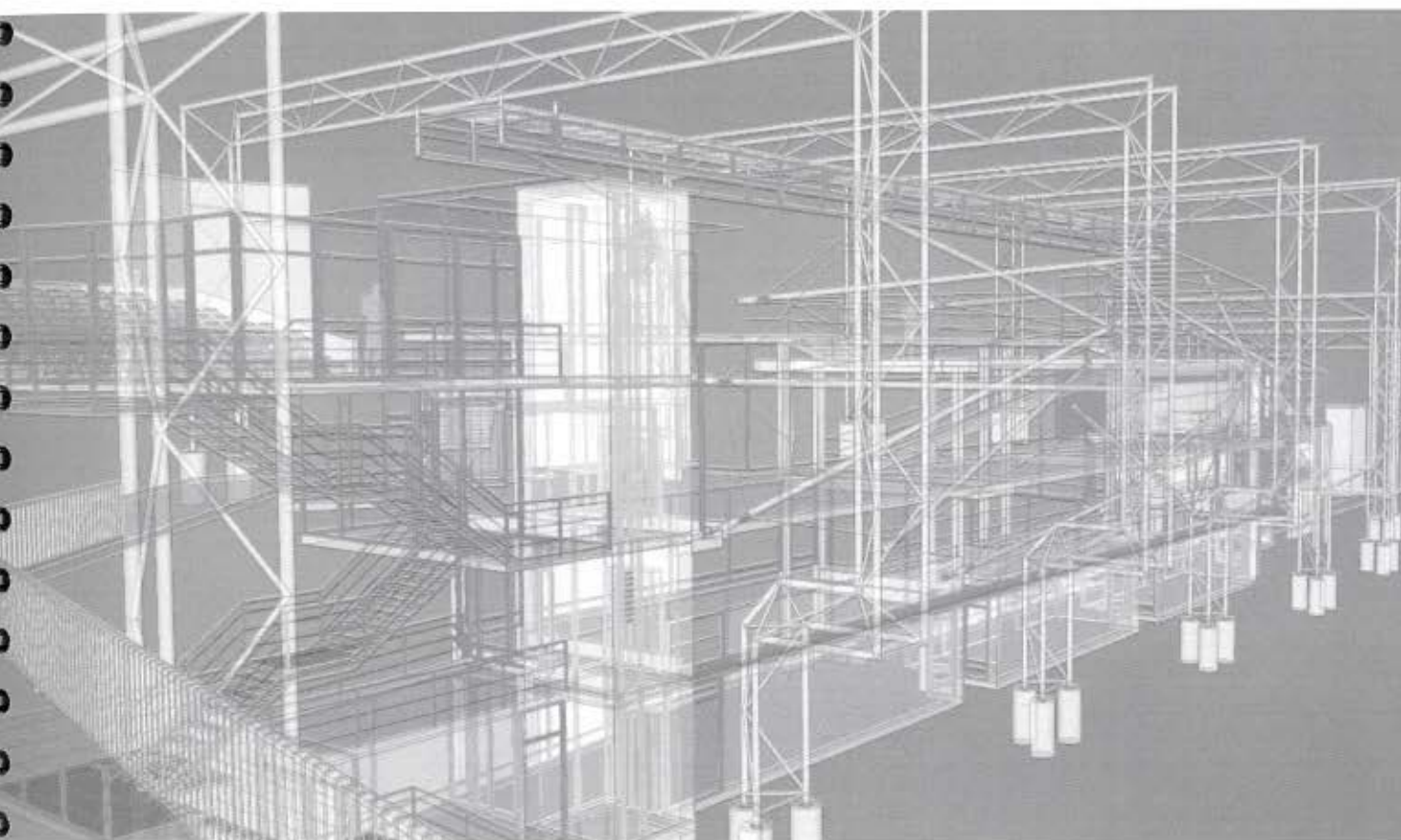


Fig: Structural render

9.2 Construction

9.2.1 Phase 1: Foundations, Sub-structure and flooring

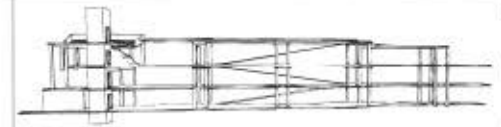
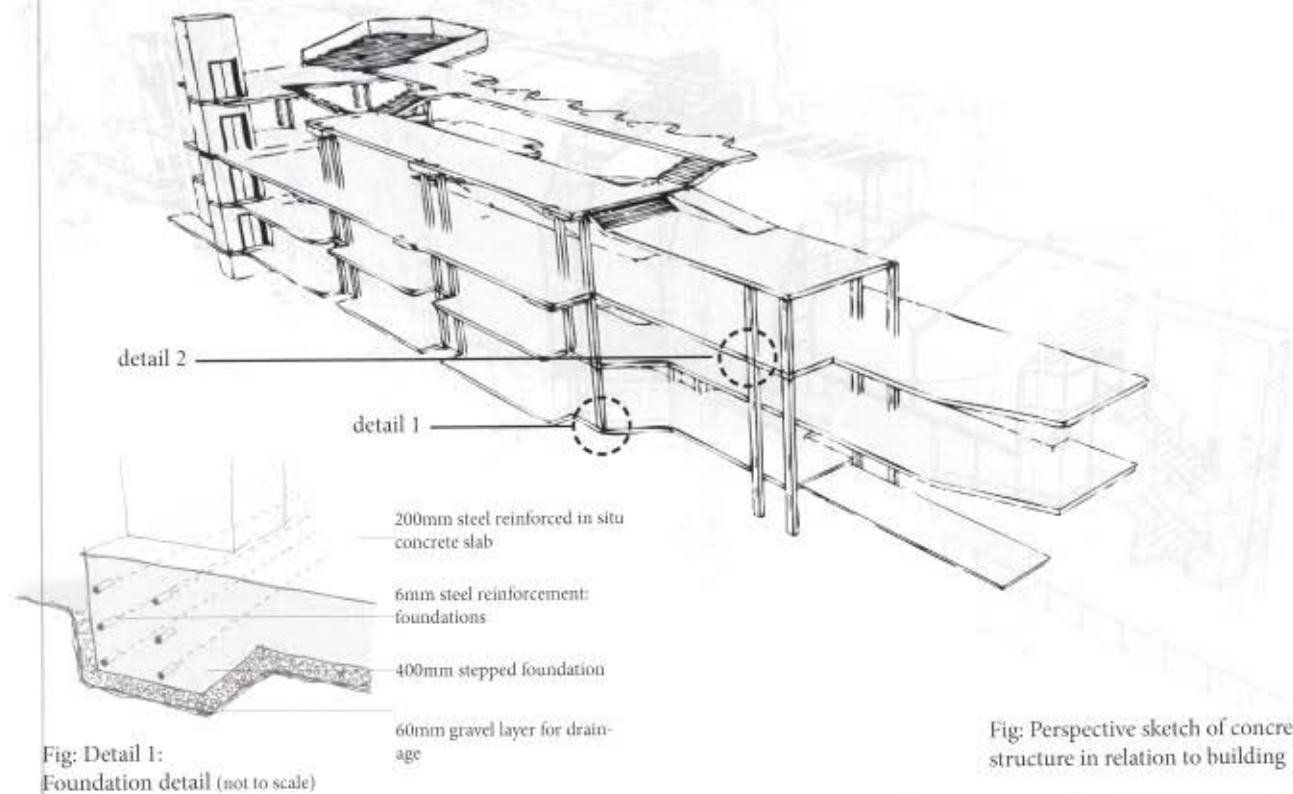


Fig: Sketch of concrete slab and beam structure



Fig: Detail 2: Slab, beam, column connection
Sourcebimandbeam.typepad.com



Fig: Reinforcement detail of slab, beam and column connection
Sourcebimandbeam.typepad.com

9.2.2 Walls, infill structure

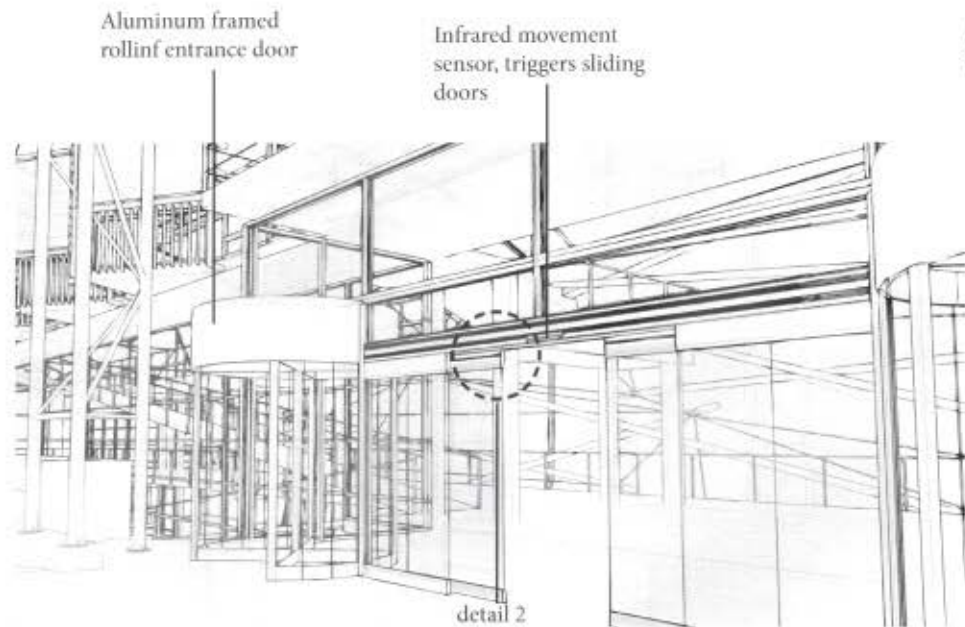


Fig: Sketch of main entrance on upper ground floor level, aluminum + glass infill.



