VOLUME V:

DECONSTRUCTING PERMANENCE:

the emergence of public place through reconfiguration of form

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i. ABSTRAK

Die inhoud van hierdie dissertasie stam uit drie deurlopende temas:
-Verandering as onveranderlike
-Die bevraagtekening van bestaande ondersoekmetodes van konteks as informante vir argitekturele skeppingswyses, met spesefieke fokus op liniere denkwyses.
-Vormgewing deur die artikulasie van ruimte, en die rol van betekenis en simboliek as doeltreffende inligtingsbron vir argitektuurskepping.

Die doelloop van hierdie navorsingsstuk is om sosiologiese en antropologiese navorsing toetepas tot nuutgeskepte teoretiese dokumentasiemetodes van 'n bestaande konteks in die hope om relevante maniere te vind wat 'n dieper insig sal lewer tot die gekose konteks.

Die gevolgtrekkings wat uit hierdie dokumentasiemetode onttrek kan word het die potensiaal om as insiggewer tot nuwe intervensies binne die gekose konteks optetree. Die kumilatiewe eindproduk se einddoel is om 'n argitektoniese ingryping te skep wat toepaslik is tot die relevante teoretiese benaderings, en ook te kan dien as voorbeeld tot toekomstige stedelike ingrypings op 'n publieke en sosiale vlak binne Suid Afrika.

i. ABSTRACT

Three underlining themes govern this dissertation
They are as follows:
-Change as a constant, indefinable factor within South Africa's emergent public
-Architectural informants as linear, process-driven vectors, and the relevance of potential alternative approaches.
-Articulation of space, and the role of signification in architectural form.

This project aims to address these themes through applying mapping techniques derived from the social sciences, and, more specifically, anthropology viewed from a classical-philosophy vantage point, to find new explorative ways of truly understanding the context in question. This, in turn, will allow one to respond accordingly and in a manner representative of this new paradigm.

The cumulative product aims to create a new, viable architectural intervention that applies relevant theoretical premises in a such a manner that the physical structure can be studied as precedent for approaching future public architectural interventions within the South African context.

ii. PREAMBLE

This is the fifth volume of a six-part investigation. It is comprised of the urban mapping, landscape intervention, and four architectural interventions. These are:

VOLUME I: Jeppestown: A Prospect Ritual
by Muhammad Dawjee, Albert Smuts, Kristen Steynberg, Gert van der Merwe and Charldon Wilken

VOLUME II: Landscape Laboratory
by Charldon Wilken

VOLUME III: Jeppestown: A Prospect Ritual
by Gert van der Merwe

VOLUME IV: At Jeppe
by Muhammad Dawjee

VOLUME V: Deconstructing Permanence:
by Albert Smuts

VOLUME VI: Private Rituals, Public Selves
by Kristen Steynberg

narrative as a mechanism for understanding

An acknowledgement of embedded subjective biases and the curation of lenses for understanding the spatial conditions and human inhabitation of the foreign context of Jeppestown.

iii. METHODOLOGY

This document would not have been possible without
Kristen Steynberg
Fieldworks collaborative
Jo Supertramp
Elmo Swart
Gus Gerneke

iv. ACKNOWLEDGEMENTS

To my parents.

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DECONSTRUCTING PERMANENCE:

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Foreword by Jo Supertramp

Consider for a moment the concept of Nothingness; Absolute Zero in the truest sense of the term.

The layperson would likely consider this notion, for a brief moment, working on the supposition that 'nothing' is the opposite of 'anything'. This, of course, is a turbid bastardisation of the concept. The learned mathematician, on the other hand, will contend that Nothing does not mean the "absence-of-anything"; on the contrary, upon examination, and a brief moment of contemplation, they would consider it to mean any quantity that one may choose.

The Qabalists—an ancient, esoteric Jewish tradition of mystical interpretation of the Bible— expanded upon the idea of Nothing a la mathematics, and, as a result, formed second- and third ideas of Nothingness.

The first of these ideas, which they called "Ain Soph" (Without Limit) is comparable to the modern-day idea of the black void of Outer-Space; the vastness of which we cannot comprehend, but the mere fact that it exists makes it, in essence, comprehensible. Their second idea of nothing undoubtedly demanded industrious cerebrations both introspective and universal in nature.. They called this the "Ain Soph Aur" (Limitless Light). It is a form of Nothing sans form and void— abstract conditions and not positive ideas—and was conceived of solely to interpret this mere absence of any means of definition. The Limitless Light seems to have meant very much what the late Victorian men of science meant, or thought that they meant, by the Luminiferous Ether. They placed this idea of Nothingness at the roots of The Tree of Life and elaborated that the Limitless Light is the source of all light and movement.

This inconceivable, Boundless Light; this Operatic Blackness; which cannot exist as Nothingness, but has to be conceived of as a Nothingness composed of the obliteration of two imaginary opposites, is without opposition, and, as a result, void of both inner- and outer conflict. It can be argued, then, that this 'state of rest' encompasses the conditions set forth by the opposition of the material and the void, and ultimately allows movement to occur between the two encompassed opposites, without any 'effort'. Without any limitations, all things happen by virtue of the fact that there is no reason why they shouldn't. Aristotle referred to this Nothingness, with its ability to create effort within itself (without exertion from itself), as the Unmoved Mover.

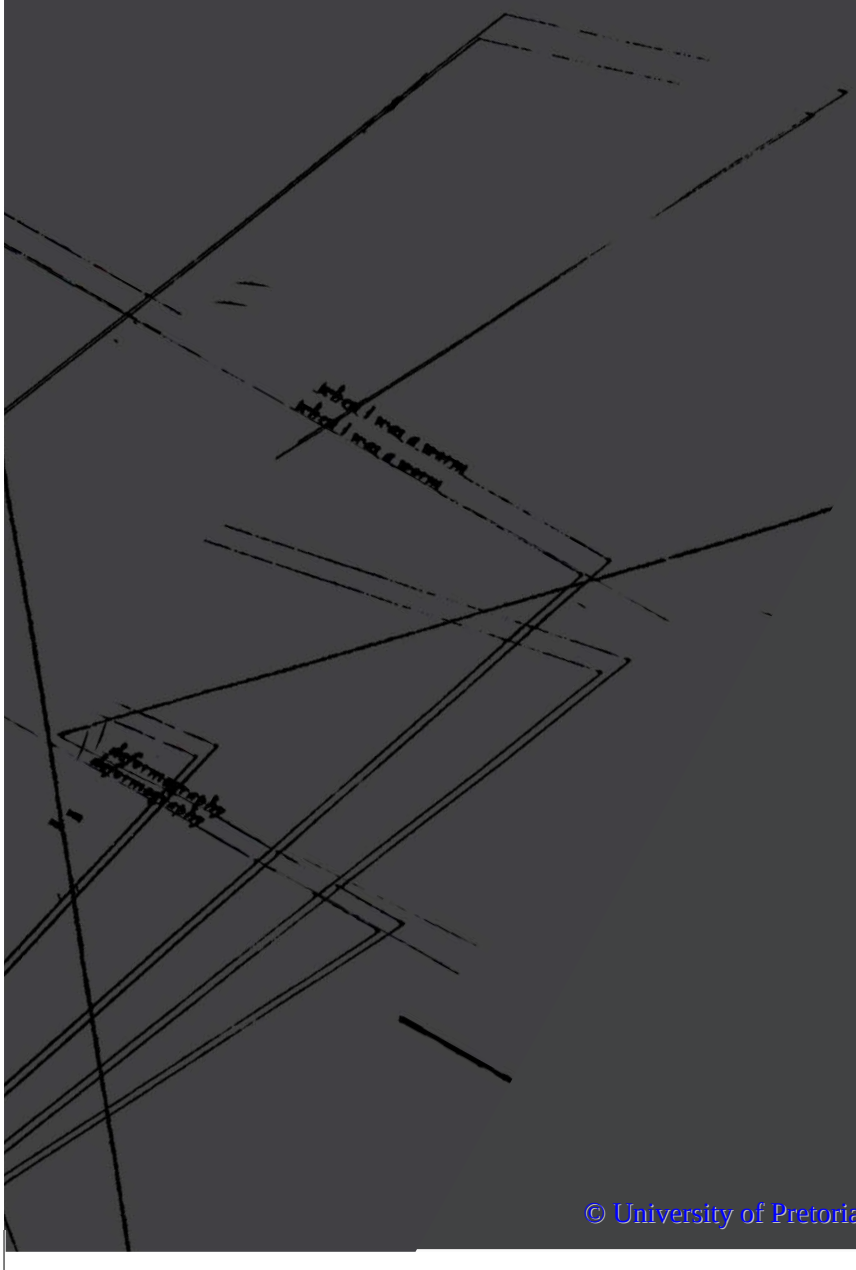
Now, to avoid the (rather ironic) exertion of effort ad-infinitum, attempting to further explain the Unexplainable (with something as limiting as language, nonetheless) must be halted before the significance of any of this becomes equal to the nothing as seen by the layperson. A well balanced narrative must find equilibrium within the confines of the condition of opposites, after all. The relevance of Nothing and Anything, and how they, together with the Absolute Zero, fit into the coming architectural equation must be gently eased into motion by the student of Architecture and of life.

The student in question—who is solely and wholly responsible for the design of the hefty tomb of 'architectural heresy' that rests uneasily in your hand—knows that only from Nothing can come something, Anything, that is free of presuppositions and limitations. His intuition can then therefore freely as responsive as is contextually required.

Albert, my confidant; my brother-with-arms; my mirrored reflection; and the only other member of the League of Extraordinary Gentlemen—has drawn inspiration from the ideas and words of those whose relevance pertain to most of the elements of life and the sciences. With Frederich Nietzsche's words "There are no facts, only interpenetrations..." in mind, he bravely set forth on a path most would consider to be considerably left-handed; a path on which no architect has ventured before. He then did what most Architects dread and put it in words.

And so we must begin, as it has begun in countless stories throughout the aeons, with "The Word".

01



THE **INTRODUCTION**

PART 1.

Content and Context

PART 2.

Architecture is stagnant

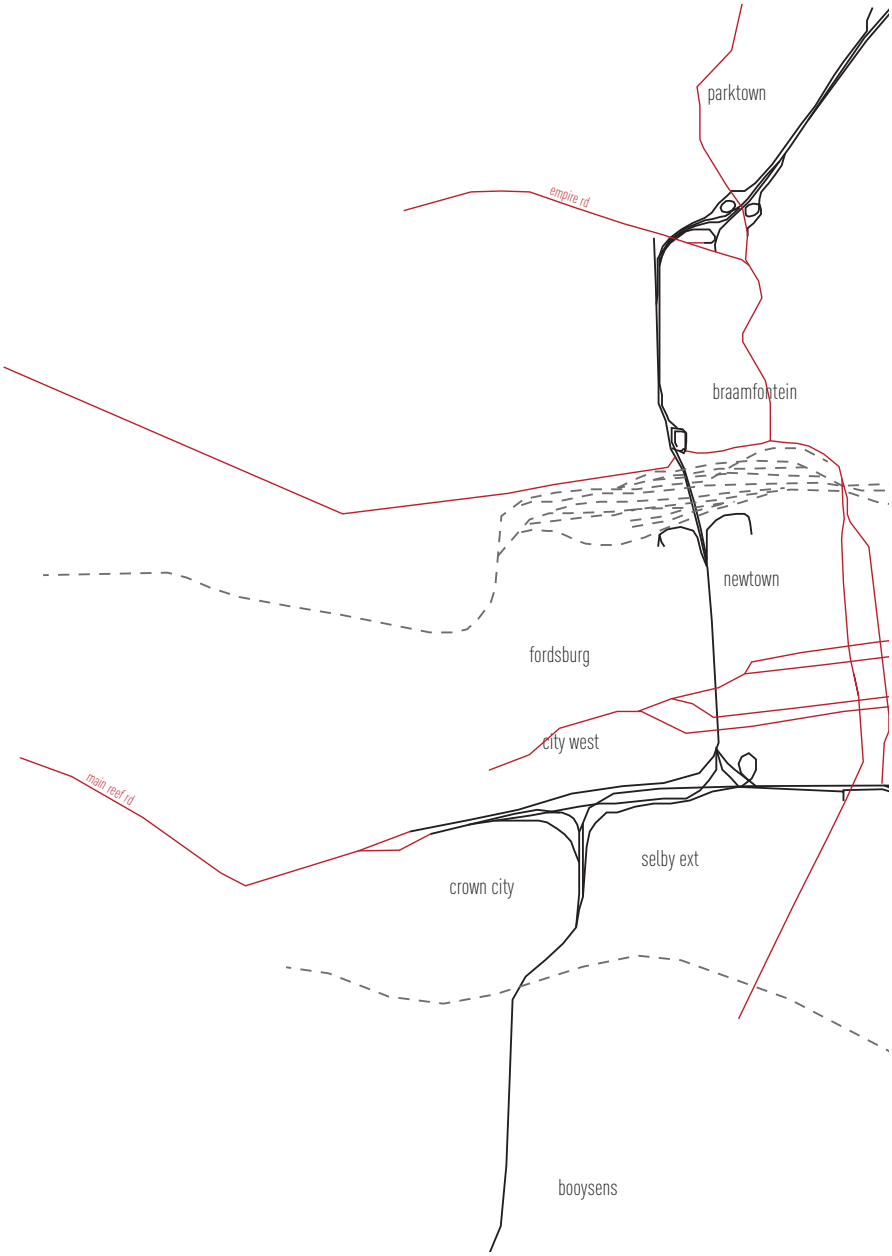
content and **CONTENT**

Contemporary architecture is reliant on Western ideals and perceptions when approaching an urban context. However, South Africa, and more specifically Jeppestown, is an emergent and decidedly non-western context. Because of its diversity, rapid densification and massive economic fluctuations, Jeppestown can be seen as an accurate representation of the true South African urban public and was thus chosen as the site best suited for researching a context ungoverned by Western ideologies of space-making.

To fully embrace the rapidly changing urban contexts of South Africa, it is necessary to dissolve the application of 'western architecture' as It is unsuited and insufficient concerning the needs of South African citizens. Without doing so, engaging architecturally within South African cities in a manner truly representative of its diverse public will remain an improbability.

This dissertation is a graphical representation, as well as a theoretical exploration, of the various underlying arguments that govourned this project. Thus, it should be understood as a map that assists the exploration of the inner workings of the processes that led to the final product.

The proposed intervention—in terms of form, function and site placement—is bound wholly to the original theoretical premise. The document should therefore be approached as a diary, containing the reflections and perceptions of the authors decisions concerning the project's conception, instead of a synopsis of the intervention's expected results.



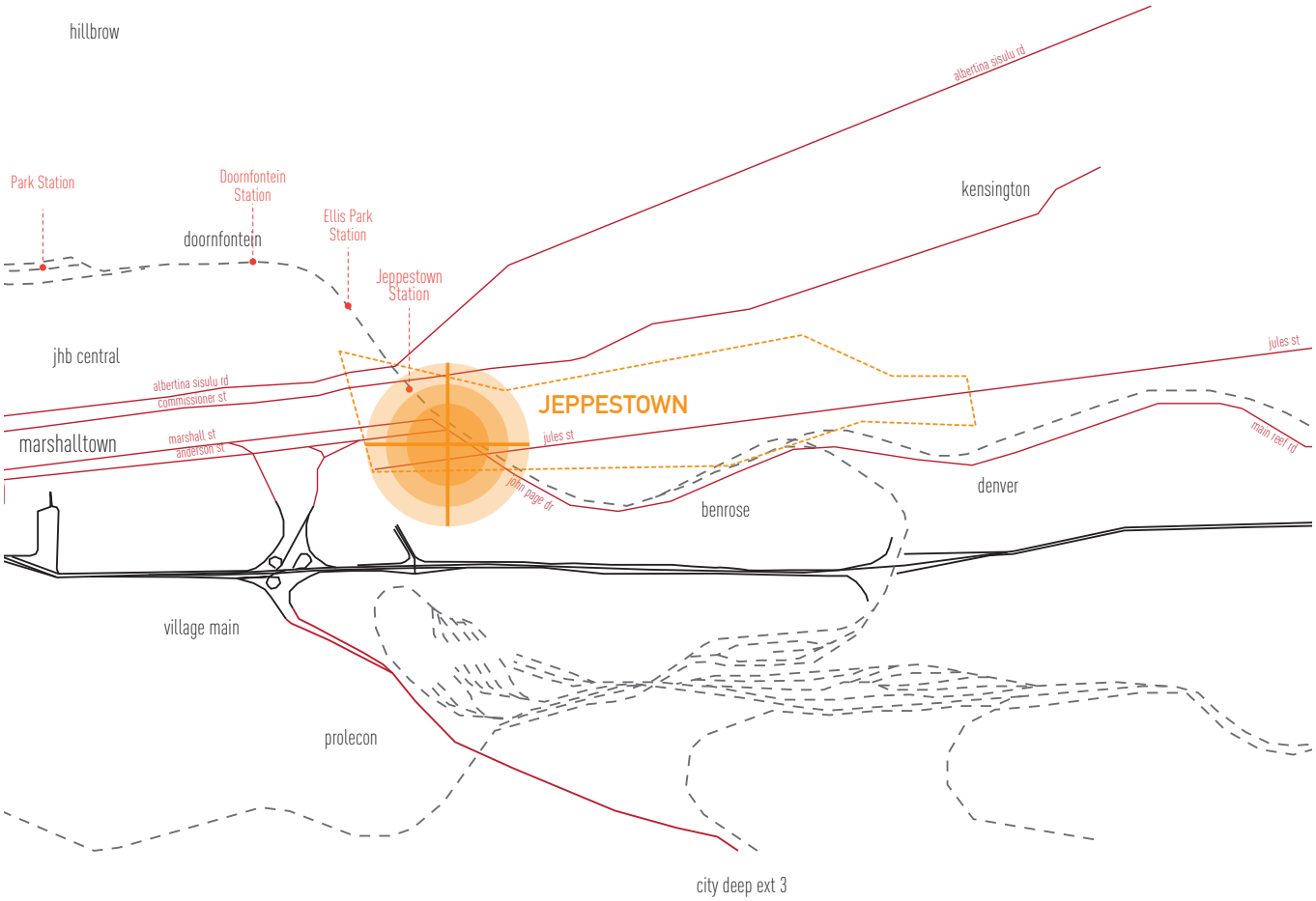
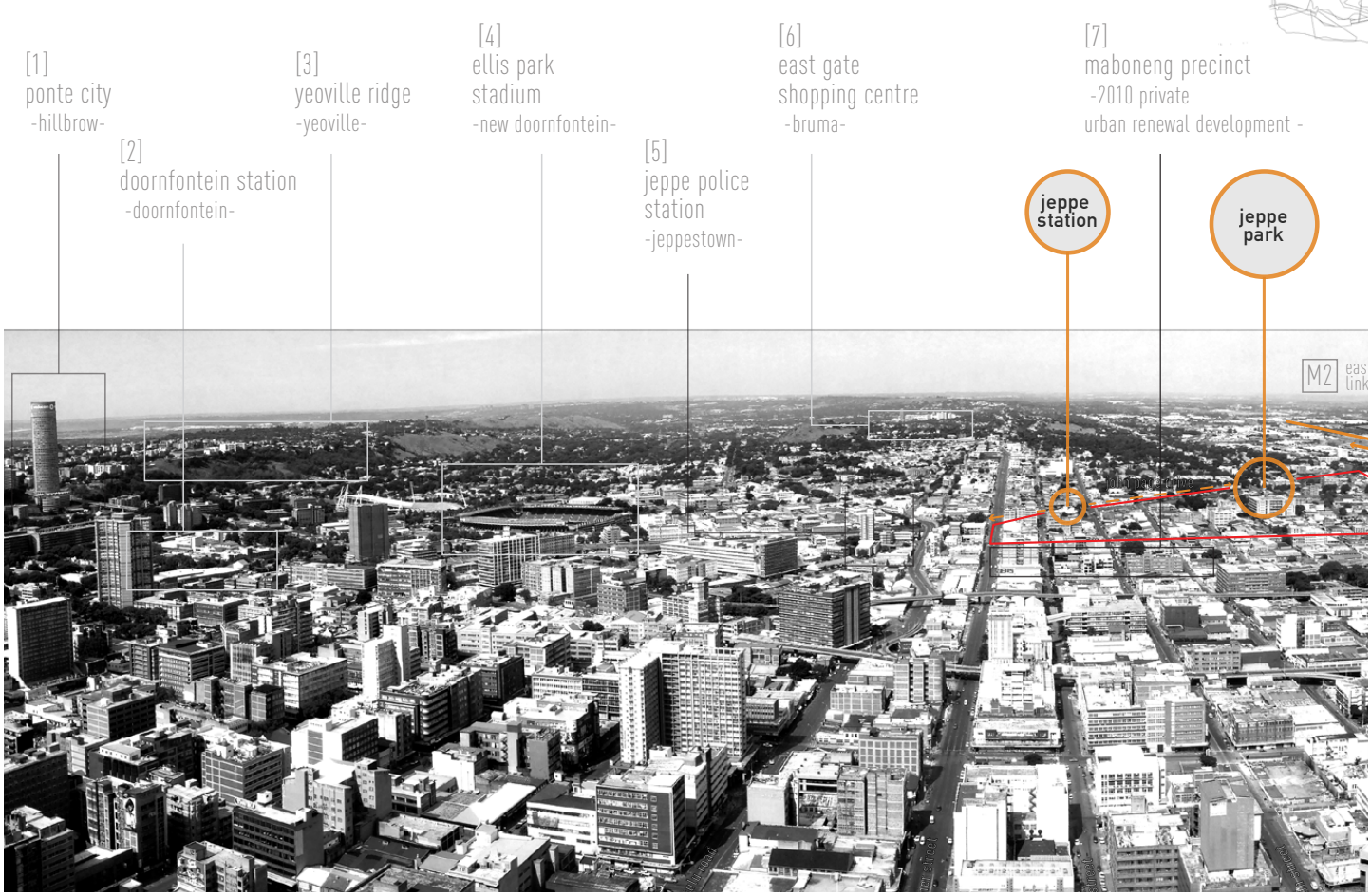
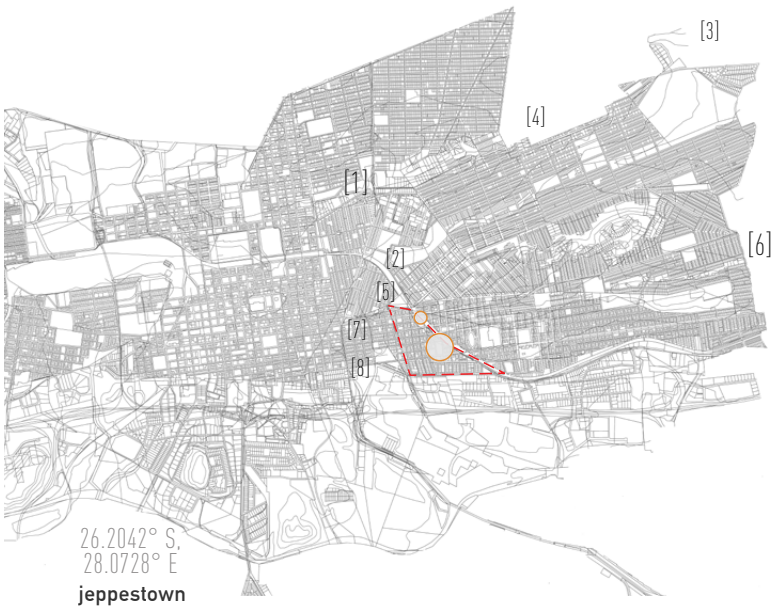


Figure 1.1. Greater site map of Johannesburg, (A Prospect Ritual, 2014)

'A Prospect Ritual, vol I' is refrenced extensively throughout this dissertation. It contains in-depth site analysis regarding Jeppestown, including it's history and current conditions. Refrenced pages should be understood as the most important or relevant parts of the greater site research conducted by the group. This documents is the fifth volume of a six part compilation.

Fig. 1.2 shows the study area within the greater Johannesburg, where fig. 1.3 contains infographics of the current conditions within Jeppestown. The chosen study area has a rich cultural layering, and a broad spectrum of inhabitants.





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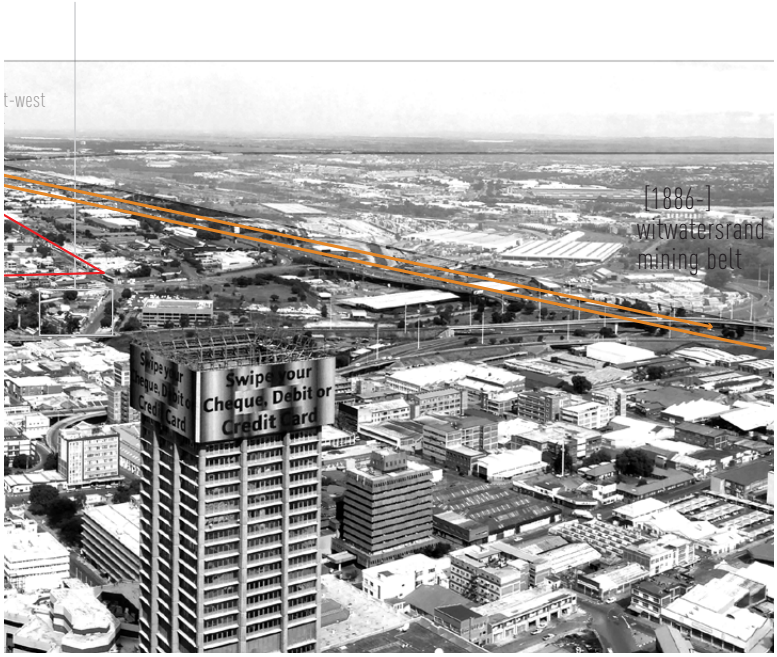


Figure 1.2. Panoramic view from the Carlton tower, Greater site map of Johannesburg, (A Prospect Ritual, 2014)

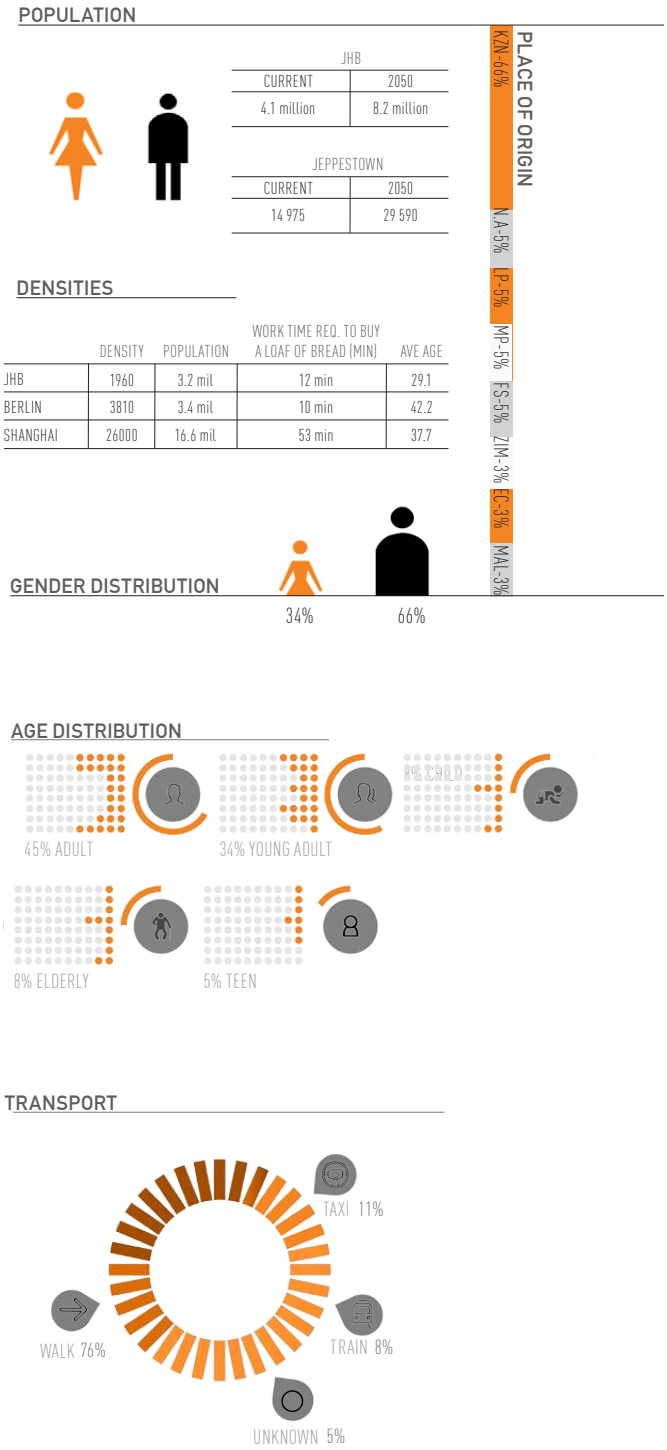
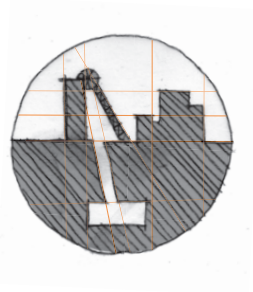


Figure 1.3. Infograpphic representation of the demographic distribution in Jeppestown, Greater site map of Johannesburg, (A Prospect Ritual, 2014)

An alternative approach that attempts to accurately represents Jeppestown's urban context should be taken: one that focuses research on prominent, relevant sociological and anthropological theories and applying their principles as driver of the necessary intervention.

These conditions stem from an past explained through fig. 1.3 and fig. 1.4. These images, accompanied by text extracted from 'A Prospect Ritual' divides Jeppestown's past into generations according to prevalent events that occurred there over time.

The development of mapping techniques such as shown, and various others explained throughout this document, aims to explore new ways of informing architecture, that is not constrained by current dogmatic ideologies of space-making.



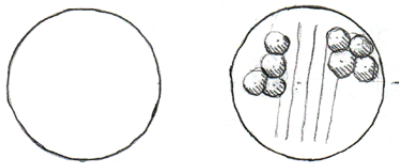
generation I

CONCEPTION

1886–

Birthed through optimism, the discovery of gold saw the arrival of pioneers who extracted riches deep within the mines of Johannesburg.

Through the ritual of consumption a new entity develops; and bestowed upon her, as birthright, the aspirations of prosperity and a bright future… but the mechanisms of time have little consideration for those who dare to dream, and external influence inevitably causes transition.



INTERVAL 1
clean slate

INTERVAL 2
farms & spruits

generation I

Figure 1.4. Diagramatic explanation of the past generations that formed Jeppestown today (A Prospect Ritual, 2014)

generation II

FORMATIVE YEARS
1902–

Colonialist rule brought with it transformation: The stranger tells how opportunism had no role within imposed structures brought on by imperial order.

The zeitgeist was dictated by external ideals and insurgent agendas, and British rule left a permanent imprint on the soul of Jeppestown.

generation III

BLIND COMMITMENTS & TORN RELATIONS 1961–

The 1st Republic, with the rise of Nationalism, brought ideals of modernism and progress, production was the agenda.

Colonial rule withered and from its ashes arose a new order. Frozen in remembrance, the stranger finally states: 'the more things change the more they stay the same', and with the enforcement of Apartheid, segregation leads to boycotts.

Jeppestown still carries the memories of oppression, and in the distance the silhouettes of the old mining hostels stand rigid against the setting sun.

generation IV

ESTABLISHING PERSONALITY 1994

Freedom comes at a price, and the years have carved away at the soul of Jeppestown.

A once thriving industry now stands vacant. The paradigm shift, driven by external forces, where breaking down barriers and instigating change.

Jeppe was forgotten...

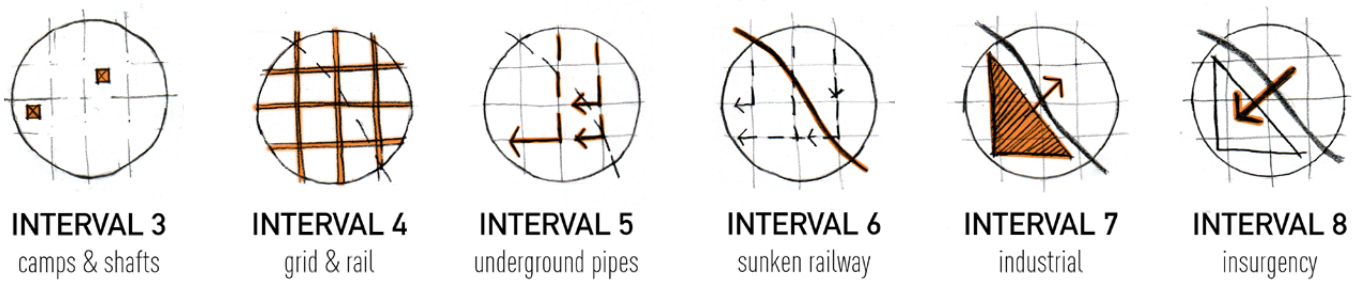


Figure 1.5. Ti,eline of the physical changes in fabric over time, (Author, 2014)

The complete body of text is intended to clarify how the theories manifest in physical form and is purposefully free from the constraint of formal analytical research.

The underlying site analysis was done through mapping the current relationship between the residents of Jeppestown and the static built fabric that has been abandoned by previous generations of inhabitants.

mechanisms & **LENSES**

The internal and external mechanisms that exert pressures on Jeppestown have both implicit and explicit workings of a physical and social nature – forming the unique circumstances prevalent today.

Current conditions are best understood by looking, with eye of one's mind, through imagined lenses of perception.

These mechanisms allow for a glimpse into the omnipresent engine that is the heartbeat of Jeppestown.

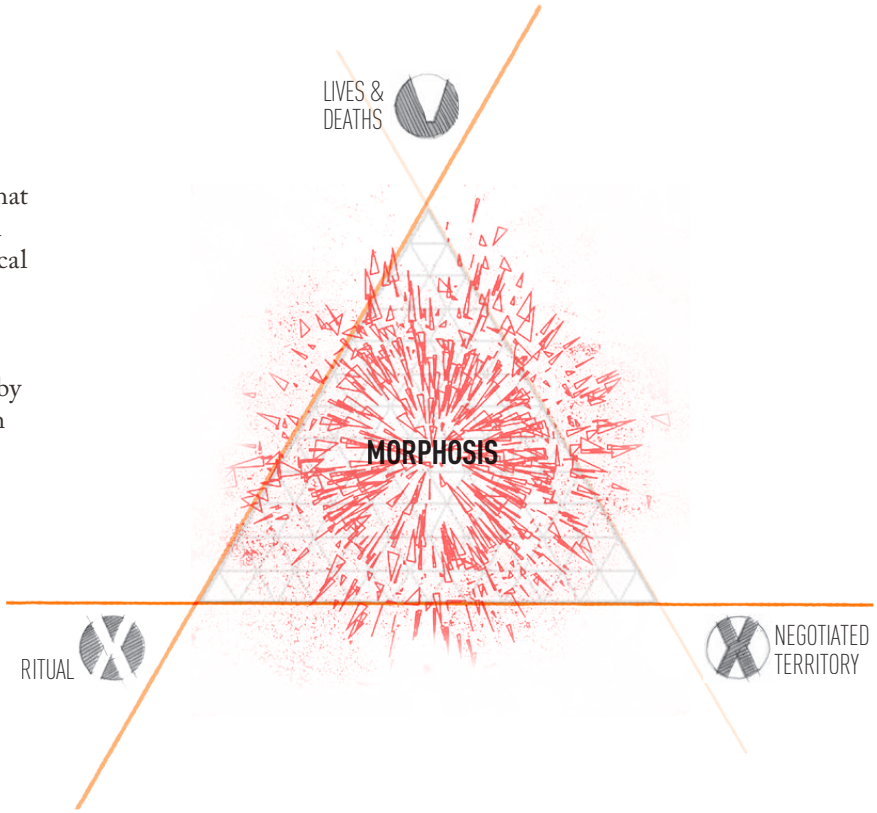
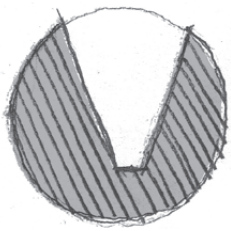


Figure 1.6. Mechanisms and lenses (A Prospect Ritual, 2014)



lens one_ LIVES AND DEATHS

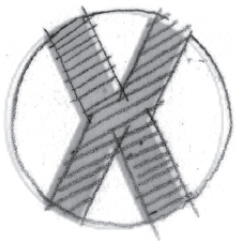
Lives and deaths are the ever-fluctuating state of being that influence how current social environments relate to physical fabric. The creation of space can be understood through the mapping of that which withers, giving opportunity for new growth.

This not only refers to new and adapted structures, but also to a more wide spread change of context and social presence (mutations).

lens two_ RITUAL

Ritual in this small scale society is a neutral common-ground; where rituals are not fixed and the concept of personal and public distinctions blur.

Ritualistic ties do not acknowledge a divide between law and morality.
(Douglas 1999: 22)



lens three_ NEGOTIATED TERRITORY

Negotiated territory consists of the fluctuating physical space that is determined by programme and circumstance.

A physical amalgamation of ritualistic mutuality that manifests self-defined functions and borders that surpass governmental instruction. These spaces are fluid and thus capable of change over time.

Figure 1.7. The three lenses used for investigation of site, (A Prospect Ritualr, 2014)

The proposed intervention aims to celebrate the existing conditions within Jeppestown, and amplify existing conditions in a manner that would bring value to the context. This implies that the new intervention purposefully tries to avoid a forced building programme that is unfamiliar to the context, and rather aims to enhance positive conditions through the linking of functions and alteration of the existing built fabric

The dissertation includes objective technical data concerning the intervention. However, it has not been integrated into the document but rather added as an appendix. The purpose of which is to objectively validate design decisions and systems implemented in project. Each chapter is preceded by a list of definitions. It is meant as a guide, to gain a clear understanding of implied intentions of the content, and to fully engage with the document.

The new proposed architectural intervention that will stem from the compiled research, will, hopefully, not only honestly and usefully engage with the existing context - but also act as informant to future interventions in urban contexts.

The conclusions we will then be able to draw from this are that, because of the ever-changing public, the permanence of western architecture is not applicable, and that a new, reconfigurable and impermanent architecture is necessary when approaching contexts of this kind. Thereby serving the contextual public by facilitating their wants and needs.

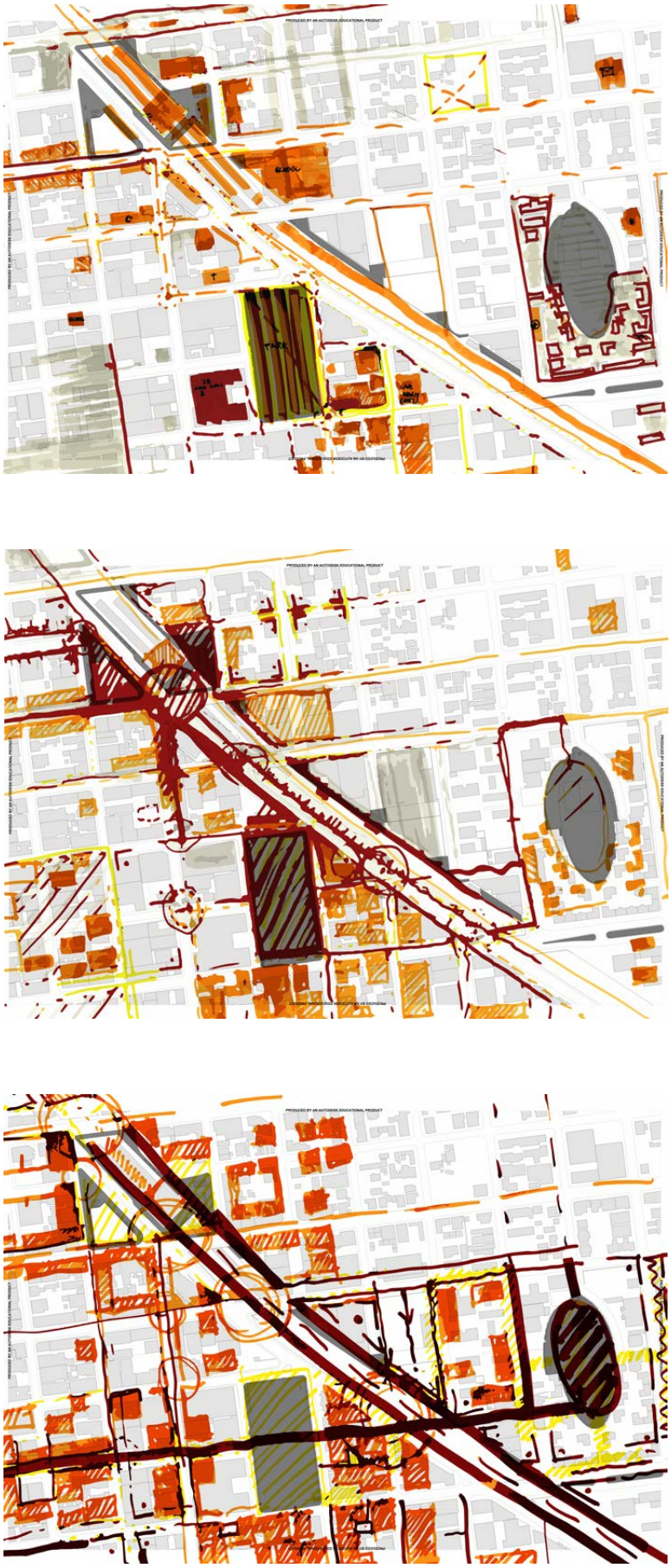


Figure 1.8. Conceptual site development plans, (A Prospect Ritual, 2014)

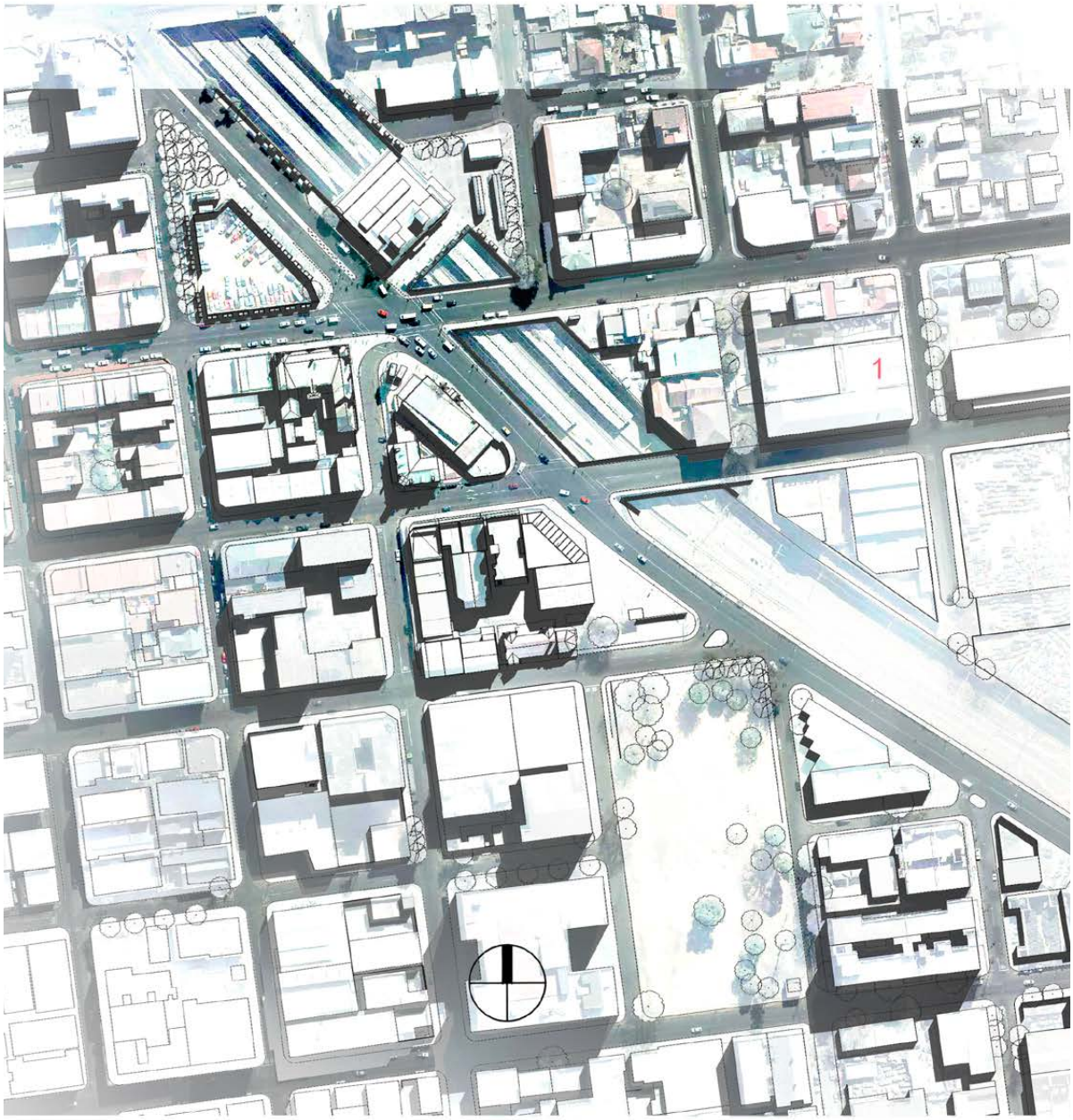


Figure 1.9. Site map, (Author, 2014)

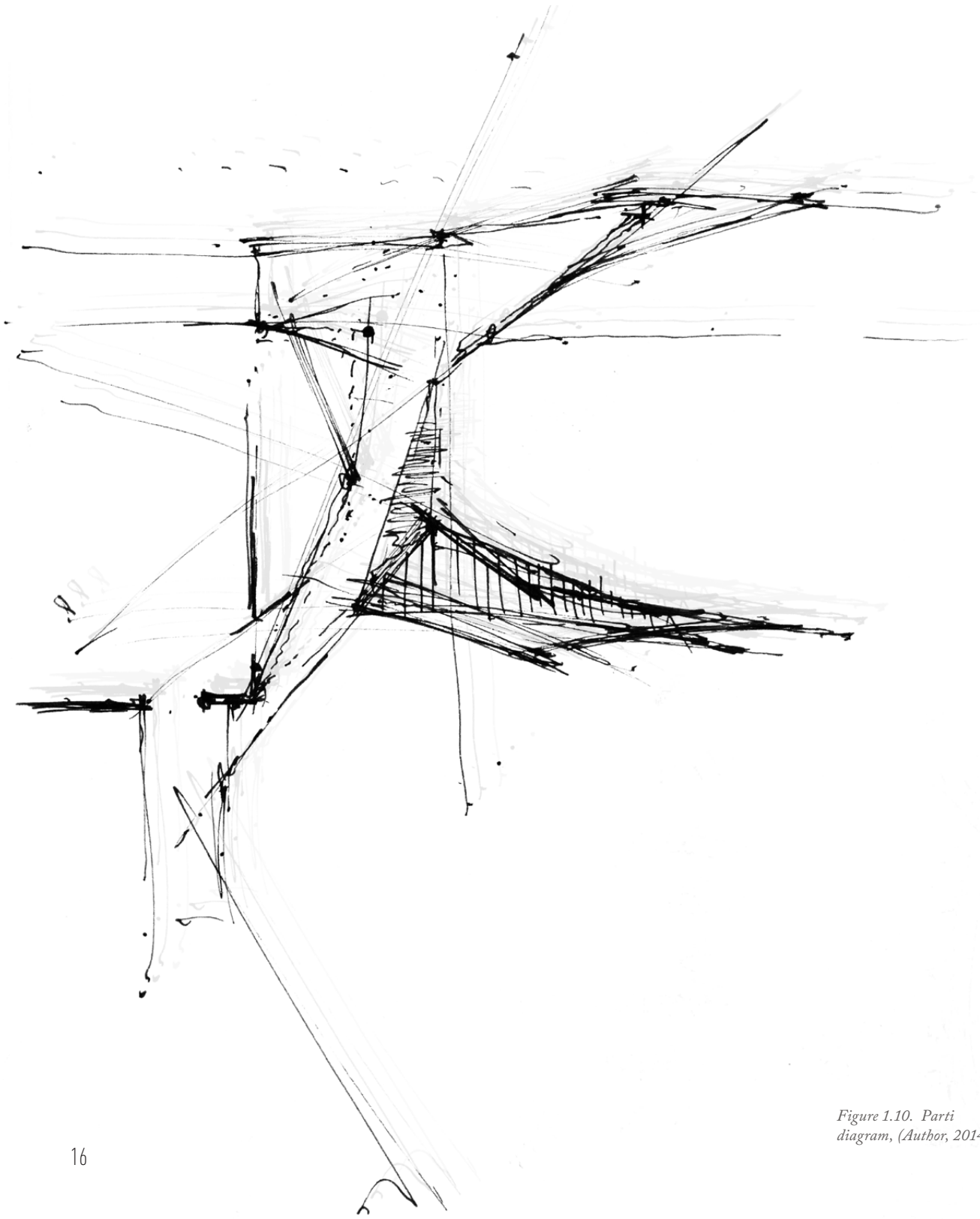


Figure 1.10. Parti diagram, (Author, 2014)

"Those who despise ritual, even at its most magical, are cherishing in the name of reason a very irrational concept of communication"
(Douglas M 1999:26)

Definitions

Ritual:
a formal and symbolic behaviour that leads to the creation or recreation of an emotion in order to obtain or maintain a correct balance between persons and the world. "Formal and symbolic behaviour" speaks of the particular behaviour included in ritual.
(Douglas M 1999:24)

Reductionism:
the theory that every complex phenomenon, especially in biology or psychology, can be explained by analysing the simplest, most basic physical mechanisms that are in operation during the phenomenon.
(Merriam-Webster 2014)

Determinism(Technology):
Describes a system whose time evolution can be predicted exactly.
(Merriam-Webster 2014)

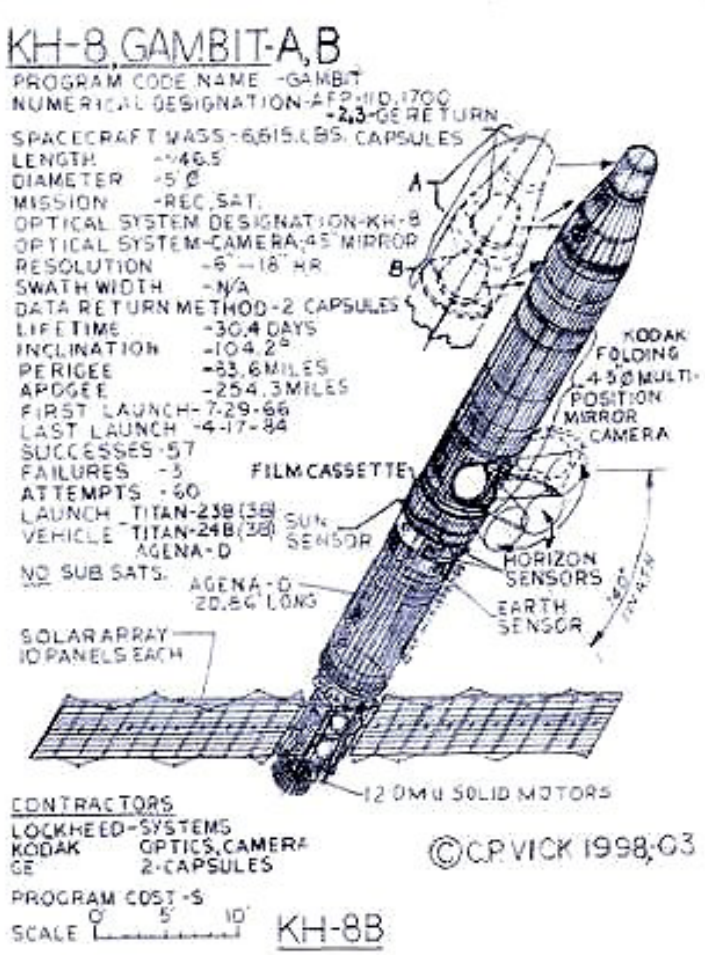


Figure 1.11. Diagram of the KH-8B spacecraft, (Wood G 2003)

Intentional growth cannot occur without inspired innovation. Contemporary architecture has whole-heartedly accepted tried-and-tested methodologies that originated in the days of yore. The foundations upon which these methodologies rest should be challenged—challenged for being arcane, and for being irrelevant in an ever-changing, emergent context.

These foundations are based on the ideals of reductionist thinking. Reductionism(Springer 2006), as a whole, is deterministic in nature; decisions are aimed at a specific executable goal, and, as a result, form closed systems. This method, with its action/reaction based planning and execution, is comparable to sending a rocket to the moon: intricate as it may be, there is but one, final and pre-determined goal in mind, which, when considering the short-lived and terminal nature of the rocket, works perfectly in accordance to its objective. Applying such methodologies to something as 'permanent' as architecture, however, seems counter-intuitive as well as illogical.

The Digesting Duck by Jacques de Vaucanson, created in 1739, was a mechanical representation of a duck capable of flapping its wings, and, allegedly, even eating, digesting and then defecating as a real duck would(Wood G 2003). This is, of course, a very crude representation of the real thing. In fact, it is but a mere representation of one function that a duck can fulfil – disguised artlessly and inexpertly as a living organism.

The end result, a defecation machine dressed up as a bird, completes this one task for which it was created without question. It never doubts whether a machine like itself is necessary, or even for whom this unique service is intended...

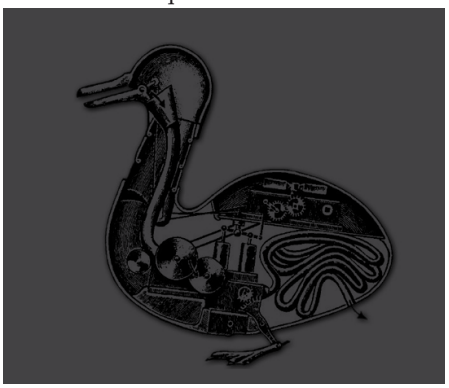


Figure 1.12. Interpreted diagram of the digesting duck, (Smarthistory 2014)

When one imagines a well-oiled city of the future, the inflexible and unresponsive impositions that are prevalent in today's way of thinking simply *do not belong.*

Architecture is not, as it is so commonly mistaken for, a function-fixed object. It neither needs, nor wants, to be filled by neat, malleable parts as if it is a machine with the imagined ability to transform its surrounds with a luminescent, internal splendour. On the contrary, architecture is an ever-moving and constantly changing organism that functions within a greater biological system. It is capable of housing functions not initially envisaged by the creator. Indeed, it is imperative that architecture be used in ways seemingly impossible when first it is bound to 'black-and-white' with incorrigible lines and Cartesian planes.

"Everybody knows—and especially architects, of course—that a building is not a static object but a moving project, and that even once it is has been built, it ages, it is transformed by its users, modified by all of what happens inside and out side, and that it will pass or be renovated, adulterated and transformed beyond recognition." (La Tour 2006,p80)

The South African public, in particular, is complex beyond full comprehension. Specifically referring to, but not limited to, the study area relevant to this project refer to A prospect ritual V1(pp26-35). Due to a vast cultural diversity, combined with various historic milestones that has led up to current conditions, these complexities manifest in building forms and typologies that would seem esoteric to any outsider.

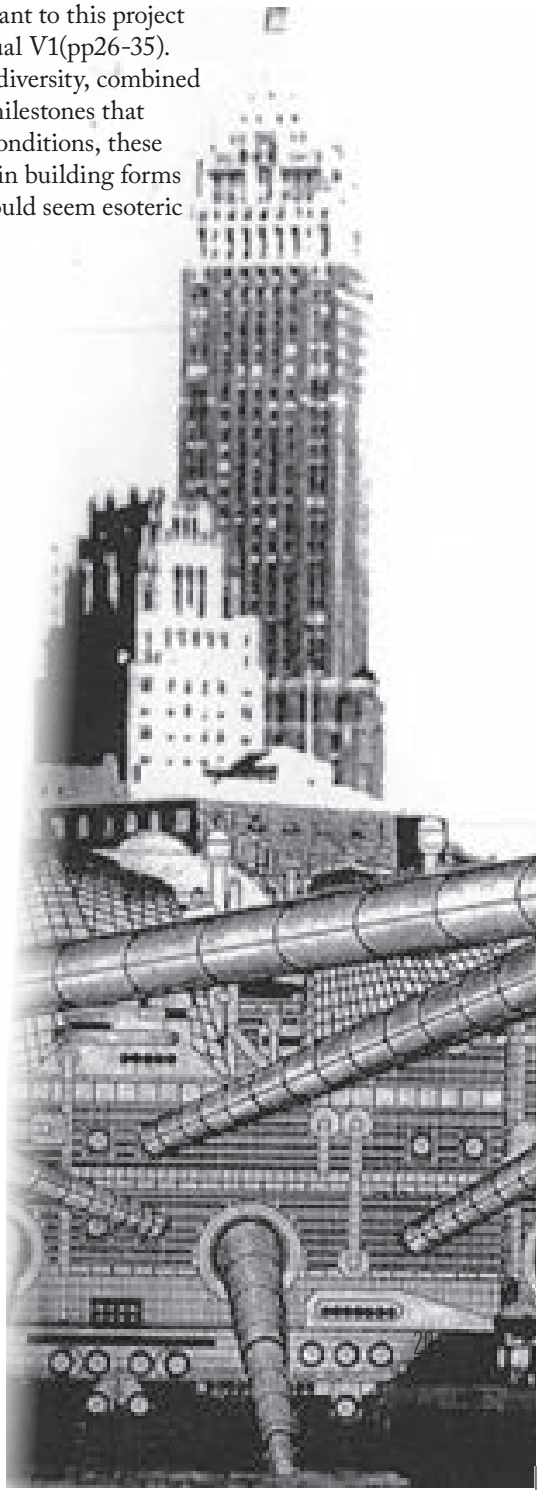
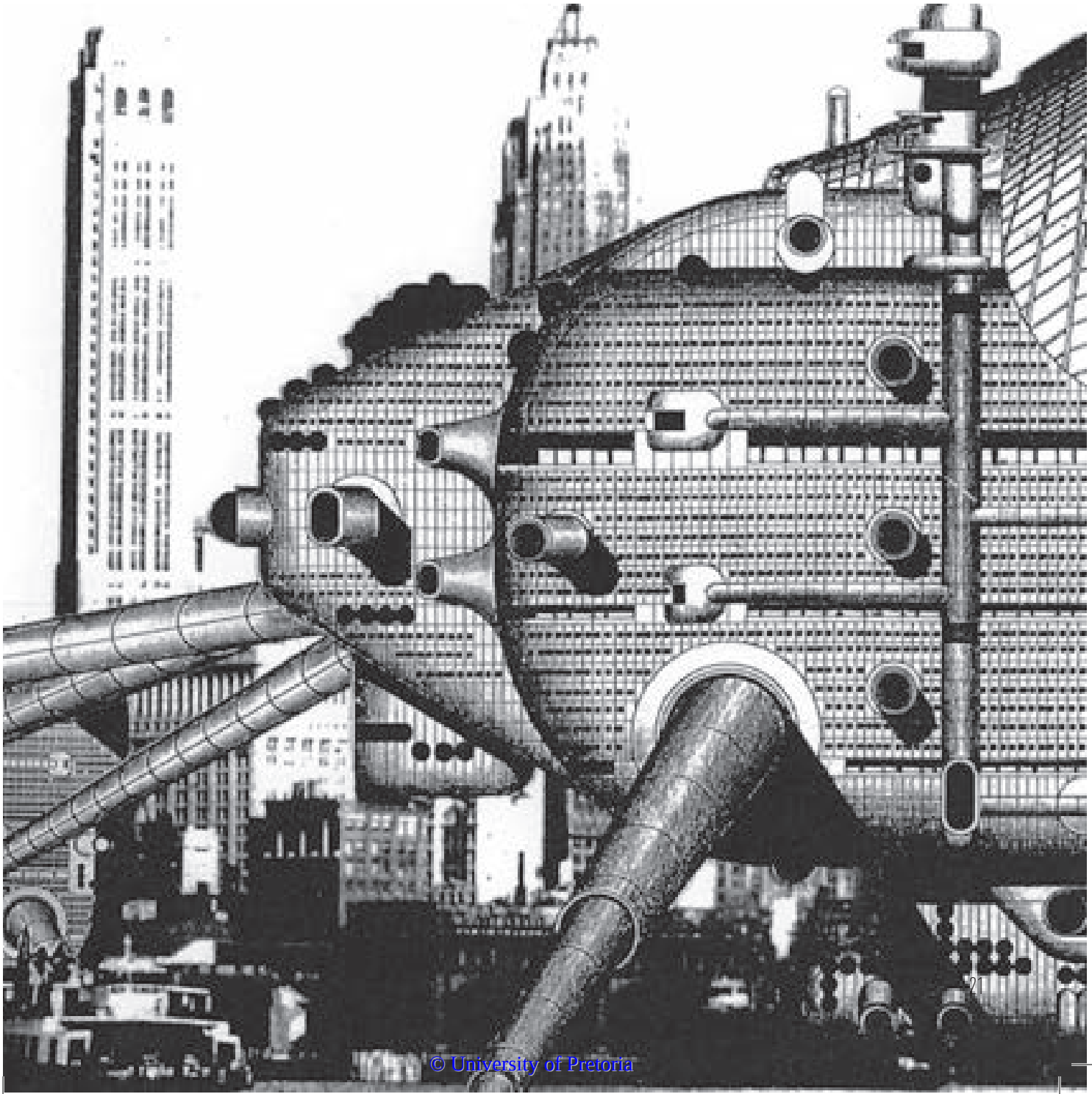


Figure 1.13. Illustration of Ron Herron's Walking city (Sadler S 2005)

"Space is neither absolute, relative or relational in itself, but it can become one or all simultaneously depending on the circumstances. The problem of the proper conceptualization of space is resolved through human practice with respect to it"
(Harvey D P125-126)



contrasting **PHILOSOPHIES**

Raphael's famous fresco, 'The school of Athens'(Fig. 1.14), depicts that the disagreement revolving around whether or not objective knowledge could ever be truly obtained, reaches as far back as classical philosophy (Smarthistory 2014). In the depiction, Aristotle, extending his arm with the palm of his hand looking to the ground, symbolises his philosophical ideal that the world can be understood as a rational, rule-based realm where all knowledge can be obtained through the application of human knowledge. In contrast, Plato, pointing to the sky, is symbolic of the eternal, ethereal universe – one in which not everything can be understood via human perception and analysis...

In accordance to Aristotle's philosophical ideal above, Descartes, the French Philosopher and great rationalist, proclaimed that all knowledge can be explained and acquired through deductions and certainties; that knowledge is obtainable through distillation of gathered information. (Marenbon J 2007)

In contrast, both phenomenalism (the doctrine that human knowledge is confined to or founded on the realities or appearances presented to the senses) and empiricism (the theory that all knowledge is derived from sense-experience), focus on knowledge gained through sensory experience. Together they collectively iterate the importance of evidence gained through sensory observation above forming assumptions based purely on innate ideas or tradition.

Empiricism and phenomenalism maintain that "knowledge is based on experience" and that "knowledge is tentative and probabilistic, subject to continued revision and falsification." Based on these epistemological tenets, it can be deduced that sensory experience creates knowledge.

Yet, the very existence of above-mentioned approaches (Aristotle, Descartes, empiricism/phenomenalism) relies, peremptorily, on the notion that knowledge is equivalent to objective fact; that subjectivity can either be overcome through the application of compiled information, or be celebrated by allowing the interweaving of various truths within a definable parameter.

Bruno Latour, the French philosopher and sociologist, states that there is only one kind of knowledge, and that it is truly objective in nature. Moreover, he claims that all knowledge is relative, meaning that it is subject to relations between different objects. Latour states that there is no advantage to be gained from associating knowledge with truth. In his opinion, the goal of science is to produce objectivity; but objectivity cannot produce poetry, law or a good life(UiB 2013).

'Habit of seeing opposites: The general imprecise way of observing sees everywhere in nature opposites (as e.g., "warm and cold") where there are, not opposites, but differences in degree. This bad habit has led us into wanting to comprehend and analyse the inner world, too, the spirit-moral world, in terms of such opposites. An unspeakable amount of painfulness, arrogance, harshness, estrangement, frigidity has entered into human feelings because we think we see opposites instead of transitions.'.
(Nietzsche F 1996)

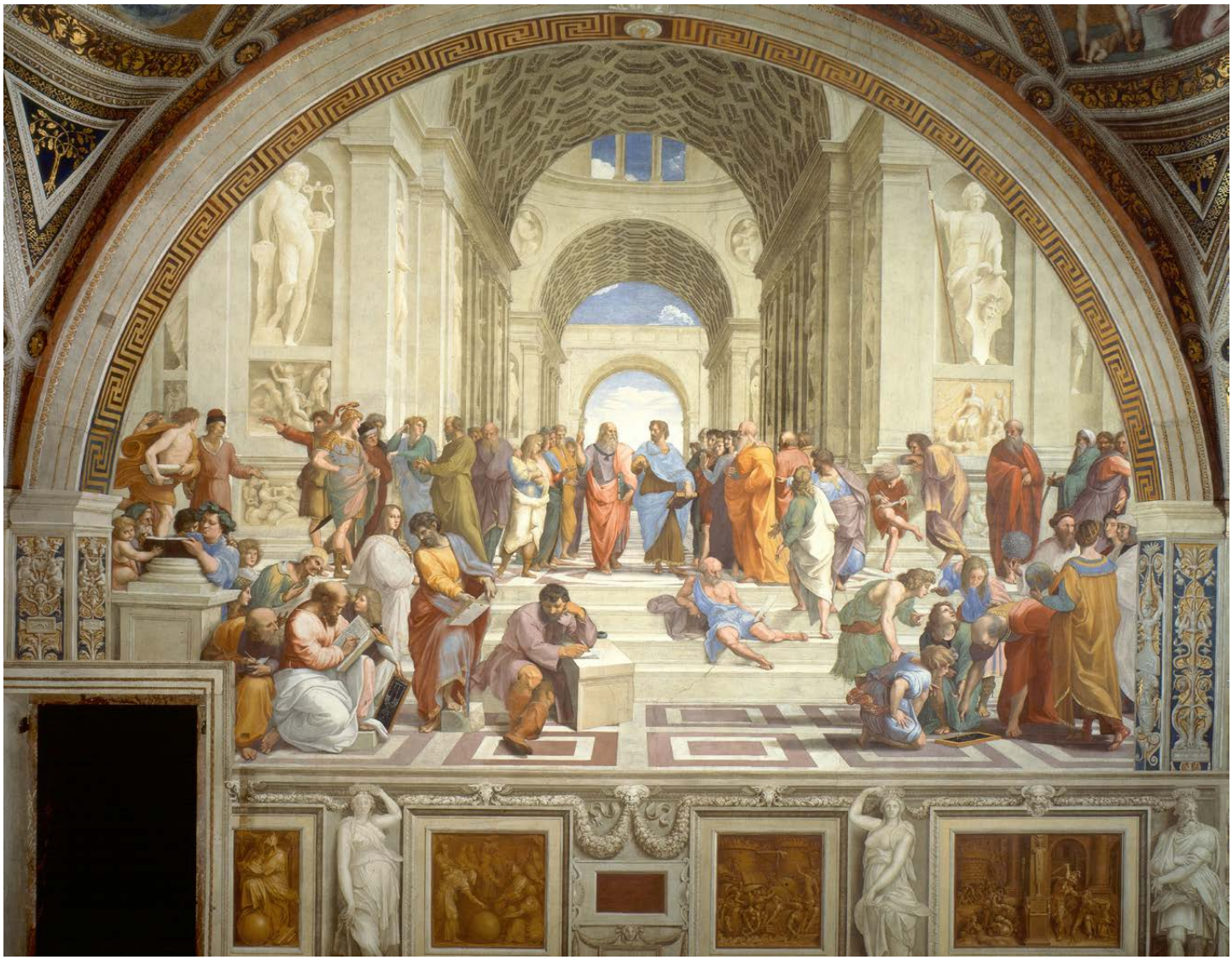


Figure 1.14. Schoolof Athens, by Raphael (Smarthistory 2014)

When considering contemporary architecture, that which remains unaddressed, forgotten or ignored, is the element of the 'unseen'. Human practice tends to be interwoven with the same ideals and principles as science and mathematics. It is measured on a scale of black-and-white, right-and-wrong, and 'cause-and-effect'. In a scientific experiment conducted to determine whether light moves in waves or particles, it was found that both were true, depending on which experiment was used. When these Newtonian set-principles were (and are) employed to the 'sub-atomic-ethereal'—the beautifully mind-boggling world of quantum physics—expected results remain inconsistent and contradictory (Clauser F J 1974:853-860).
Applying what we know to that which we do not is, therefore, ineffective.
Similarly, when pre-determined outcomes are used, definitively, to force structure upon that which has no structure, the Newtonian can easily become Orwellian...
Building on Mary Douglas's explanation of symbols as relational constructs within nature—more specifically, human nature—it can be understood that social differences exist only in relation to each other, and that these differences that occur define the body of cultural elements within a public sphere. Symbolic actions are thusly interpreted differently from one culture to the next.

Douglas argues that the different perceptions we have of cultural function, the understanding of an action either relating to a social norm, or a symbolic action, is all linked to experience obtained from the constructs within a given society.

Consider the act of suicide, the Japanese act of 'Seppuku', as depicted in figure 1.15, is seen as the last action a person can fulfil to redeem himself after committing an act of great dishonour(Musashi, 1993).

Figure 1.15. Illustration of a person commencing in the act of Sepuku, (Musashi M 1993)

Sacraments
Taboo

"Nature is known through symbols(a construction upon experience), and a symbol only carries meaning through its relationship with/ relation to other symbols in a pattern." (Douglas M 1996).

Contrary to this view, the Catholic stance on suicide is much different, if an individual would attempt to take his/ her own life, it is considered sacrilege- and there is considered no redemption for committing such an act. Figure 1.16 illustrates Judas Iscariot preparing to hang himself after his betrayal of Jesus, which is described in the bible as a sin against God.

This is then where the full aim of this dissertation lies; in the investigation of cultural diversity beyond the constraints of articulation. Through looking past comparative conclusion in hopes of illuminating the inherent meaning of cultural symbols that act in patterns through architectural signification of what is relational.

Magic
Sin

Figure 1.16. Depiction of Judas Iscariot committing suicide, (Smarthistory 2014)

02

INSTRUMENTS FOR DISSECTION: THE **CONTEXT**

Definition:

Pirate utopia:
Pirate enclaves, as described by Peter Lamborn Wilson(Pirate Utopias: Moorish Corsairs & European Renegadoes,)were early forms of autonomous societies in that they operated beyond the reach of governments and embraced a temporary state of unrestricted freedom, where a form of self-governance existed within these communities.
(Bey H 2014)

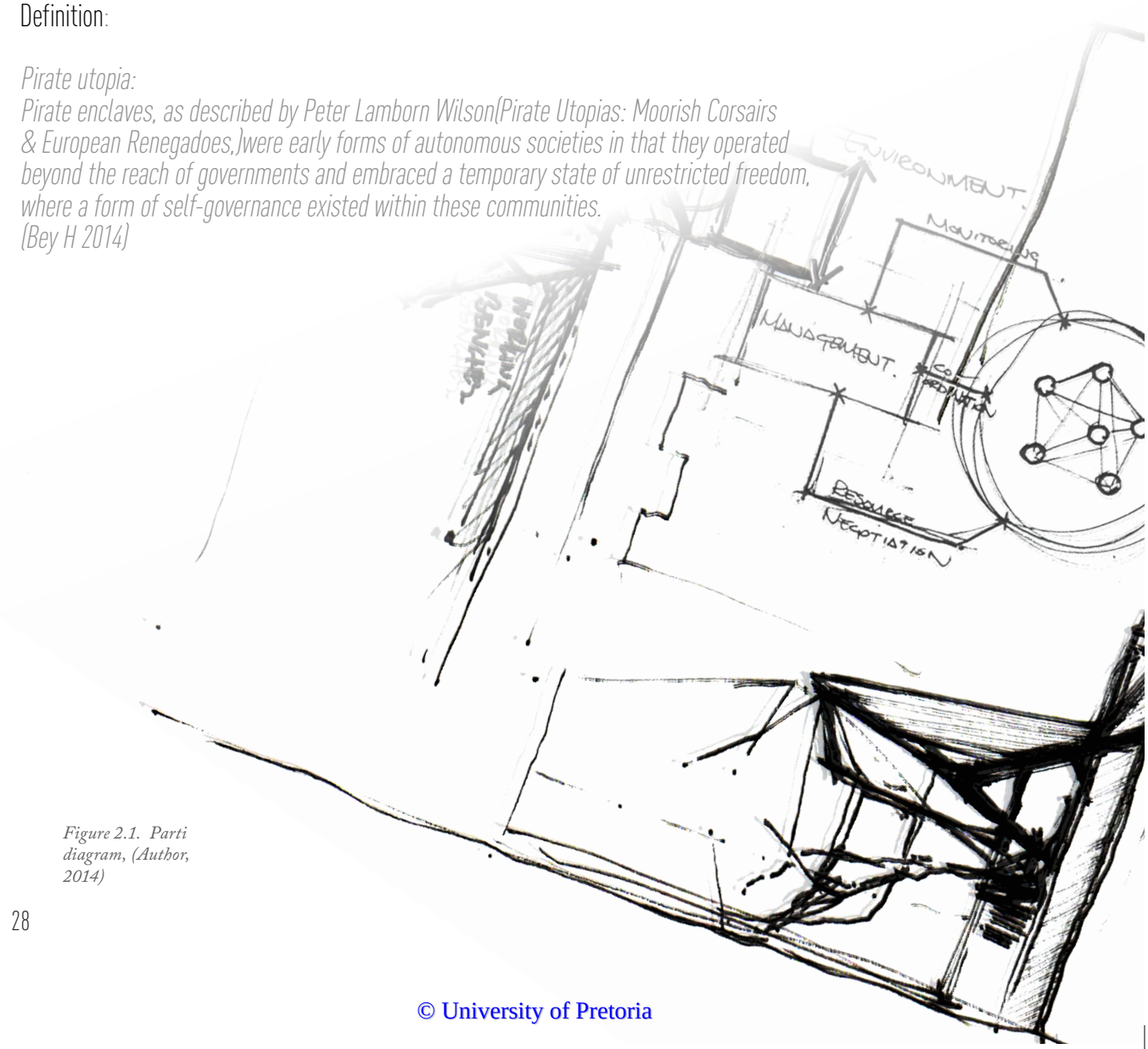
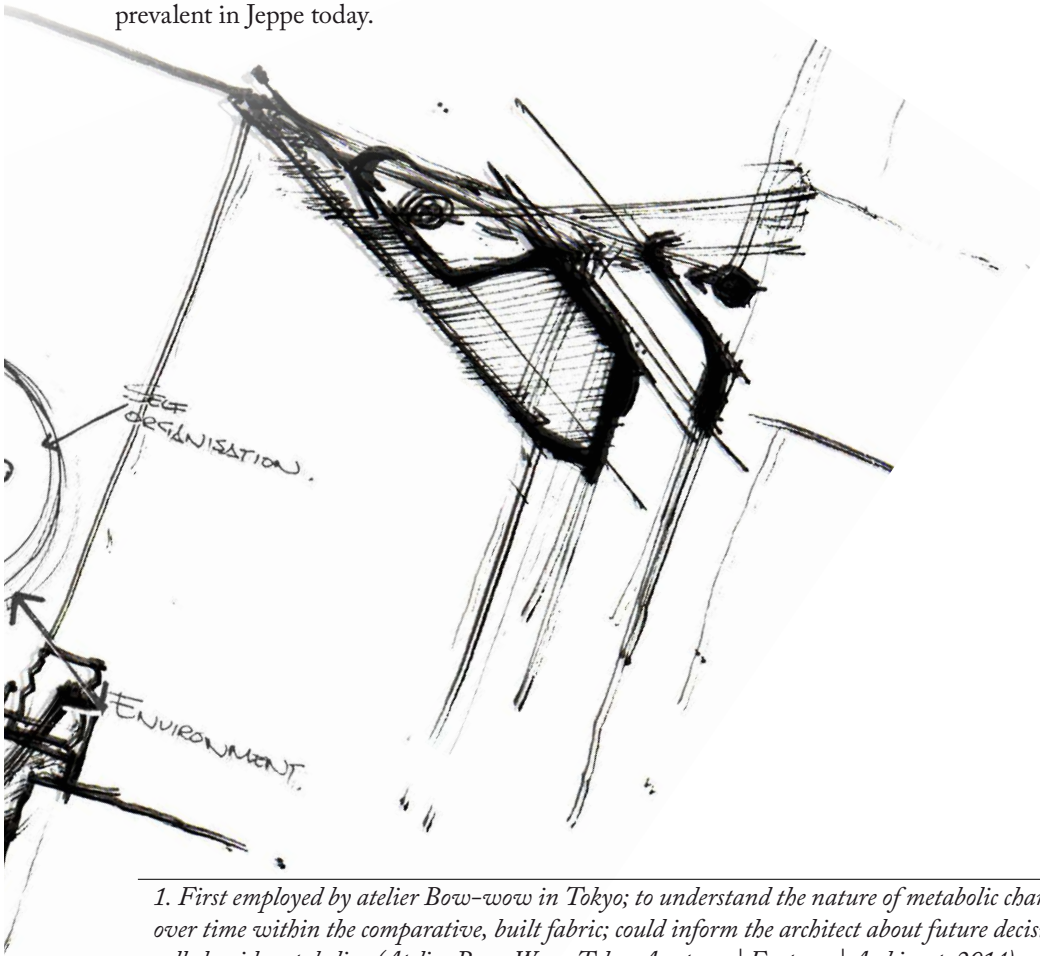


Figure 2.1. Parti diagram, (Author, 2014)

"So--Revolution is closed, but insurgency is open. For the time being we concentrate our force on temporary "power surges," avoiding all entanglements with "permanent solutions."(Bey H 2014)

Jeppestown exists free from the constraints of imposed western traditions and the consequent conventions thereof. This eastern outcropping of Johannesburg CBD, which once stood prominently as an industrial powerhouse, now hosts new functions that seem queer when juxtaposed to the physical articulation the existing structures carry. Refer to V1, A Prospect ritual(pp. 7, 37, 46-53, 58-61) for an in-depth analysis of the conditions prevalent in Jeppe today.

To clarify the condition, and also the methodology, that brought on this conclusion, the application of a theoretical approach[1] was examined and altered to suit South African conditions. This would subsequently serve as a catalyst to gain greater insight into the nature of the existing fabric of Jeppestown.



1. First employed by atelier Bow-wow in Tokyo; to understand the nature of metabolic change over time within the comparative, built fabric; could inform the architect about future decisions; called void metabolism(Atelier Bow-Wow: Tokyo Anatomy | Features | Archinect. 2014)

re-generative **METABOLISM**

The urban formula known as Void metabolism focuses on the void spaces that develop between buildings when they are restructured or rebuilt. Small houses in Tokyo, for instance, cover the land with greenery inserted in between the gaps. With privately owned properties, this is a highly sustainable urban approach which regenerates itself. It can be considered a type of metabolism, despite it being quite different in content comparative to the 1960s architectural thought – an era in which concepts focussed on the composition of the vertical core. It can be observed that architects of the day believed that the construction of the city would be carried out efficaciously through a concentration of power and capital; however, the regeneration of houses do not revolve around a core; on the contrary, regeneration of houses revolve around a void—the gap space between buildings. This would be determined by the initiatives of individual families, rather than the accumulation of central capital (Atelier Bow Wow, 2007).

If indeed the urban formula of void metabolism finds its' origins within the initial era of Tokyo's first developments (1920s), then the oldest parts are already 90 years old. In theory, then, it can be said that houses in the original areas, with a 26 year lifespan, have regenerated twice over. There are, of course, differences in lifespan, so today's situation can be said to include a mixture of first, second and third generation buildings. With this conclusion in mind one becomes quite aware of the variety of building behaviours and how they reflect the generational differences. Houses which are produced now are a part of the fourth generation, determined by the realities of void metabolism (Atelier Bow Wow, 2007).

Atelier Bow-Wow suggests that a deduction can be made from this study: --- this study method then prompts what should the next generation be? Now that there is an understanding of the relation/ void that exists within the complex fabric and the effects that they have.

Through understanding the main principles of what is suggested by 'void metabolism' as a concept, and interpreting/integrating the method to suit the context of Jeppestown, it becomes possible to categorise the built-fabric found in the chosen study area – within specific generations regarding time and ethos(a Prospect Ritual pp. 32-37). The most important generation, however, is the final/existing one; this is due to the fact that it encompasses all other generations. The insurgent generation adapts the physical fabric of every other generation and transforms/mutates its structure to suit the needs of

"Space is neither absolute, relative or relational in itself, but it can become one or all simultaneously depending on the circumstances. The problem of the proper conceptualization of space is resolved through human practice with respect to it"
(D. Harvey 1998)

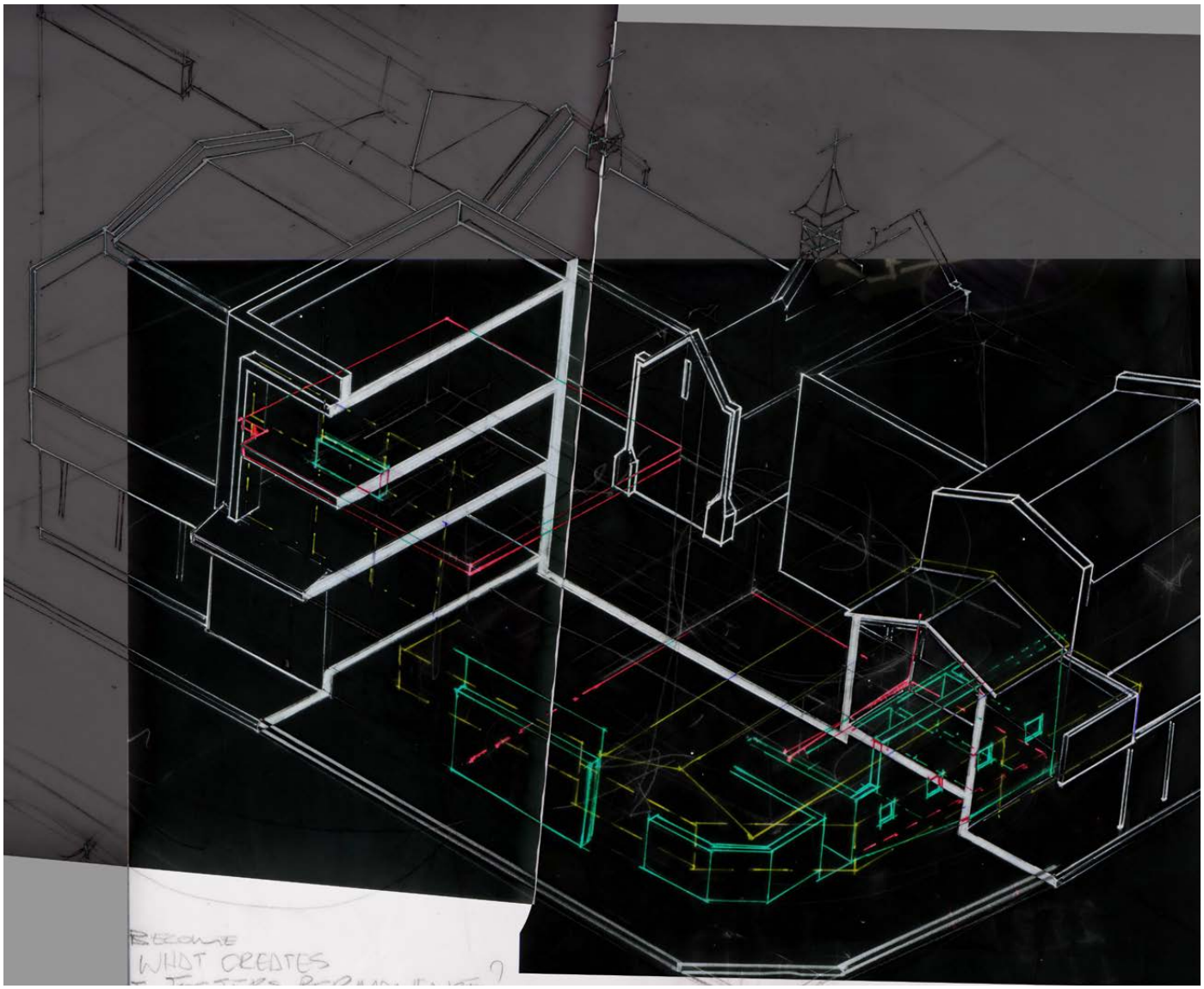


Figure 2.2. Axonometric exploration of adapted built fabric, (Author, 2014)

To illustrate this concept, diagrams, plans and sections were drawn up—elaborating on original generation/date/use—then overlaid with new drawings that indicate the degree to which the last generation has altered the built-material that existed before(See fig. 2.2). First, building archetypes were defined as a base for further analysis to proceed. These archetypes, although diagrammatic, serve to highlight differentiations of spatial occurrences between generations as illustrated in fig. 2.3 & 2.4.
The primary drive for the mapping of these primordial occurrences are influenced by Carl Jung's theory on archetypes. The motivation behind basing the analysis on theories derived from psychology is to strengthen the relation between that which is seen as the physical (material) aspects of existence, and the social (metaphysical) aspects of human interaction. Drawing these two (seemingly) opposing elements into a relational analysis blurs the perceived roles of these characters and opens space for the two becoming directly related.

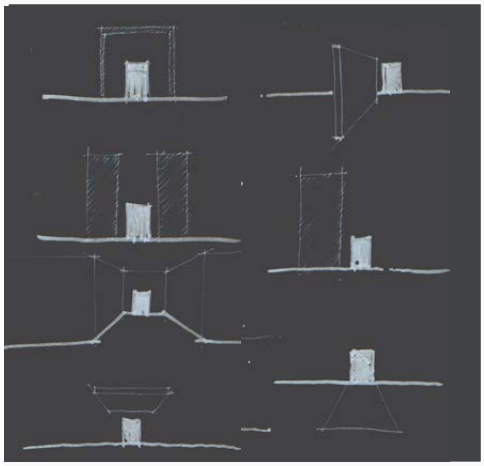


Figure 2.3. Architectural archetypes of spatial elements, surfaces and entrances, (Author, 2014)

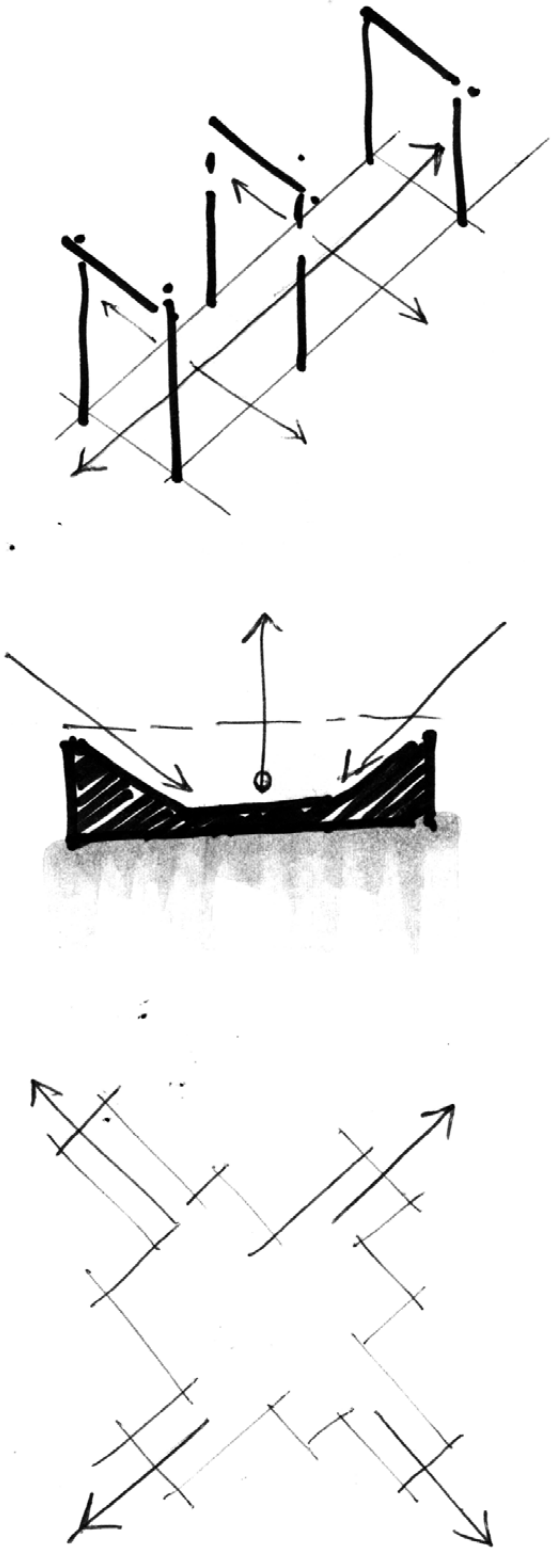
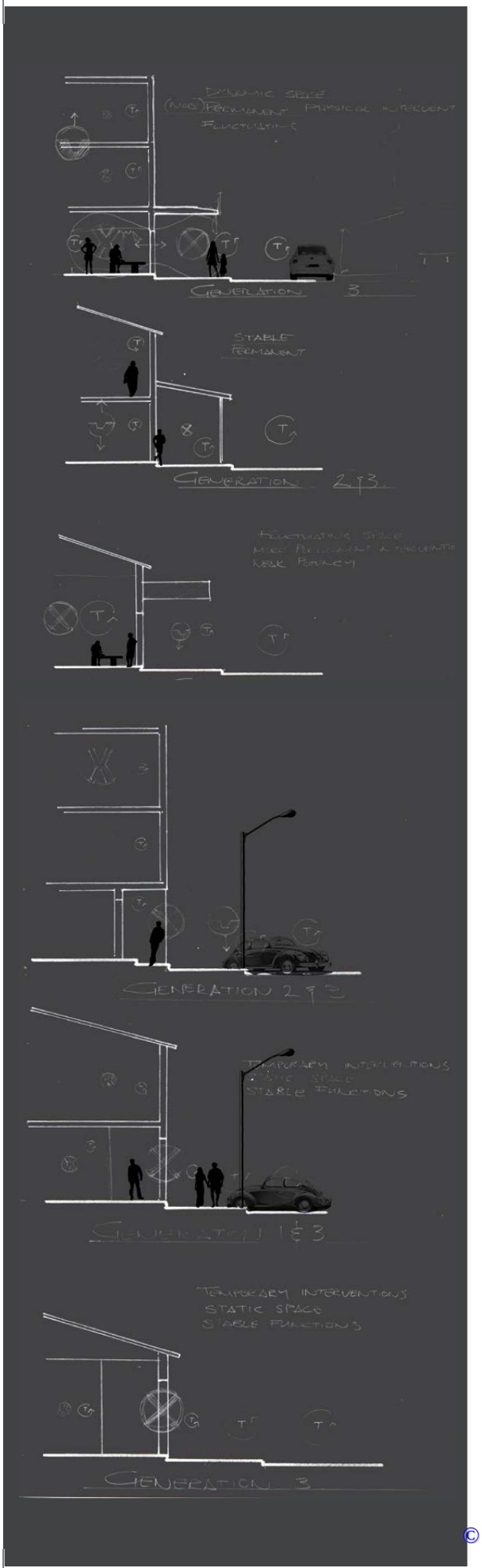


Figure 2.4. Architectural archetypes of spatial elements, steriotomic and tectonic floor-surfaces (Author, 2014)



Relating these fundamental archetypes to building typologies specifically prevalent Jeppestown(A Prospect Ritual pp.14-25) , preliminary studies were done about the relationship of typologies to social functions. To start with, all the buildings that form part of the analysis were tabled according to the generation(A Prospect Ritual pp.30-37) they fit into according to the predetermined time-line. Diagrammatic sections of the primary typological and spatial were drawn up, and the primary uses of the building then indicated as seen in figure 2.5. The uses were then analysed according to the three lenses used throughout the contextual mapping(A Prospect Ritual pp.6-10) and comparatively analysed.