Fig: 3D Section drawing of aluminum sliding door. (entrance)

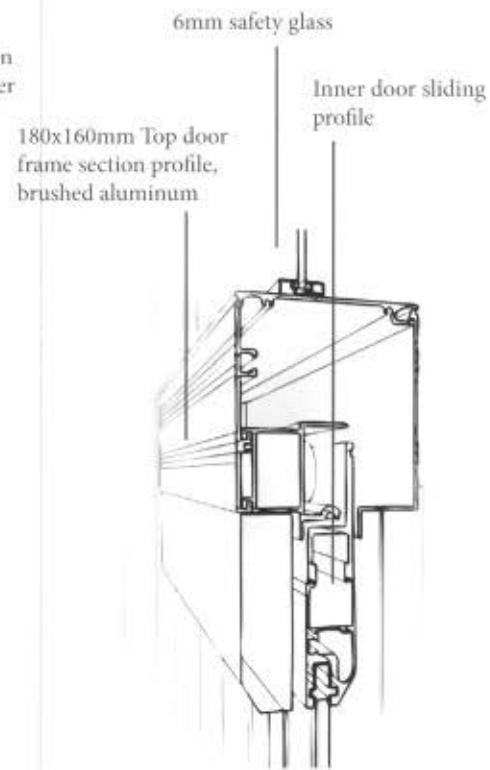


Fig: Detail 1: Aluminum Sliding door mechanism, activated by movement sensor located on frame

9.2.3 Tensegrity installation

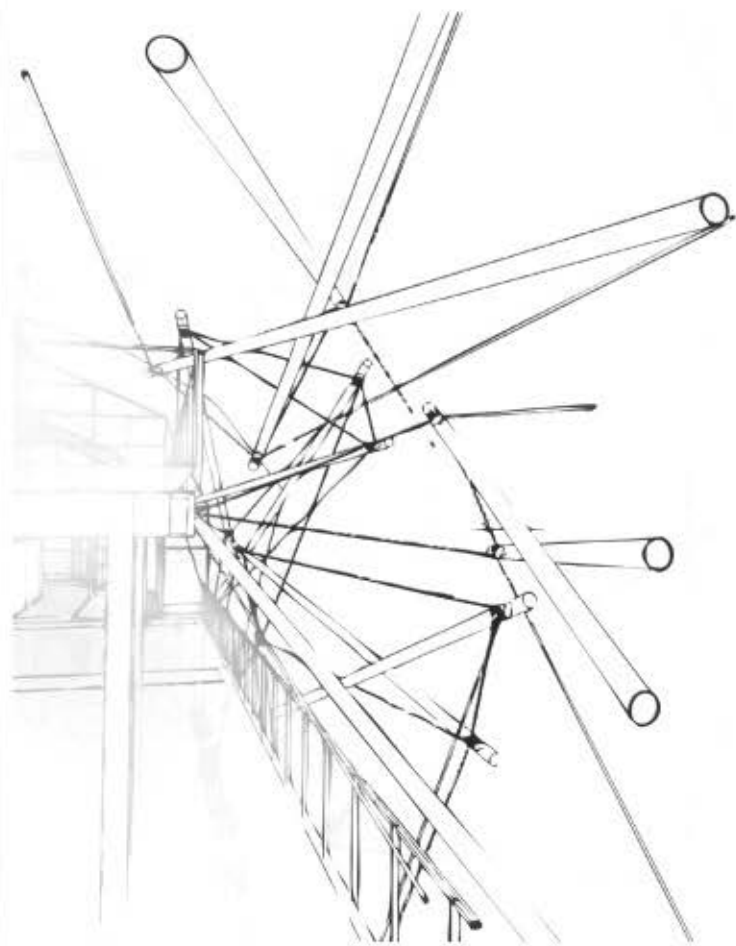


Fig: 3D section showing tensegrity skin located between concrete structure and outer skin

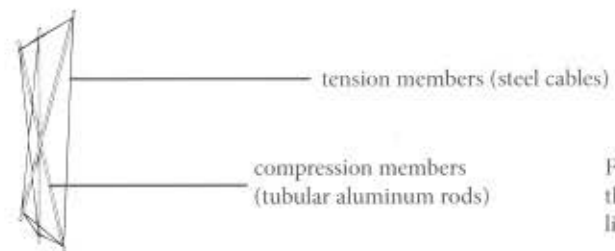


Fig: Basic 3- strut tensegrity. These are the simplest to construct and can be linked to form a network.



Fig: Structural diagram differentiating the 4 tensegrity structures

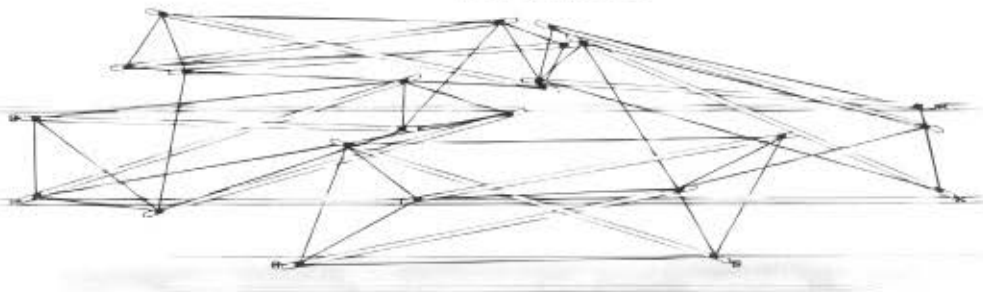


Fig: Elevation drawing showing the 4 connected tensegrities as one element, anchored vertically to structure

anchor points

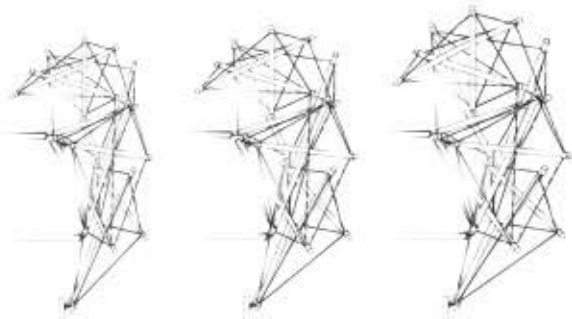


Fig: Front view of movement

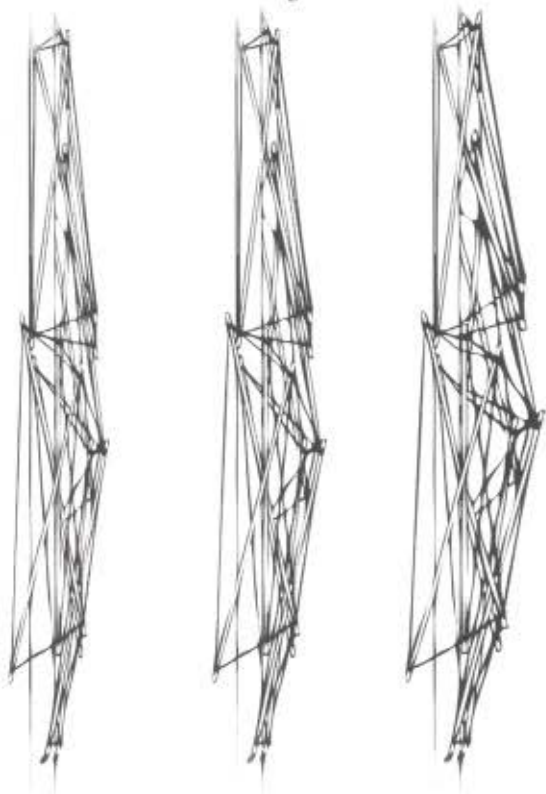
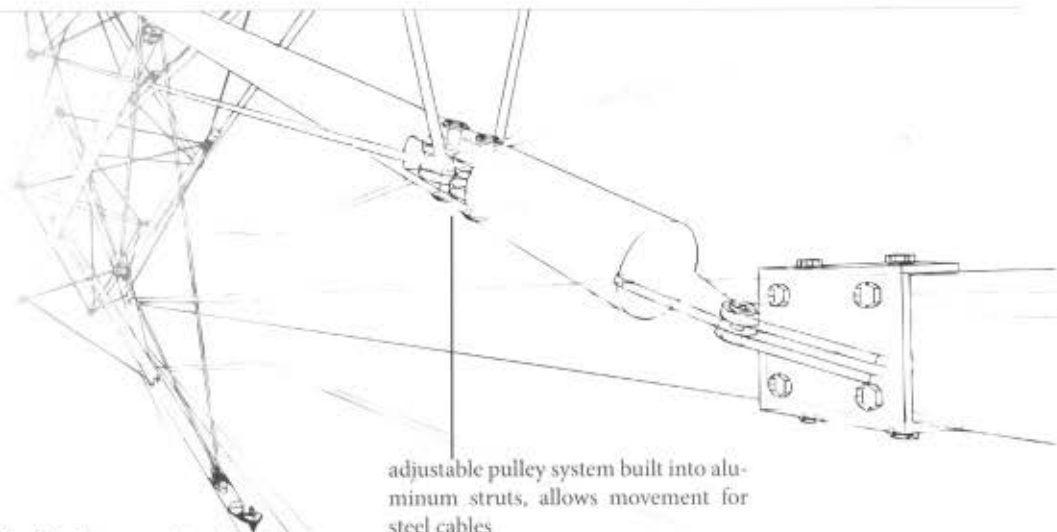


Fig: Top view diagram of movement



adjustable pulley system built into aluminum struts, allows movement for steel cables

Fig: Detail perspective of system connection to building structure and cable pulley system

steel connection pin connecting strut to base plate and allowing movement

15mm steel baseplate, bolted to concrete floor slabs to support compression struts.

175mm diameter aluminum strut ('compression member')

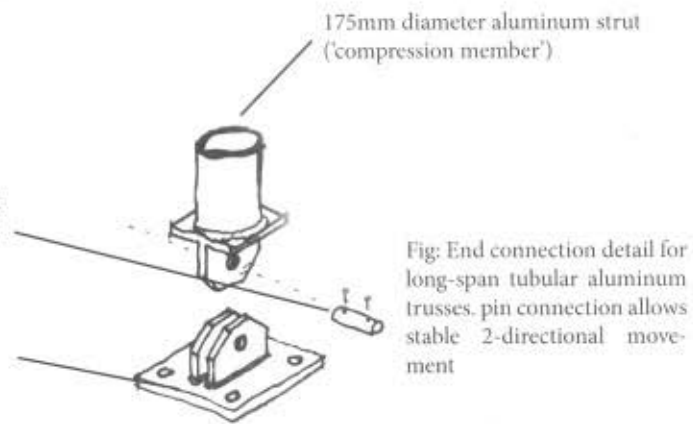


Fig: End connection detail for long-span tubular aluminum trusses. pin connection allows stable 2-directional movement

9.2.4 EFTE Membrane (Skin + Roofing)

EFTE (*Ethylene tetrafluoroethylene*) is a fluorine based plastic, designed for high corrosion resistance and strength over a wide temperature range.

Advantages:

- Naturally water resistant
- Transparency, allows ambient light , no glare
- Quick simple construction and long lifespan
- Lightweight
- Flexible



Fig: EFTE used on Beijing olympic stadium. (Herzog & de Meuron)
Source: www.google.com/images

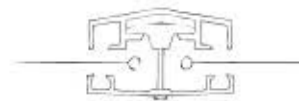


Fig: Aluminum clamp section, used where two EFTE membrane meet (not to scale)

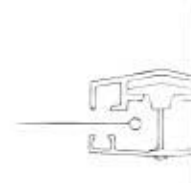


Fig: Aluminum clamp section profile (not to scale)

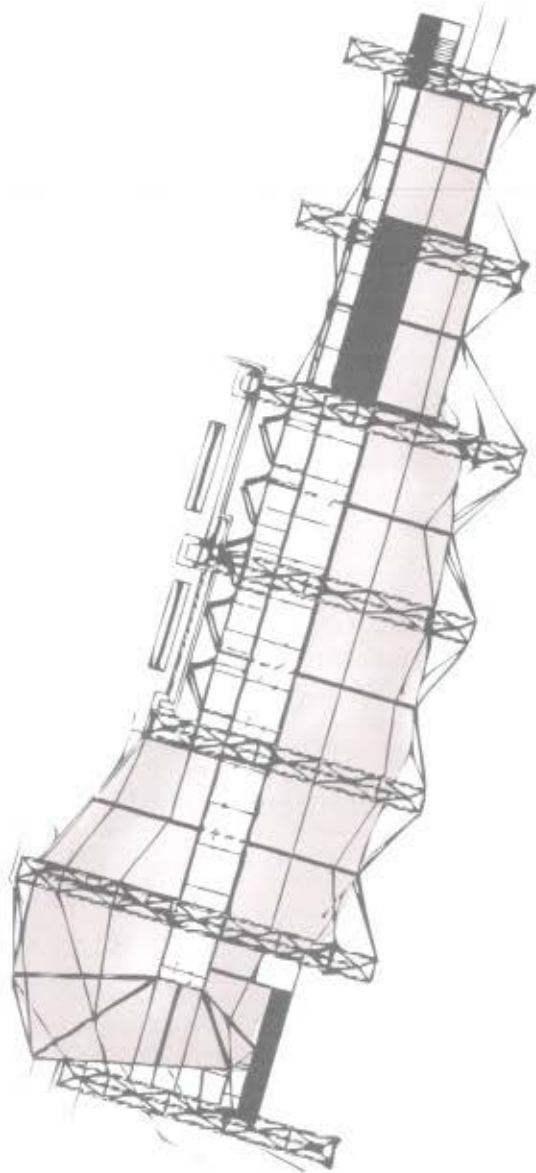


Fig: Roof plan sketch showing EFTE membrane in red

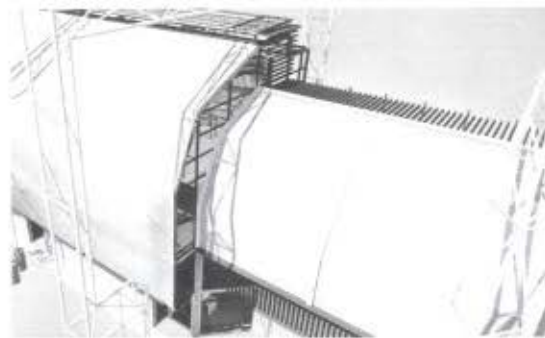


Fig: Rendering showing transparent quality and flexibility of material



Fig: Steel cable connection, holds EFTE membrane in suspension

9.2.5 Steel Superstructure

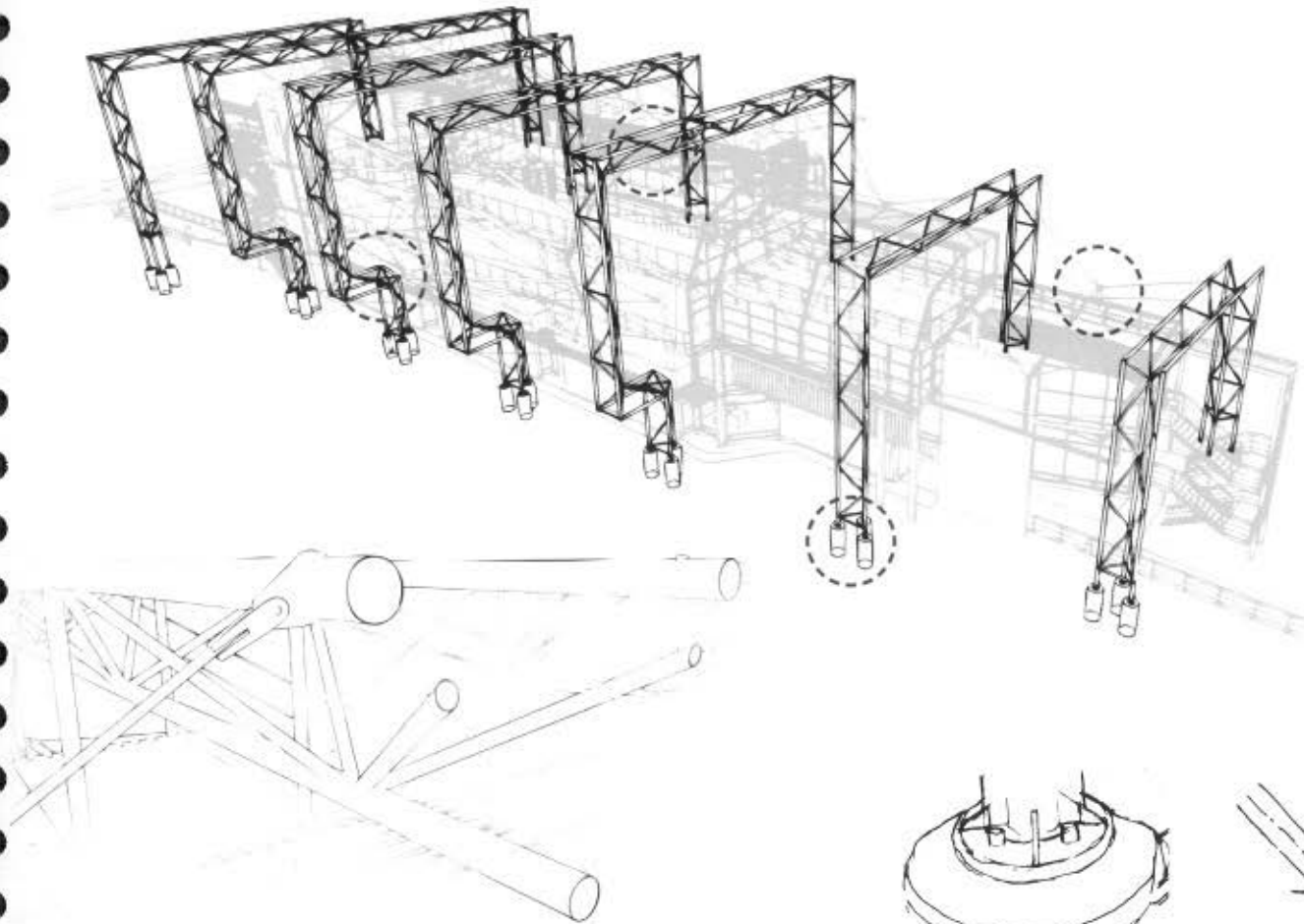


Fig: Section drawing through tubular steel girder structure with suspension cables.