Preliminary regulatory assumptions were drawn from the broader study, as shown in image 2.5, to inform spatial decisions of any new intervention that could occur.

Preliminary assumptions:

1. Early generations of buildings within Jeppestown are less likely to undergo severe spatial or surface changes.
2. Gen1 buildings with a specific intended function(not mixed use) are more likely to be abandoned than altered
3. Buildings that provide a covered entrance and street facade has a higher level of negotiation of territory, and a higher presence of humans.
3. Gen3 buildings(Industrial buildings) are most susceptible to be altered spatially. Large open internal spaces are usually broken down into subdivided partitions.
4. Gen3 Buildings subject to spatial alterations for the purpose of insurgent housing have little negotiated territories that arise on the streetscape, creating a lifeless pedestrian route.

Figure 2.5. Generation mapping of buildings based on architectural archetypes, (Author, 2014)

The mapping of these changed functions (and new configurations) not only translate how space is formed, but also highlights how function is articulated—through negotiated territories(A Prospect Ritual pp.8) rather than static matter—in a manner that is not yet recognised, architecturally, as an entity that can inform spaces and give definition to streetscapes on a social level.
The argument that thusly follows is: within a space free from physical articulation and static/standardised methods of regulation, there exists a heightened level of social interaction that is reliant on the premise of negotiation of territory. Ritualistic 'ties' and 'practices' create the current which conducts the directed energies of the society.
It would then, by concluding from this statement, be absolutely imperative to gain a deeper—and objectively unbiased—understanding of the spectrum that makes-up the social fabric of Jeppestown.

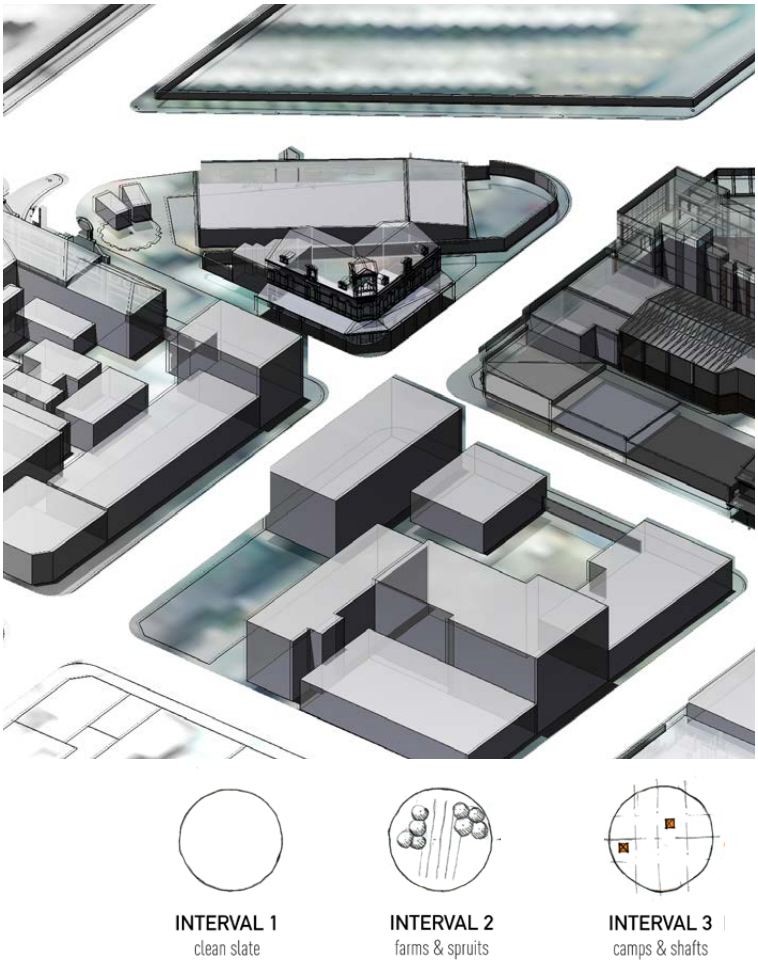
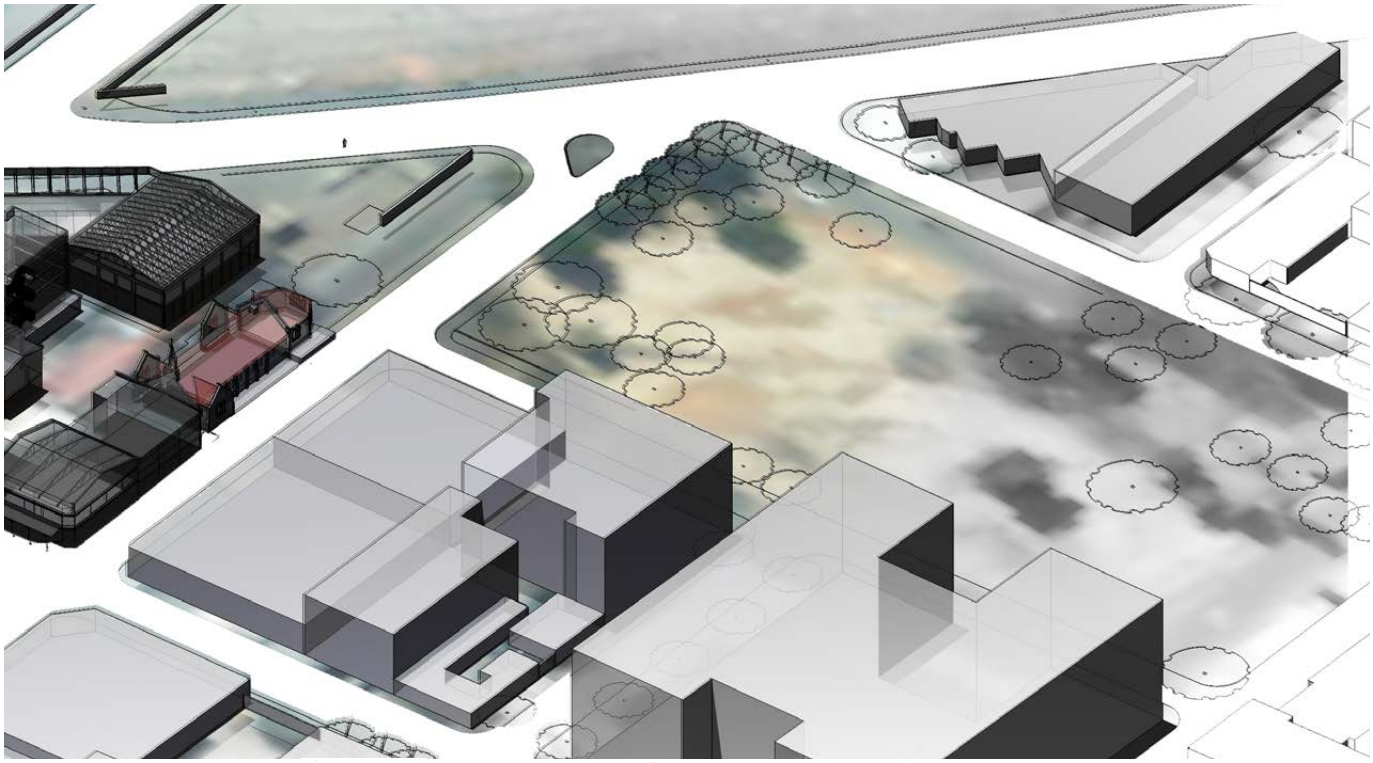


Figure 2.6. Axonometric site plan with immediate context, (Author, 2014)

Figure 2.8. Photographs of buildings and activities on site, (Author, 2014)

Figure 2.7. Diagrammatic representations of past generations of Jeppestown, (Author, 2014)



INTERVAL 4
grid & rail

INTERVAL 5
underground pipes

INTERVAL 6
sunken railway

INTERVAL 7
industrial

INTERVAL 8
insurgency

generation II

generation III

generation IV

As stated in chapter 1, cultural differences are the essence to gauging the subjective 'right' from the subjective 'wrong'; these conflicts, in opinion, create the essence of a diverse civilisation.
So, by implementing a method first introduced by Mary Douglas(1996 :64), a social study, accompanied by a physical mapping of the information, was compiled with the specific intention of distilling the apparent disorderliness.

The basic structure of Cultural Theory is informed by two features of Mary Douglas'. Firstly there is a general account of the social-function of individual perceptions of societal dangers. Douglas maintains that the individual often associates societal harms—i.e. sickness, famine, natural calamities etc.—with conduct that infracts upon societal norms. She argues that this tendency plays a critical role in promoting certain social structures; both by permeating members of a society with aversions to subversive behaviour, and by focusing resentment and blame on those who resist such institutions.
The next prominent feature of Douglas' work is a particular account of the forms that competing structures of social organisation assume. Douglas maintains that cultural ways of life (and the respective, related outlooks) can be characterised within and across all societies at all times - along two dimensions. (Figure 2.8), from her book Natural symbols, gives a general impression on her approach of categorisation.

She labelled these dimensions as "group" and "grid". "High group" ways of life, as she called them, exhibit a high degree of collective control; whereas "low group" ways of life exhibit a much lower one, which results in an emphasis on individual, self-sufficiency. "High grid" ways of life is characterised by prominent and long-lasting forms of classification in roles and authority; whereas "low grid" ways of life reflect a more egalitarian, classless ordering.

To form a clear understanding of the groups that act within Jeppe (the ones who utilise the stage to their advantage), a mapping of the different variations of citizens acting within the confines was done, and the complex relations and cultural variations from one individual to another was revealed(fig. 2.11).

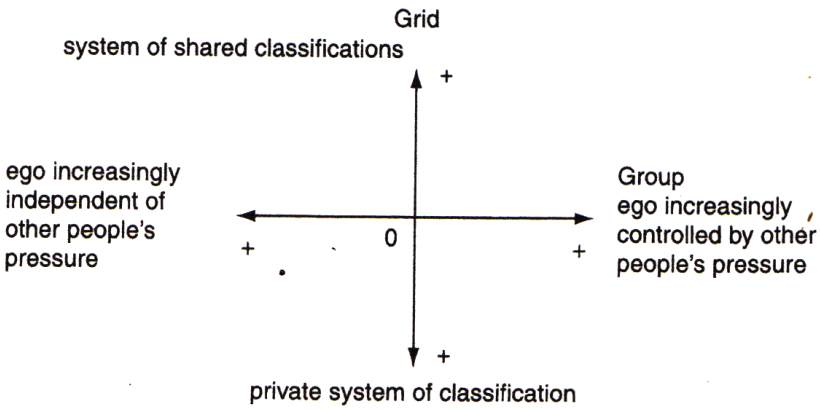


Figure 2.9. The 'group&grid' theory graph, (Douglas 1996)

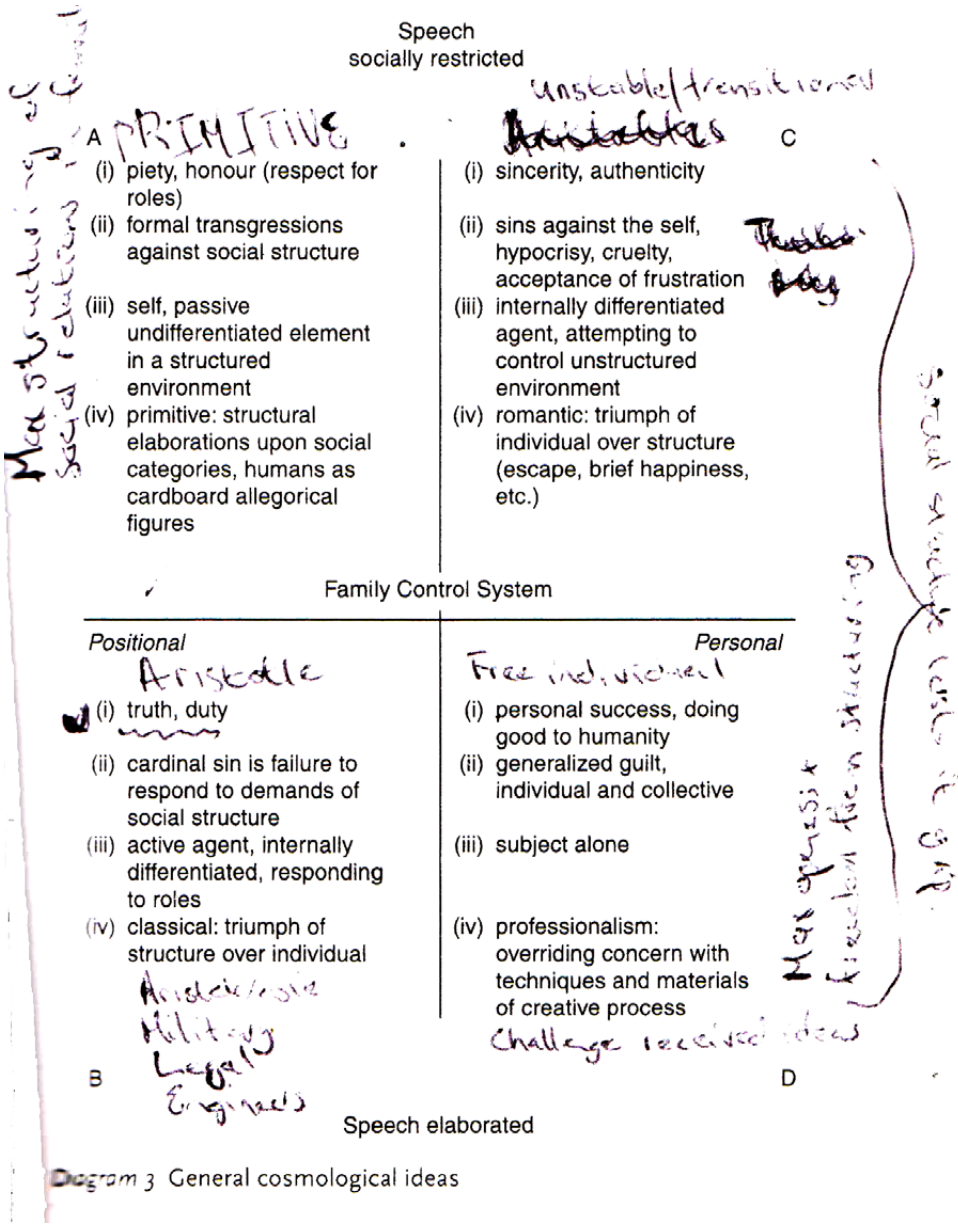
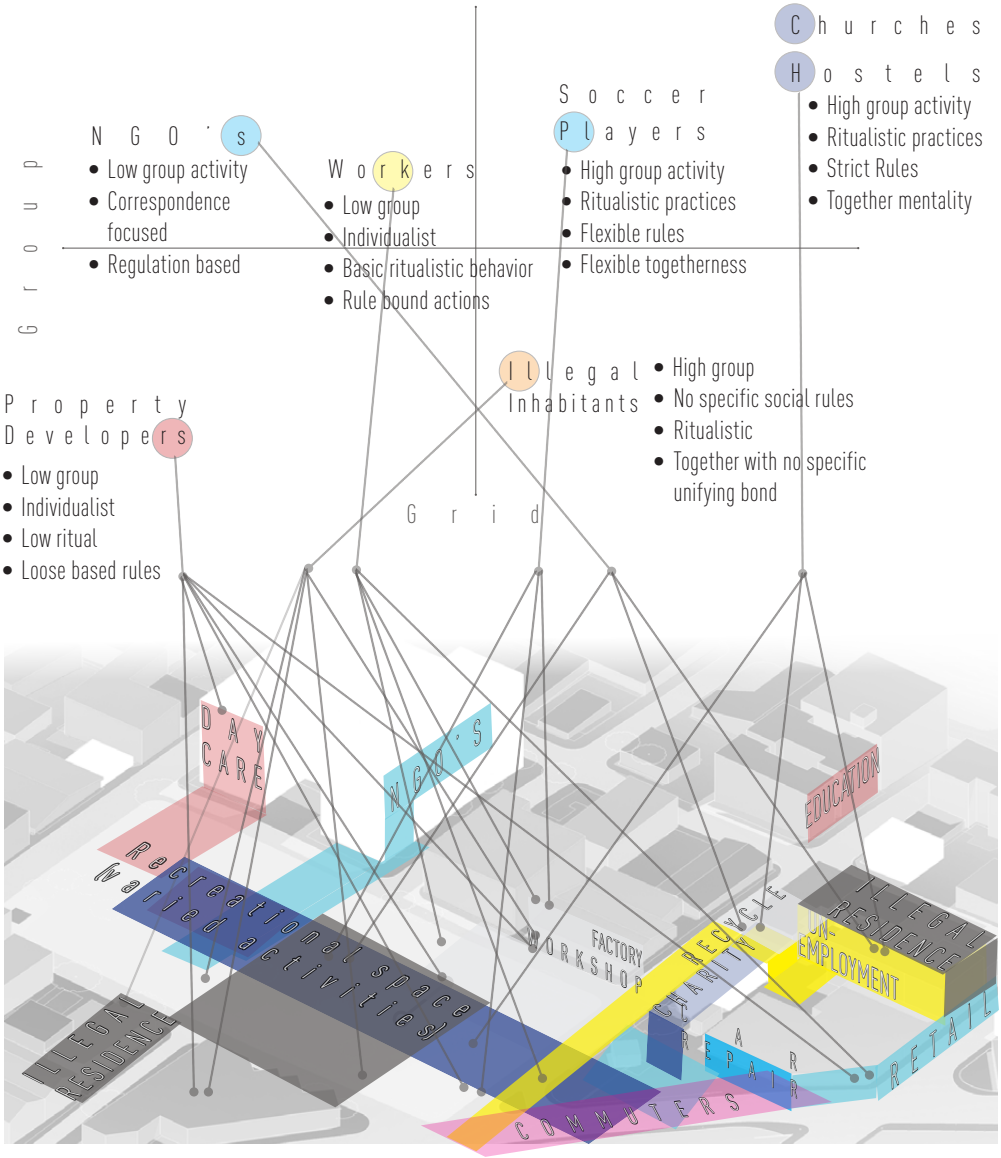
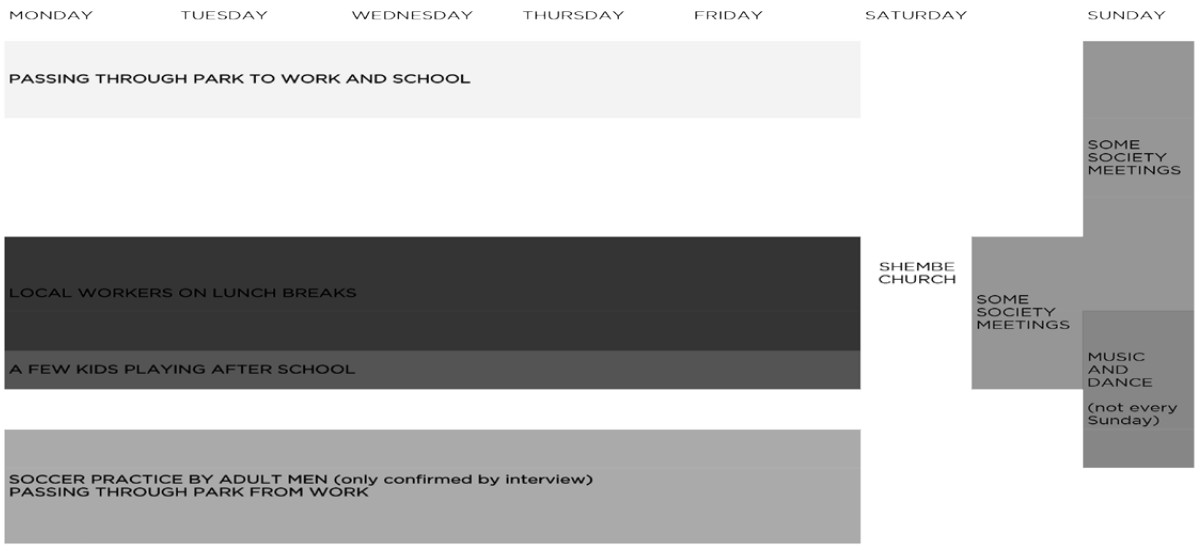


Figure 2.10. Graph illustrating M. Douglas's understanding of general cosmological ideas, (Douglas 1996)



The mapping creates an understanding of how fixed framework and function interweave with ritualistic social spaces, creating the complex and dynamic environment which is Jeppestown. Further the study identifies which groups are inclined to certain kinds of spaces and/or spatial interpretations.

Figure 2.11. Timetable of activities happening in and around Jeppe park throughout a week, (Sticky situations, 2012)



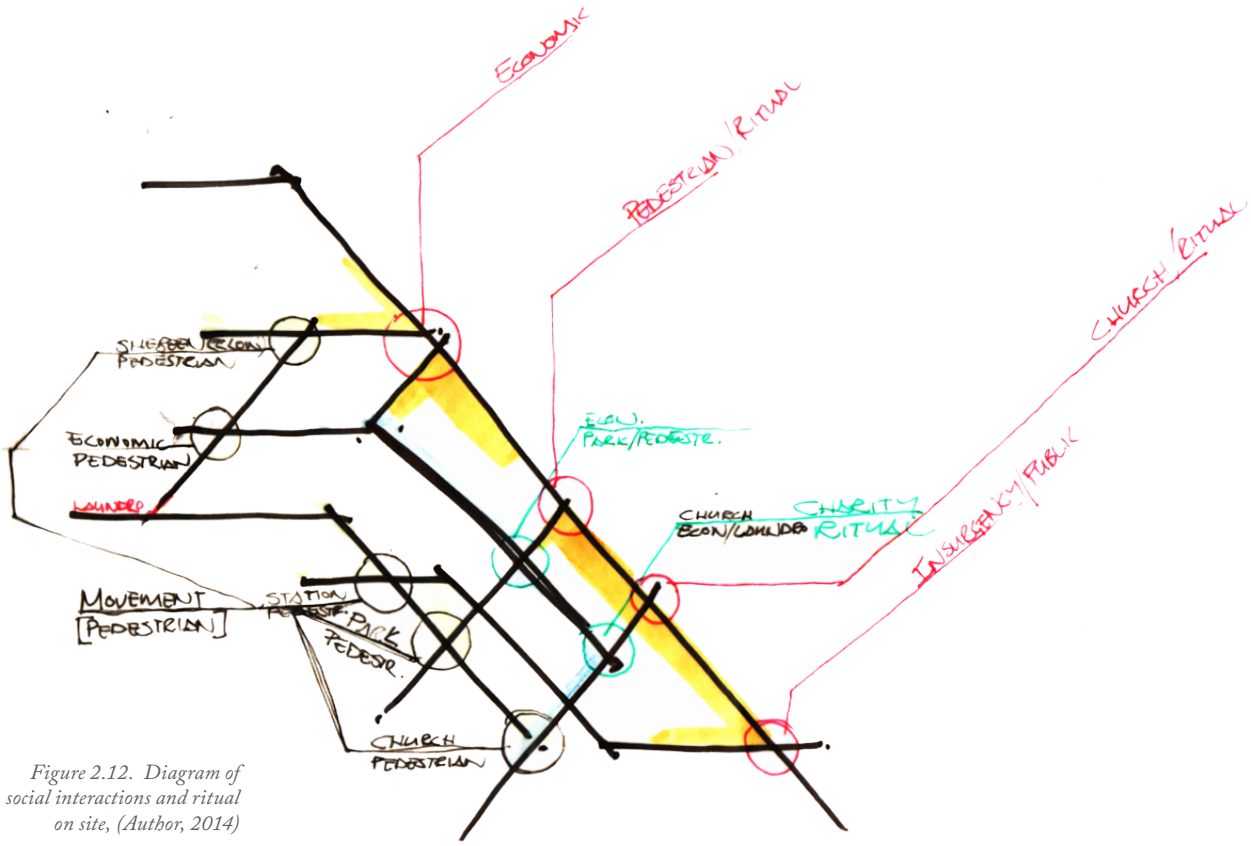


Figure 2.12. Diagram of social interactions and ritual on site, (Author, 2014)

Figure 2.13. Applied group grid graph of Jeppestown combined with axonometric site plan, (Author, 2014)

Figure 2.14. Diagrammatic representations of past generations of Jeppestown, (Author, 2014)

competing **RELATIONS**

There is a strong relation between the metabolic state of the physical fabric and fluctuating state of the social sphere. This mutual symbiosis defines the true nature of what makes Jeppestown. The one cannot exist without the other – yet neither one is in control of its counterpart. This relation can be seen as the core, the most basic interaction, from which all complexities arise, as well as where all reactions and changes in fabric (both material and social) will ultimately act as visible signifier to outside sources as signifier of the governance of this pirate state.

Again, the analysis draws from Jung's theories of psychology, specifically his explorative investigations on synchronicity, 'things that like to occur together'. The concept explains a state where events happen simultaneously but are not causally related – yet remaining meaningful.

"Matter would therefore contain the seed of spirit, and spirit the seed of matter ... the symbol has the great advantage of being able to unite heterogeneous or even incommensurable factors in a single image." (Jung C 2005:48)

It is, however, not possible to compare two related sources of information without a clear connection from which even conclusions can be drawn. In other words, there needs to be a third party. One which considers both sides equally, and can act as translator of the events that arise from these interactions and the physical impact they finally create.

The implication is then as follows: the third element—the suggested intervention in this case—will analyse the relation that exists between the materiality and the social interactivity of Jeppestown, and will aim to make it relational and physically accessible. This relational condition will be understood as the signifier of internal conditions to outside sources. Reaching a state where these conditions become relational, it is necessary to have a clear understanding of the base level of architectural interaction, the axiom of architectural engagement within Jeppestown, and for that the work of Patrik Schumacher, dealing specifically with the relevance of architectural semiotics, illuminates the importance of such an approach.

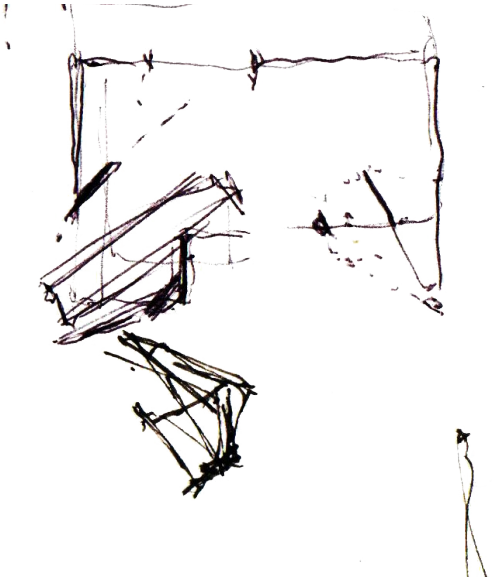


Figure 2.15. Parti diagram, (Author, 2014)

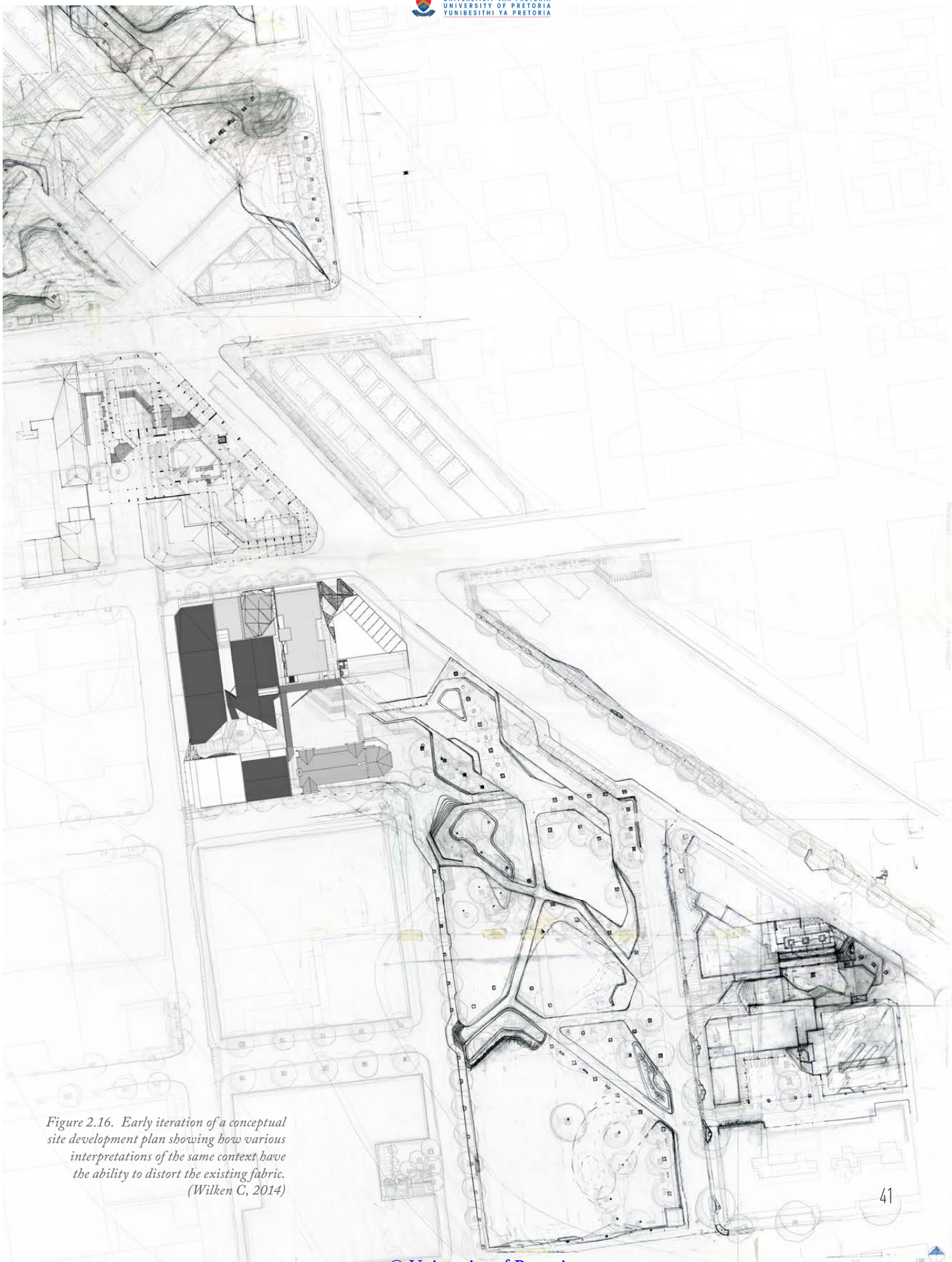


Figure 2.16. Early iteration of a conceptual site development plan showing how various interpretations of the same context have the ability to distort the existing fabric. (Wilken C, 2014)

03

CONCEPT, CONTEXT, COINCIDENCE: THE **APPROACH**

inherent **COMPLEXITIES**

Definition:

Territory:
1 area, area of land, region, enclave; country, state, land, colony, dominion, protectorate, fief, dependency, possession, jurisdiction, holding; section, turf.
(Merriam-Webster 2014)

Axiom:
a Statement or proposition that is regarded as being established, accepted, or self-evidently true.
(Merriam-Webster 2014)

signification:
The representation or conveying of meaning.
"Architecture's task, now, is to organize and articulate the societal complexity of post-industrial network society. Societal Function of architecture is the innovative organizing and framing of communicative interaction."
(TheHarvardGSD 2012)

Determinism(Philosophy):
The doctrine that all events, including human action, are ultimately determined by causes external to the will. Some philosophers have taken determinism to imply that individual human beings have no free will and cannot be held morally responsible for their actions.
(Merriam-Webster 2014)

Stochastic:
randomly determined; having a random probability distribution or pattern that may be analysed statistically but may not be predicted precisely.
(Merriam-Webster 2014)

Petri-net:
A Petri net (also known as a place/transition net or P/T net) is one of several mathematical modelling languages for the description of distributed systems. A Petri net is a directed bipartite graph, in which the nodes represent transitions (i.e. events that may occur, signified by bars) and places (i.e. conditions, signified by circles). The directed arcs describe which places are pre- and/or postconditions for which transitions (signified by arrows).
(Adam C, Reisig W 2008)

Reconfigurable manufacturing systems:
A reconfigurable manufacturing system (RMS) is one designed at the outset for rapid change in its structure, as well as its hardware and software components, in order to quickly adjust its production capacity and functionality within a part family in response to sudden market changes or intrinsic system change.
(Springer 2006)

"Architecture's task, now, is to organize and articulate the societal complexity of post-industrial network society. Societal Function of architecture is the innovative organizing and framing of communicative interaction."(TheHarvardGSD 2012)
- Patrik Schumacher

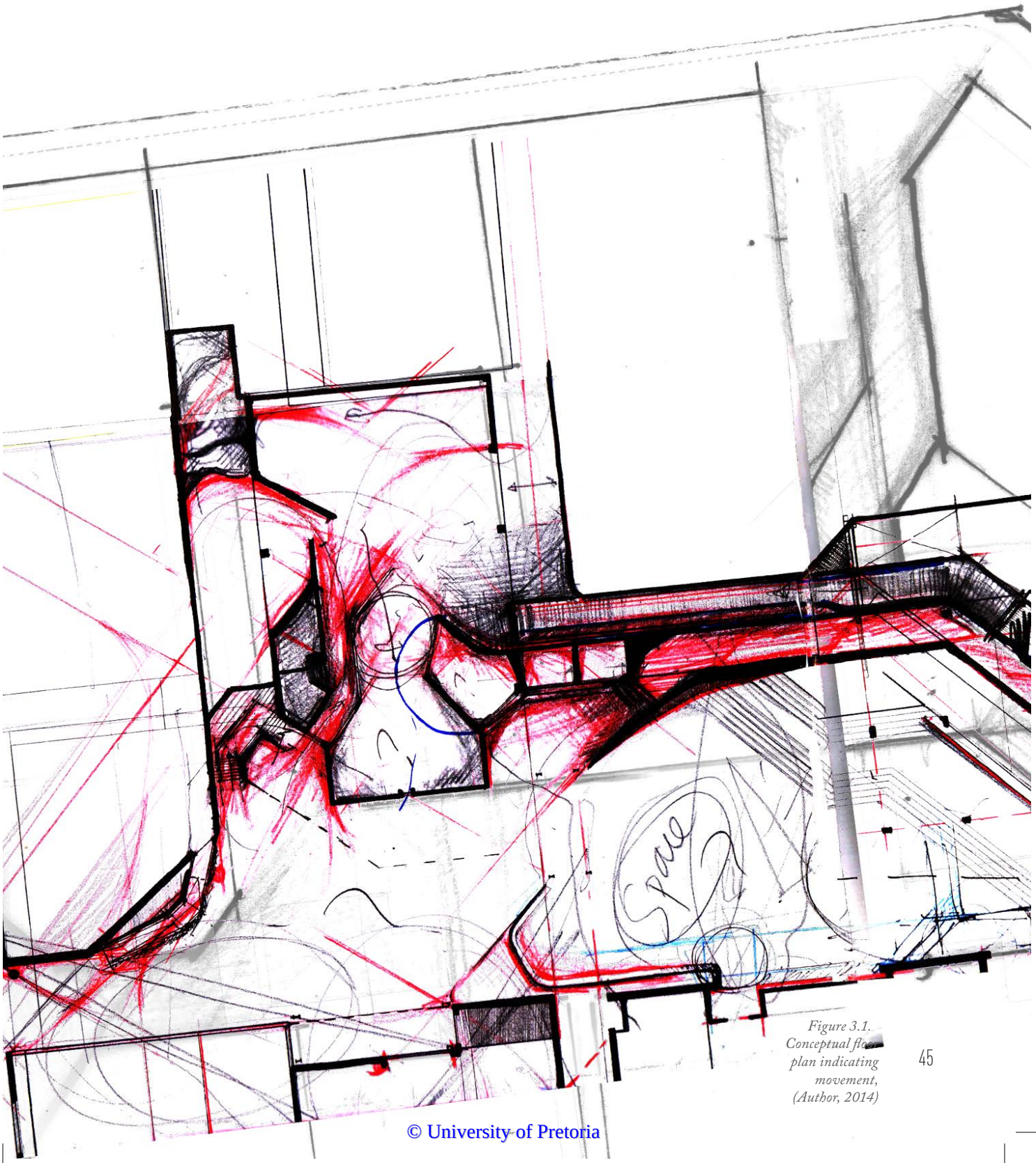


Figure 3.1. Conceptual floor plan indicating movement, (Author, 2014)

Schumacher(TheHarvardGSD 2012) claims that architectural order breaks down into:

- The organization of space; and,
- The articulation of space.

This articulated form is then either:

- A phenomenological project; or,
- A semiological project.

The meaning of the word 'sign' is its use. This is also true for the word 'territory'. The base of any architectural interaction, i.e., the axiom, would be a territory. Thus, an actor can choose to either accept(interact with) the hypothetical territory, or to reject(ignore) the territory.

The conclusion that is drawn from the argument, then, is that any given architectural sign is equal to a physical territory. Figure 3.3 shows a site plan created by Schumacher through applying these principles.

Taking this claim a step further—and also referencing back to Mary Douglas' understanding that multiple signs within nature form a symbol(M Douglas 1996:8)—it can be argued that each territory exists within a greater context defined by systems of these smaller territories. These systems are comprehendible occurrences and act as signifier of the circumstance.

The argument, however, rests on the assumption that the nature of these territories are defined; i.e., the society is seen as a non-fluctuating element within the formula.

However, this assumption cannot apply to Jeppestown (as previously stated, it is not possible to give a singular value to an emerging society composed of various groups.)

What is important from the argument, though, is that the chosen context, comprised of an indefinite amount of territories, can be defined by the ubiquitous 'architectural axiom'. By combining the theoretical analysis of the site(A prospect ritual, pp.6-10) with the three contextual explorations, a potential method of contextual intervention can be composed. The method aims to intervene within the context in a manner that will, potentially, act as a sign (for external sources to understand the complex and important nature of space-formation and social cohesion that exists within Jeppestown); without disrupting or imposing foreign contexts upon it. This method will be referred to as 'conditional amplification'.

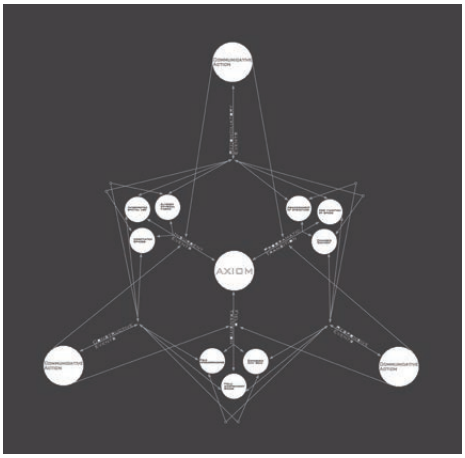


Figure 3.2.
Petri-net mapping,
(Author, 2014)

Figure 3.3. Site map created through parametric scripting, (Schumacher P, 2009)

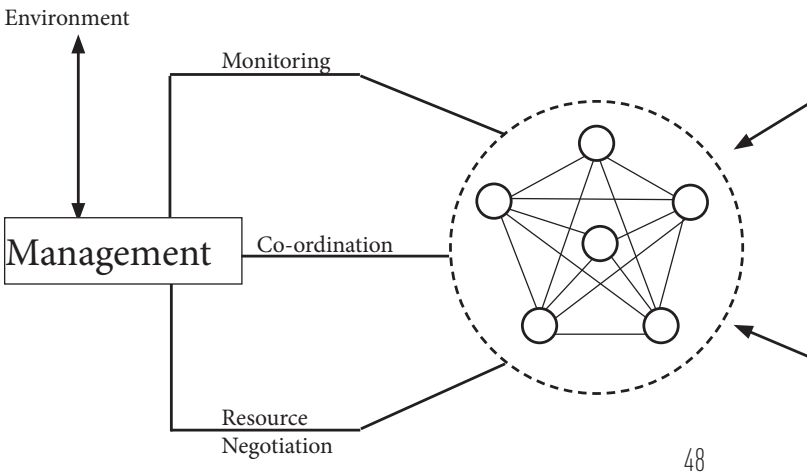
conditional **AMPLIFICATION**

By creating a Petri-net (Springer 2006) mapping of all known influences (and the acknowledgement of potential unknown sources) a relational understanding can be formed between transitional engagements with space and the formation of place. Relating the three previously mentioned studies back to one central theory, the 'axiom' exists as a fluctuating system. This system is defined by both the social interactions(GROUP GRID, chapter2, fig. 2.12) and the physical changes in the materiality of the city(GENERATION MAPPING, chapter2, fig. 2.5). The defining link between these two poles is the territory created when social function occurs within the confines of architectural form; this transitional, or impermanent, 'place' can be seen as a negotiated territory.

The equilibrium can be best understood through example: Jeppe park bears permanent engravings from the activities that happen there, from young men playing soccer to the church sermons on Saturdays as illustrated in chapter 2, figures 2.6 through 2.12, the grass is not granted to recover, it is in a permanent state of transition due to all the functions it hosts. The park is a place for people, they go there to fulfil social functions, or even just to rest. The opposite is true for the old Anglican church on site; its spaces are suited to practices from a previous collective long since absent from Jeppe. The church is almost perfectly preserved as a monument – unused, it stands looking over the crowds that gather under the shade for the Saturday church ceremony held in the park.

Conditional amplification aims to act upon the occurrence of negotiated territories through creating a larger scale platform for these events to happen. The rationale for the placement of focus on the occurrence of negotiated territory is, simply put, that it takes both poles of the axiom into equal consideration.

The intention of the intervention is to amplify existing conditions on-site. This will be done via the implementation of a re-configurable manufacturing plant(Springer 2006). This plant will, in turn, aim to: analyse the relation between 'people' and 'place' through receiving material waste that is created on and around the site; draw conclusions about the relation between the materials and the social functions that created them, and, finally; process and re-assemble these materials to form a product that has the potential to make that which has relation relational. Figure 3.4 depicts a diagrammatic variation of how these forms of manufacturing plants are managed discretely.

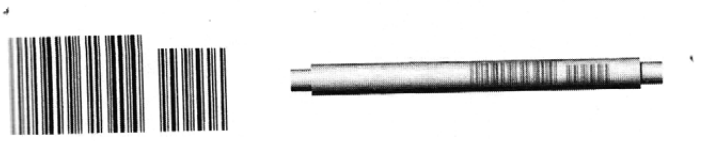


Condensed symbols: Symbols with multiple references to each other . Condensed symbols form a universality within combined representations, they are omnipresent and self governing.
(Douglas M 1996:10)

The claim is made that every man-made and/or processed material carries information about the social context and conditions of those who create the need for the existence of the material. It can further be argued that the re-use of these materials act as sustainable economic-driver within these communities.
The main purpose of the manufacturing plant would thus be to re-use materials already being brought to site; the aim of which is then centred on the creation of new building-material focused specifically on the amplification of social, ritualistic interactions with the goal of informing spatial-approaches within urban conditions.

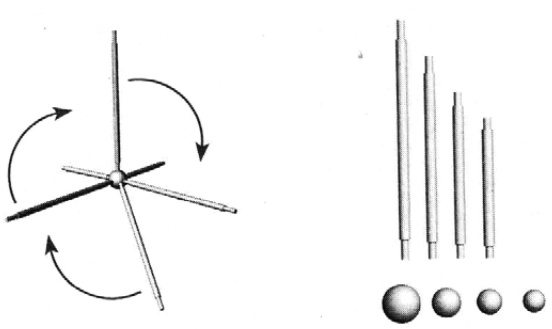
Because of the unpredictability *vis-à-vis* materials being brought in on-site—and because of these materials' varying sizes and/or compositions—the processing plant cannot be seen as a linear manufacturing plant that produces a specific, planned product.

It should be viewed, rather, as a reactive plant that designs potentiality for various formations of informally gathered materials, and, subsequently, creates new elements – stochastically. This will be referred to as 'mass customisation' in a post-Fordist global environment.
The idea of mass customisation is inspired by 'The metro space frame system' designed by Reiser and Umemoto(Reiser + Umemoto 2006) as example of how mass custom fabrication can be implemented on a large scale(See fig 3.5).



Just-in-Time Delivery:
Parcel tracking system directs each component to the right place at the right time.

Self Organization



Variables of the Ball Node System:
Length of strut, angle between struts, size of node.