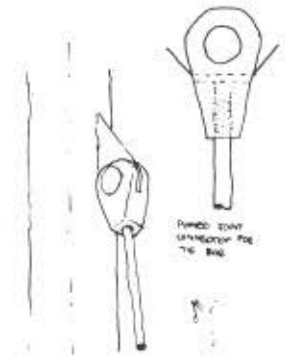


Fig: Cable connection

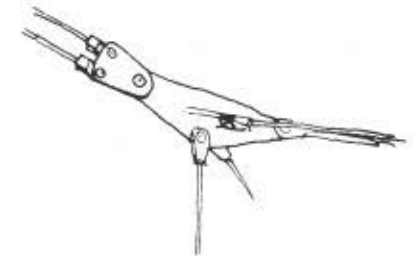


Fig: Multiple cable connection

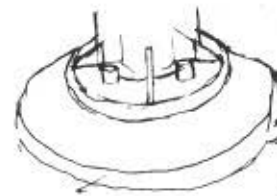


Fig: Foundation connection

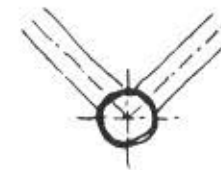


Fig: Tubular steel member weld connection

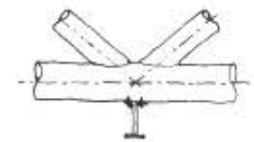
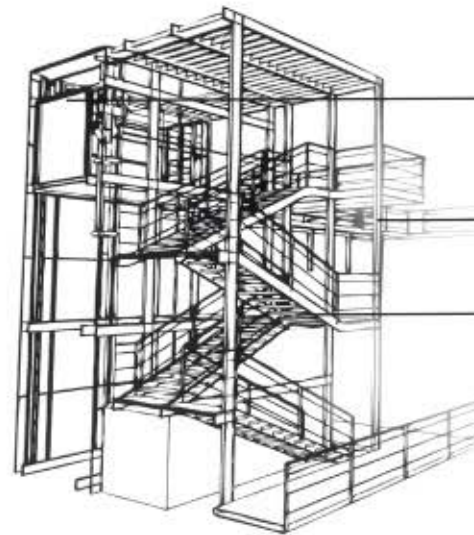
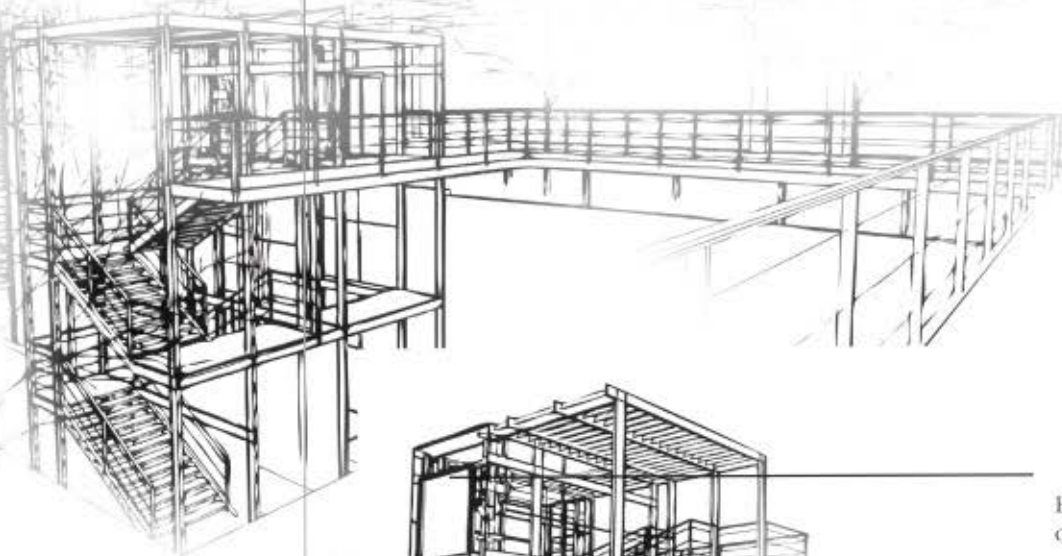


Fig: I-beam to tubular structure connection

9.2.6 Services

Existing delivery access to Thakaneng is badly congested and blocks pedestrian circulation. Deliveries are proposed to move to the lower level of DF Malherbe. This not only frees the upper level for new pedestrian routes and public space, but relieves traffic congestion on campus by removing delivery trucks and vans.

Fig: New service lift as seen from Thakaneng service balcony



Exterior service lift and steel stair in case of power failure

Steel frame structure (I-Beam)

Security checkpoint

Fig: Section drawing of new service lift for thakaneng Bridge, allowing direct delivery access to shops from public road

9.2.8 Environmental Performance

Passive ventilation, by means of louvers on lower levels and an openable 'spine' roof element allow sufficient natural ventilation during the day. Trees on lower levels enhance the flow of cool air which enters the building and moves its way up and out through roof openings.

Fig: Render showing passive ventilation louver detail on lower ground floor

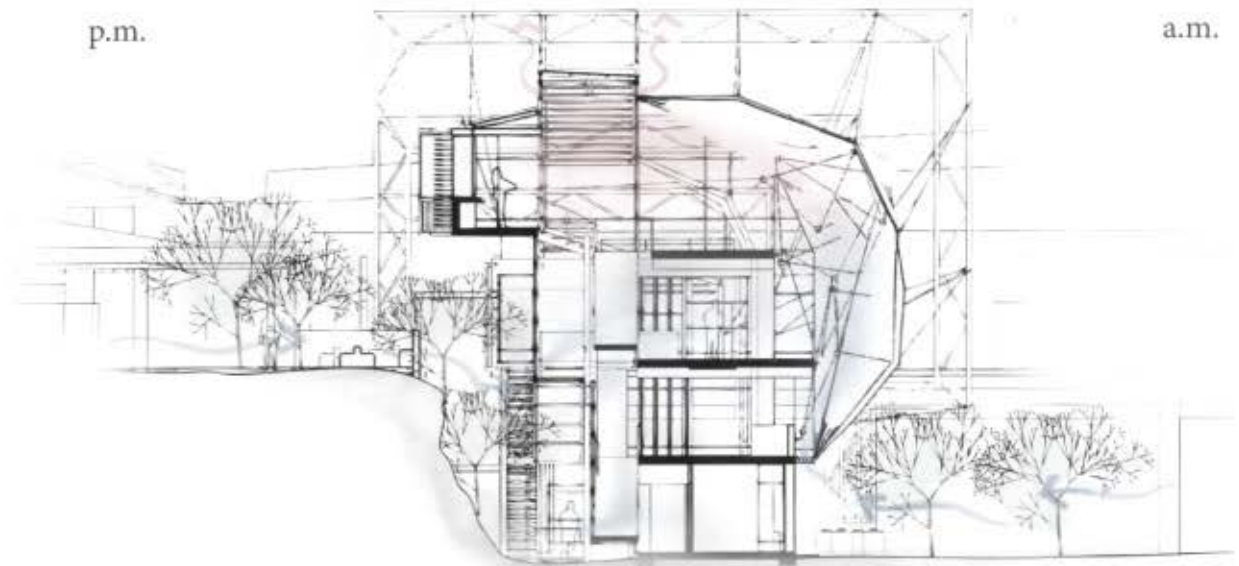


Fig: Cross section ventilation and sunpath

9.2.9 Construction Drawings

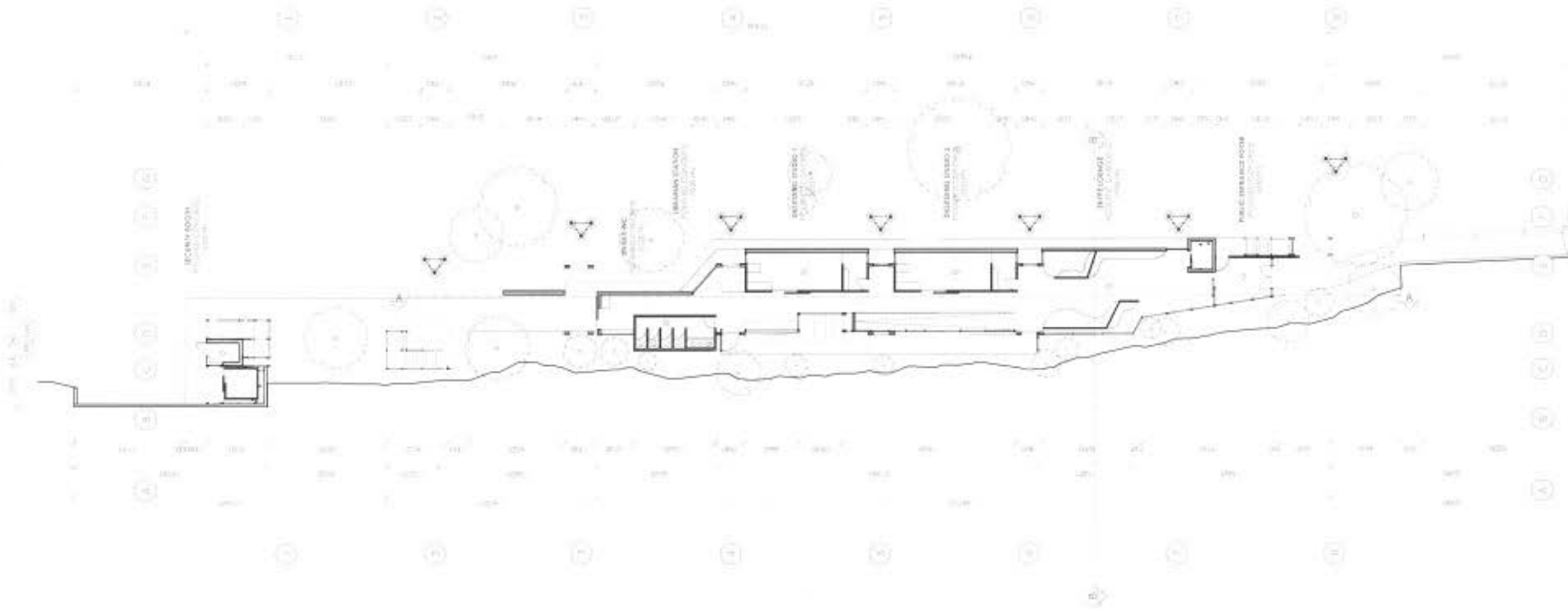


Fig: Lower Ground Floor Plan
(not to scale)