Figure 3.4. Stochastic explanation of a discrete management system, (Author, 2014)

Figure 3.5. Mass customization model designed by Reiser and Umemoto , (Reiser + Umemoto 2006)

Environment

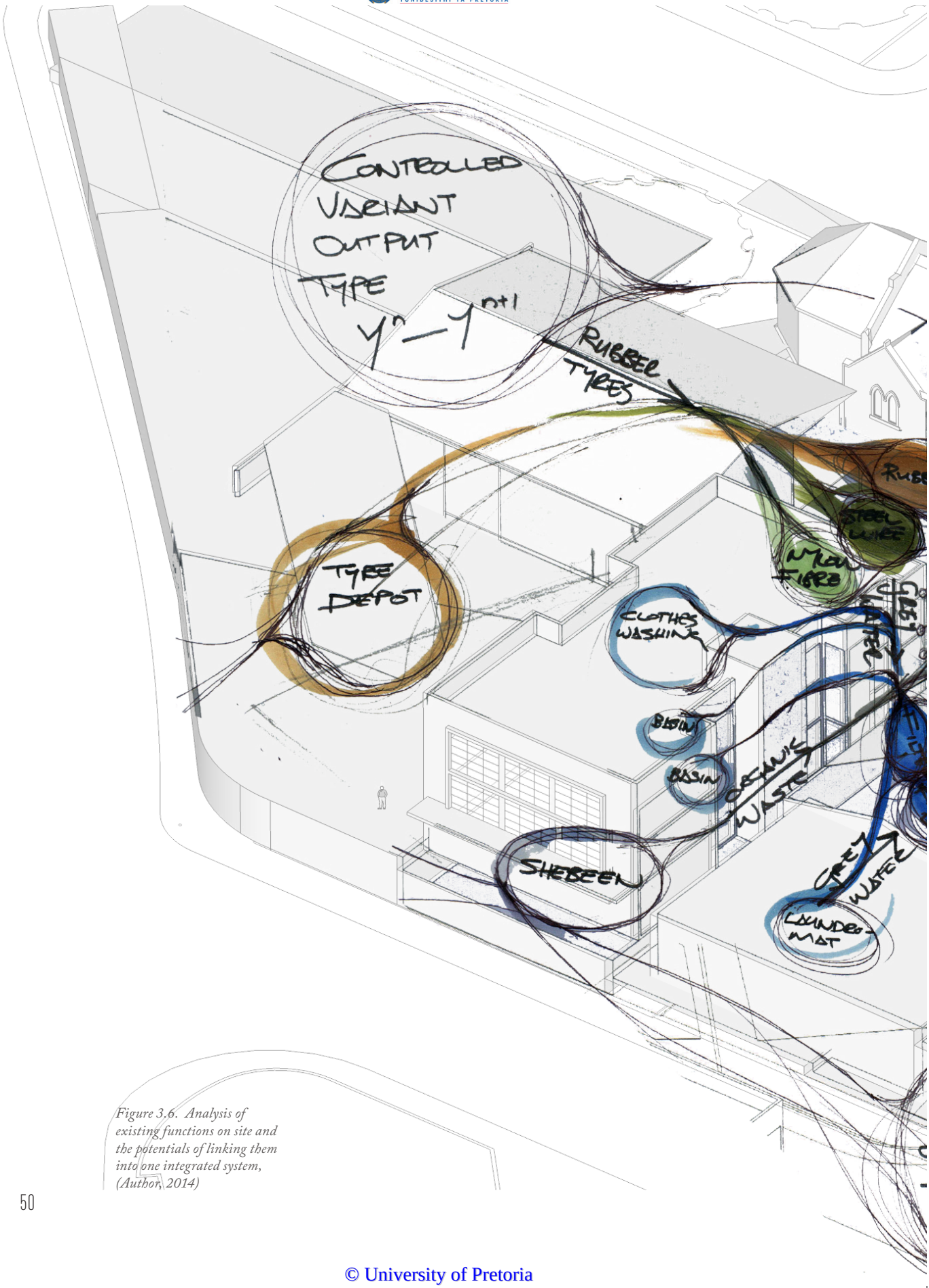
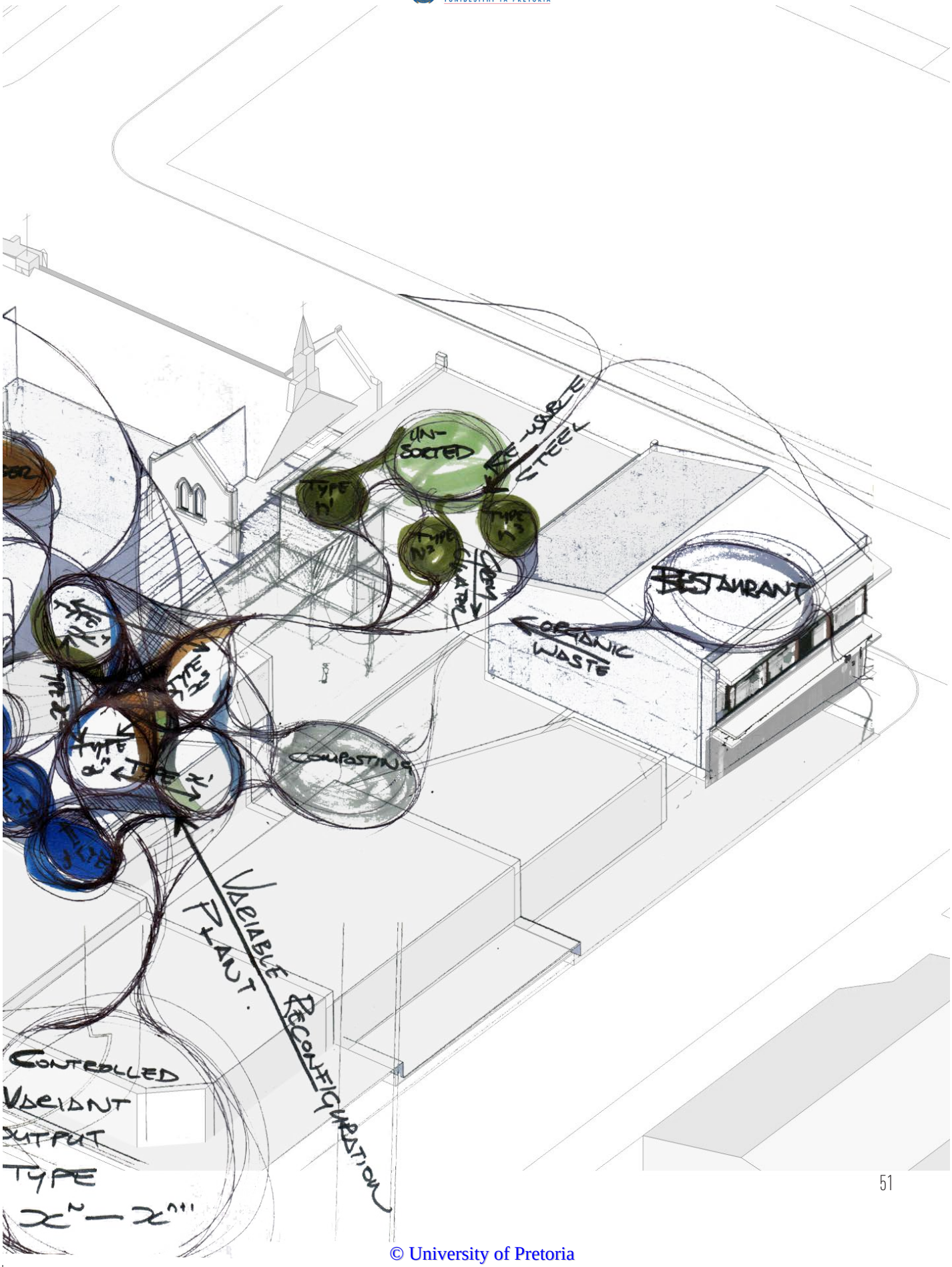


Figure 3.6. Analysis of existing functions on site and the potentials of linking them into one integrated system, (Author, 2014)



Petri-net **MAPPING**

Presuming that there is no fixed, linear production-line contained within the parameters of the production process (when looking at the new intervention), and taking into consideration that social interaction happens on both a planned- and unplanned level of engagement, a new graphic-representation-technique explanation method and approach is needed to fully grasp the concept that will act as informant of all further design decisions (both pragmatic and otherwise.)

Petri-nets(SEE DEFINITIONS) have a unique ability to contain both place and process of various events and transitions within one graph; this occurs without the elimination of possibilities for new processes—or even complex systems—to be taken into account at a later stage.

Secondly, Petri-net systems functions without a time-scale (i.e. no specific time-based scale over which events can be measured), which, in turn, allows for various types of events to simultaneously take place over all time scales.

With specific focus on the delineated scope of this project, a preliminary Petri-net mapping was set up to explain the various degrees of architectural involvement: Stage 1 indicates the least complex form of architectural involvement (the axiom); stage 2 (articulation of function) illustrates where Jeppestown in now in accordance with its new societal function, and; stage 3 (social signification) - which is what the new intervention aims to achieve.

To better understand the idea of events unbound by time—or then events that jointly occur and bear significance—concepts from Carl Jung's studies on synchronicity (Jung C G 2005) can be related back directly to this study.

Jung's theory of synchronicity states that, in our everyday lives, certain events like to occur together without them being reactionary. The theory implies that different interactions that happen within the same scope of time posses a shared and meaningful relationship unbound by a causal link. These 'meaningful coincidences' were to Jung the proof that archetypes played a fundamental societal role, and that a collective unconsciousness forms the structure of the psyche which autonomously organizes experience.

This third tier of involvement has three suggested events that are reactive to specific to existing conditions(pp. 46-66). These three events pertain to specific parts of the intervention that, when put together, act as integral cogs in the formation of the greater whole. It needs to be clearly explained that the initial intervention only aims to act as agent of amplification – not as signifier within itself, but rather only the core of production, without which signification cannot take place. The actual form of this agent is derived from existing materials, both physically and metaphysically, with the aim of celebrating the true nature of the material by portraying its inherit structural and/or tactile presence.

It is necessary for the existence a driver for new events to take place; even though the intervention aims to preserve the social condition that existed prior to disruption, it is still necessary for a new instigator to exist in order to heighten conditions. All three events are programmed to focus on specific prominent events that carry clear and striking indicators of the current conditions within the delineated study area. In the next chapter these three events will be discussed in terms of visual appearance and spatiality.

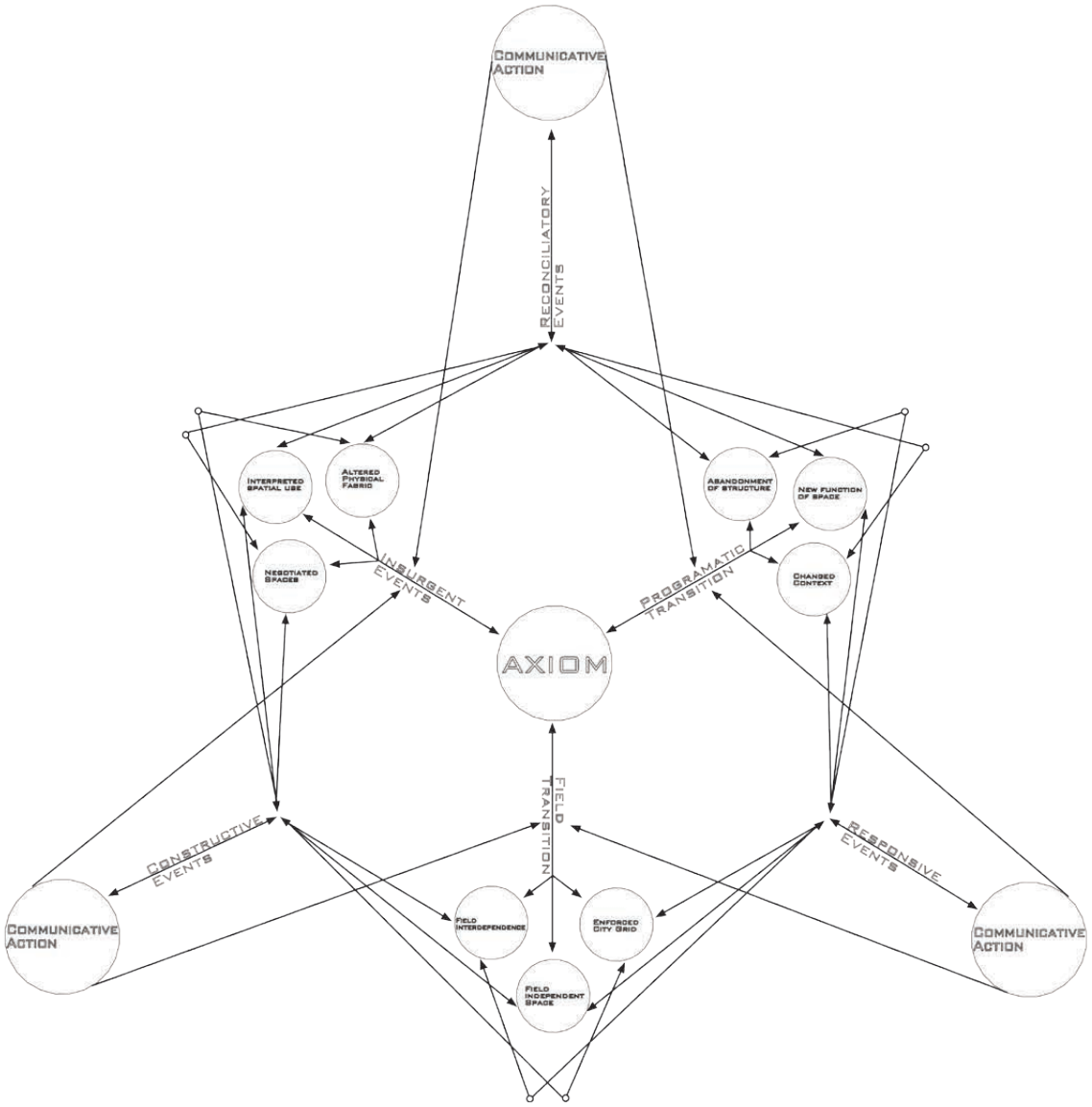


Figure 3.7. Petri-net diagram illustrating the different levels of interaction and how they affect the axiom of Jeppestown, (Author, 2014)

agent and **AGENDA**

Definition:

'Stochastic actor-based models are models for network dynamics that can represent a wide variety of influences on network change, and allow to estimate parameters expressing such influences, and test corresponding hypotheses. The nodes in the network represent social actors, and the collection of ties represents a social relation. The assumptions posit that the network evolves as a stochastic process 'driven by the actors', i.e., the model lends itself especially for representing theories about how actors change their outgoing ties.' (vd. Bunt S 2009)

What architectural form would be able to instigate the transition from a state of general articulation of function into a condition of external social signification? The first step in this specific process was to understand the function of the building beyond a traditional enclosed system, and rather ensure that the system itself should be subject to external influence. In metaphorical terms the function of the building is not to house events arising from its context, but rather to become an actor itself. The building wants to become a citizen of Jeppestown, a subject within the surrounding context.

For this to be true the intervention(actor) needs constant information of its surrounds to be able to operate convincingly and relevantly. He/she embraces the fluctuating conditions as a constant informant and uses it to operate and manipulate the stage.
Three initial steps, derived from site analysis(A Prospect Ritual pp.46-62) have been identified as being crucially necessary within the confines of the conceptual development.
These three steps, understood as new transitions(PETRI NET) within a greater network of events are informed by interpreting the site mappings spatially, and then deriving relativistic conclusions on the most effective methods for intervening within the specific context.

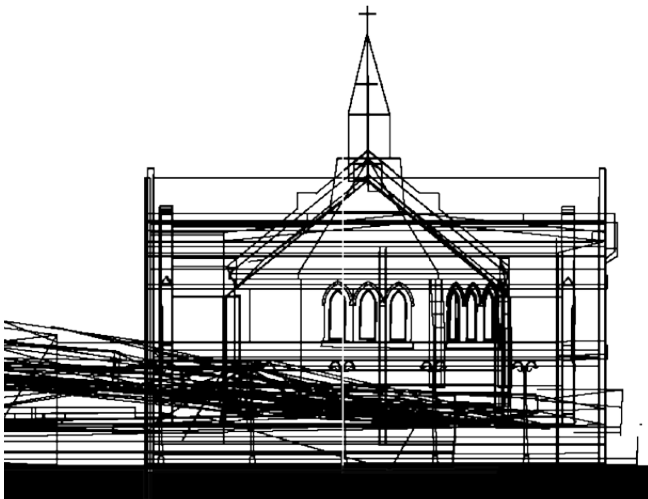


Figure 3.8. Conceptual exploration of architectural intervention on site, (Author, 2014)

Figure 3.9. Site map indicating existing functions in context to immediate surrounds, (Author, 2014)

SHEBEEN

TIRE REPAIR CENTRE

INSURGENT RESIDENCE

INSURGENT RESIDENCE

ANGLICAN CHURCH

JEPPE PARK

To relate this back to the formation of architecture, with specific regard to the lenses(group book), the three modes of intervening on site where identified and applied as follows:

a) Reconciliatory event
b) Responsive event
c) Constructive event

(A Prospect Ritual pp.6)

a) The intention of a reconciliatory intervention is to start breaking down the stagnant buildings in order to allow for new functions to arise. Mining the existing buildings implies cutting through the fabric at critical points to create new potential for negotiated territories. The site specific cuts, labelled a b and c all have a specific intention in mind:

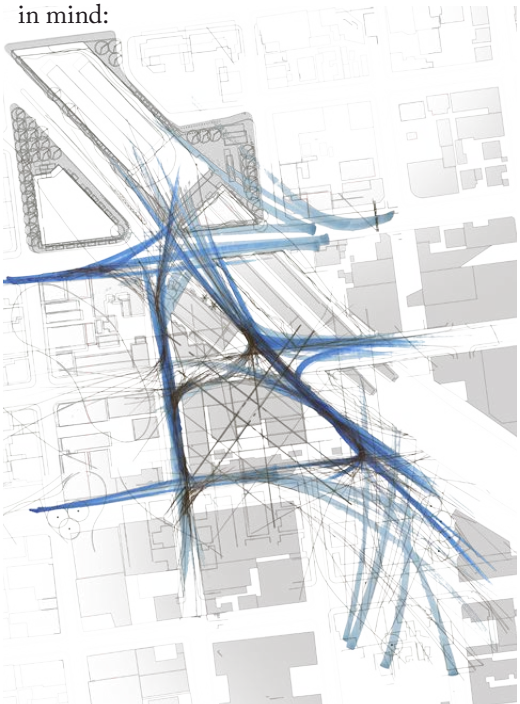


Figure 3.10. Rendition of understood territories where negotiation frequently occurs, (Author, 2014)

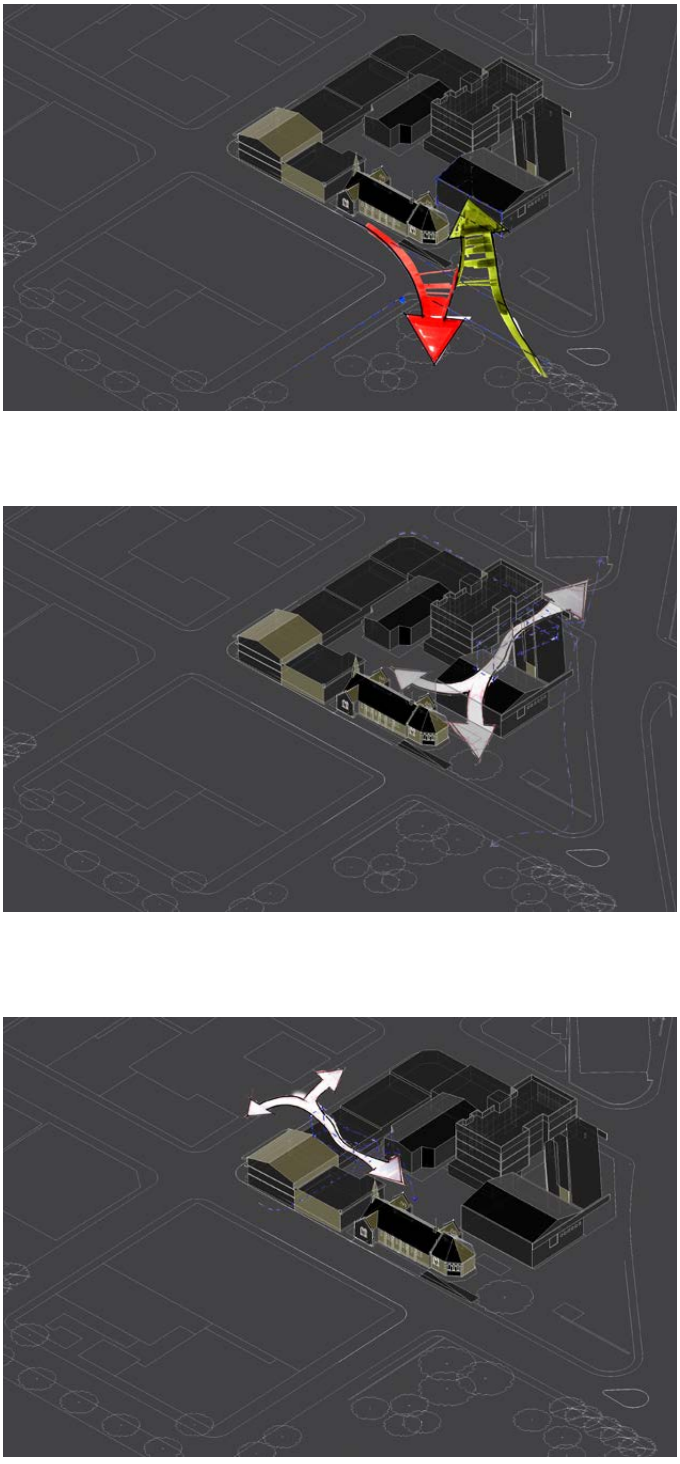


Figure 3.11. Axonometric diagrammatic sketches of the three suggested cuts through site, (Author, 2014)

a

Drawing the surface of the park into the presently unused courtyard that exists on site, a space specifically tied to public ritual is extended into what can be described as dead fabric. The surface extension creates new spaces, previously inaccessible, around the old church and links existing eateries and retail with a vibrant public space.

b

Cuts through the urban fabric between the shebeen and the tire repair centre. The link extends through to create a new path from the station to the park. The goal of this cut is to create a new through-way in between two active economic hubs, amplifying human movement and creating a more pedestrian focused route through Jeppestown, set back from the busy street edge.

c

Reacting on new insurgent activity on site, a cut is made to create a new entrance to a insurgent housing complex that exist within the study area. The cut also creates new potential access to the abandoned ground floor of a secondary building. The new entrance bridges buildings previously separated by unused static urban fabric. This third cut aims at amplifying insurgence already occurring on site through enabling access to spaces previously inaccessible to the inhabitants of the site.

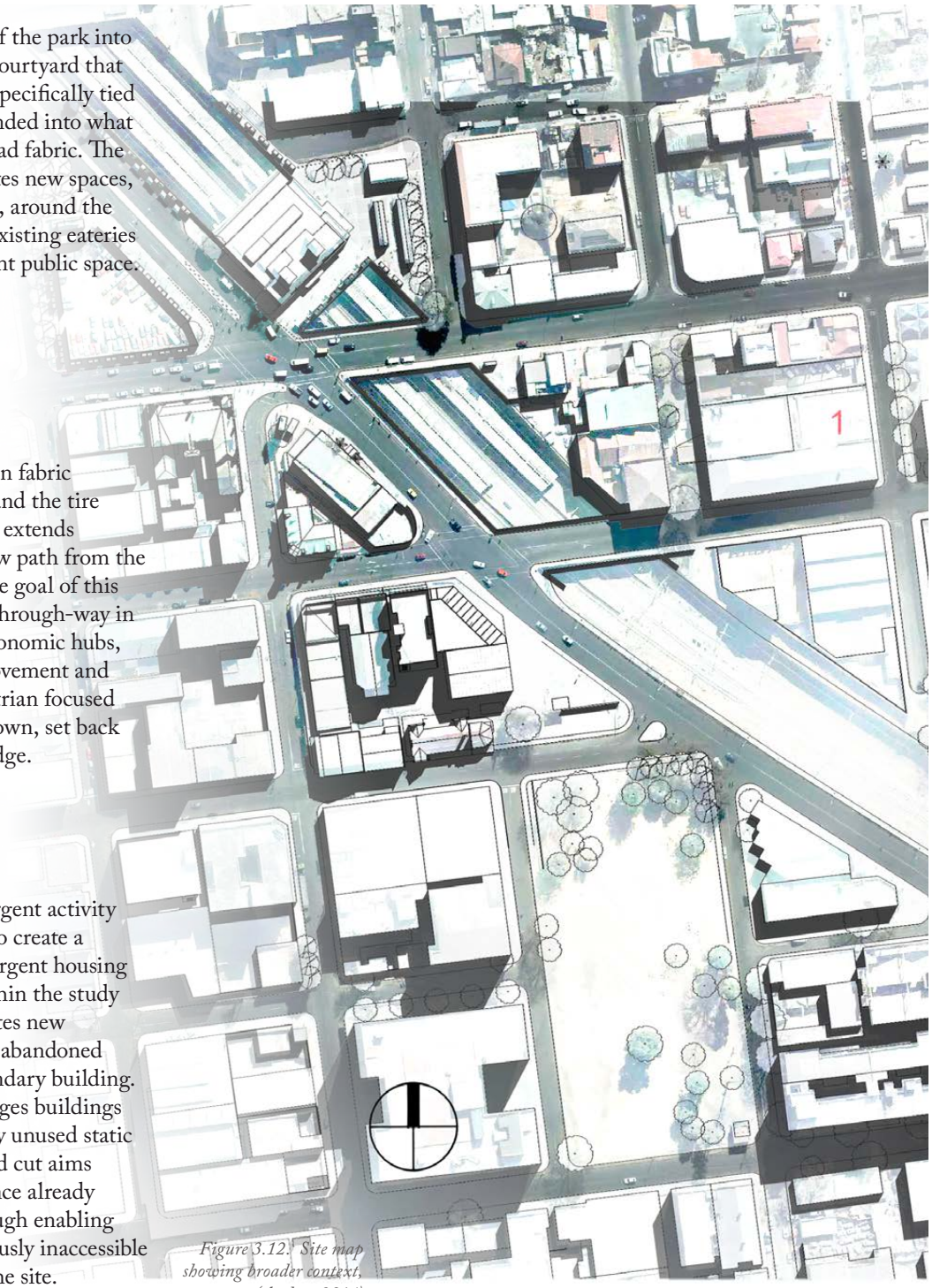


Figure 3.12: Site map showing broader context, (Author, 2014)

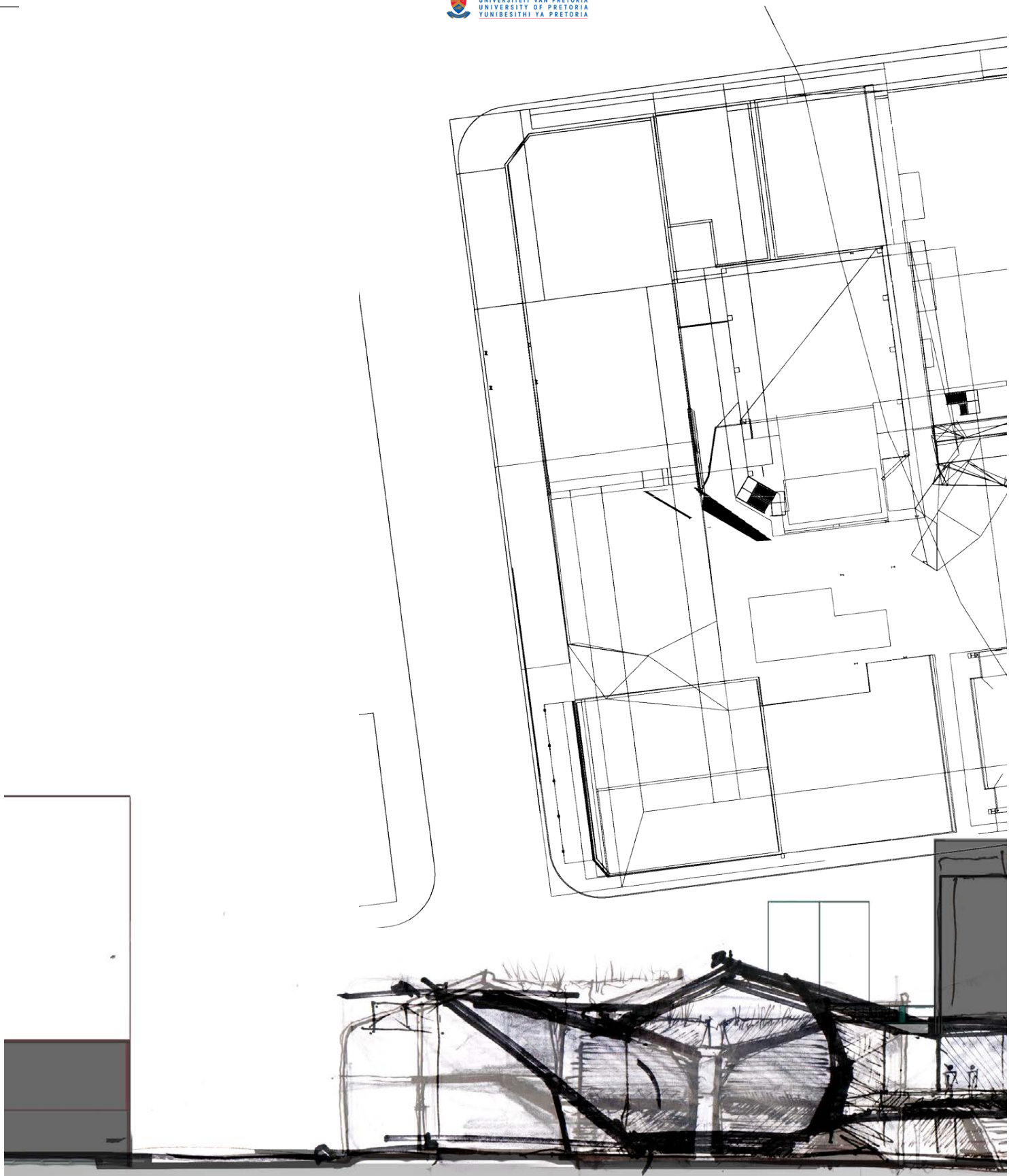
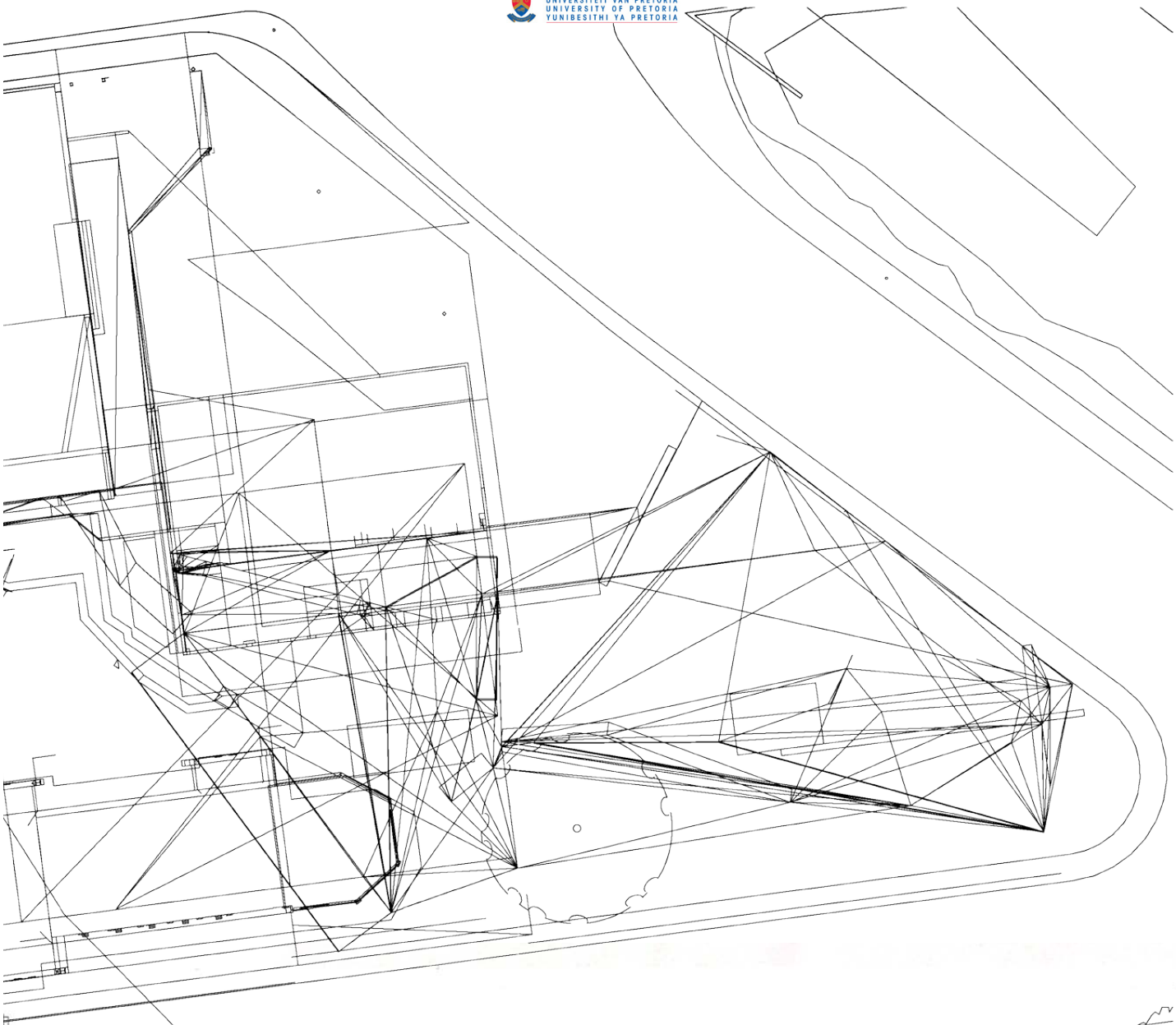
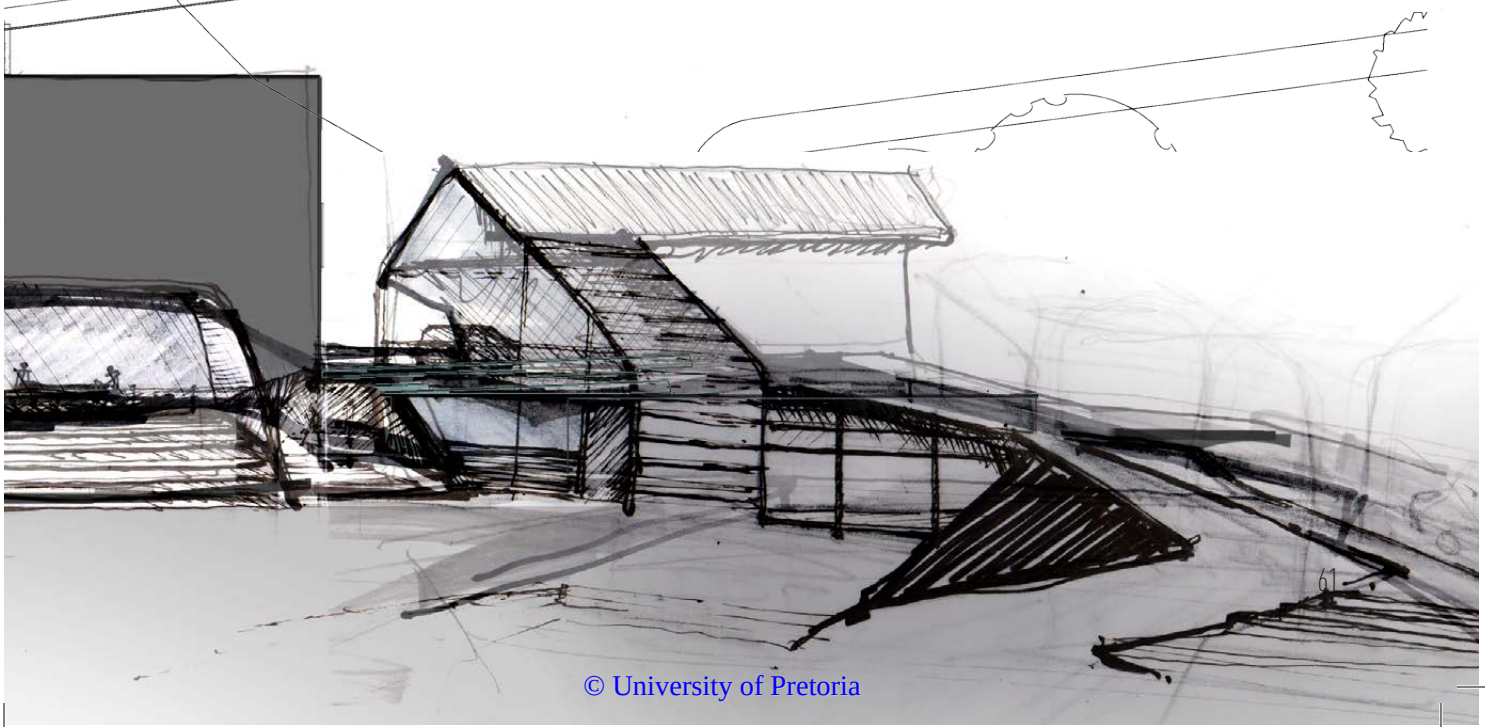


Figure 3.13. Site plan and conceptual section through site, (Author, 2014)





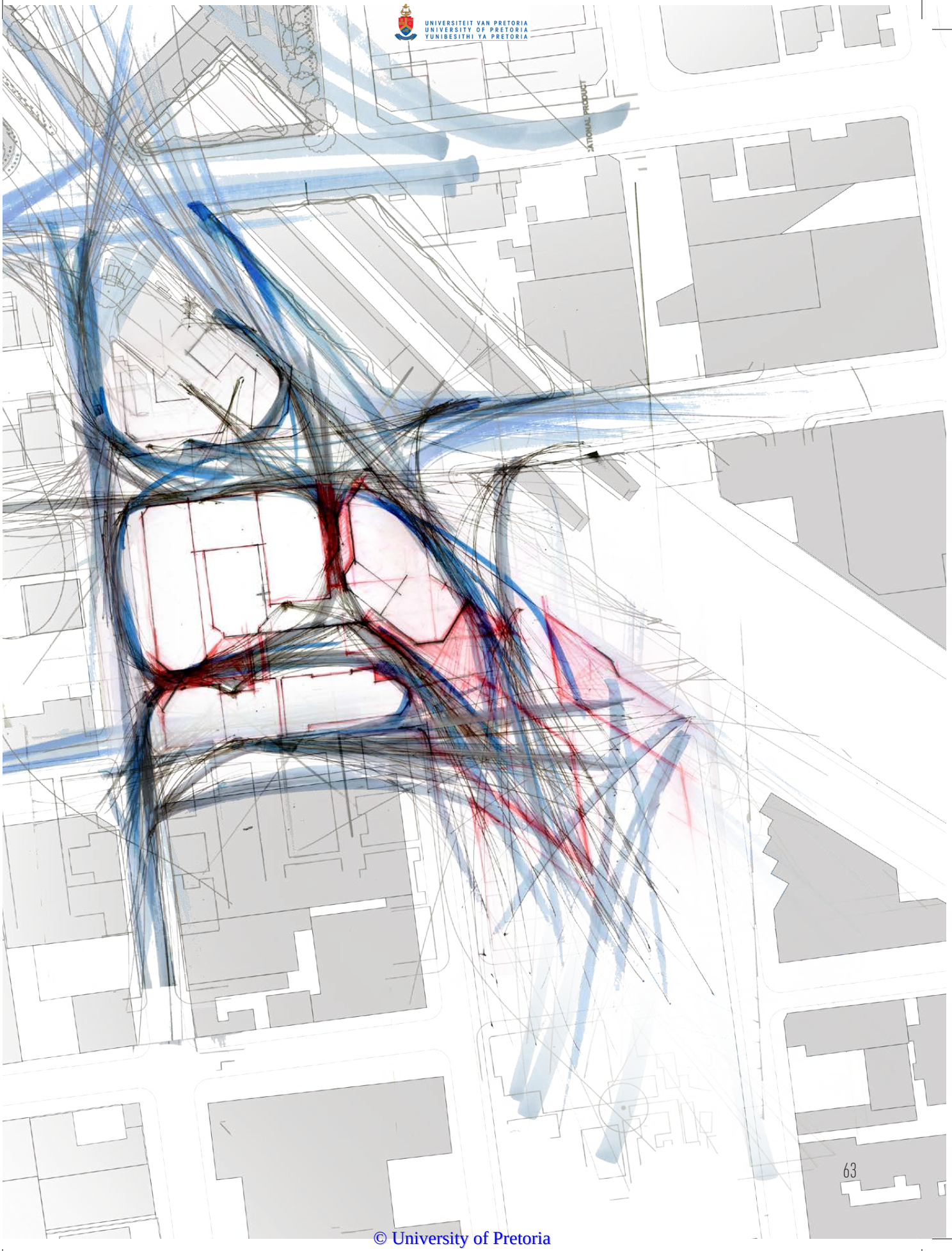
b) Responsive events act as amplifier for the existing rituals on site. Although every identifiable condition is relevant, only the most prominent conditions that reflect the existing conditions of Jeppestown in relation to the mapping lenses(A Prospect Ritual pp.06-10) have been chosen for this specific project.

c) Constructive events are specifically focused on the new functions implemented through the imposed intervention. These events are conducted through the application of newly created building materials formed through the process of re-assembling materials brought onto site.

The three main actions that make up the full intention of the initial intervention should be understood as a whole. All three legs are needed for any form of amplification to occur. The complete system(The agent) will be able to produce a material reflection of the spatial and social conditions of Jeppestown necessary for an external understanding of this new space formation(The agenda).