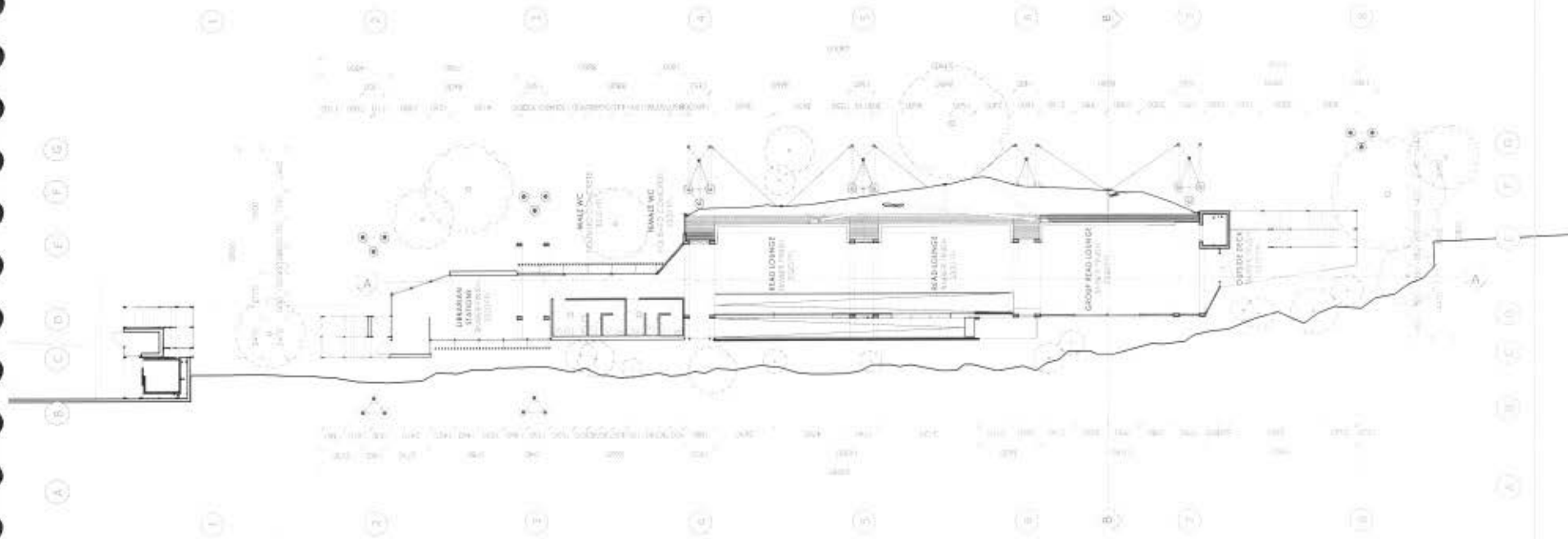


Fig: Lower First Floor Plan
(not to scale)

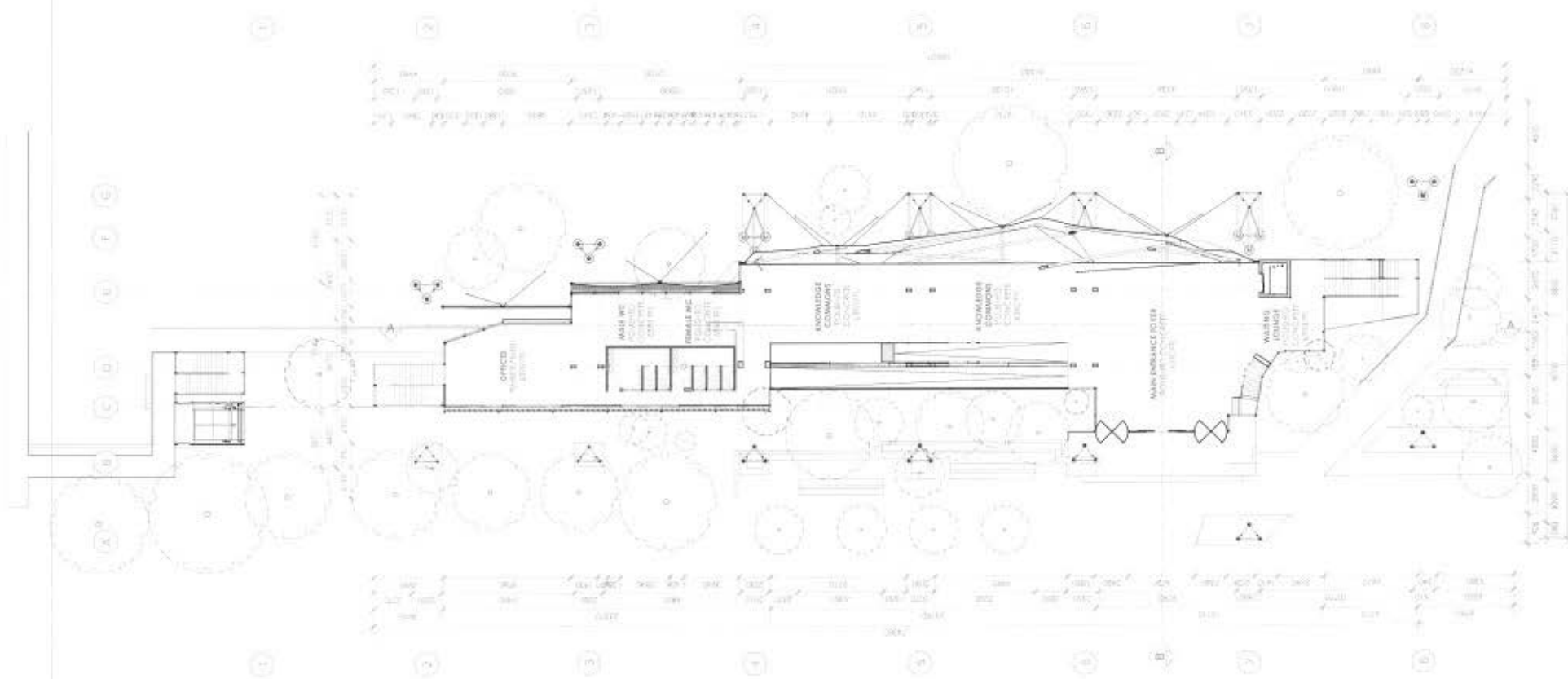


Fig: Upper Ground Floor Plan
(not to scale)

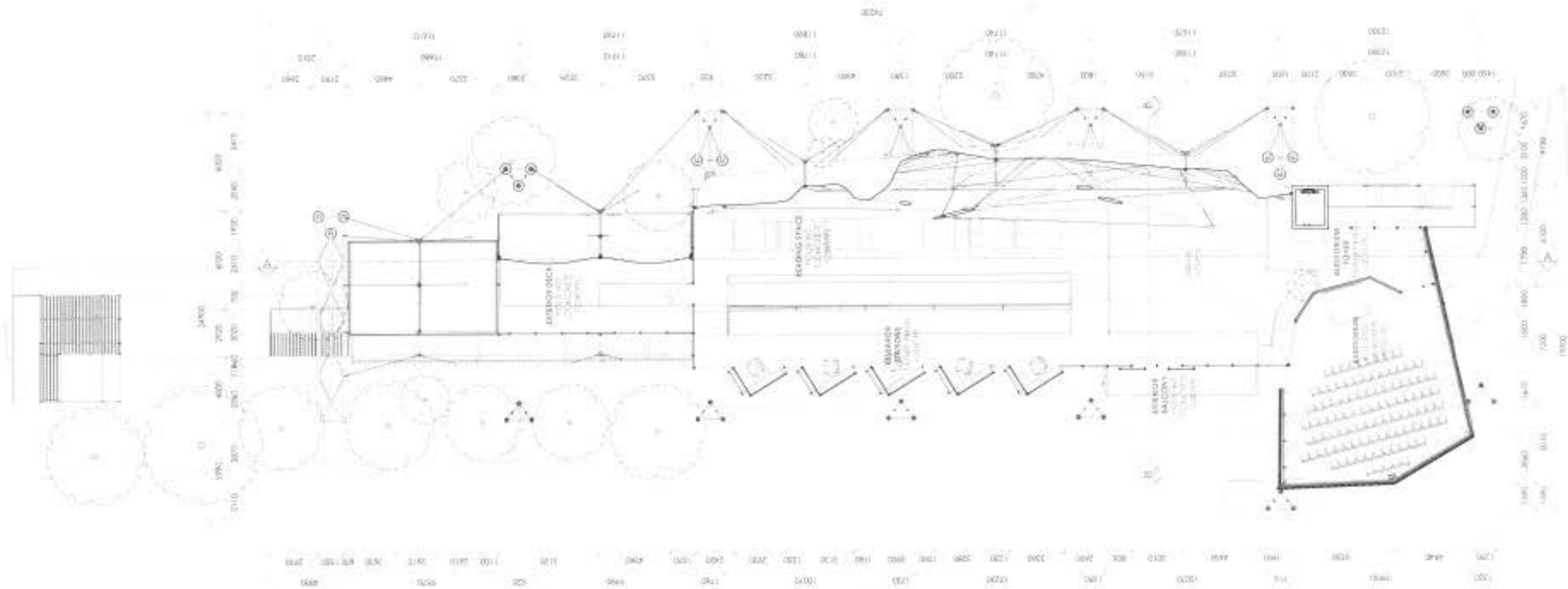


Fig: Upper First Floor Plan
(not to scale)