Figure 3.14. Parti diagram, (Author, 2014)

Figure 3.15. Imagining of new territories created through strategic cuttings through site, (Author, 2014)



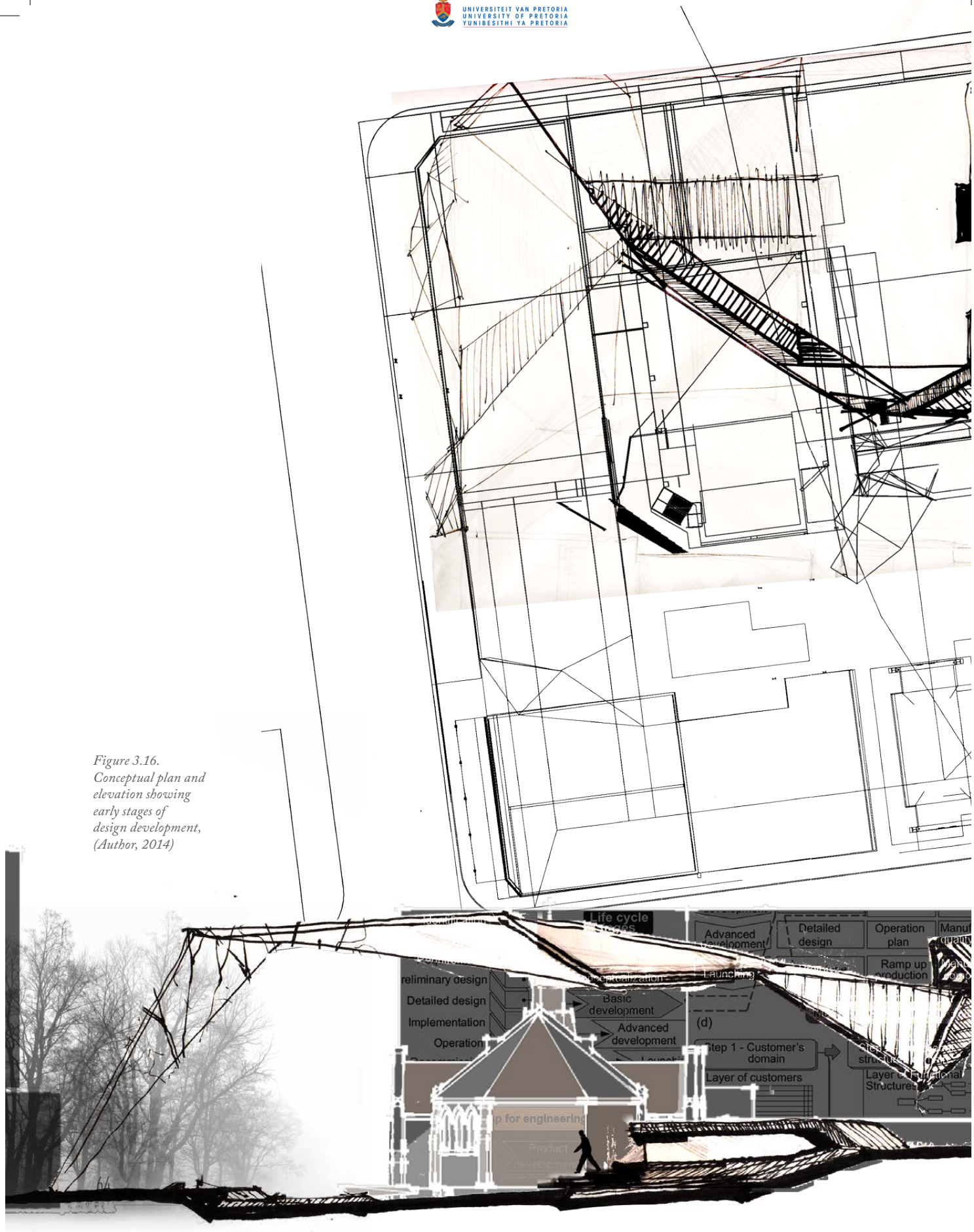
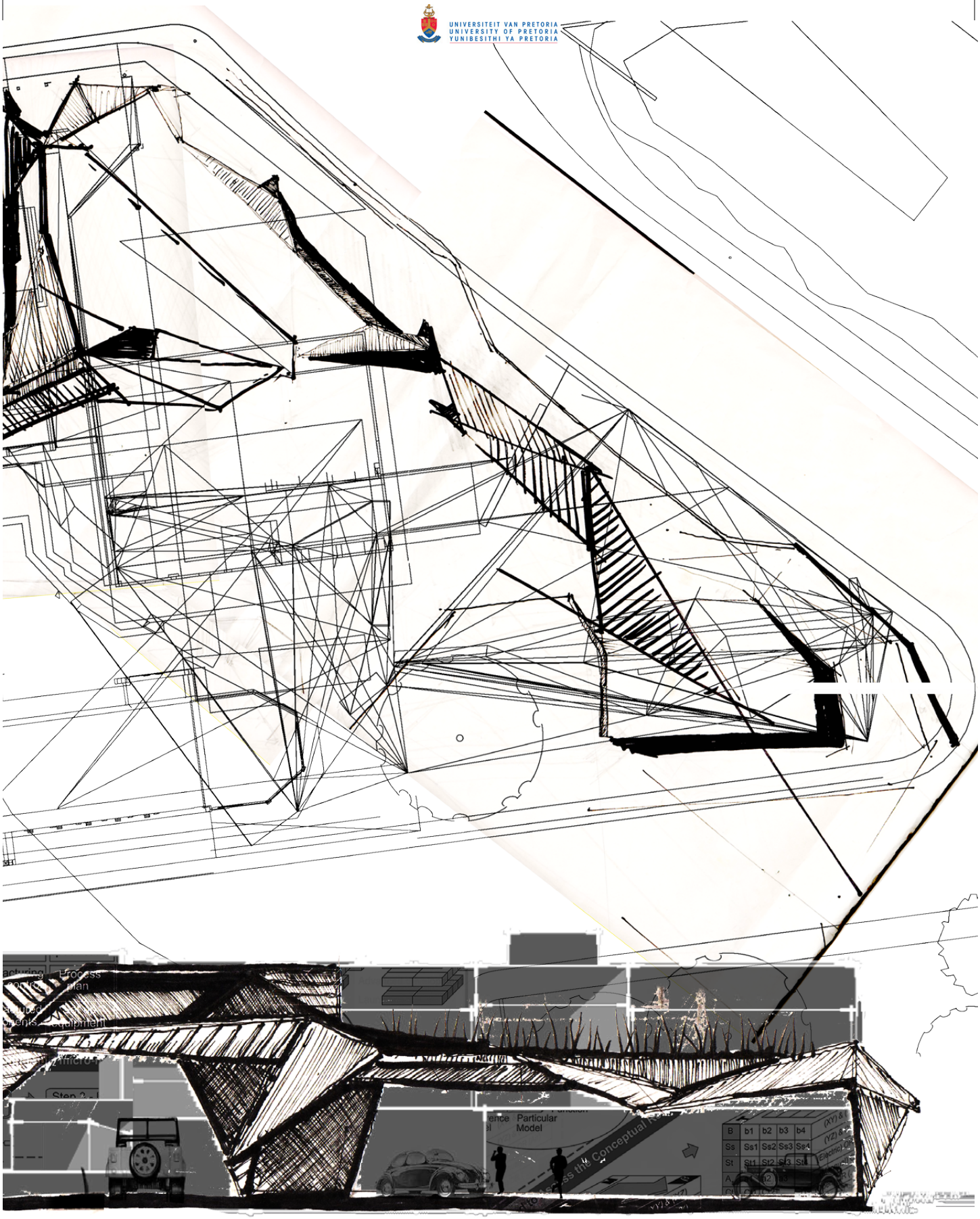
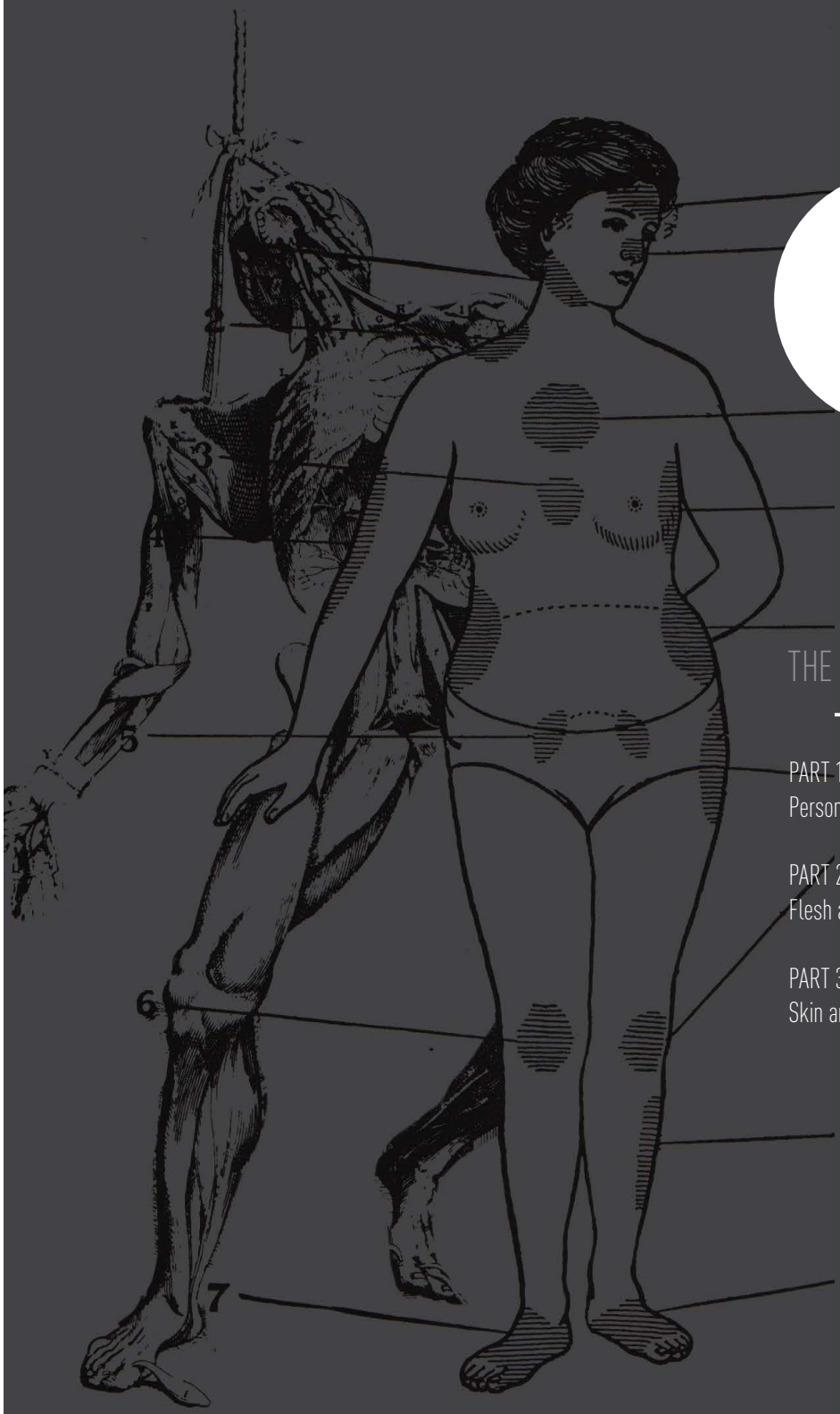


Figure 3.16. Conceptual plan and elevation showing early stages of design development, (Author, 2014)





04

THE FIGURE AND THE **ROLE**

PART 1
Personality and character

PART 2
Flesh and bones

PART 3
Skin and scar tissue

part1: **PERSONALITY and CHARACTER**

Definition:

formalism
marked attention to arrangement, style, or artistic means (as in art or literature) usually with corresponding de-emphasis of content (Merriam-Webster 2014)

Regionalism
emphasis on regional locale and characteristics in art or literature (Merriam-Webster 2014)

Skin
'Skin is a multi-layered, multi-purpose organ that shifts from thick to thin, tight to loose, lubricated to dry, across the landscape of the body. Skin, a knowledge gathering device , responds to heat and cold, pleasure and pain. It lacks definitive boundaries, flowing continuously from the exposed surfaces of the body to its internal cavities.'(Lupton E. 2002)

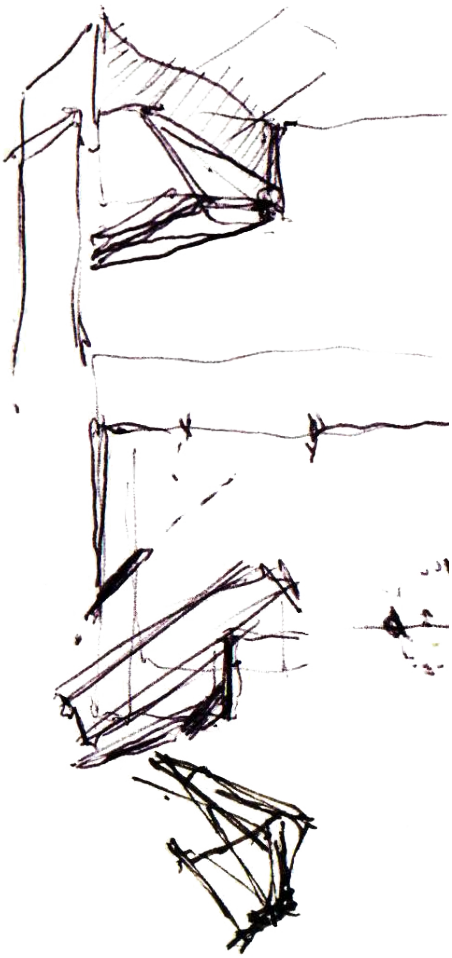


Figure 4.1. Parti-diagrams, (Author, 2014)

"A nation lives by its architecture; when it comes to consciousness of its soul, it feels that it has to build a house for that soul to live in. Such buildings must be utterly useless; the soul will not live in a Woolworth Building --- that is inhabited by the unclean spirit whose name is Legion, and that is the evidence that America, with all its material prosperity, has no soul. Nor is a man rich while he confines his purchases to things which are useful."
(Crowley A, 1989).

Responding to a specific context architecturally, with the intent to celebrate the region and its inherent condition, promotes a purely regionalist approach. Considering that the conditions surrounding architectural form in Jeppestown is not fixed, or even controlled (see generation mapping, with specific reference to generation 5), the most representative regional response would be one that responds to the prevalent social condition.

This implies that the new-generation architecture (Generation 5), specifically referring to the proposed intervention, should be an insurgent instigator that celebrates the social wilfulness represented by the inhabitants of Jeppestown(See pirate utopia definition p??). The new form, as agent, is then informed by constant fluctuation, and is shaped and inspired by this sense of hyper-regionalism created by insurgence of a new public.

The first function is to link existing functions on-site, and being able to move selected materials into a central space(Fig 4.4). These elements can be imagined as tentacles that penetrate the existing fabric that collect information about the interior workings of these spaces. These connections, in regards to the relation that exists between place and material, then create new places for human interactions and events. The shape and structure celebrates the value of the materials it gathers through imitating the materiality of its bounty. Tectonic steel structures frame the internal public plain whilst heavier, curved elements of concrete and brick form interconnected and overlapping spaces to celebrate the tactile nature rubber posses.

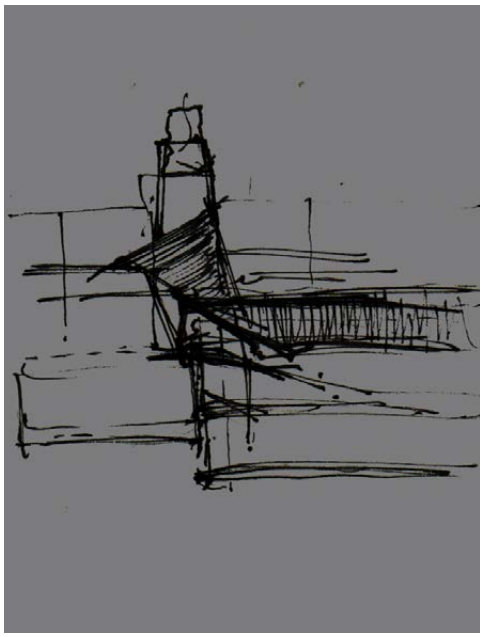


Figure 4.2. Parti diagram, (Author, 2014)

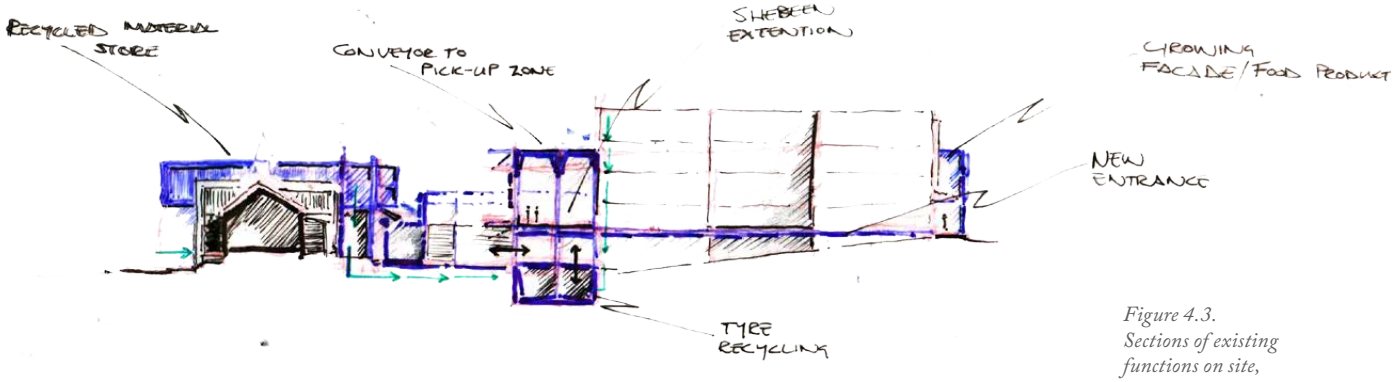


Figure 4.3. Sections of existing functions on site, with potentials for a new programme indicated, (Author, 2014)

Physical form of GEN5 takes a secondary stance to the functions/purpose the intervention allows for.

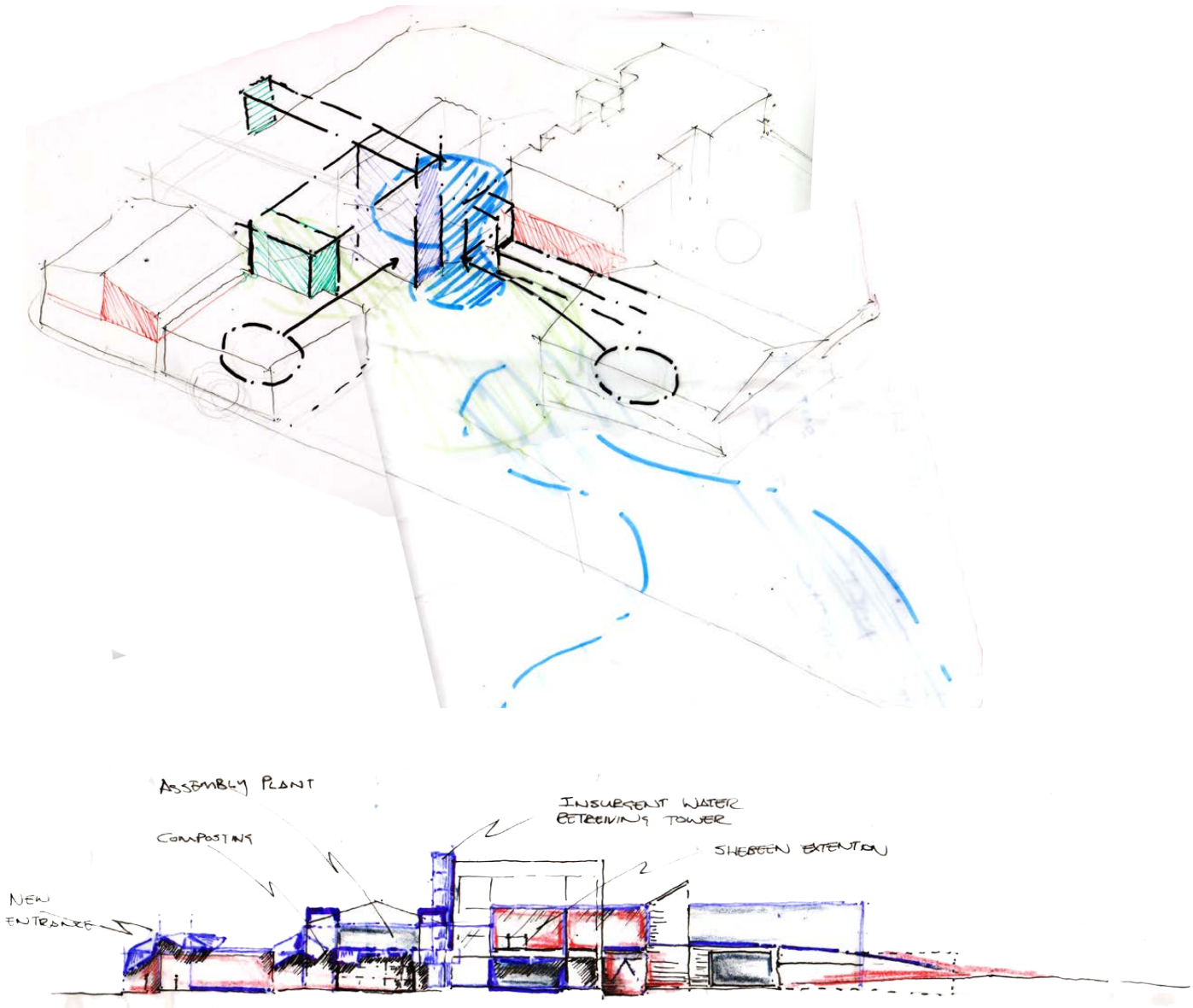
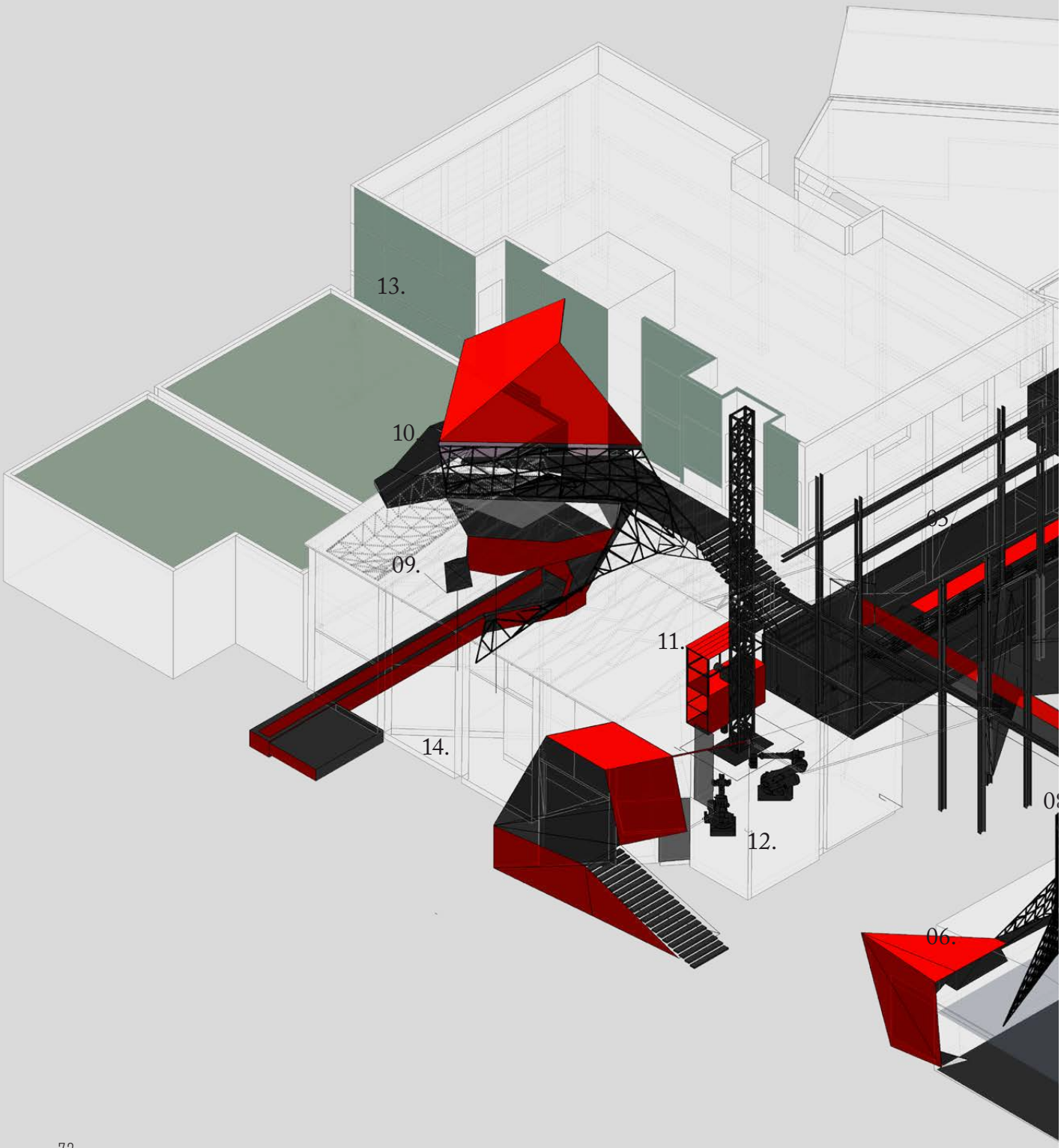
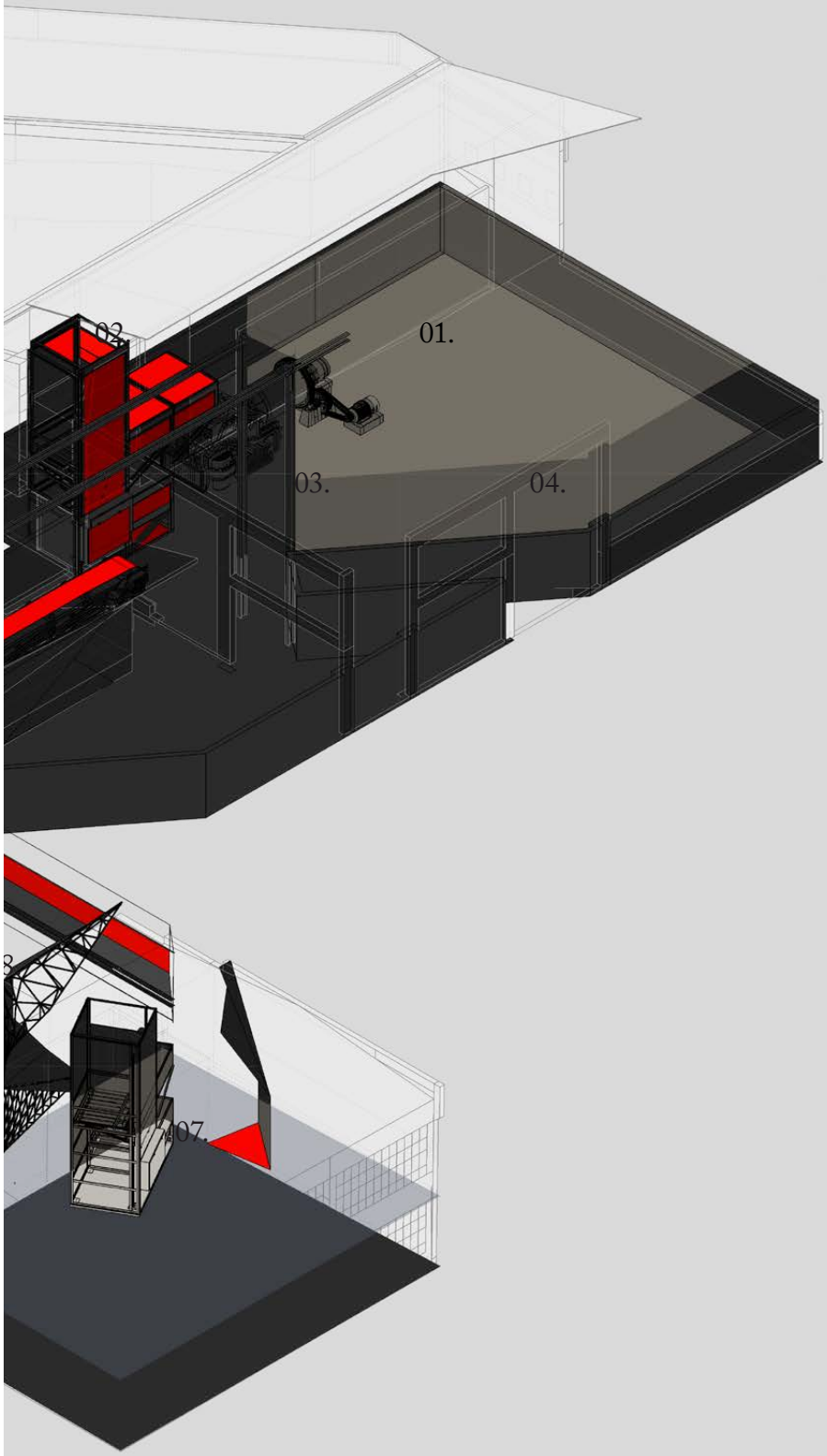


Figure 4.4. Axonometric representation of how functions could potentially be linked on site, (Author, 2014)





01.Loading bay

02.Material hoist

03.Tyre processing machinery

04.Storage

05.Conveyor belt

06.Steel drop off point

07.Material hoist

08.Moving steel transporter

09.Material control point

10.Organic material control point

11.Material hoist

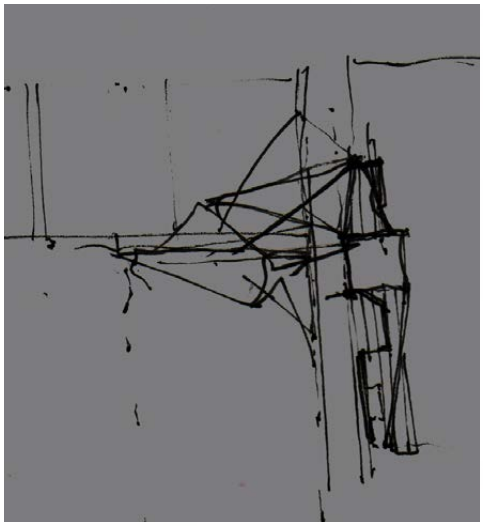
12.Informal material formation laboratory

13.Water filtration system

14.Composting site

Figure 4.5. Axonometric render of newly suggested interventions on site, (Author, 2014)

Secondly, in order to convincingly mimic existing Generation 5 architecture that greatly shapes the inherent character of Jeppestown, the intervention should house itself within the remaining unused static fabric of the site. This insertion of new function creates a home for the reassembly of gathered material to take place. It also aims to elevate human interaction on site. Through operating from within an existing, abandoned building, the formation of a physical bridging between the existent generations of buildings and the new Generation 5 intervention. The bridging of generations ensures that the response on-site respects the existing characteristic of Jeppestown.



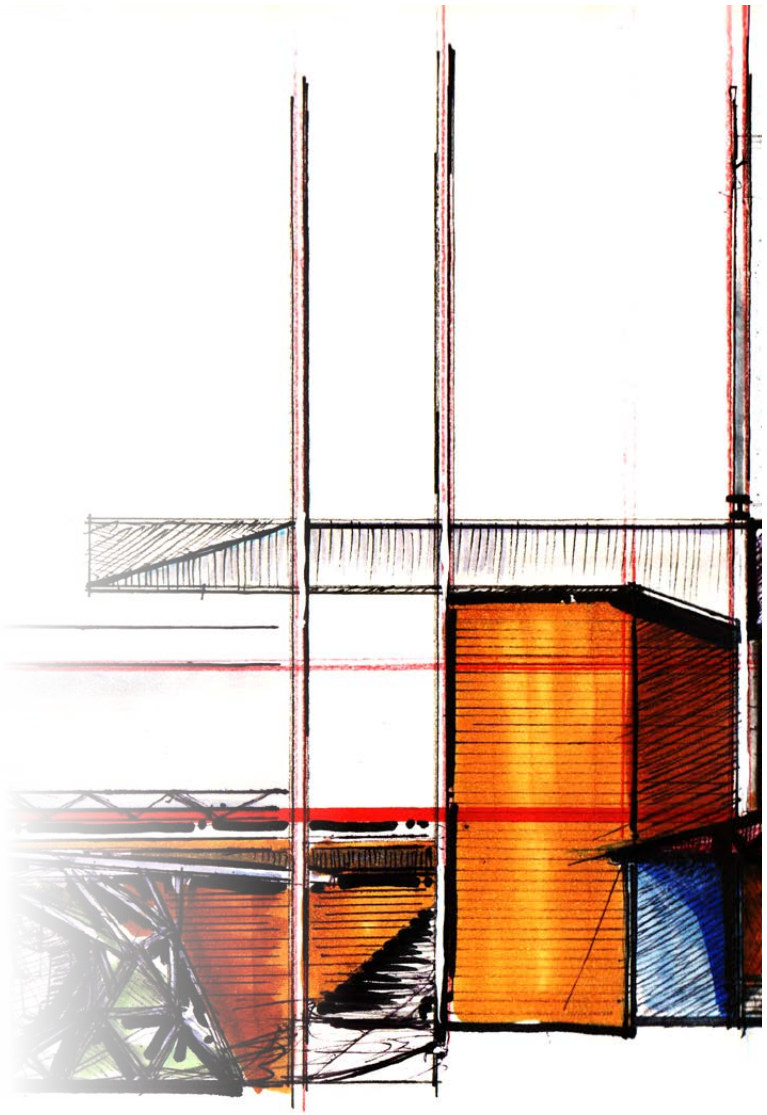


Figure 4.6. Parti diagram, (Author, 2014)

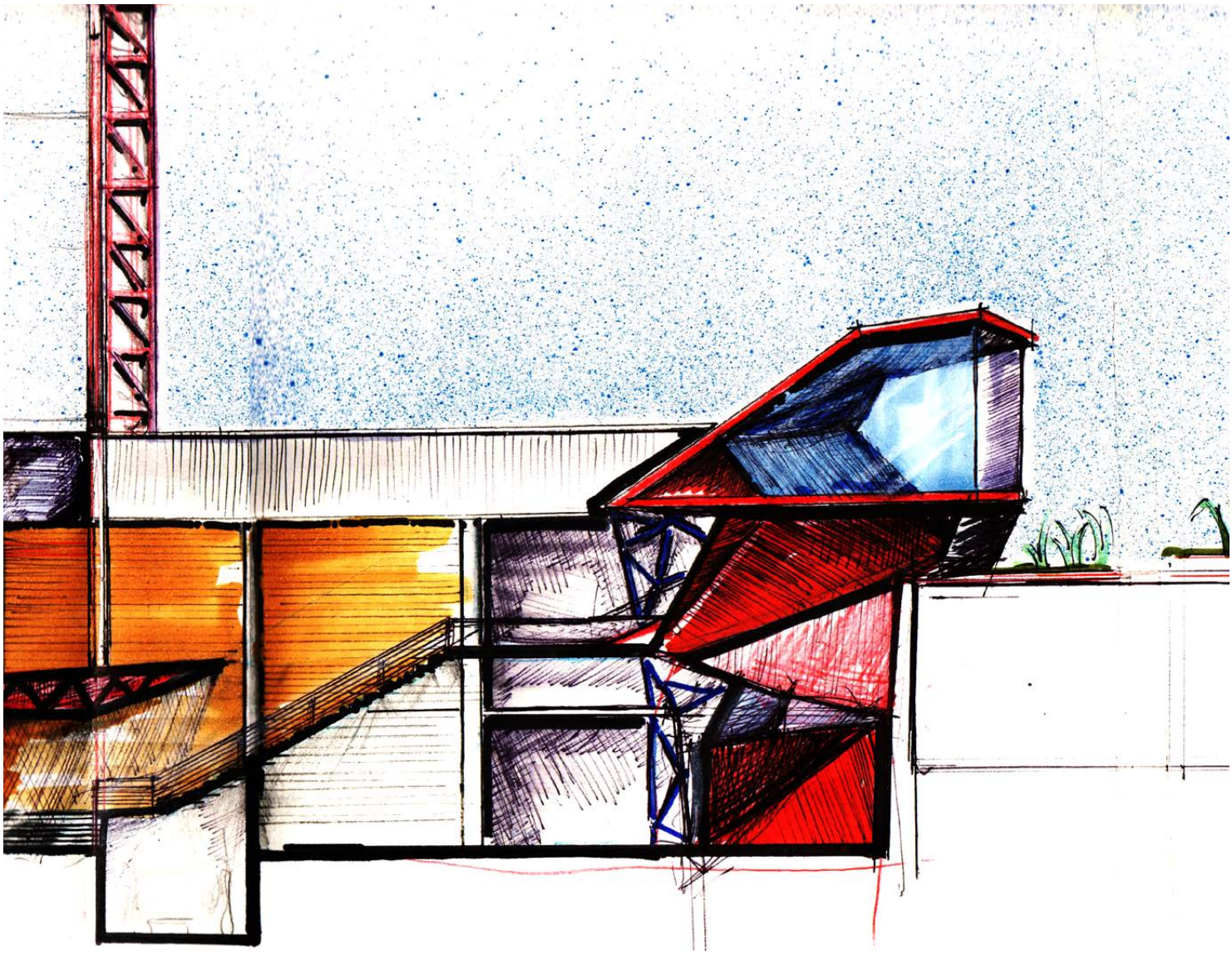
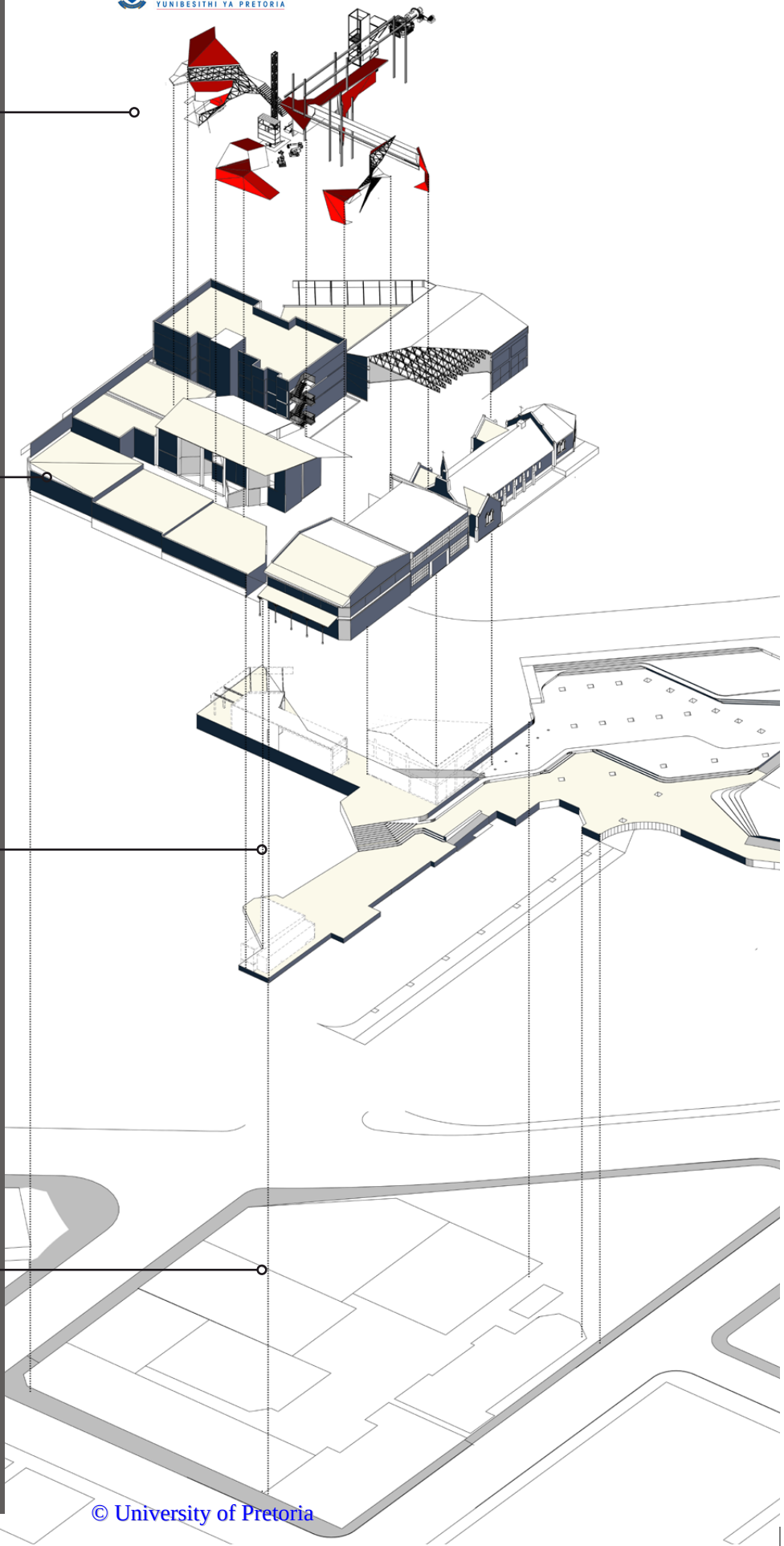


Figure 4.7. Conceptual section of potential architectural form, (Author, 2014)



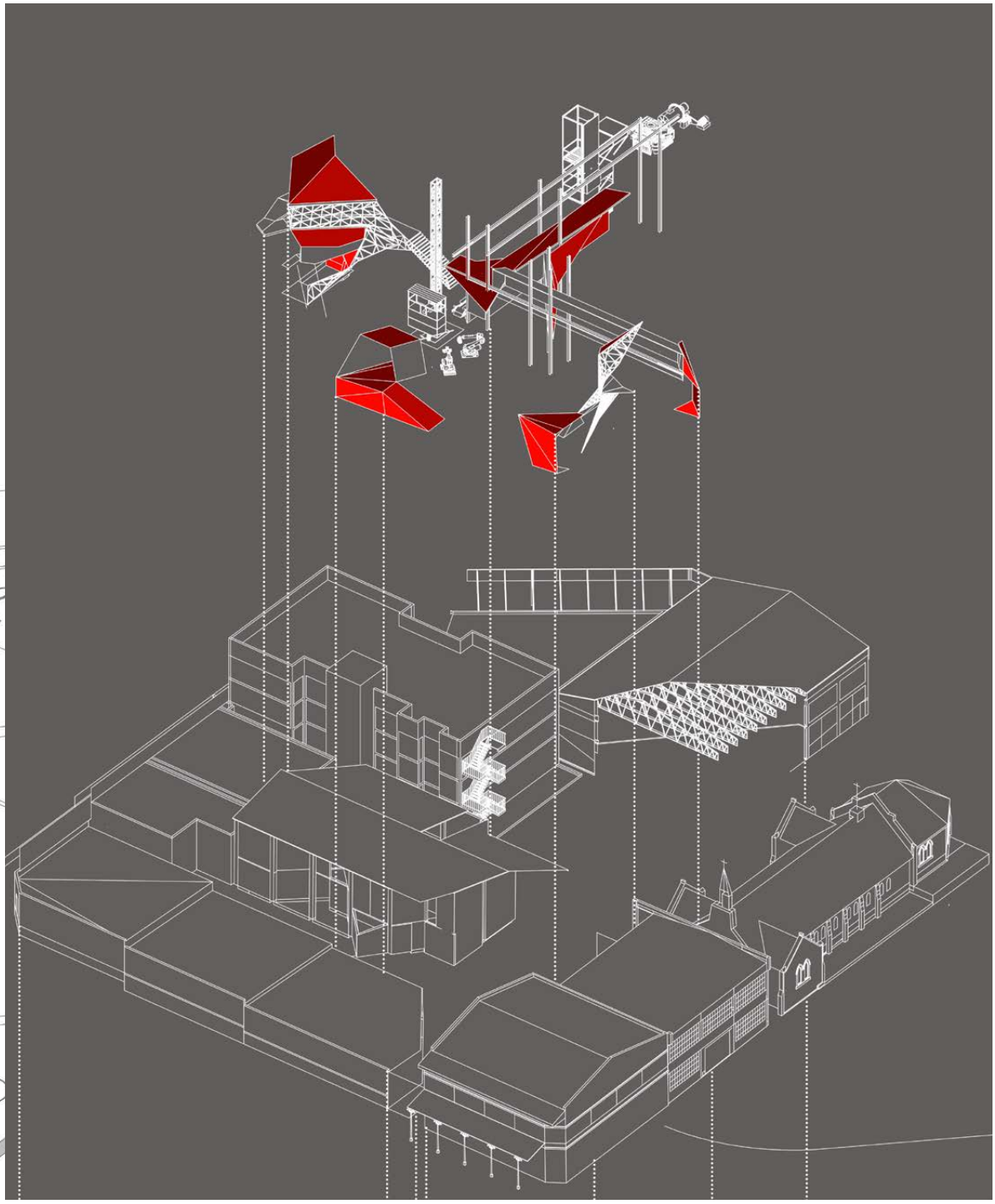


Figure 4.8. Exploded axonometric view of suggested intervention, (Author, 2014)

Figure 4.9. Enlarged version of exploded axonometric, (Author, 2014)

Lastly, a new form capable of analyzing the information/materials is inserted into the existing fabric. This core represents the body of this new inhabitant of Jeppestown. The structure positions itself at the centre of all new events; it reaches upward and penetrates the shell of the existing building to gain a clear, unobstructed view of its surroundings. By standing in the centre of incoming materials, it allows the tower to cohesively compare, monitor, and analyze incoming and outgoing materials both organic and refined.

The new intervention reflects the process of taking, reconfiguring, and making materials that are capable of signification. It is thus imperative that the physical form also celebrates this process. The tower does not take on the form of its context, for if it did, it would only act as a monument to a fixed place in time. It neither takes on the characteristics of what it gatherers, nor accounts for changes bound to happen in the future.

The physical construction rather strives to be true to its conceptual intent. A Complex environment, that houses dynamic societal-circumstances, is the primary driver that informs the body of the tower. Angled surfaces join together to combine two related spaces with one defined structure. The supporting surface combines materials to form a composite plane, both carrying and covering activities it hosts. Set into the ground, a sculpted mass acts as a solid foundation for the load it carries.

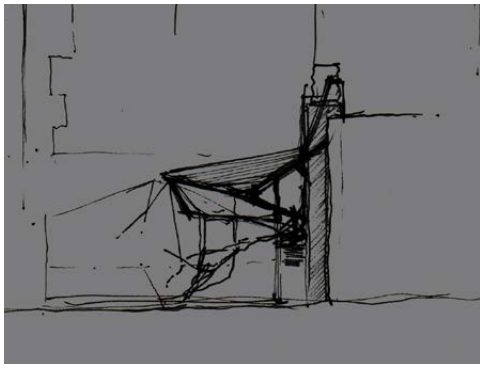
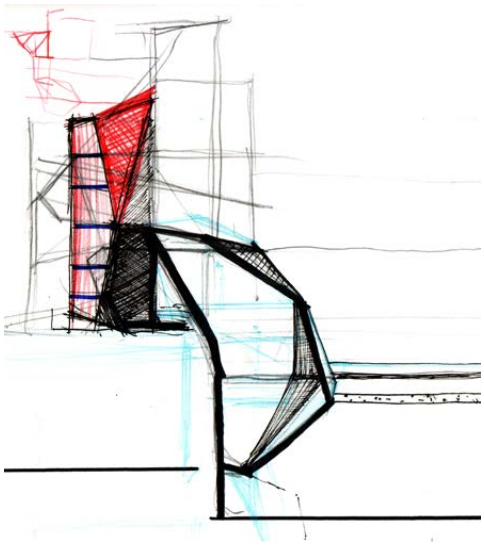
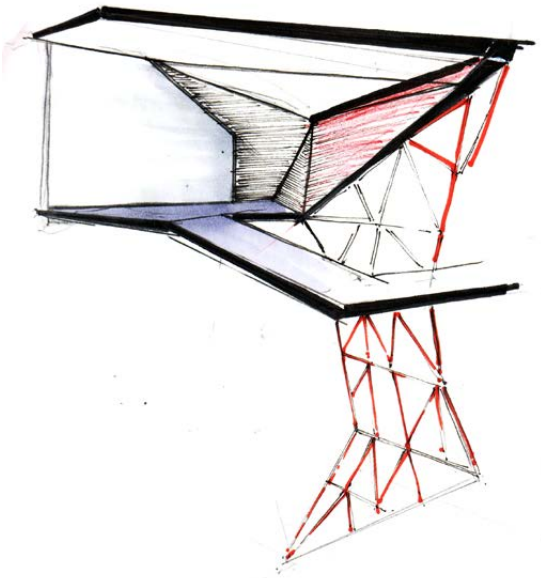
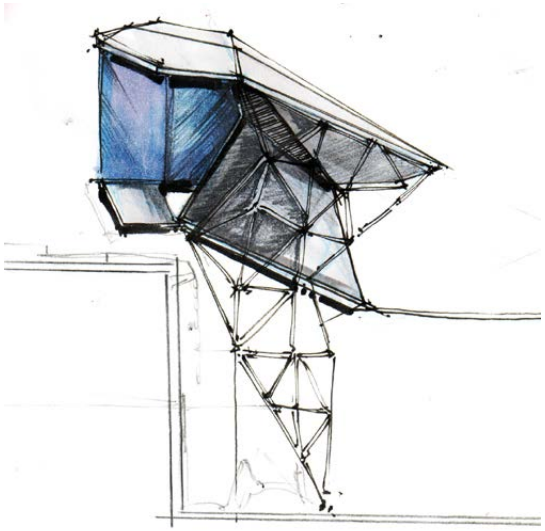


Figure 4.10. Parti diagram, (Author, 2014)







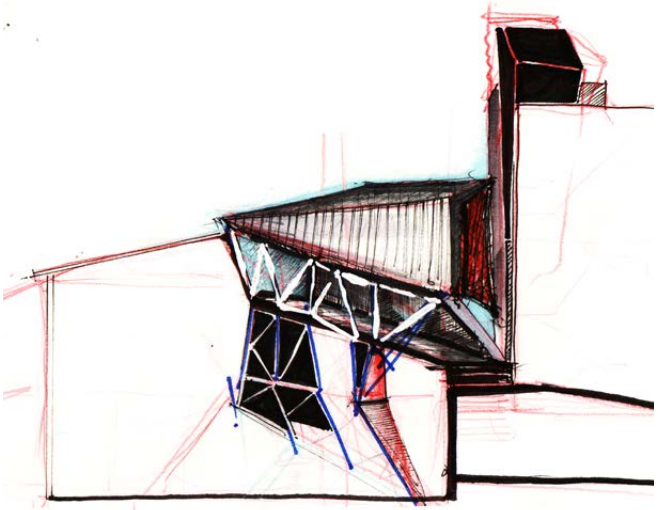
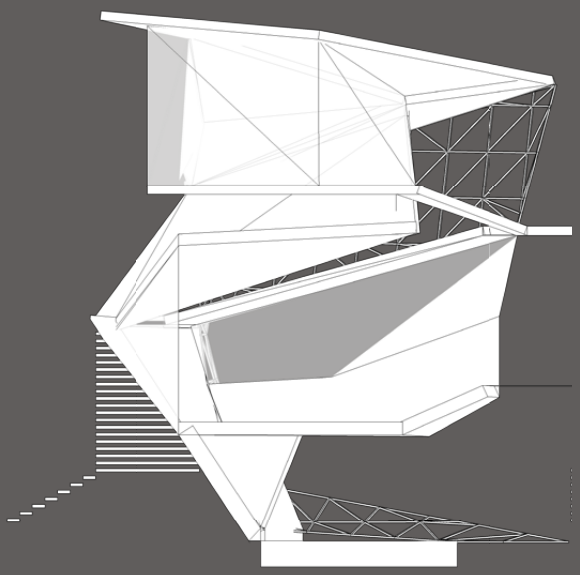
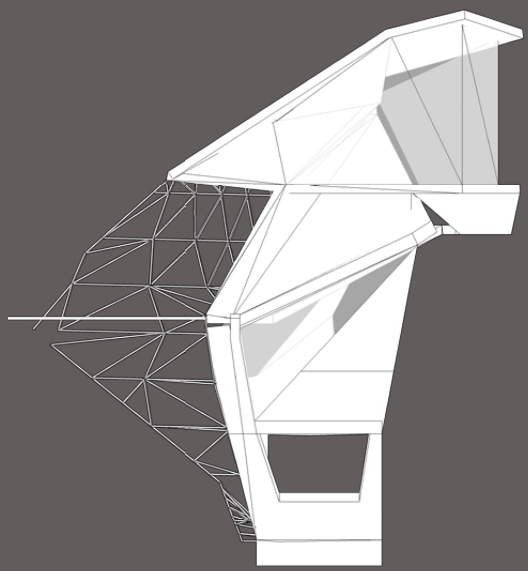


Figure 4.11.
Conceptual drawings of tower, (Author, 2014)





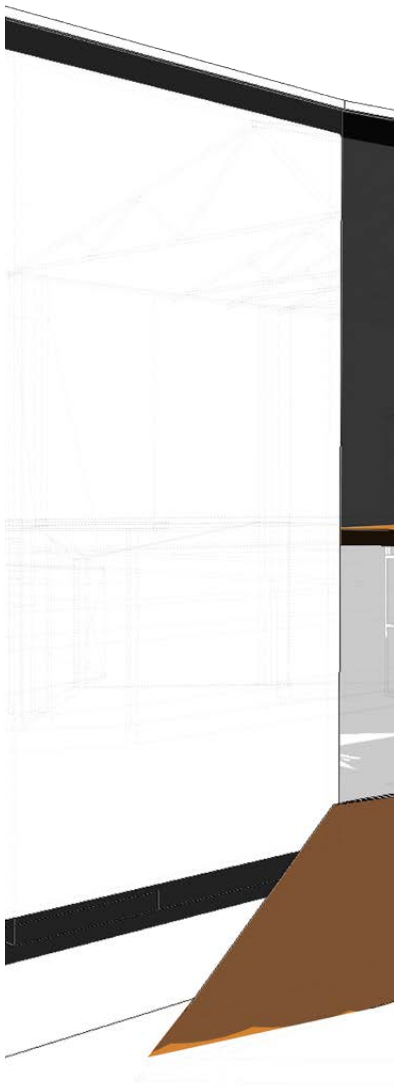


Figure 4.12. North and West elevations of tower, (Author, 2014)

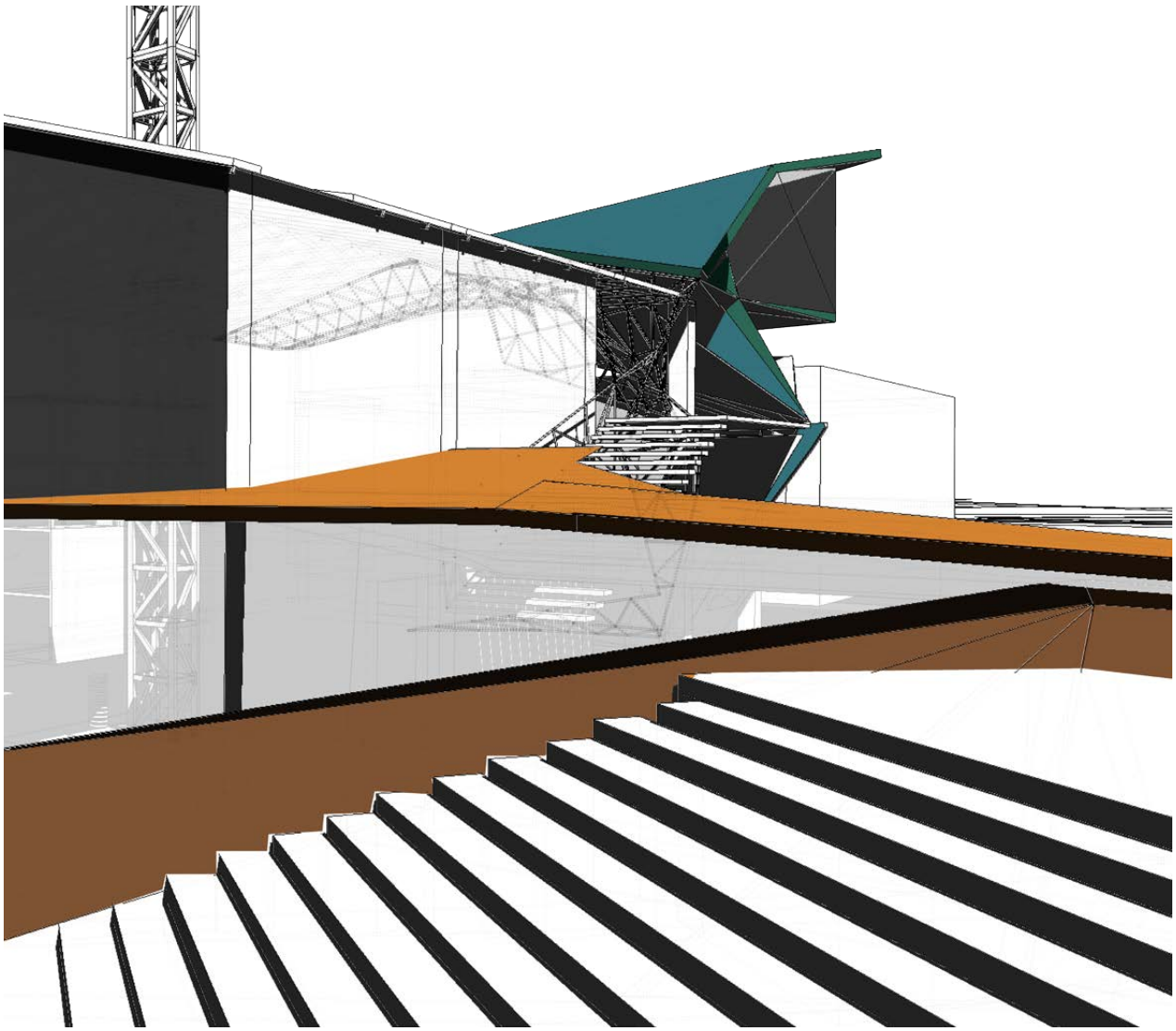


Figure 4.13. Digital render of proposed intervention, (Author, 2014)

The complete intervention, although consisting of various elements each with unique characteristics and functions, are not individual elements scattered throughout the site. The fourth layer is a ubiquitous membrane that weaves the parts together into one body. Unbound by a rigidity of form and function, the skin resembles the metaphorical hope of the new spatial conditions that will arise from this intervention; the progression into the sixth generation; the aether...

The skin and scar tissue (not being constrained by fixed form) is able to interact within and around existing fabric, changing the meaning of surfaces or acting as new functional elements. The malleable, inherent characteristic of this new form also allows it to plug into existing infrastructure within its context, thereby creating smaller scale self contained systems.

The application of skin within the intervention is used as method for reacting and interacting with the existing infrastructure. This is done in a manner which creates a symbiosis between the existing spaces and the new intervention, creating rich surfaces which functions range from creating shade, or articulating a surface to filtering grey water through natural vegetation that grows within the structure.

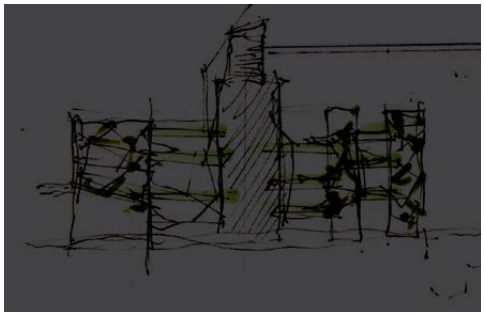


Figure 4.14. Parti diagram, (Author, 2014)

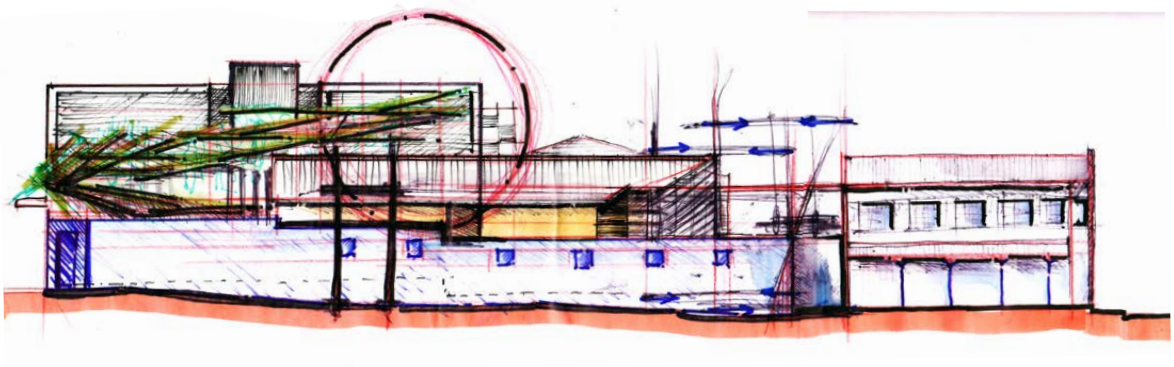


Figure 4.15. Sectional elevation of imagined steel structure supporting planted skin, (Author, 2014)

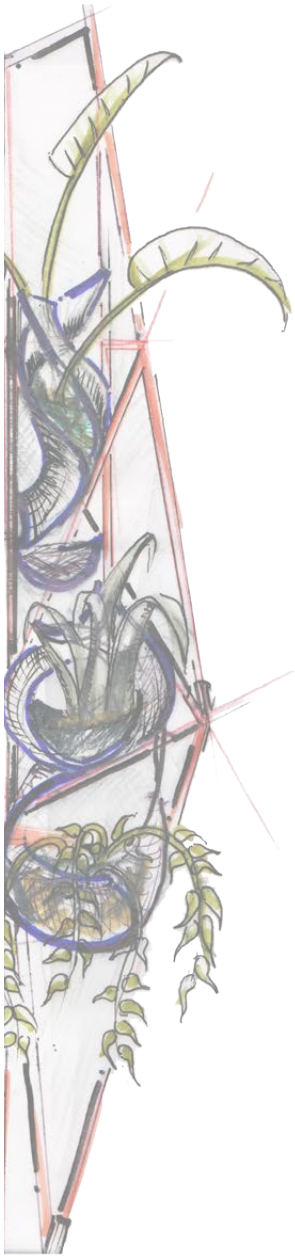


Figure 4.17. Sectional elevation of imagined steel structure supporting planted skin, (Author, 2014)

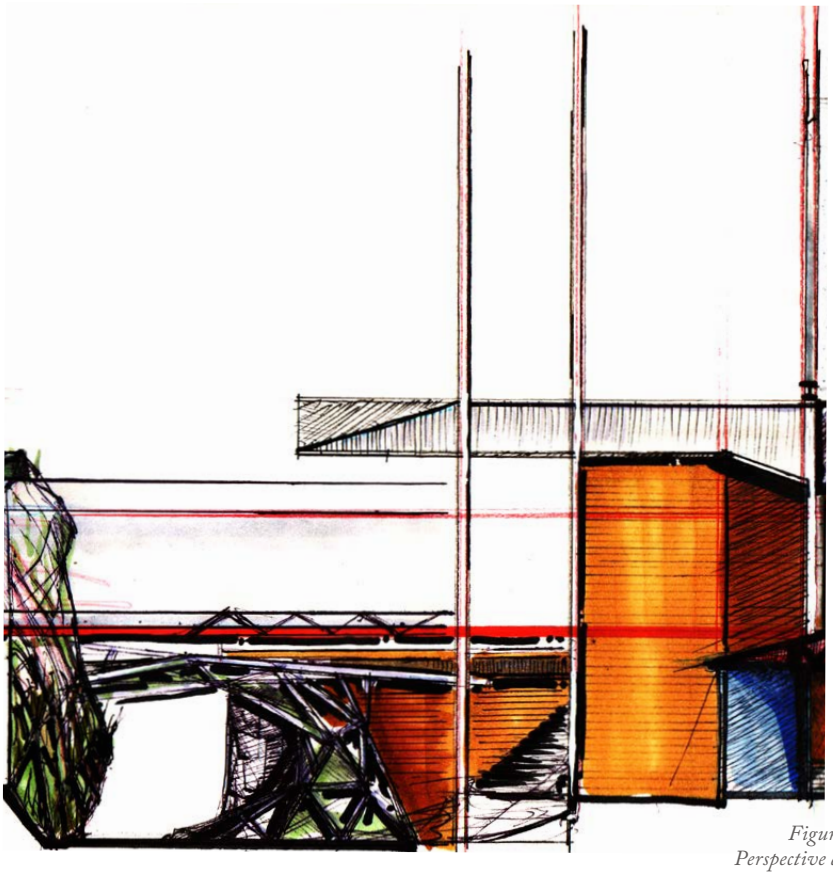
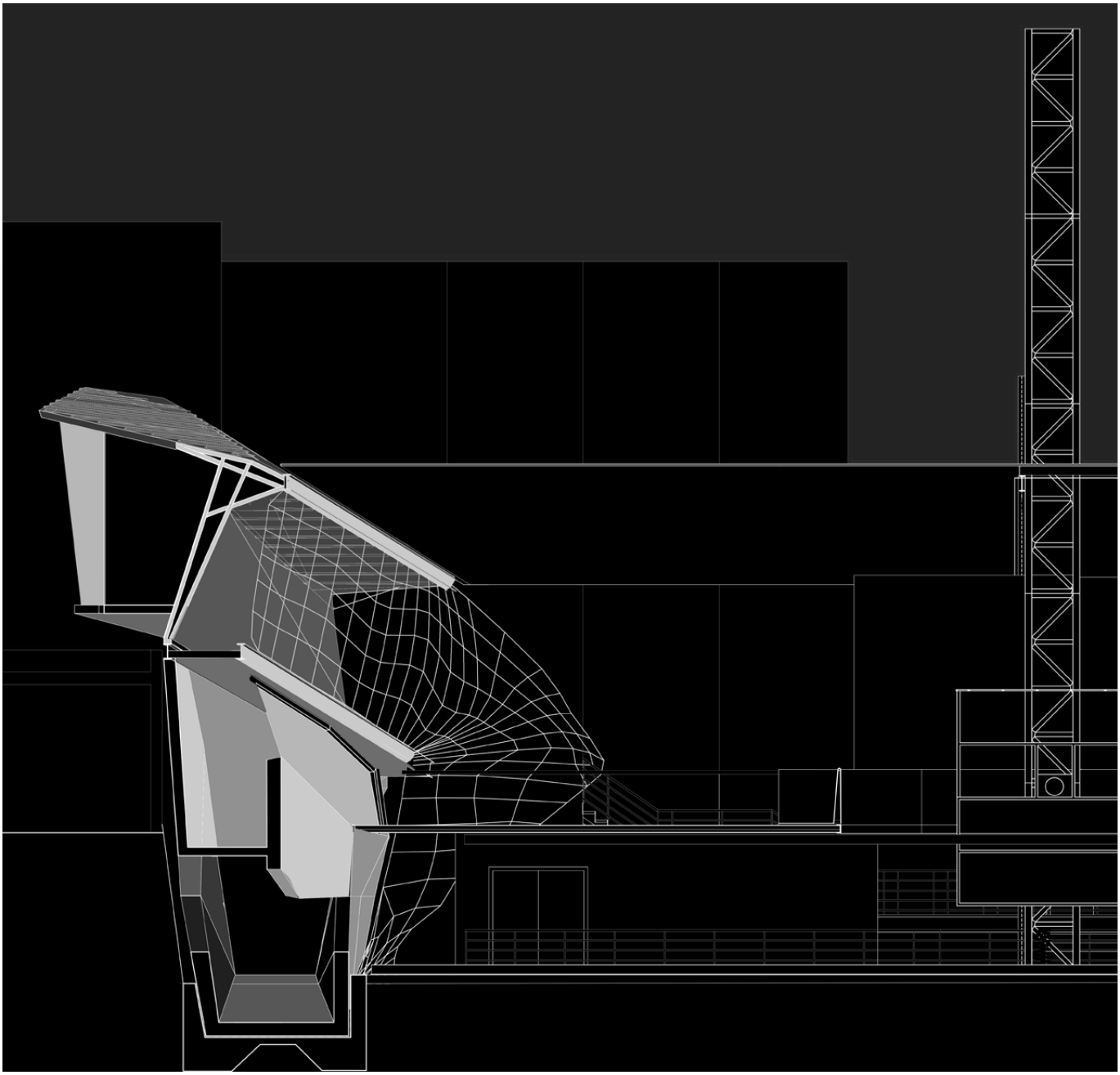


Figure 4.16. Perspective drawing of early conceptual exploration of planted skin,

Figure 4.18. Sectional elevation of imagined steel structure supporting planted skin, (Author, 2014)



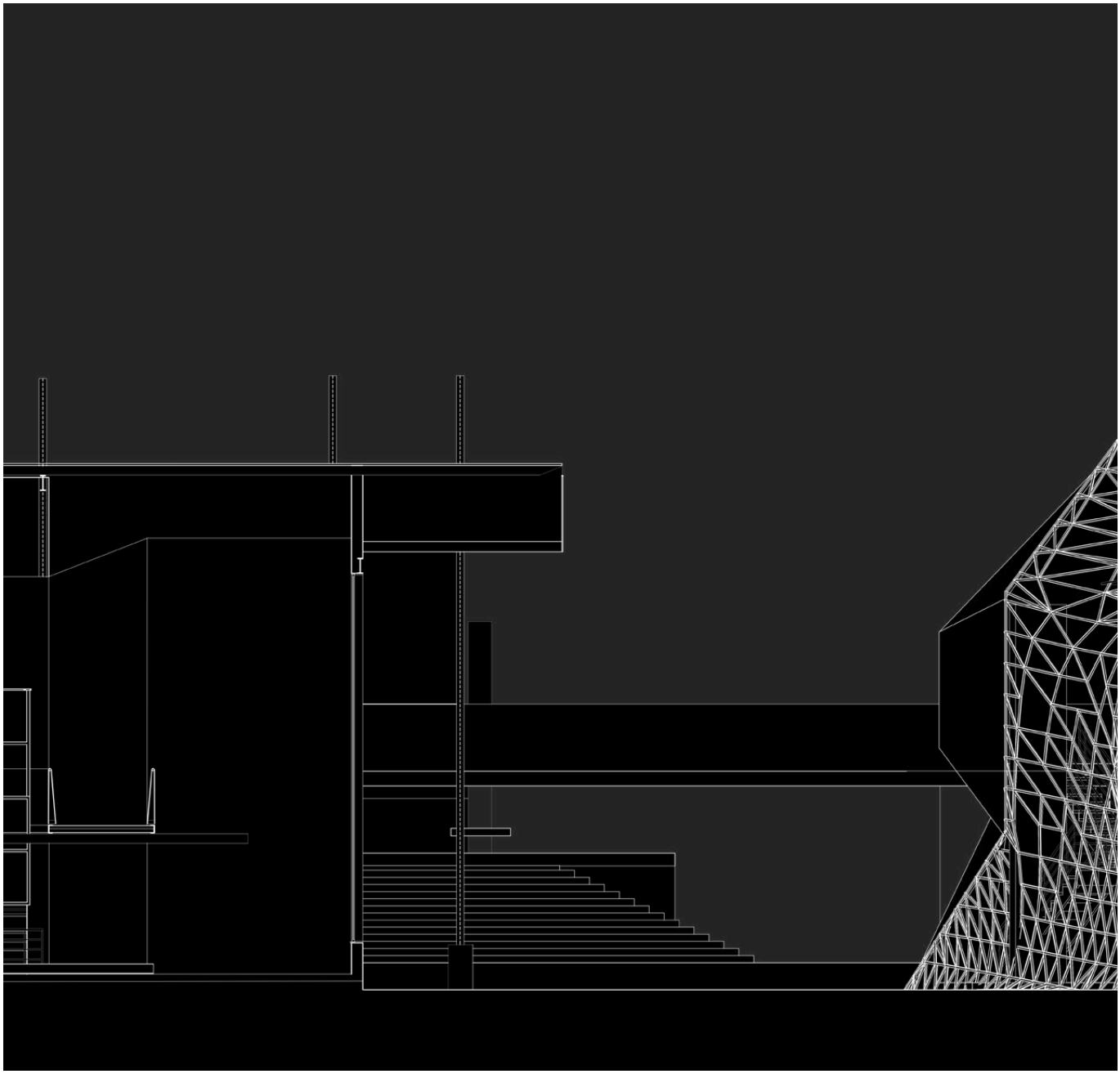


Figure 4.19. Digital render of a section through the existing fabric, exposing new interventions, (Author, 2014)

05

THE TECHICAL **RESOLVE**

PART 1.
Materiality

PART 2.
Approach

PART 3.
Practicality within construct

Definition:

Aether:
The noun AETHER has 2 senses:
1. personification of the sky or upper air breathed by the Olympians; son of Erebus and night or of Chaos and darkness
2. a medium that was once supposed to fill all space and to support the propagation of electromagnetic waves
(Merriam-Webster 2014)

Parametricism:
'Parametricism implies that all architectural elements and complexes are parametrically malleable. This implies a fundamental ontological shift within the basic, constituent elements of architecture. Instead of classical and modern reliance on rigid geometrical figures – rectangles, cubes, cylinders, pyramids and spheres – the new primitives of parametricism are animate geometrical entities – splines, nurbs and subdivs. These are fundamental geometrical building blocks for dynamical systems like 'hair', 'cloth', 'blobs' and 'metaballs' that react to 'attractors' and can be made to resonate with each other via scripts.'
(Schumacher P 2014)

"As environments change, no human ideal standeth sure!"(Szandor LaVey A, 1969)

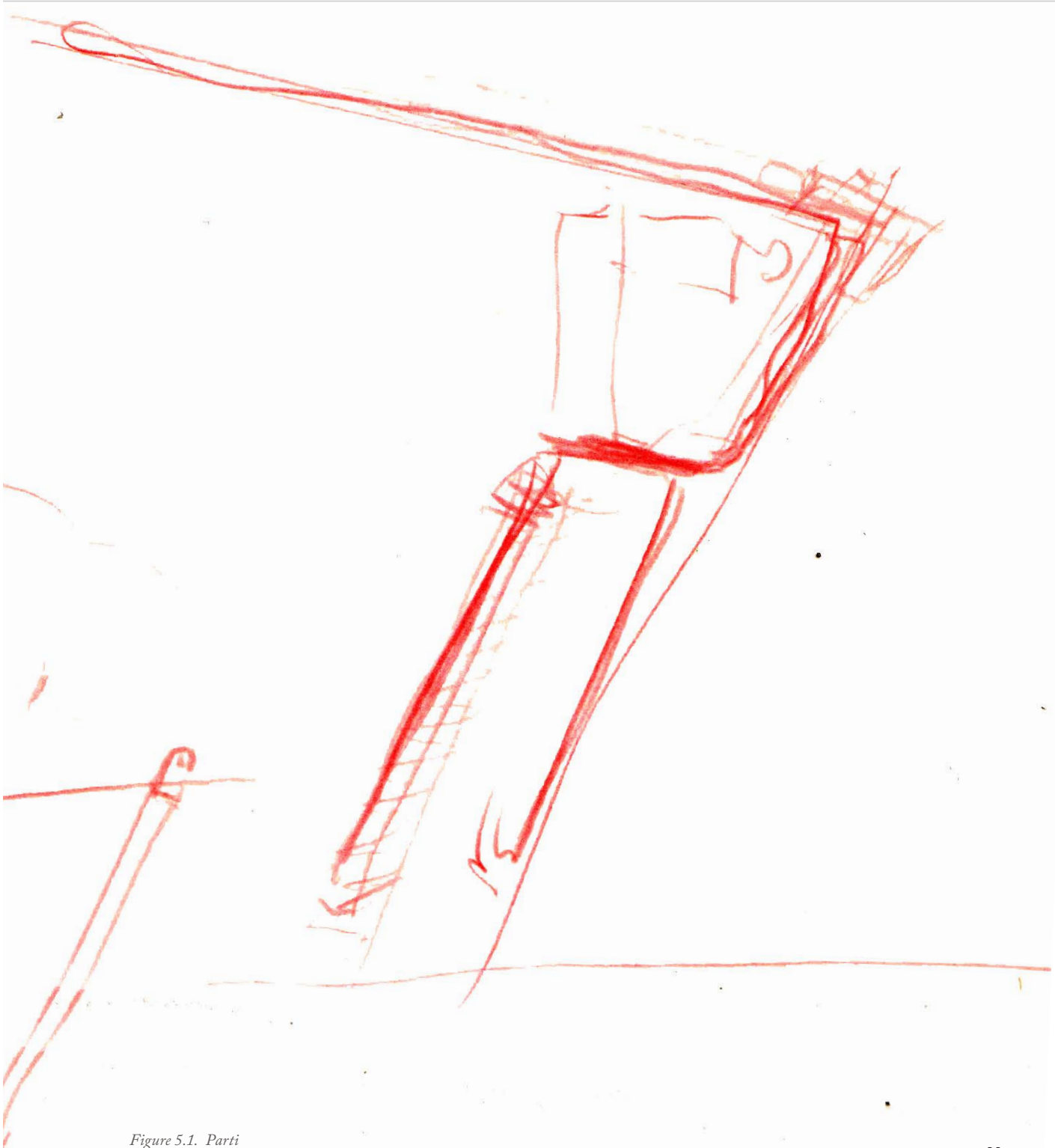


Figure 5.1. Parti diagram, (Author, 2014)

The implicit value carried by the materiality contained within any structure is inseparable to the space which it encompasses. It is thus of the greatest importance to investigate the application of said material beyond the structural capabilities it carries or the overall ease of assembly.

Reiser + Umemoto states: "Material science promises to bridge the gap between natural variations and standardization through non-standard materials, the traits and performance of which can be manipulated even within a single member according to specific requirements. This will liberate the traits of steel from modernity's homogeneity and paradoxically return them to the heterogeneity of traditional practices such as sword-making." (Reiser + Umemoto 2006, p203).

As precedent to staff this statement, structural diagrams of 'Alishan bridge' is used to illustrate the value of rigorous explorations of structural form. Reiser + Umemoto created these images in order to show how materiality can alter the initial concept of a design, and also that, through various iterations of structure and material, a final form can be realised without having to destroy the initial intent.

The value (regarding this project) of how Alishan bridge's form was iterated lies within the idea of freeing structure from homogeneous systems of grids and fixed elements. This subsequently enables a wider variety of functions to be realised without compromising the intent of the form.

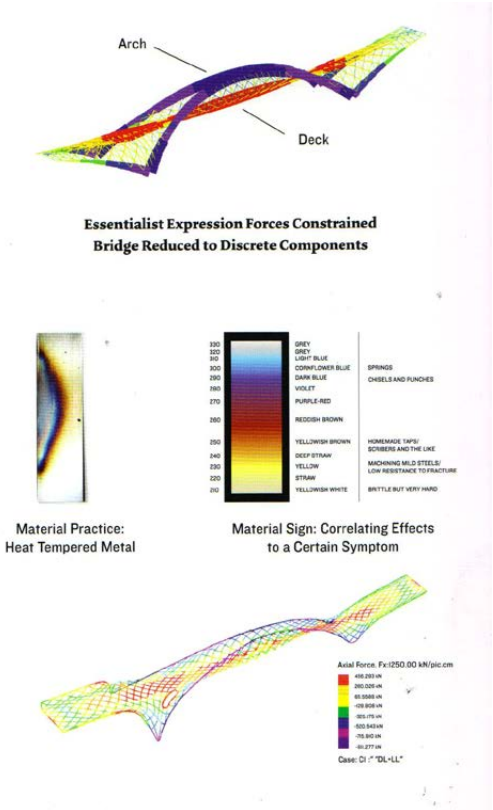
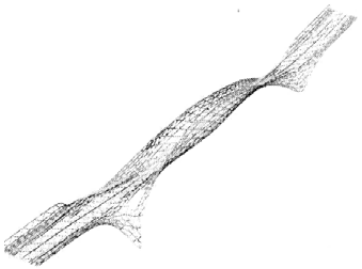
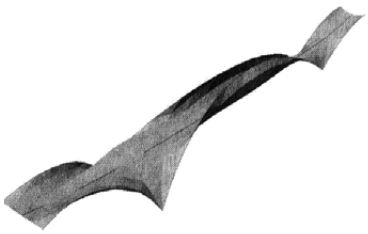


Figure 5.2. Load and force study of Alishan bridge, (Reiser + Umemoto, 2006)

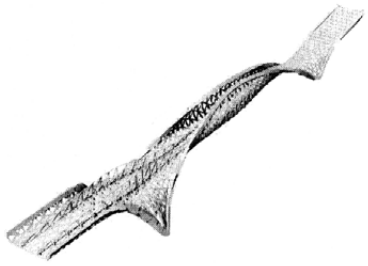


COMPETITION MODEL
The concept produces an ideal geometry. We presume it could be built in wood, as stipulated by the Taiwanese government.

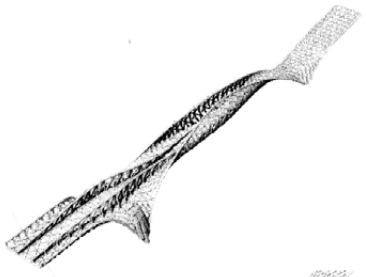


FORM FOUND MODEL
Our engineers run the form of the bridge as a minimal surface in order to optimize for shell action. Works fine, looks terrible.

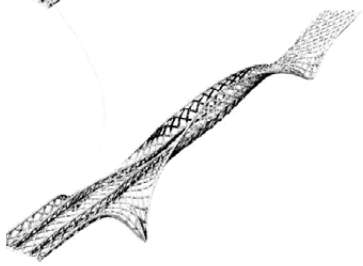
OPTIMIZED STRUCTURAL MODEL IN WOOD
An interpretation of the optimized model in wood looks even worse.



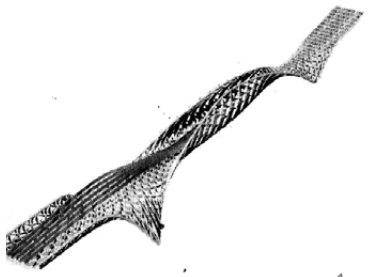
WOOD MODEL WITH TRANSVERSE ELEMENTS
In an effort to improve the appearance of the model, transverse members are introduced. Thinner members are added, but at the expense of the original basket weave concept.



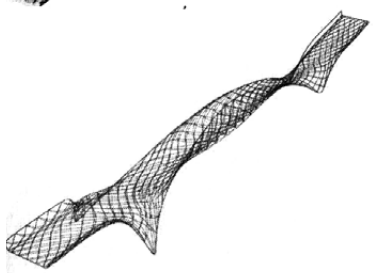
STEEL VERSION WITH TRANSVERSE ELEMENTS
Phylogenetic Shift: Our client indicates that the lifespan of wooden bridge under the environmental conditions on site would only be six years. Fruitless effort! We suggest a change in materials. A formal improvement, but members are still too heavy.



STEEL VERSION WITH NO TRANSVERSE ELEMENTS
A formal improvement, but members are still too heavy.



STEEL EGG CRATE MODEL
As a remedy we suggest turning all members 90 degrees. Our engineers compliment us on a rational move. Bridge becomes transparent in elevation, yes, but incredibly solid from a longitudinal perspective. Unacceptable!



CRAFTED MODEL: DOUBLE LAYER GRID SHELL
Visual lightness is achieved by pairing two lighter members rather than a single heavy member. Paradoxical return to the spirit of the original competition model is achieved.

Figure 5.3. Materiality study of Alishan bridge, (Reiser + Umemoto, 2006)

The first part of this chapter focuses on the technical resolve of the elements that make up the agent. The tower, being a composite of the other new interventions on site, reflects the architectural intent on a detail level and, through exploring the construction, will act as sample of how construction of the other elements will be approached.

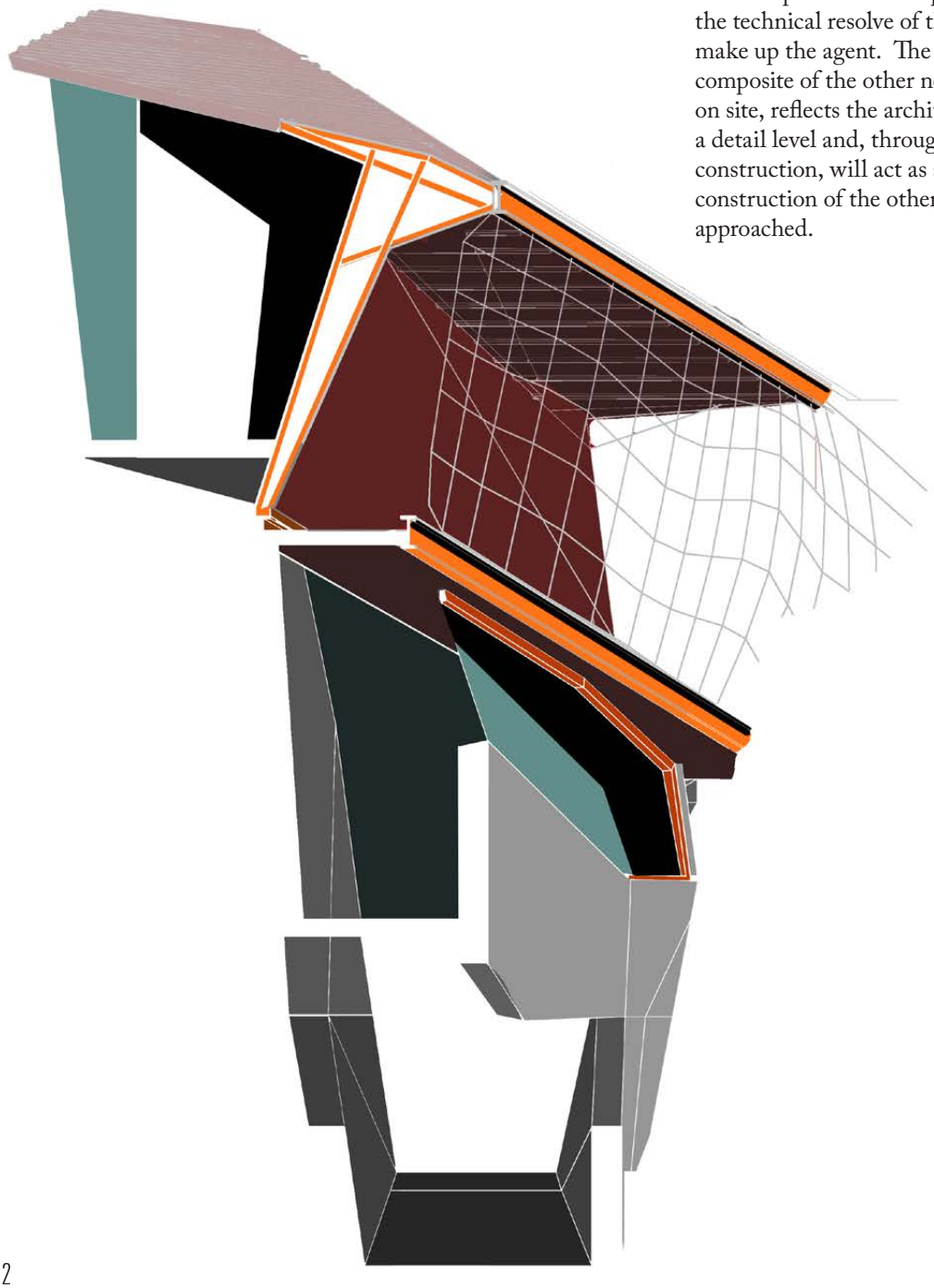


Figure 5.4. Surface exploration render of tower, (Author, 2014)

1.1 BASE

The base of the tower should be understood as a carved, massive shape. The form itself consists of complex, interlinked geometrical surfaces that do not follow rigid structural grids but rely, rather, on the form itself for structural rigidity. In-situ cast concrete is specified as the main material, firstly because of the plastic nature it possesses before setting, and, secondly, for the robust massive qualities that off-shutter concrete has.

For the concrete shell to materialise, the form-work would need to be constructed with a high level of accuracy. A highly detailed digital model was created from which all the surfaces can accurately be flattened. The sizes for each board that would be necessary to create the complete shell can then be determined.

Fig 5.6 illustrates the unfolded external surfaces of the concrete base. The unfolded flat surface can be seen as a template for creating the complex shuttering needed for creating the a-symmetrical form show.

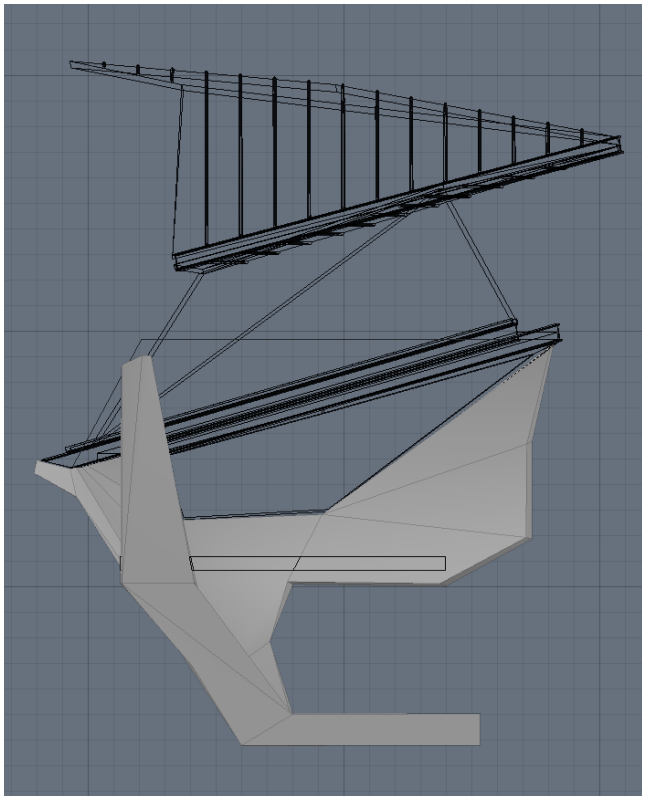


Figure 5.5. Elevation study of concrete base rendered in MODO, (Author, 2014)

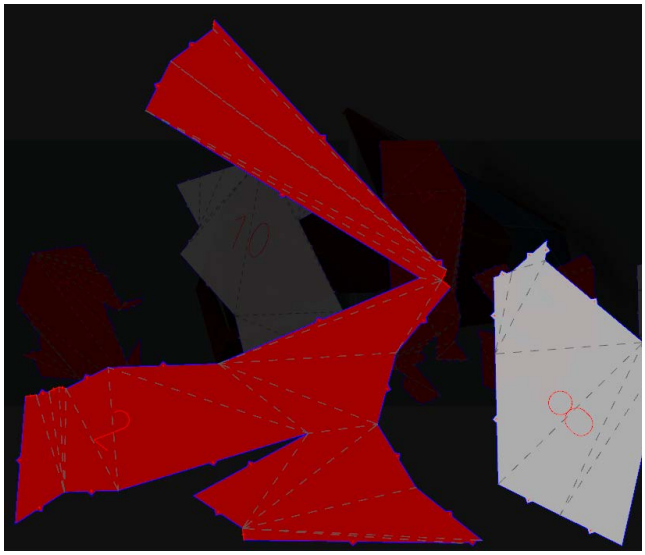


Figure 5.6. Exported surface map of tower base through various digital explorations, (Author, 2014)

1.2 INTERMEDIATE SURFACE and STRUCTURAL FRAME:

Acting as intermediary between the two main forms of the structure, a composite surface creates an access ramp into the top part of the tower, encloses the lower cell, and, lastly, creates an accentuated water spout to transport filtered water from the roof gardens into the internal water channel. These composite floors are sandwiched between hot-rolled I-beams. The beams, which are fixed to the concrete shell below, act as the main structural support of the top half of the tower.

Conceptually, as a tactile element, the composite flooring acts as the mediator between the two materially contrasting elements that make up the body of the tower. A sparse layer of concrete covers folded steel corrugations. Both of these materials optimally utilise their inherent properties. The steel acts as tensile frame, embracing its insides fully. The concrete screed absorbs all events happening on its surface happily. The robust surface it grants can handle all the daily practices of a factory.