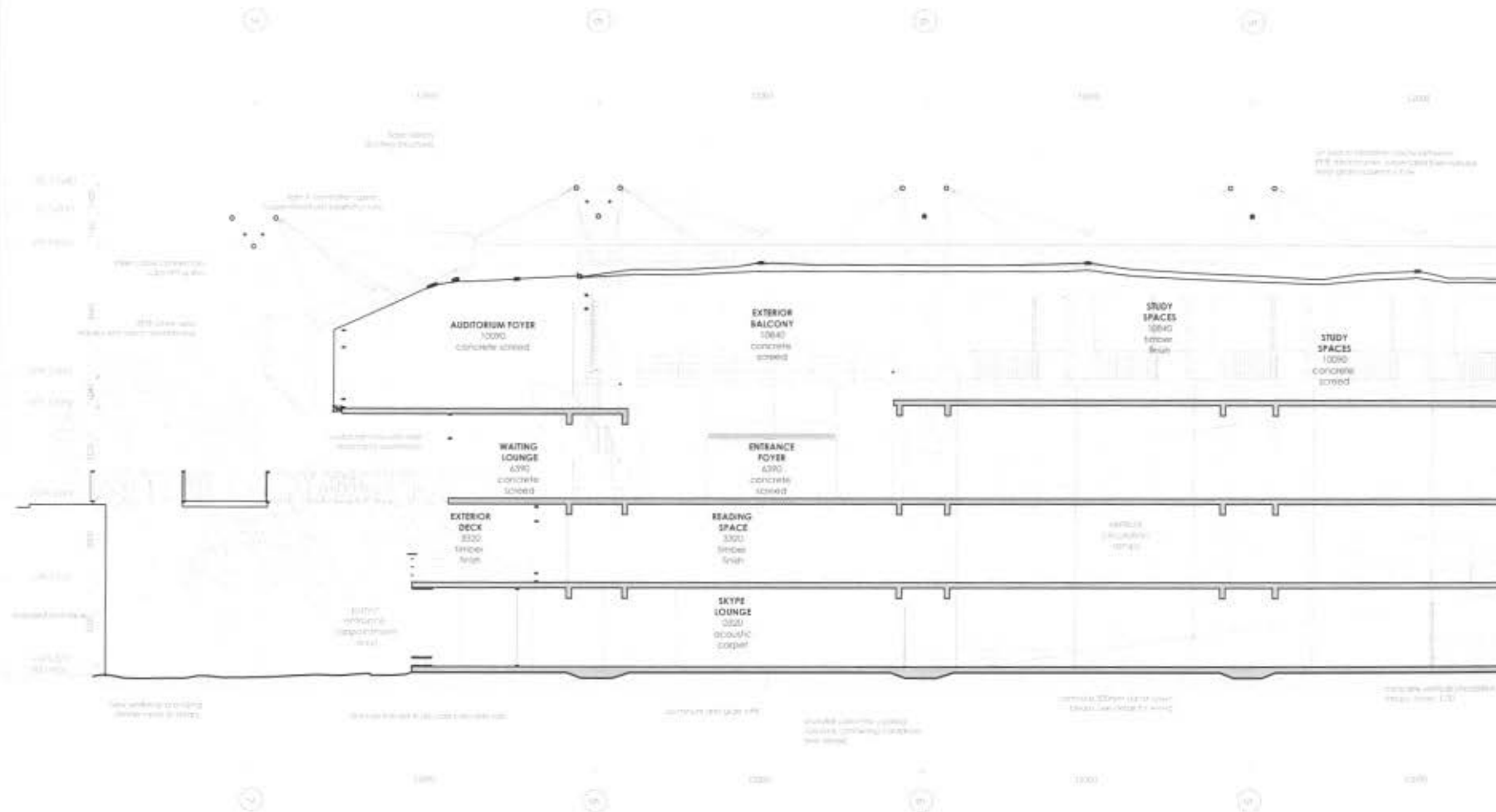
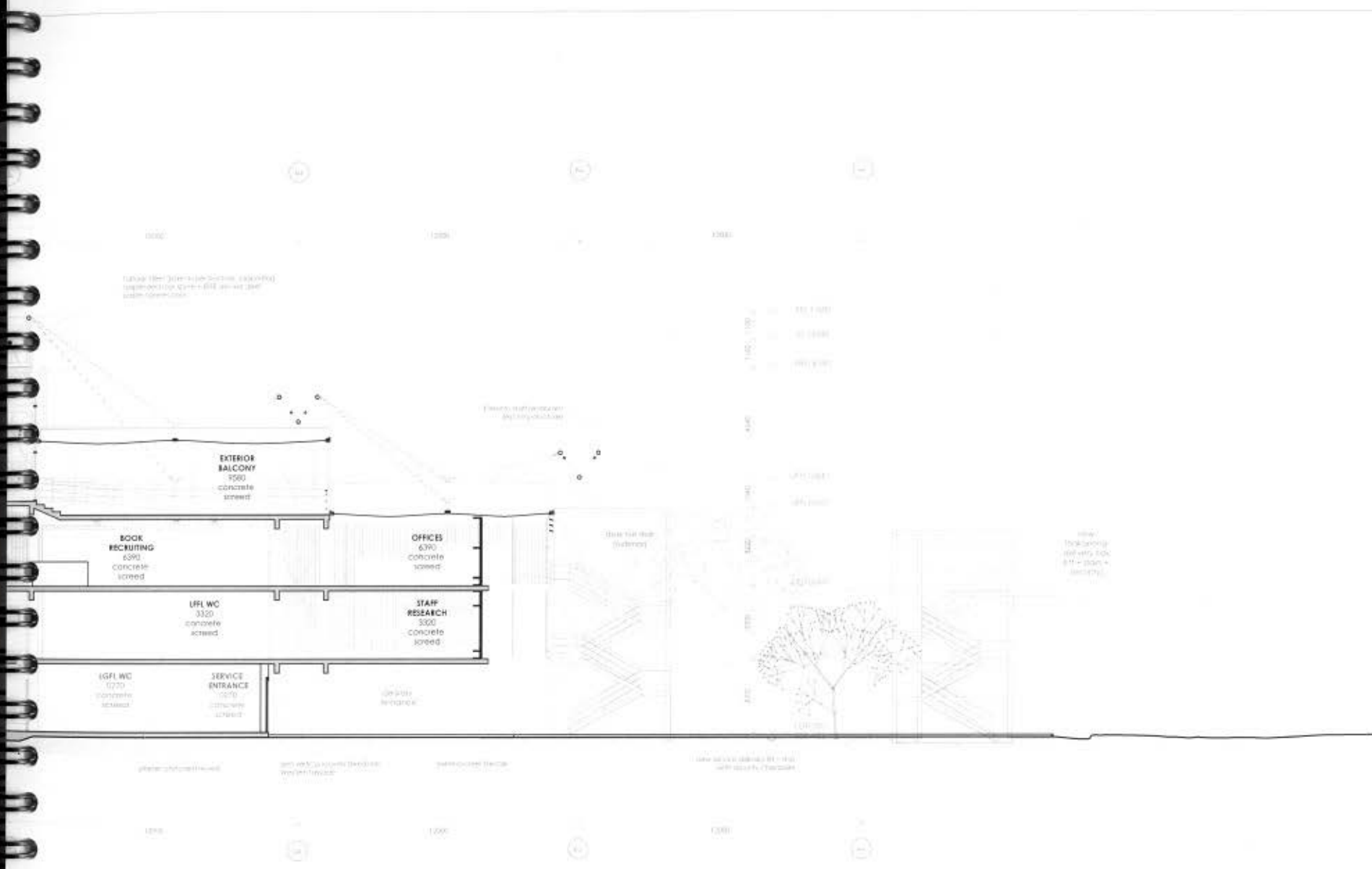


Fig: Longditonal Section AA
(not to scale)



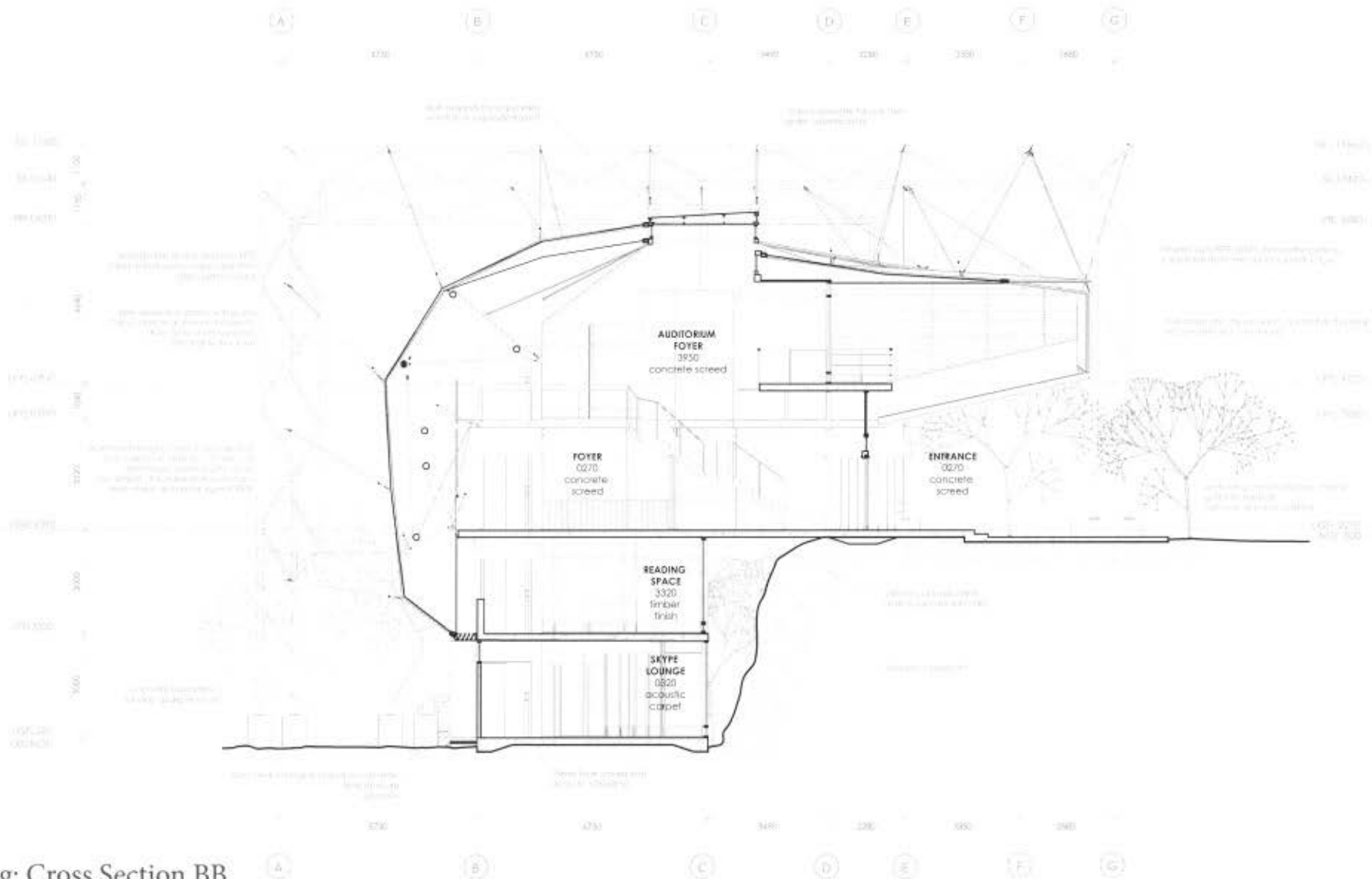


Fig: Cross Section BB
(not to scale)

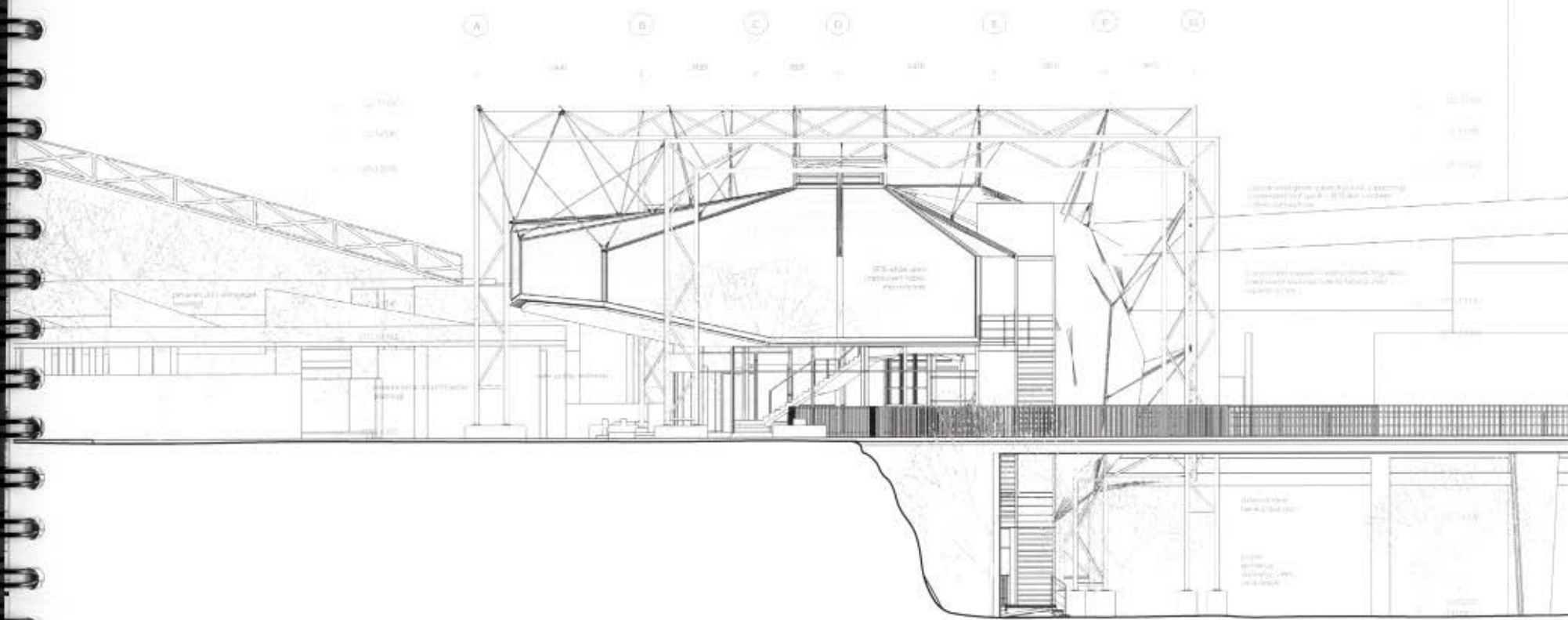


Fig: South Elevation
(not to scale)

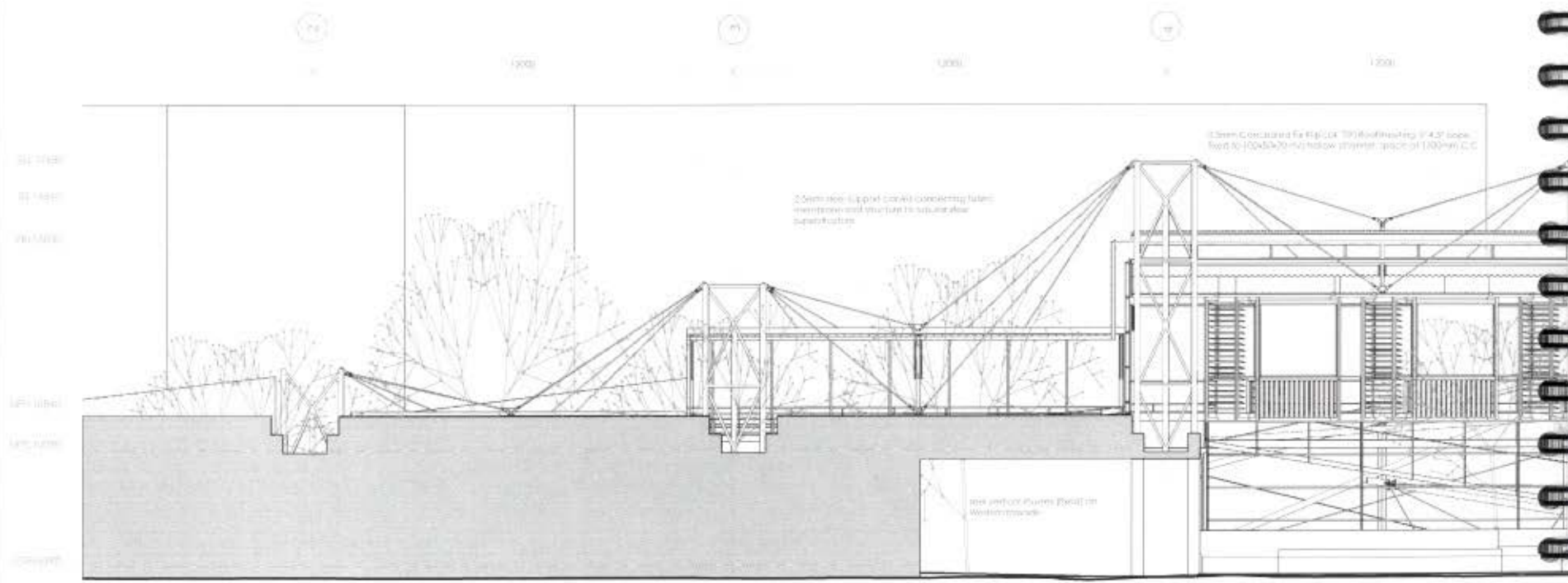


Fig: West Elevation
(not to scale)