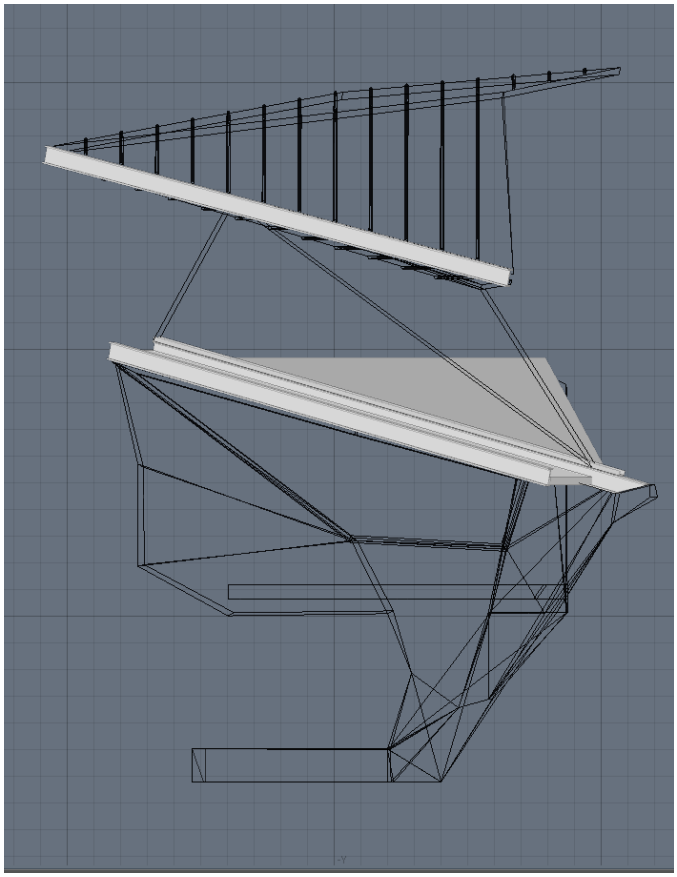
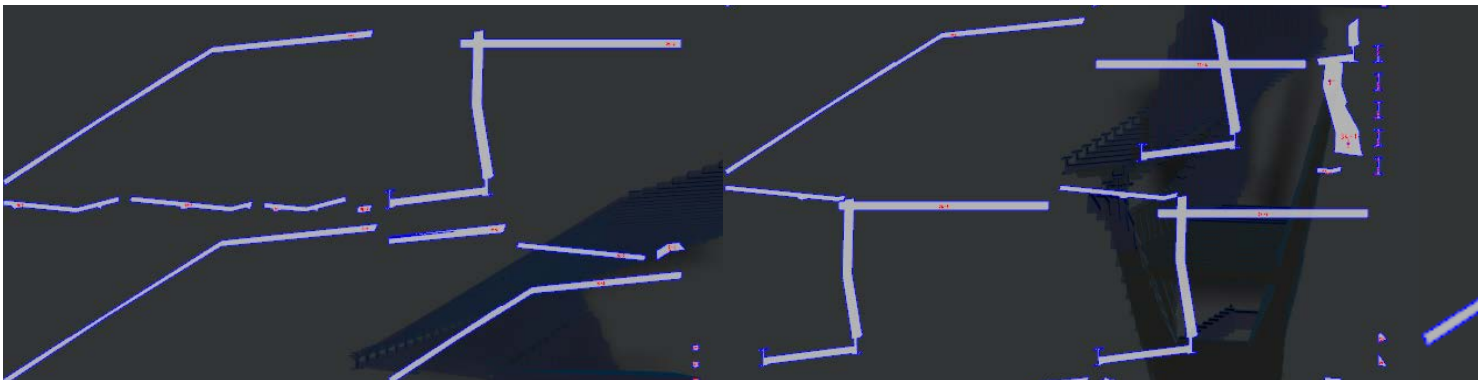


Figure 5.7. Elevation study of composite roof and ramp, rendered in MODO, (Author, 2014)



1.3 CROWN

Rising from the existing structure, looking out onto Jeppestown, is the head of the tower. The structure is formed through a process of abstracting the material removed. By cutting into the existing fabric a new space is created, cladded in flat rolled steel sheets crimped together. This newly created space acts as a memory/reflection of Jeppestown's industrial past. The structure consists of a layered sandwich-panel system to allow for the obscure shape to rest atop the primary steel frame.

Structurally the head consists of lightweight steel girder-trusses. The trusses are then spaced closely enough that they can be spanned by flat ply-wood sheets, eliminating the need for purlins. The reasoning behind this approach is to keep the geometrical surfaces readable and skinny. Finally, the assembled form is clad in the aforementioned roof plates, creating a homogeneous surface covering.

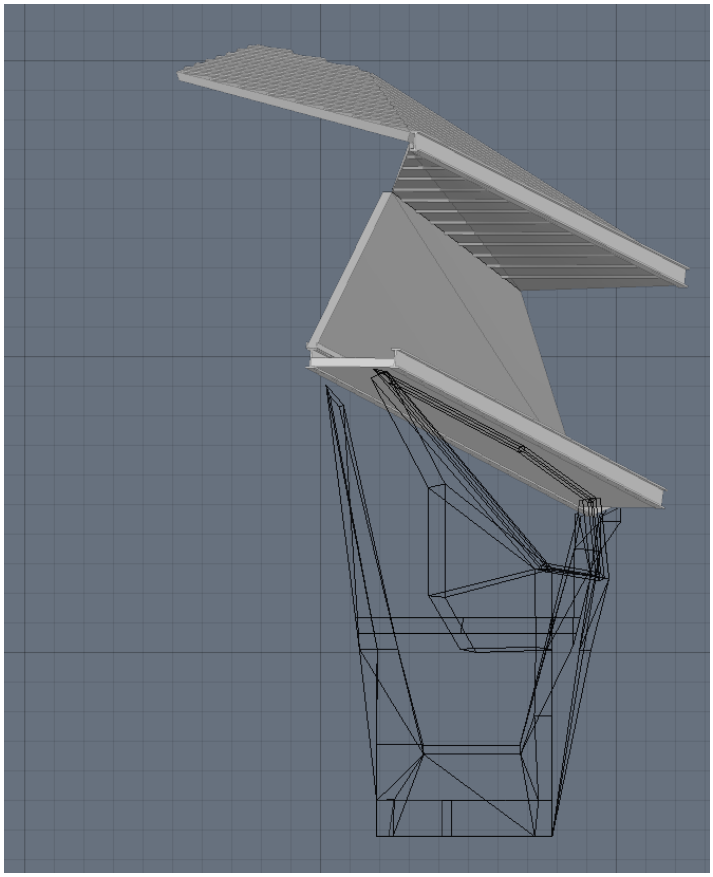
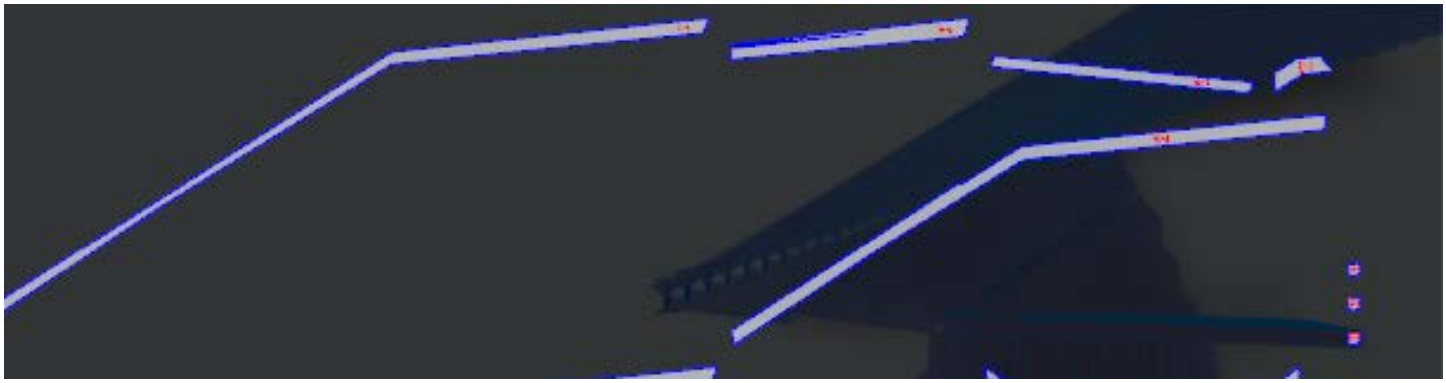
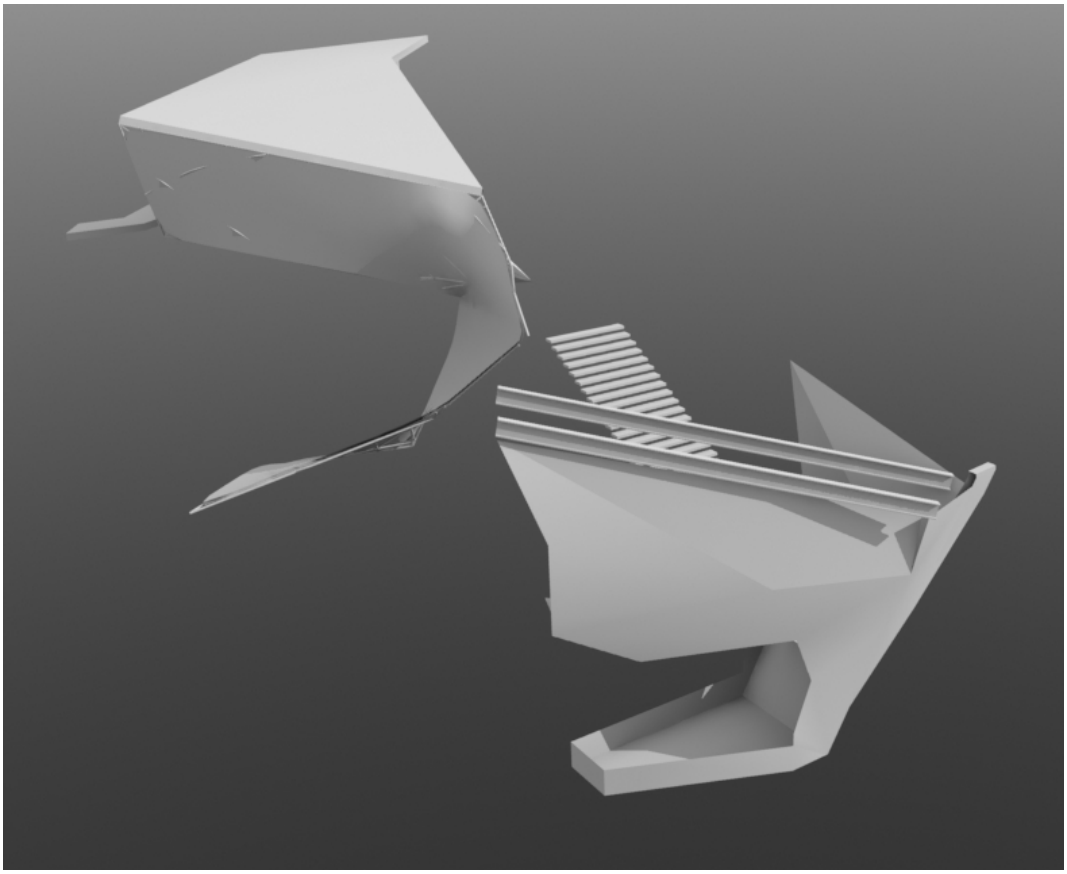


Figure 5.8. Elevation study of lightweight steel construction rendered in MODO, (Author, 2014)

Figure 5.9. Exported map of lightweight steel members needed for the construction of the tower, through various digital explorations, (Author, 2014)





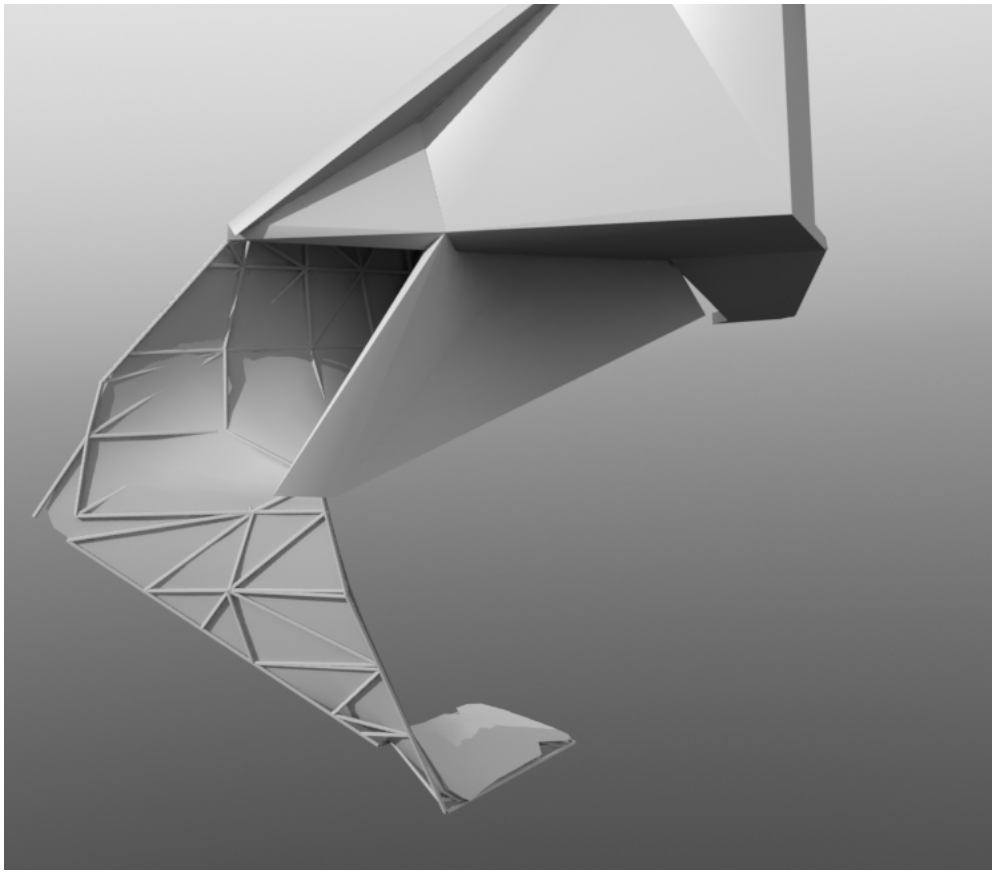


Figure 5.10. Digital render of constructed tower form exploration, (Author, 2014)

The **SUBSURFACE**

Brick & mortar, demolition and new construction.

The creation of (previously non-existent) physical links between existing buildings involves, firstly, the removal of built fabric (three cuts through site). To avoid the hampering of (and potentially smothering) existing activities, only areas where little- or no regular activity happens have been identified and selected for demolition. For the most part, the removal of walls, slabs and floors are non structural in nature, as the existing fabric is mostly concrete column and beam construction with brick infill.

The new architecture that latches onto these partially demolished buildings acts as external public square on the surface, with private functions happening below. Therefore the shape of the internal spaces are completely subject to creating usable and comfortable external spaces that flow into each other with ease. Remnants/ memories of what the old fabric was will be left on site as spatial informants and/ or visual elements that frame vistas of the park, or frames of the heritage building on site.

Being dependent on the courtyard design, specifically spaces housing people necessary for the new intervention, internal spaces root themselves firmly in the soil rather than attempting to have an outwards presence. The interior spaces are celebrated by filtering natural light through the roof of the structure, with only a single strip window looking onto the church from the exterior ground level. The entrance to this space also resembles a cut running into the existing fabric; deep brick walls slant inward to an entry point hidden from everyday public activities.

Lastly, steel columns reach into the sky, allowing for the movement of materials to happen without obstructing pedestrian movement happening within the square. These slender steel elements create visual interferences, breaking an otherwise awkward space into definable regions able to host the various activities that Jeppestown has to offer.

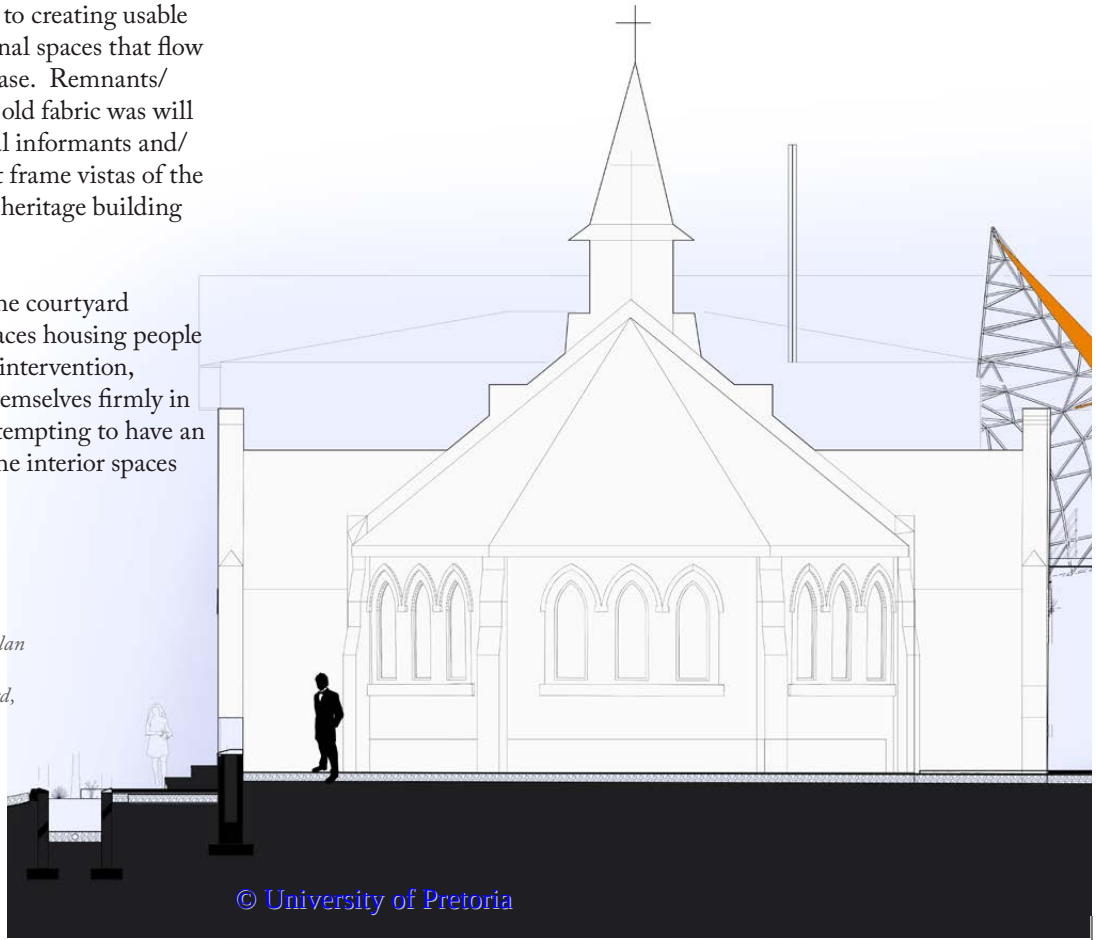
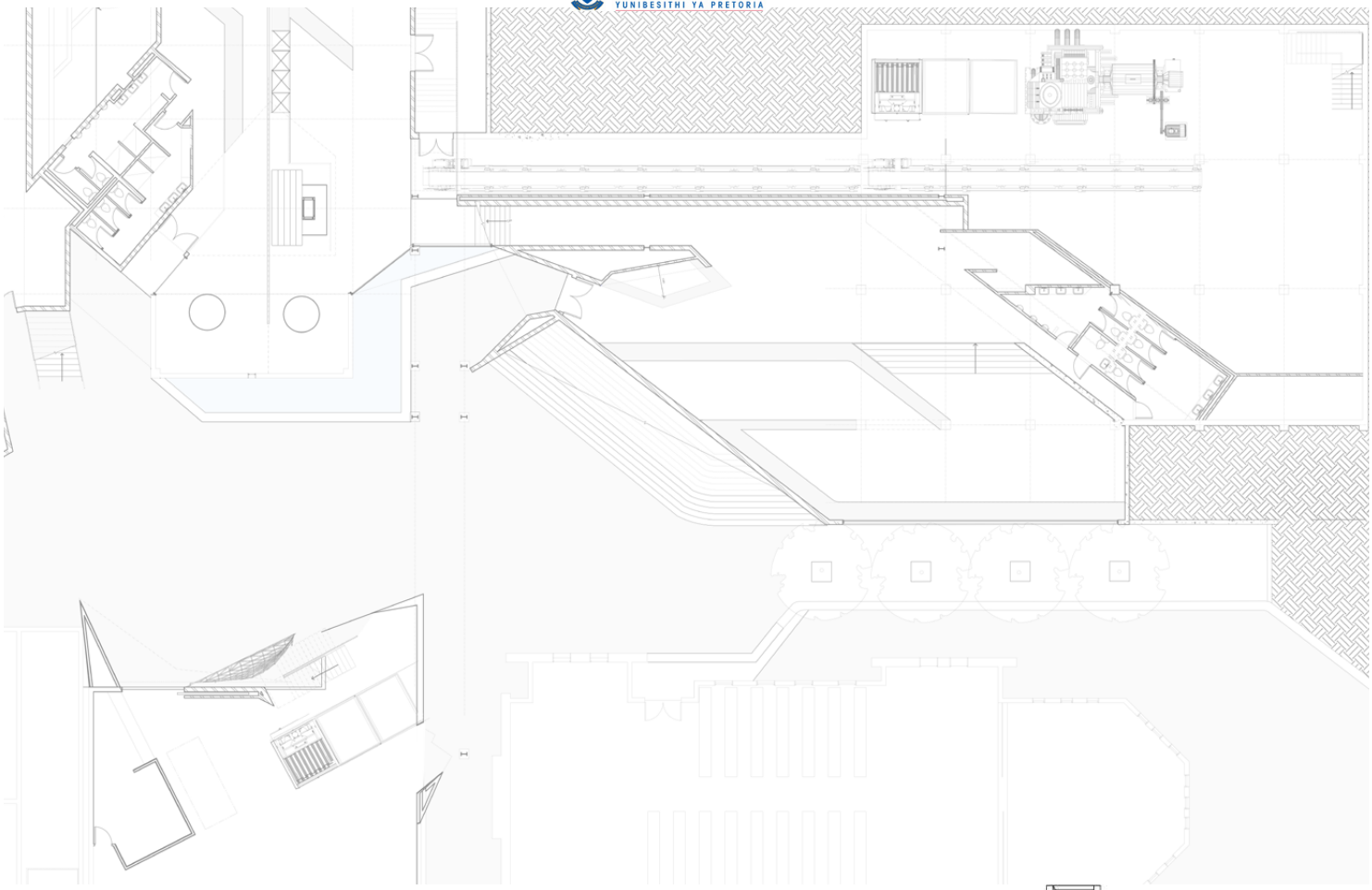
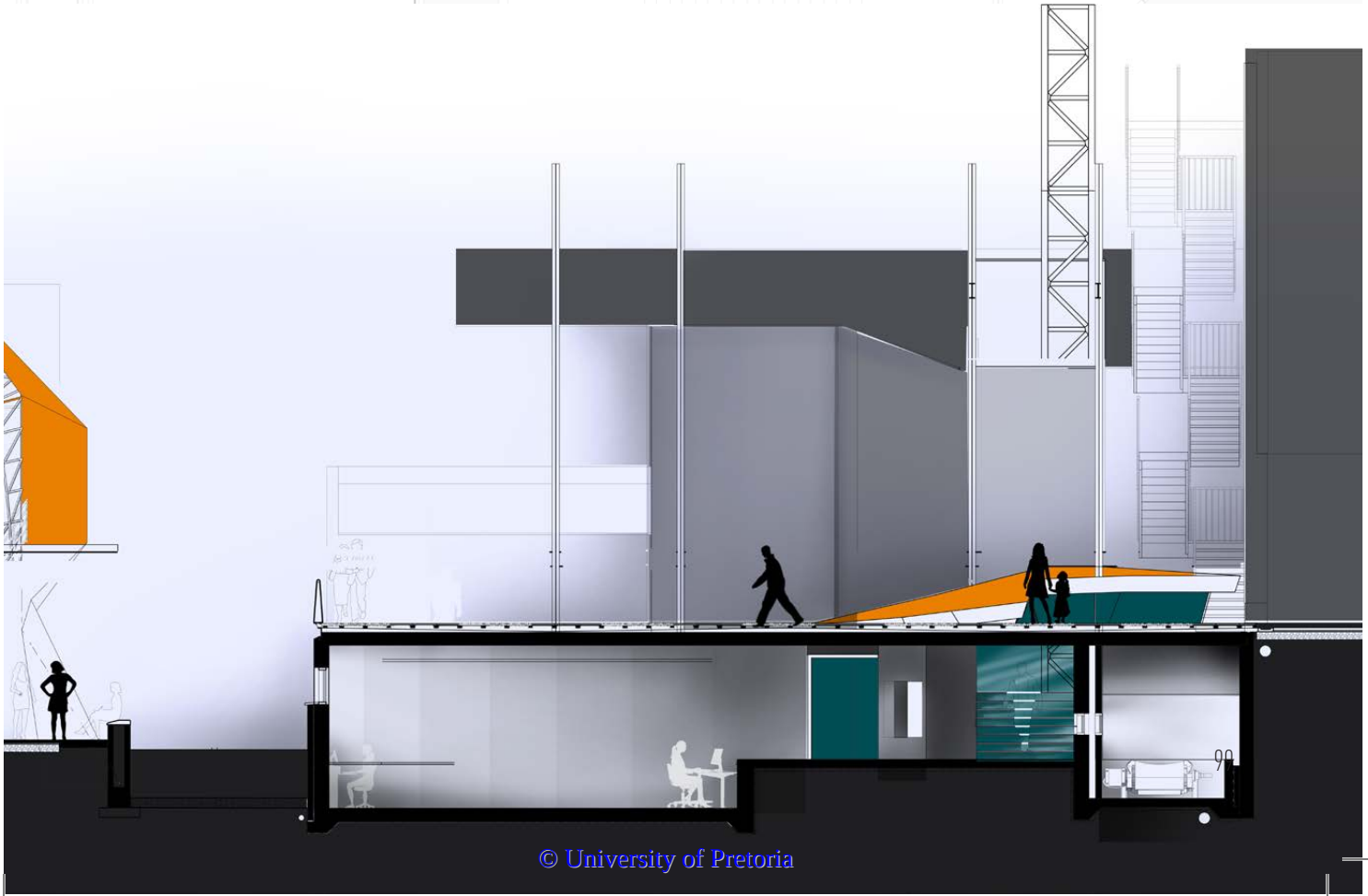


Figure 5.11. Rendered plan and section of the lower lever spaces and courtyard, (Author, 2014)





Focusing on current building methods employed within Jeppestown today, materials are re-used in various ways and forms – most likely emerging from material scarcity and financial constraint. The structures that arise from this metabolic state is limited only by the parameters and by a constricted knowledge of application of the materials at hand. This condition creates the opportunity to reappraise both the method and the order of construction, so as to create potential for new emergent forms to materialise, given the opportunity.

It can be argued, of course, that the whole approach aims at wilful and arbitrary form-giving, and disregards—or maybe even worse, discredits—present methods of construction, i.e. the present style of creating space.

"...what stands in the way of this is the tendency to regard style as merely a matter of appearance, as well as the related tendency to confuse styles with superficial, short-lived fashions. Although aesthetic appearance matters enormously in architecture and design, neither architecture nor its styles can be reduced to mere matters of appearance. Neither must the phenomenon of styles be assimilated to the phenomenon of fashion."(Schumacher P, 2014)

The counter-argument proposes forming a clear distinction (just as Latour argues for a distinction between knowledge and truth) for a cognitive schism to be established between superficial appearance and architectural style (La Tour B, 2014). Architectural style, undoubtedly bound by visual presence, does not exist in isolation of the context it is placed in. The new intervention, with a contrasting appearance to its surrounds, will create a tension/argument between the old and the new; opening space for conversation around the form of urban environments within South Africa.

For these reasons, the final iteration of this project; the technical resolution; shifts its focus not to the resolution of details easily solved by practitioners in the know, but rather explores methods of constructing elements yet undefined. This will allow for forms unbound by present methodologies (concerning construction of contemporary forms within our cities). To manifest such forms, the role of the architect is not to act as visionary creator, but rather to hand over the proverbial reams and allow new forms to manifest freely.

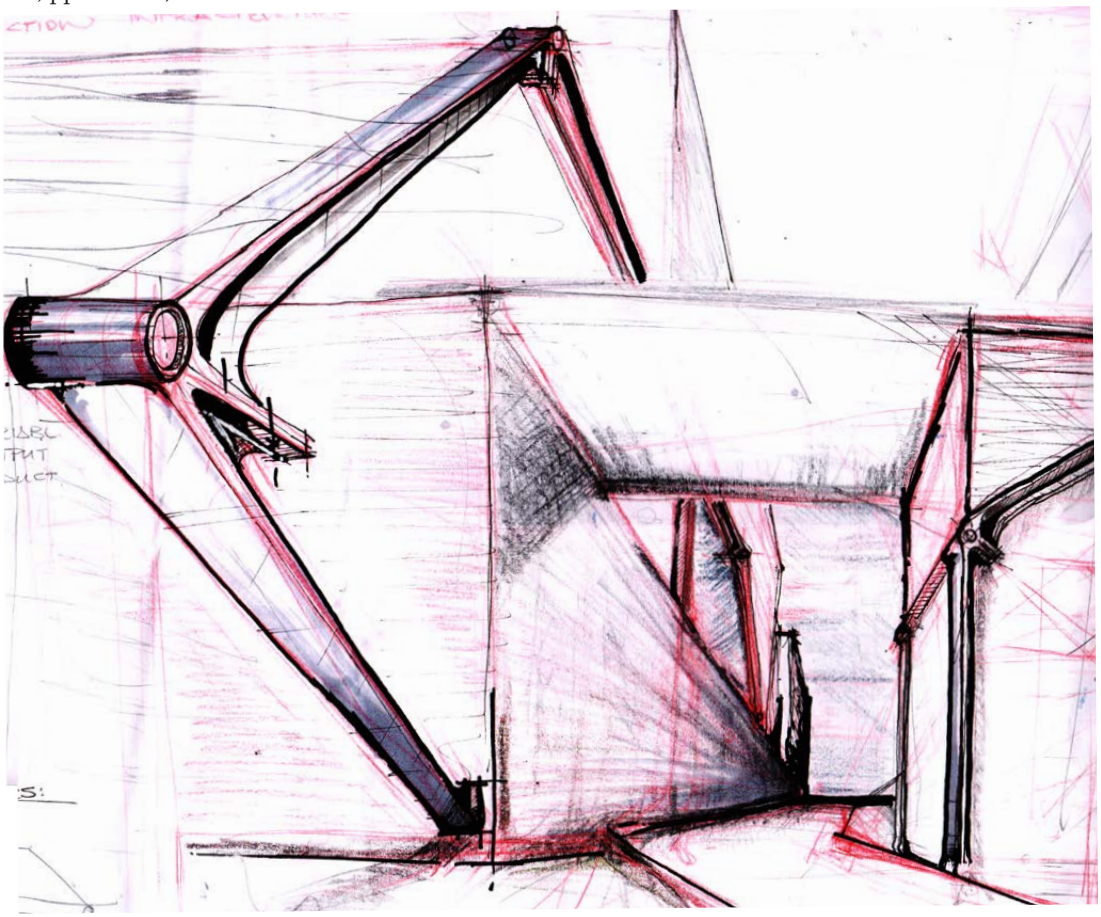
Figure 5.12. Concept sketch (Author, 2014)

2.0 PRAGMATIC

What has been done can be re-enacted. What is recognized as unaddressed, and unknown, is the inevitable future of construction within urban environments. Parametricism, with specific regard to furthering the potential theoretical argument of this dissertation, acknowledges variability of materiality and function as an ever-present contributor to our environment. The idea of applying parametric functions within an environment that has, as of yet, only executed robust and well known methods of construction, is founded in the concept coined(by the author) as 'low- material, high technology value'.(A Prospect Ritual, pp.117-129)

To delineate a broad argument enough for it to be applied constructively, materiality, in accordance with the function it potentially provides, has been separated into three degrees of functionality: simplex; binary; and complex.

To delineate a broad argument enough for it to be applied constructively, materiality, in accordance with the function it potentially provides, has been separated into three degrees of functionality: simplex; binary; and complex.

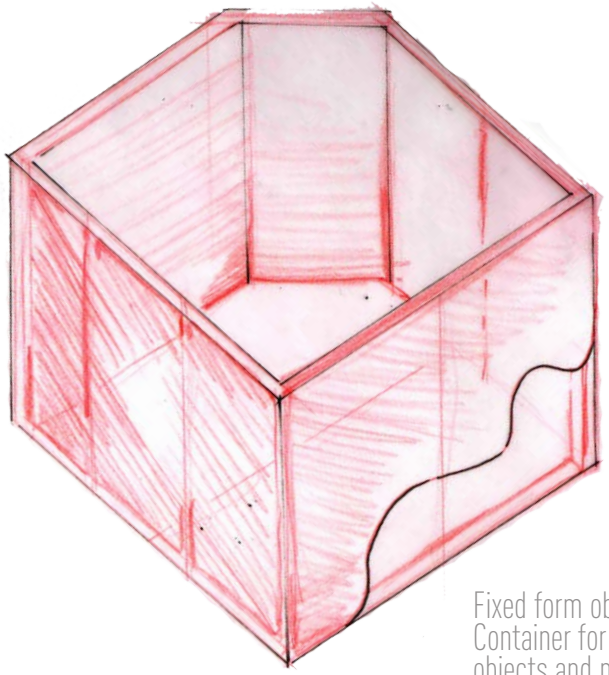


2.1 SIMPLEX

Simplex functions can be defined as having one primary function; all other, subsequent functions or effects it might have are secondary to its nature. A paving brick serves only one main function as load-bearing surface. A structural column serves only to carry the intended weight placed upon it. Simplex functions are defined as elements that fulfil a singular defined task, and are bound by basic parameters characterised by structural capacity, material integrity, and/or modular functionality.

Simplex materials are most easily defined. Thus, the formation of the core of all parametric creations concerning the 'skin' (Lupton E. 2002) of this project relies on simplex materials. The primary structure of the skin will always consist of elements defined as being simplex in nature.

- Surface
- Object
- Element
- Piece
- Part
- Portion
- Member



Fixed form object. Container for other objects and materials. In isolation the object potentially serves a singular purpose

Figure 5.13. Axonometric drawing of a simplex element, (Author, 2014)

2.2 BINARY

Binary material compositions, as the name suggests, are considered as elements able of fulfilling two tasks – either simultaneously or in progression. Binary materials always consist of a combination of simplex materials and do not function in isolation. A door within a room acts as a binary member; when open it is a portal into the space – a defined entrance. When the door is closed it acts as surface – it encloses and isolates a defined space otherwise permeable.

Parametrically these elements are harder to define, considering that their function varies from one event to another. These elements are reliant on functioning as contributor to an assembled pattern. Consider $2(a^2)^x$ where 'a' represents a single element with binary capacity, 'x' represents the amount of binary elements in a system. Considering 'a', the simplex element is defined; there remains only one unknown parameter which is the amount of elements working in the system for it to function.

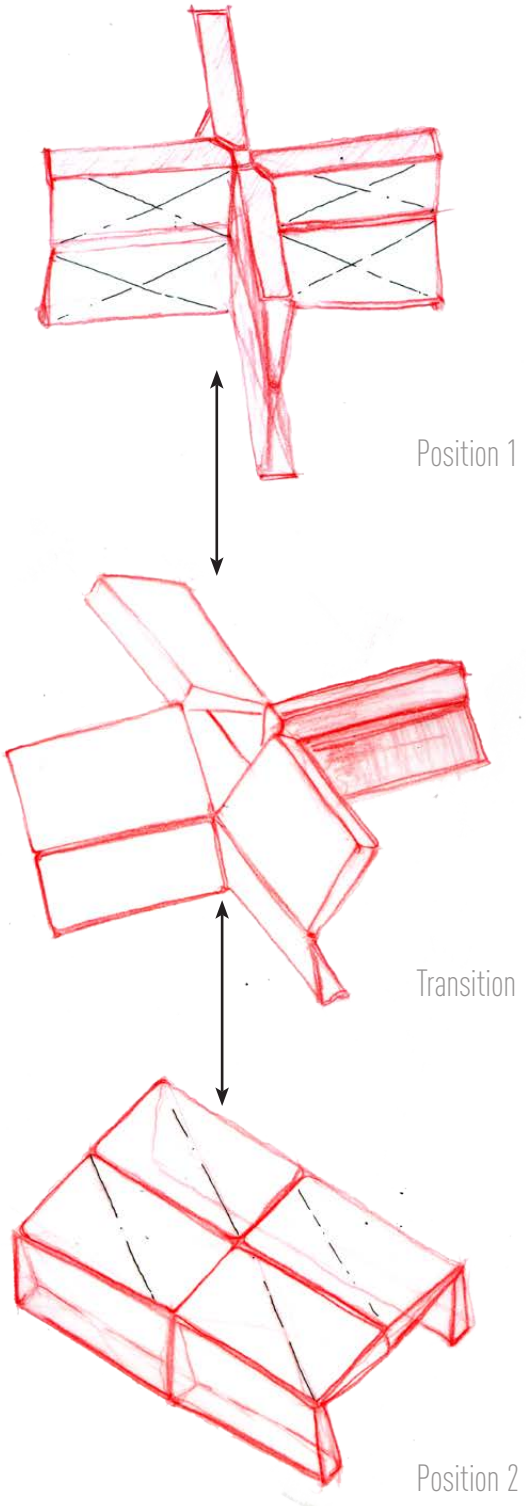


Figure 5.14. Axonometric exploration of binary functions within elements, (Author, 2014)

In the manufacturing plant, the use of a binary element as a regulatory mechanism controls necessary access to the composting plant. The public needs access to the composting plant and the roof gardens, but should not be able to enter the factory itself. Similarly, the factory workers also require access to the composting plant, but only when there is no public activity occurring in the space. Movement and process is regulated by introducing a large centre-hinged door with only two fixed positions.

When the door is stationary in either position, it will always create one access route and one impenetrable surface, fluctuating equally between public and private.

This dual state mechanism allows for maximum productivity by only allowing access to areas specifically required by the varying processes of the factory. More importantly, the door acts as an indicator of whether material is in transition or stationary according to human activity, making the connection relational.

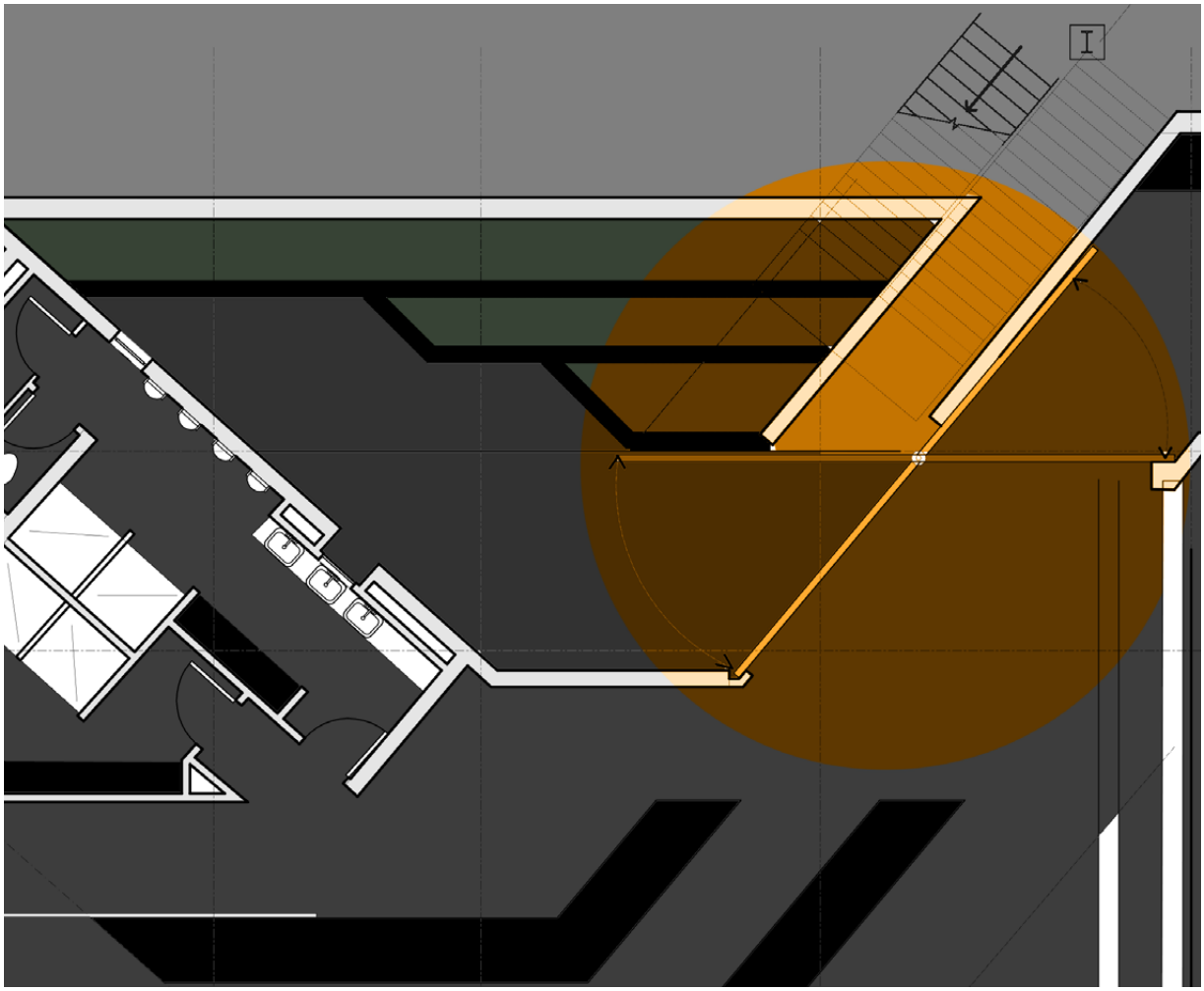
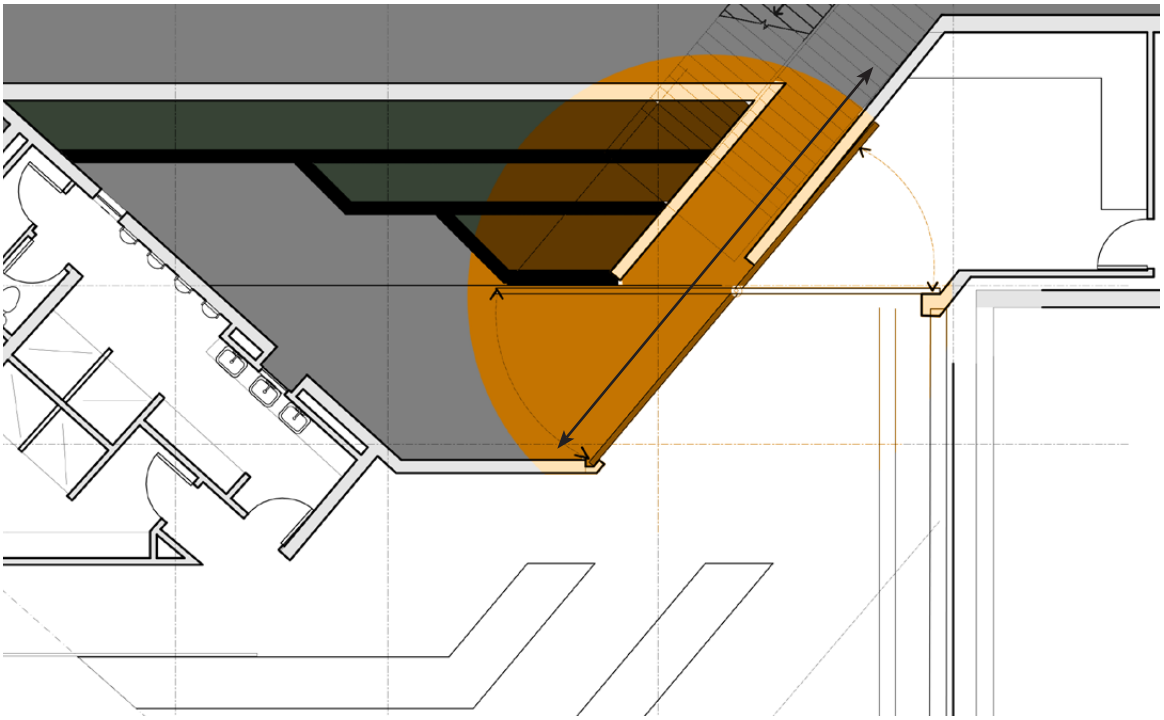
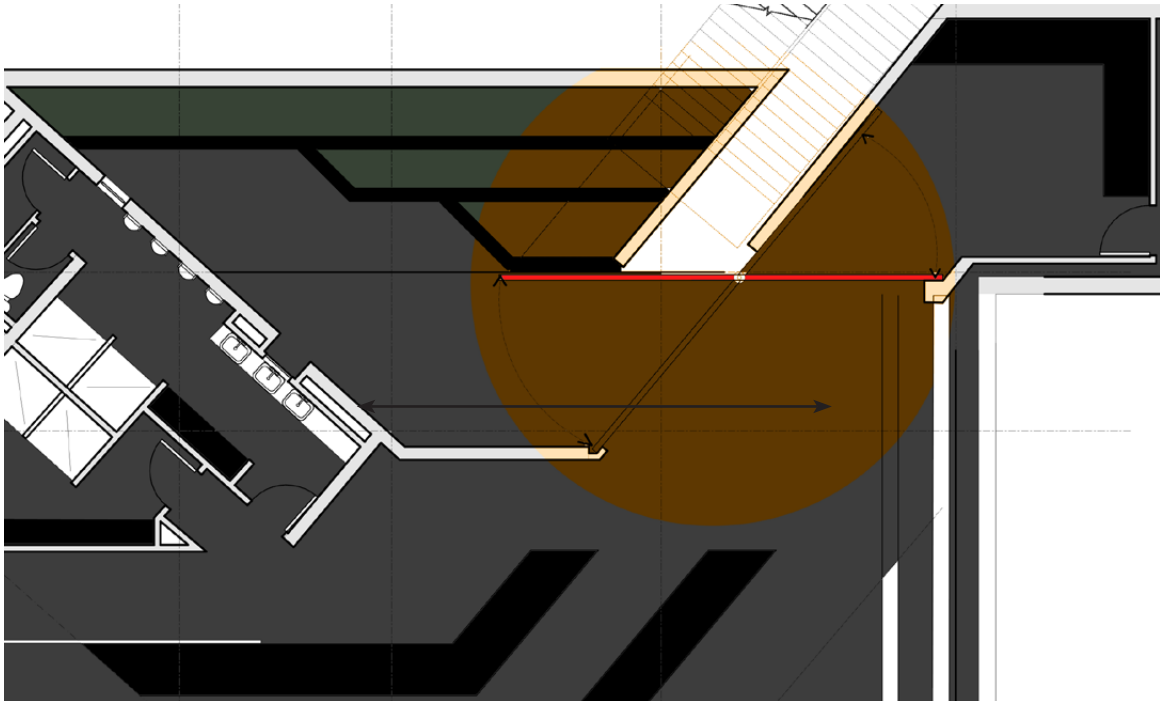


Figure 5.15. Extract from plan showing binary door element, (Author, 2014)



Position 1



Position 2

Figure 5.16. The door mechanism in two positions, (Author, 2014)

2.3 COMPLEX

Complex architectural systems should be understood as having the ability to host a variety of events, both of material and social value, either simultaneously or in succession. Although there is a broad spectrum of building members that qualify for this category, an example of such a system would be an artificial wetland operating in conjunction with a building's grey-water system. The wetland filters water for various functions within the building, and, in order for this to be achieved, the wetland requires a natural ecosystem to thrive in and around the body of water. Beyond the pragmatic tasks it fulfils, the intervention also creates pleasing vistas and new recreational spaces for other unprogrammed human events to occur.