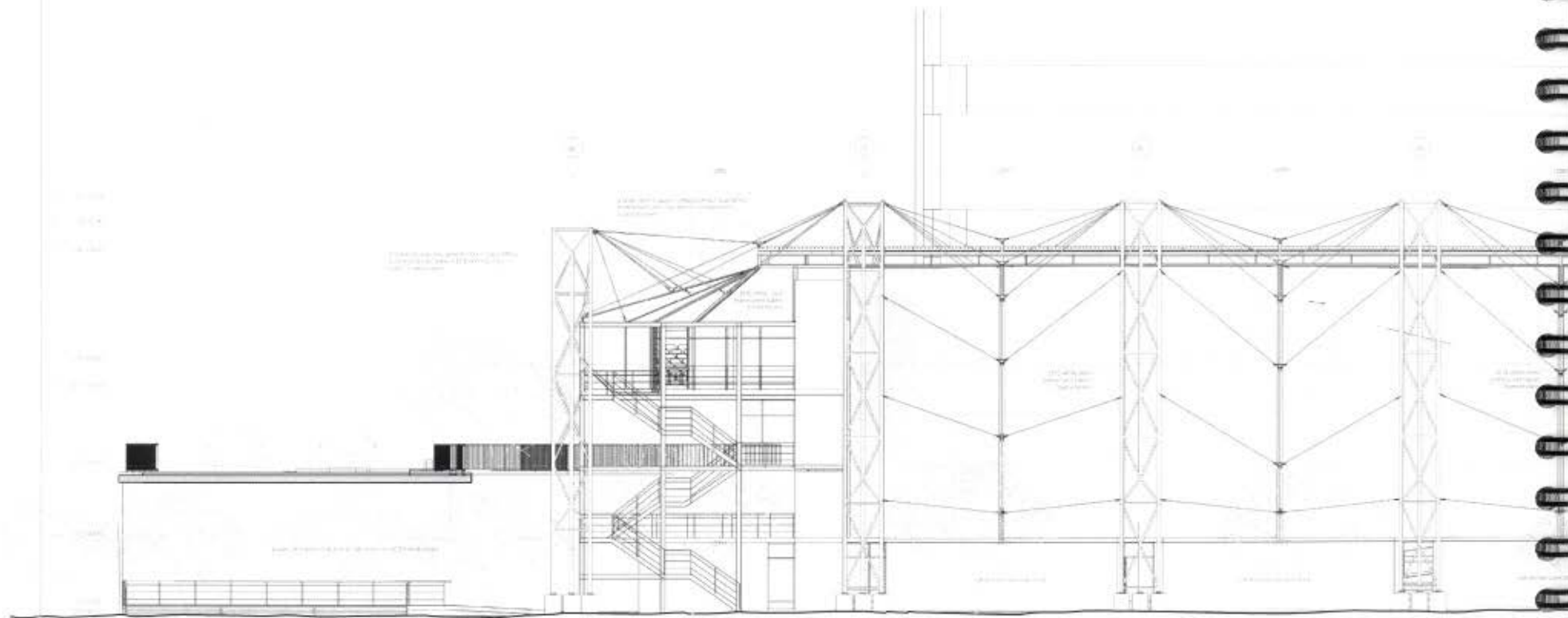
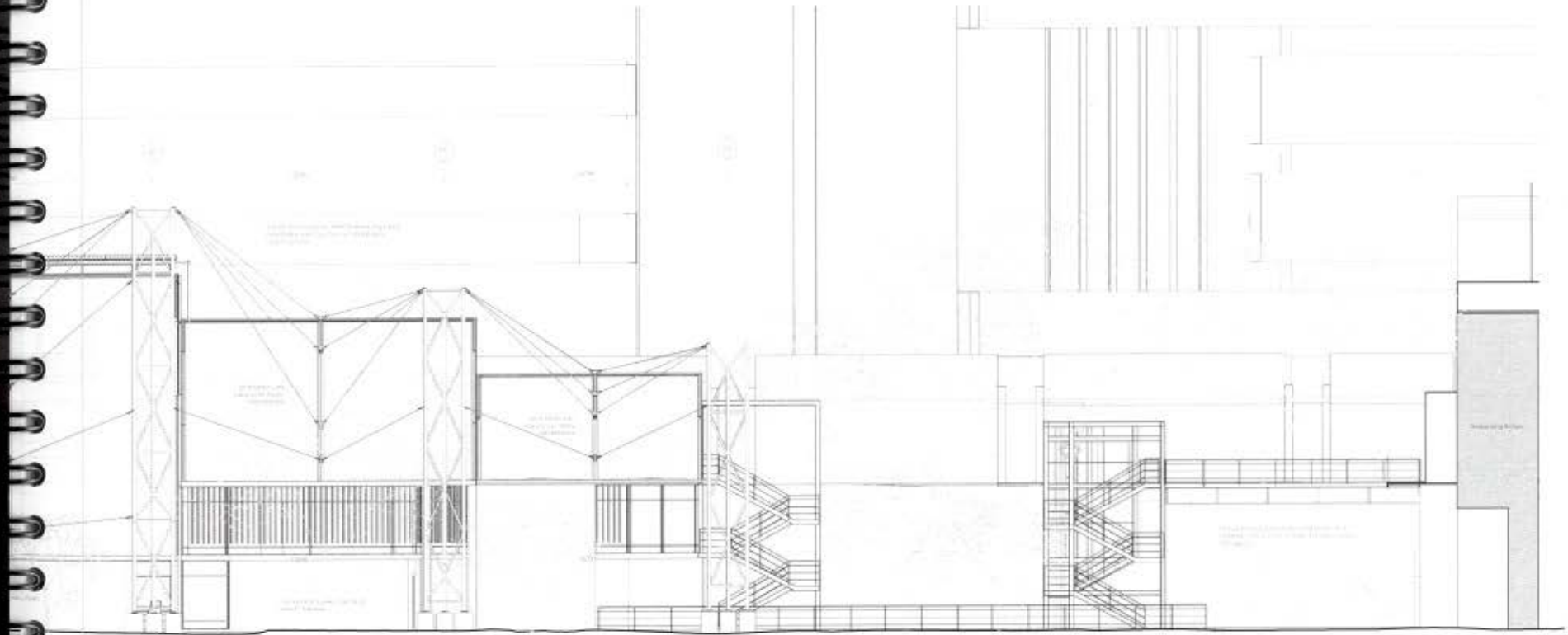


Fig: East Elevation
(not to scale)



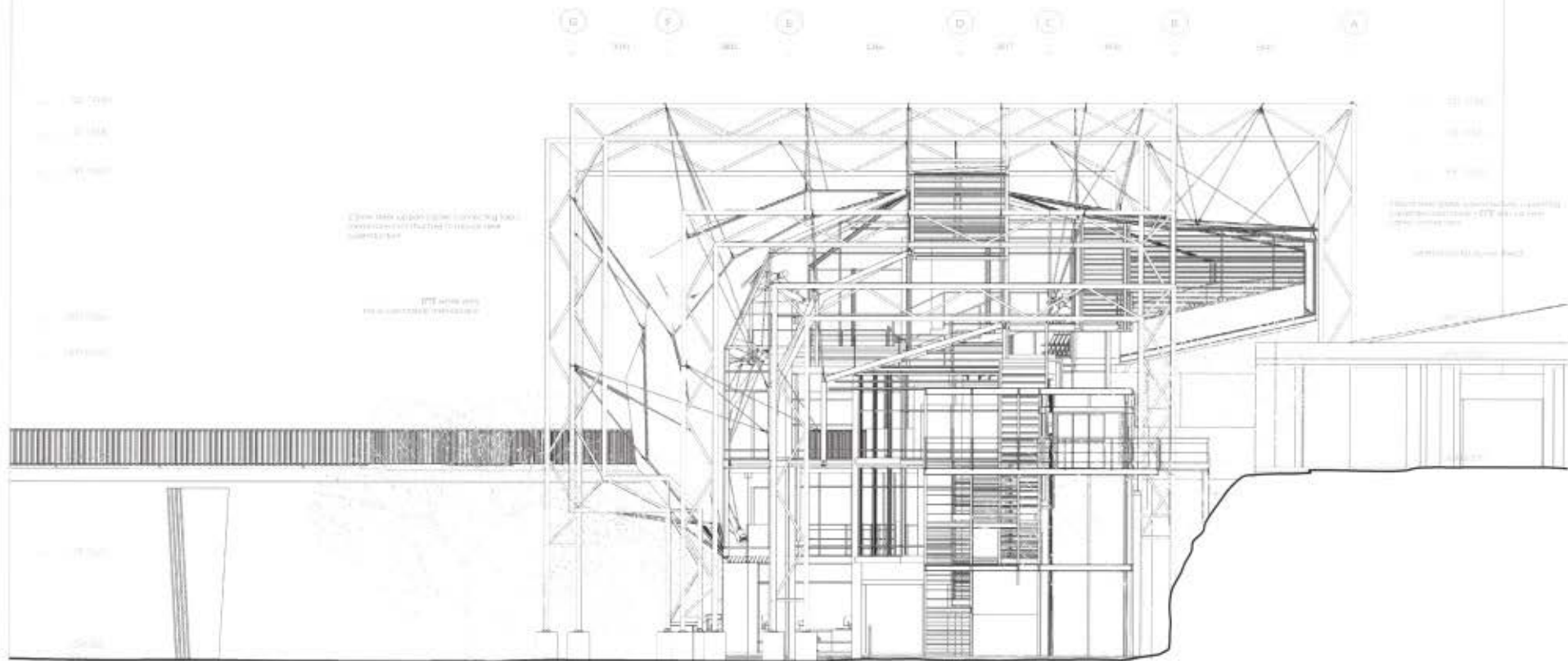


Fig: North Elevation
(not to scale)

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