The complexities that arise from these interlinked systems are probably not quantifiable through mathematical formulas or physical analysis. They operate somewhere between the physical and ethereal – the aether.

For this reason, with regard this project, complex architectural systems are employed from a purely pragmatic and aesthetic approach – aiming only to improve conditions from both an infrastructural-, and a public inhabitability point of view.

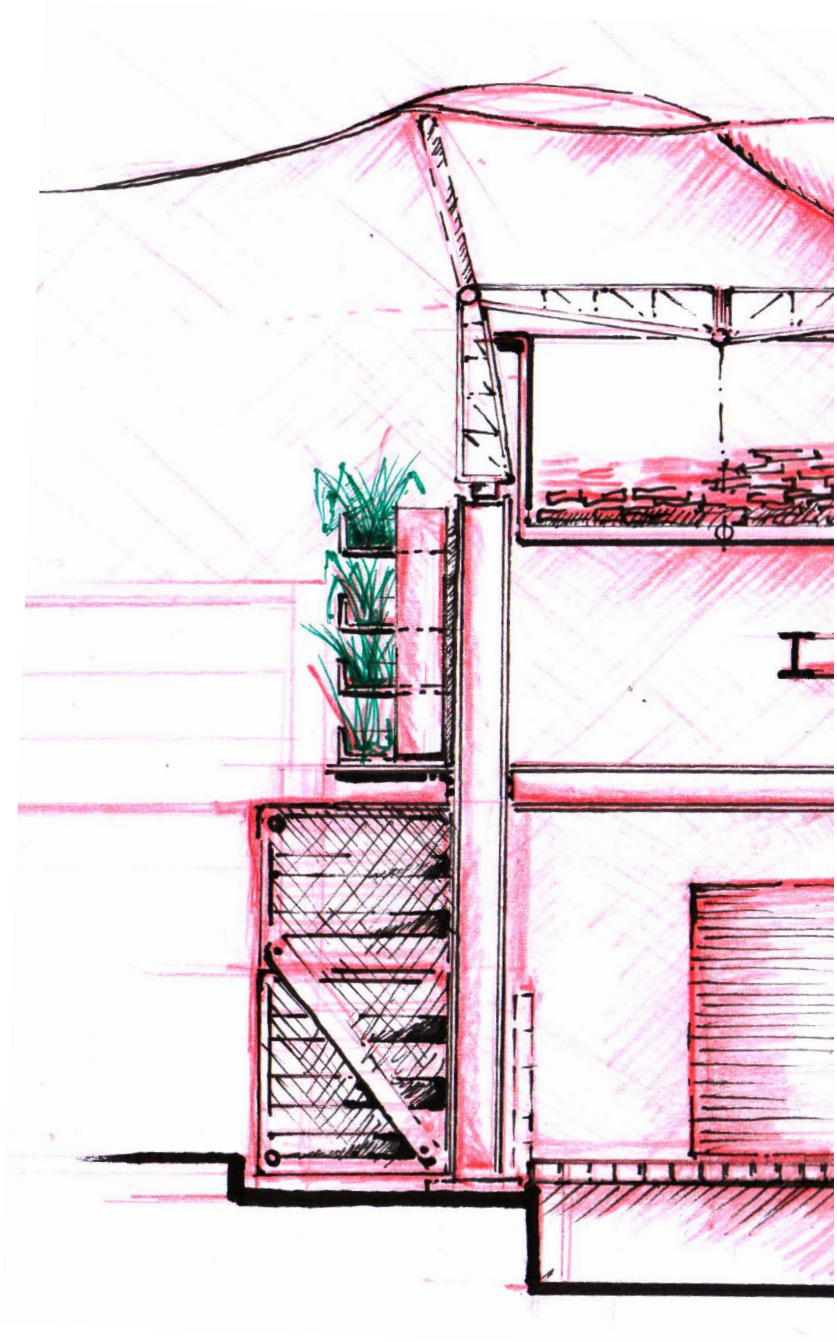
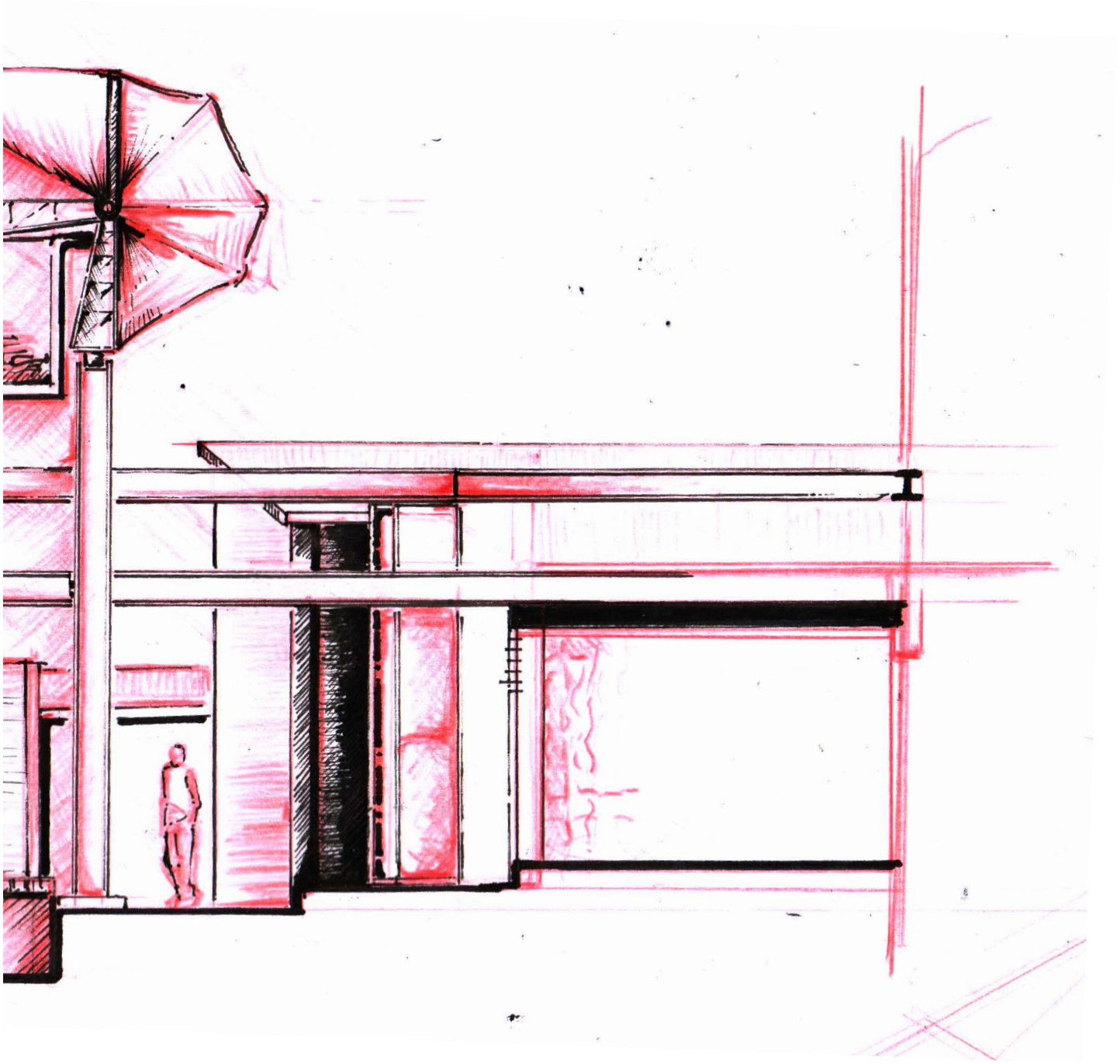
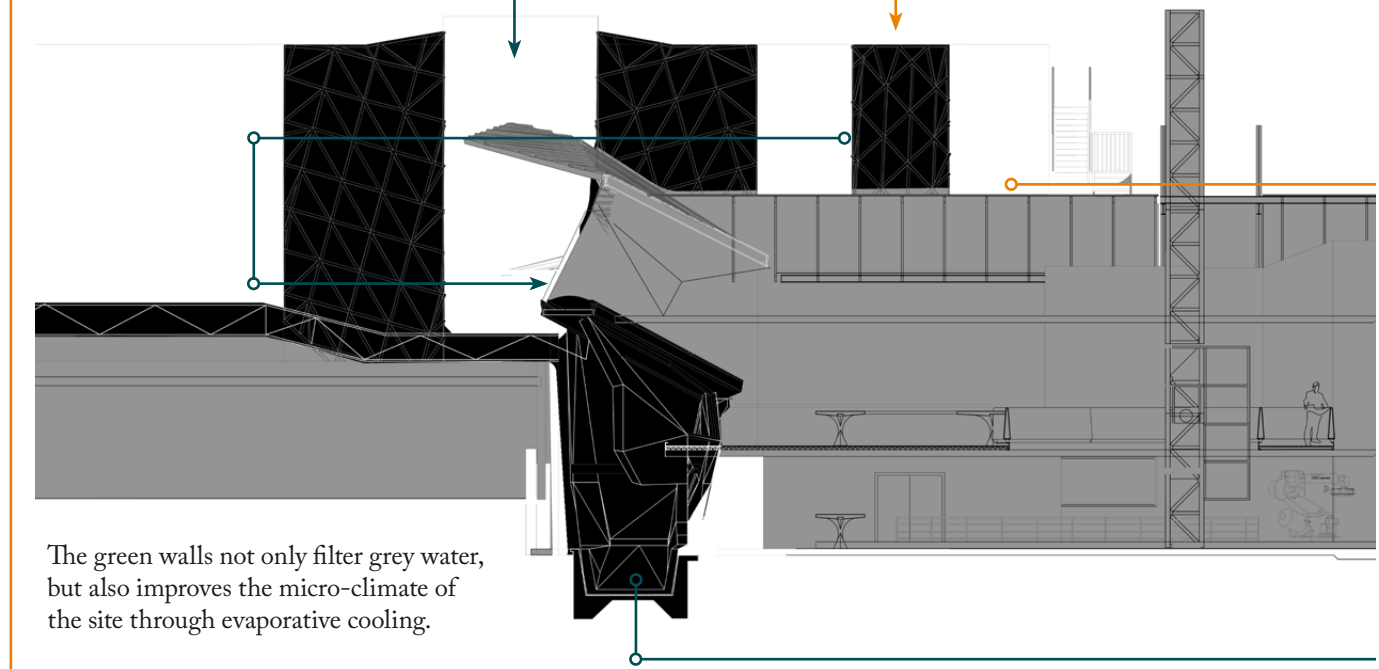


Figure 5.17. Conceptual exploration of a complex element (Author, 2014)



The orange path shows the movement of grey water collected from adjacent buildings, the water is collected in a storage tank, and from there it is transported through vertical wetlands where plants filter out the unwanted nutrients



The green walls not only filter grey water, but also improves the micro-climate of the site through evaporative cooling.

The plants that grow from the structure can also be used for food, or as herbal remedies.

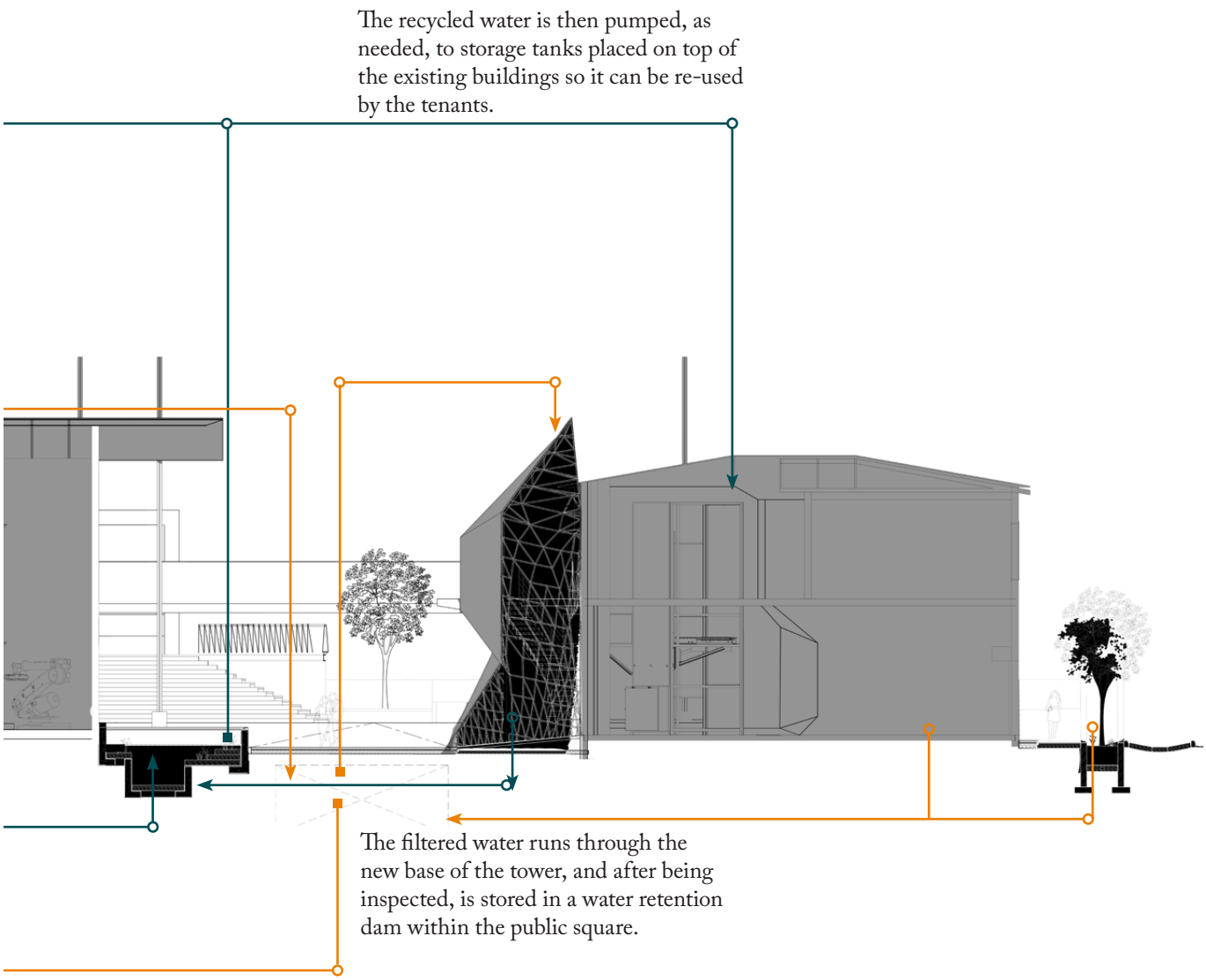


Figure 5.18. Section illustrating vertical water filtration process (Author, 2014)

part 3: PRACTICALITY WITHIN CONSTRUCT

3.1 ROOF CONSTRUCTION

A programme structured around the process of manufacturing should create what it desires to create. For this reason, material choices are predominantly based on the potential of them being manufactured and processed on site.

Girder-trusses:
Spaces that are enclosed by new steel roof structures will all make use of light-weight steel girder-trusses for supporting structure. Any profile/combination of profiles can be rolled on site, eliminating the need for outsourcing, and also saving on material – considering that the new roof structures are not bound by a rigid repeating module.

Purlins:
To eliminate the need for traditional purlins, the girder-trusses are spaced at ±600mm centers, and subsequently covered with 10mm marine-ply sheets for rigidity. Firstly, this method of construction allows for insulation to be sandwiched between the ply-wood and the ceiling, and, secondly, the ply-wood itself, acting as surface, creates a secondary layer of insulation.

Roof sheets:
To waterproof the complex geometrical shape, roof plates, that are rolled on site, with a standing seam interlocking system is used; not only because of the aesthetic value it adds, but also to ensure that connections between surfaces of varying inclinations and direction form a neat, watertight seal.

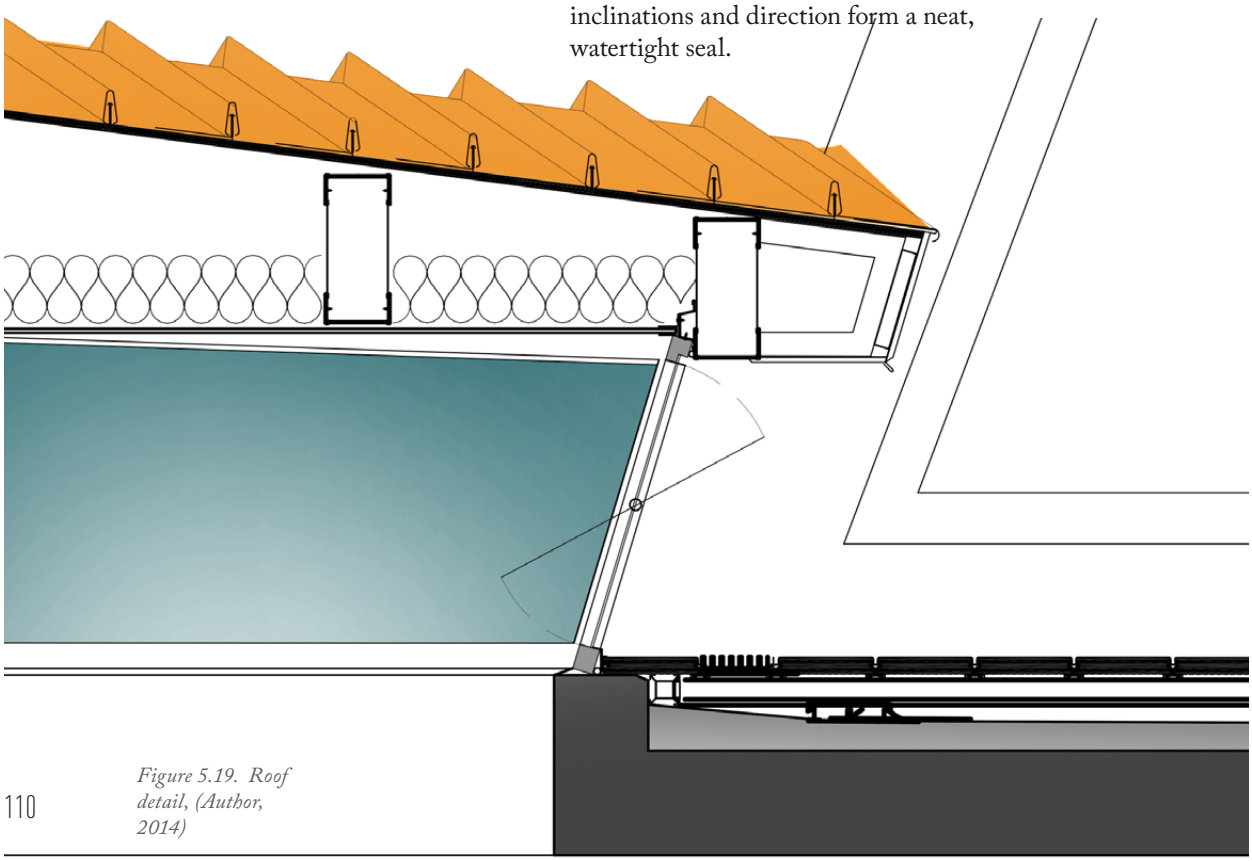


Figure 5.19. Roof detail, (Author, 2014)

3.2 PRIMARY STEEL STRUCTURE

I-beams:
Hot-rolled I-beam sections are used throughout the project as load bearing frames, thereby fulfilling various structural and functional tasks. The versatility of these elements, combined with the availability of the product within Jeppestown, makes it an ideal choice. Beyond the structural capacity it is also possible to process and alter the beams on site, enabling rapid customization of steel elements to suit specific and varying applications.

Steel construction also lends itself to additions and modifications on existing buildings. Steel I-profiles are able to engage with concrete and mortar construction just as easily as it would with lightweight steel- or even wood construction. The recyclability of the material allows for a higher rate of structural and spatial changes than wet-construction would – supporting the core concept of mass-customization.

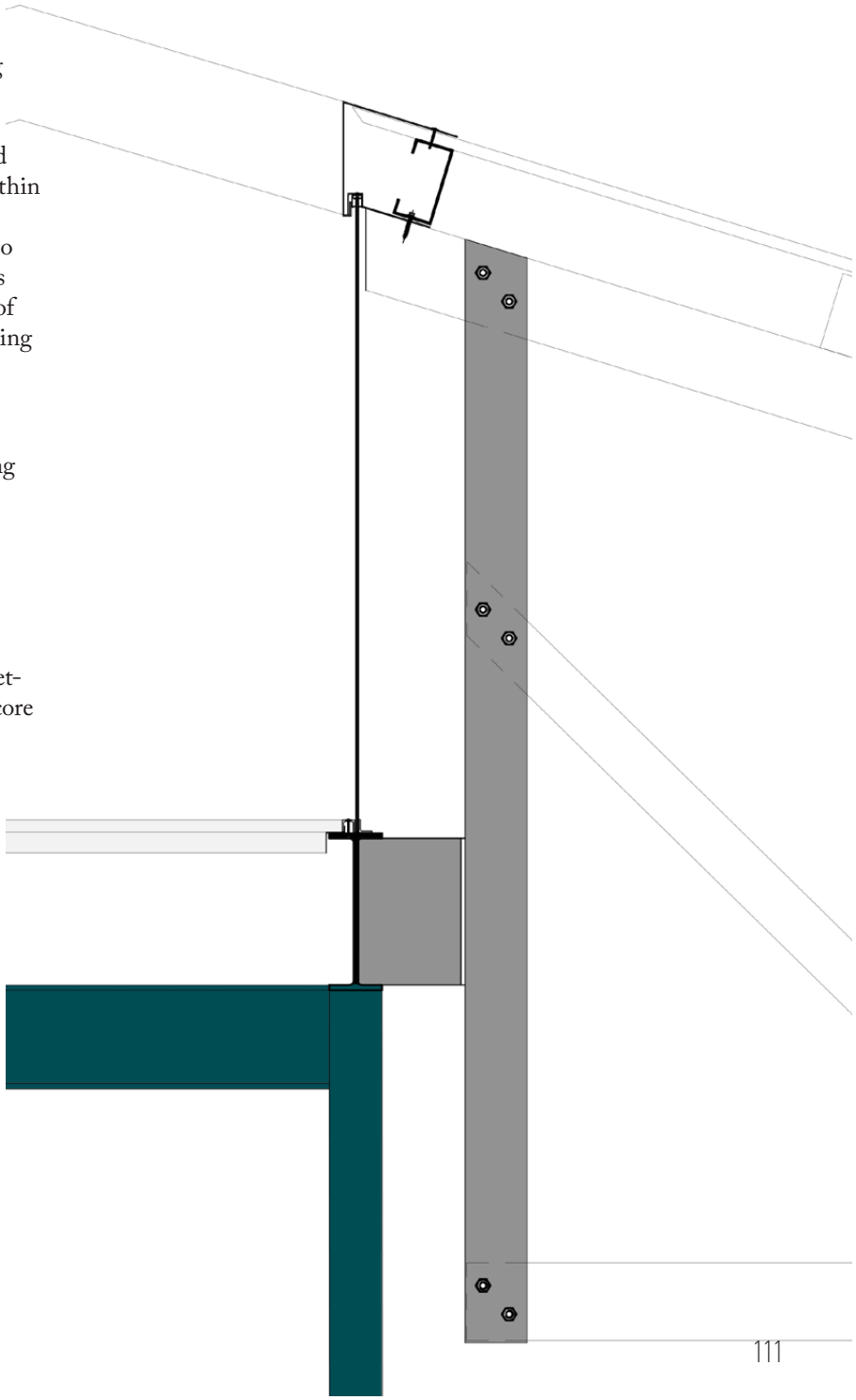


Figure 5.20. Existing roof with new steel structure detail, (Author, 2014)

3.3 SECONDARY STEEL STRUCTURE

The connective tissue that fills the spaces in between the primary steel structure. The application, within the bounds of this project, consists of varying steel profiles gathered from the existing steel recycling depot on site. These sections, which vary in length, are joined together to form a tessellated (triangular planes connected either by five or three individual section ends) structure with the ascribed ability to connectively span in varying and fluctuating planar angles.

The tessellated skin can fulfil various functions: Simplex functions, such as acting as a spatial divider; Binary functions, which include acting as a tensile structural member and being a spatial divider, and; Complex functions, like filtering grey water, acting as a structural member by interweaving 2 or more skins and creating spatial elements of varied use.

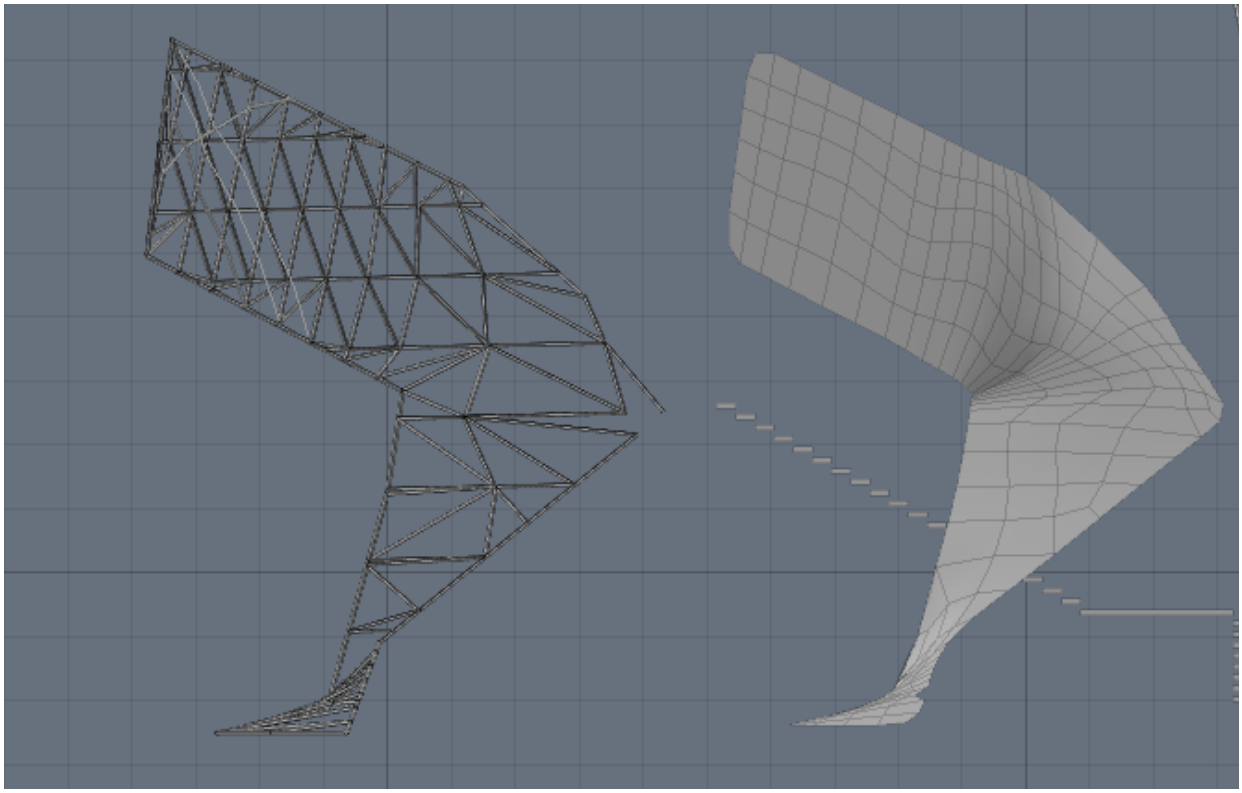


Figure 5.21. Digital exploration of skin and structural form (Author, 2014)

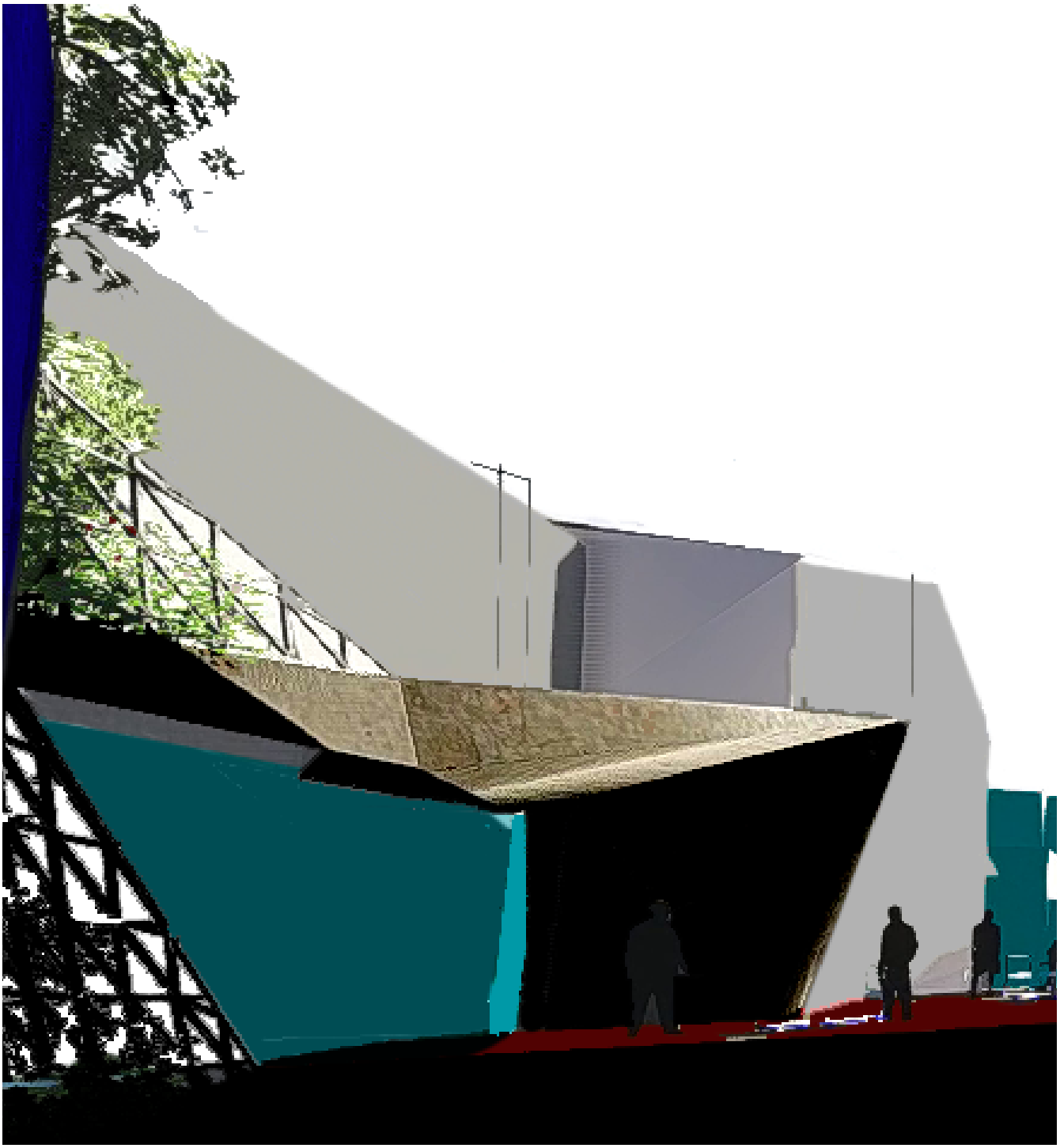


Figure 5.22. Digital render of secondary steel structure in context,(Author, 2014)

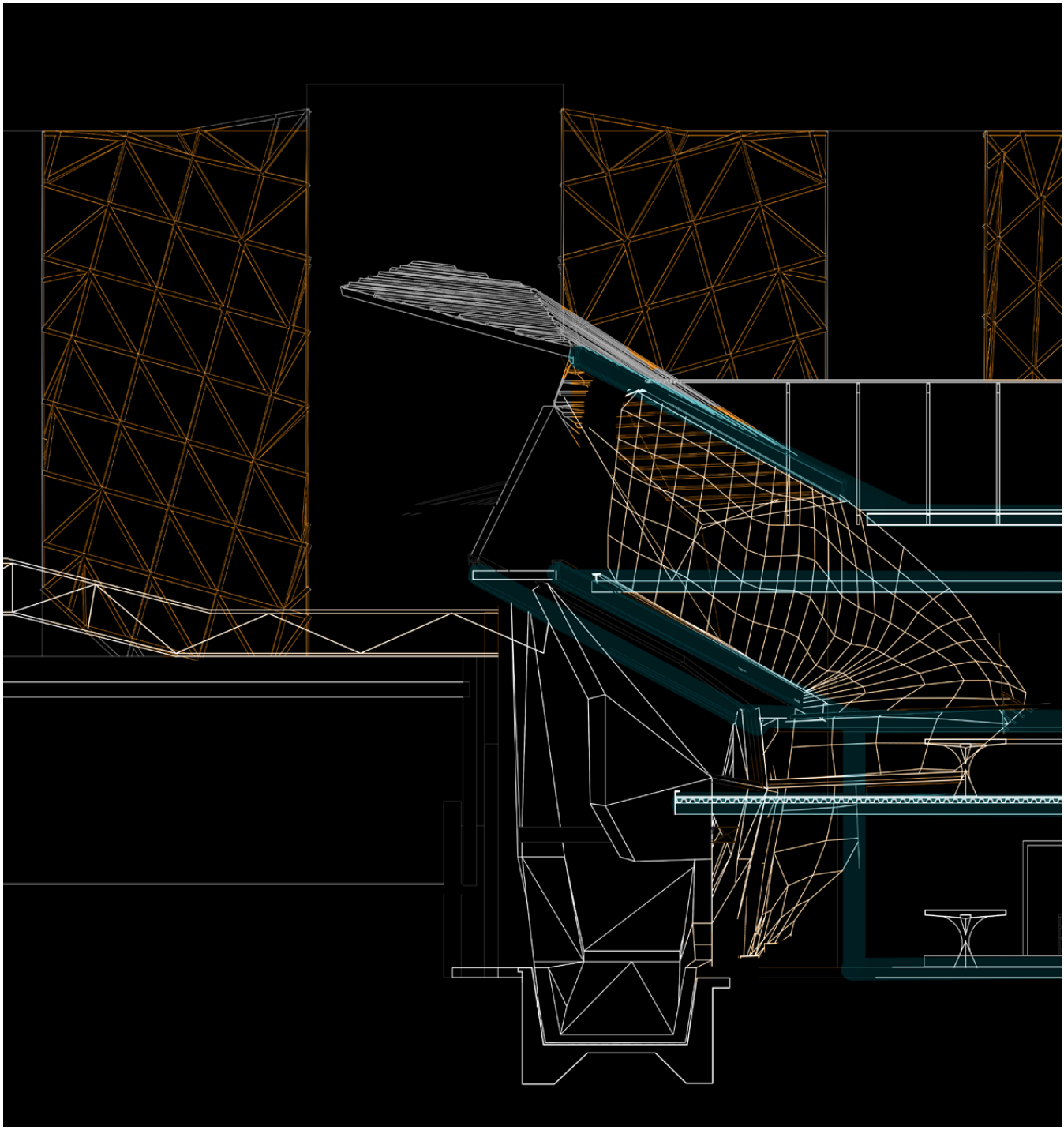
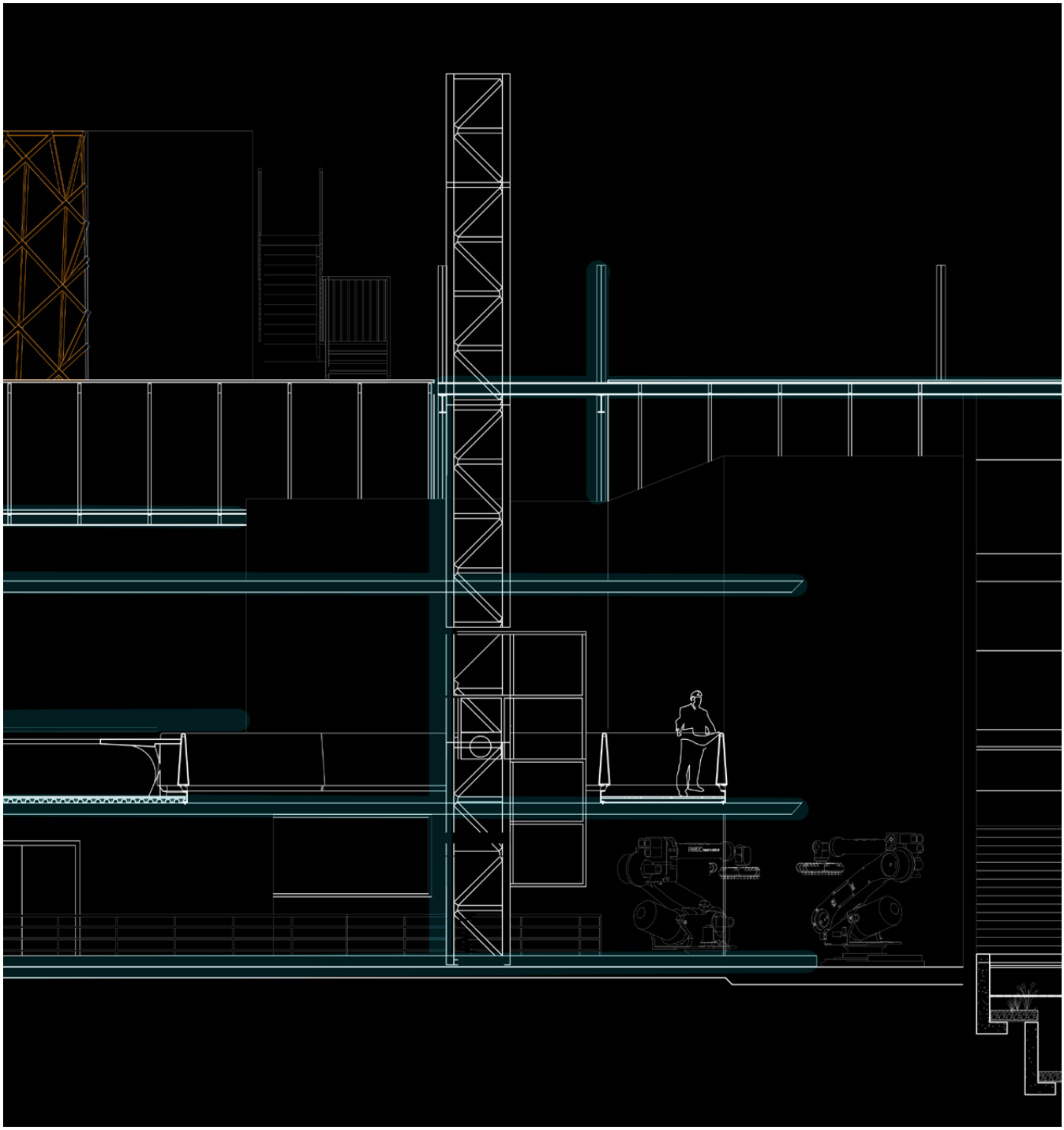


Figure 5.23. Section indication primary and secondary steel structures, (Author, 2014)



Primary steel structure

Secondary steel structure

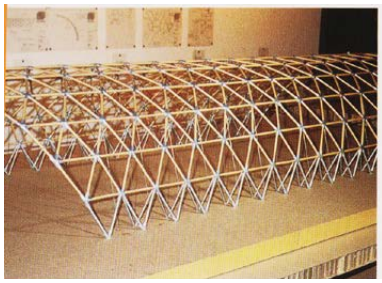
3.4 JOINTS AND MECHANISMS

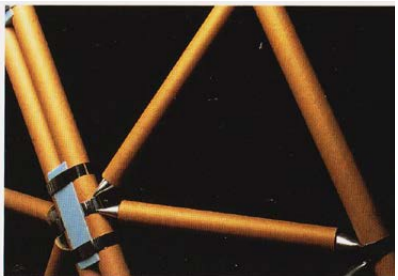
There is an inherent challenge in creating an appropriate clasp that will enable the construction of the secondary steel structure. Although steel sections can easily be welded together, such an implementation will not work within this project's conceptual confines. Firstly, welding is a permanent, energy-heavy method of construction. Secondly, a skilled person is required to execute the labour-intensive task of welding. Lastly, the process can never be accurately monitored as a whole, actively countering the idea of mass customisation.

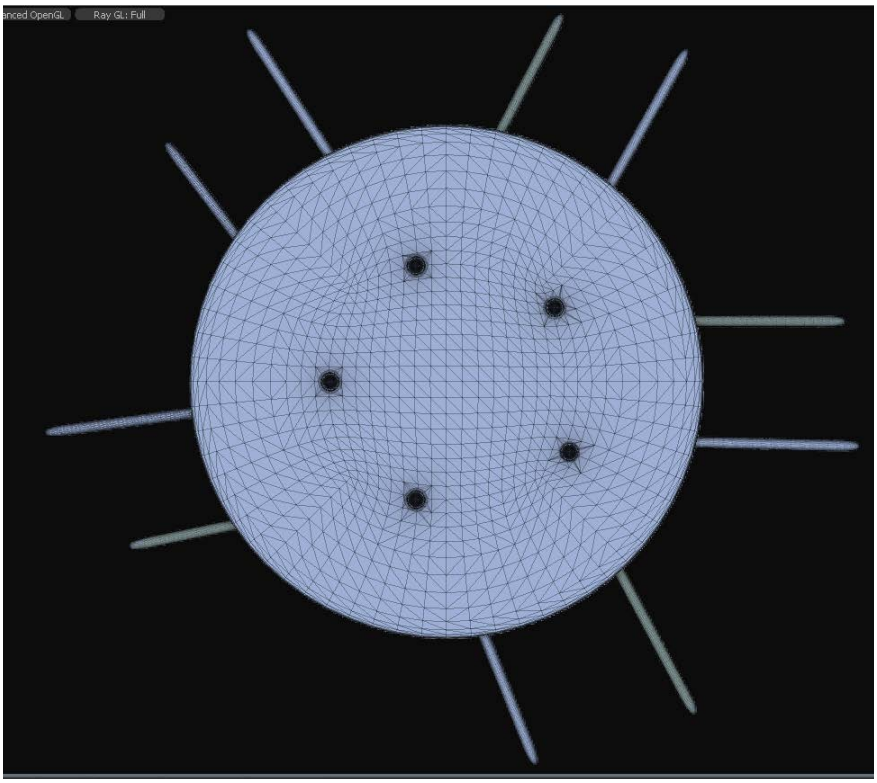
Because of these reasons, a different, variable method of fixing together the loose parts is thus required. As precedent Shigeru Ban's boathouse design was used as starting point fort the mechanism. His detail allows for an elegent manner to join 5 elements in one point on a curved surface (McQuid M, 2003).

The necesarry joint within this project is characterized by its binary function; its parameters are definable and therefore adjustable. The first parameter is that the mechanism needs to be able to receive between three and five steel sections. The second parameter is that the angle of reception is not fixed on an 'x'/'y'-axis, and, as a result, needs to be able to adjust according to the specific instance at hand. Thirdly, the size of the steel varies according to the application; i.e. the bracket that receives the steel member needs to be adjustable within the bounds of what is structurally possible. The last parameter is that every member has a variable angle on its 'z'-axis, thus creating a situation in which the joint needs to be able to allow for adjustment accordingly.

The solution employed within this design takes the form of an individual, reproducible bracket that has one size and shape, and the inherent ability to fulfil all of the above-mentioned requirements. In order for this feat to be achieved, it is necessary to digitally script a schematic—stochastic—prototype with variable inputs dependent on the specific circumstance and application. The end mechanism consists of two circular mild-steel plates, with three sets of five holes spaced evenly around incremental radius's spaced by threaded bolts. The individual rods each hold in place symmetrical mild-steel plates that hinge around the bolt. The part has 125 variations concerning the spacing of the steel brackets, and each bracket is able to accommodate fluctuations of steel it receives concerning both the x- and y angle.







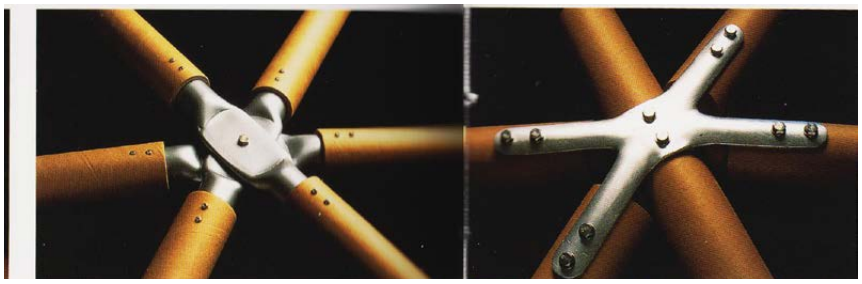


Figure 5.24. First prototype of detail development (Author, 2014)

Figure 5.25. Detail Shigeru Ban designed as joining member for cardboard tubes (Ban S, 2002)

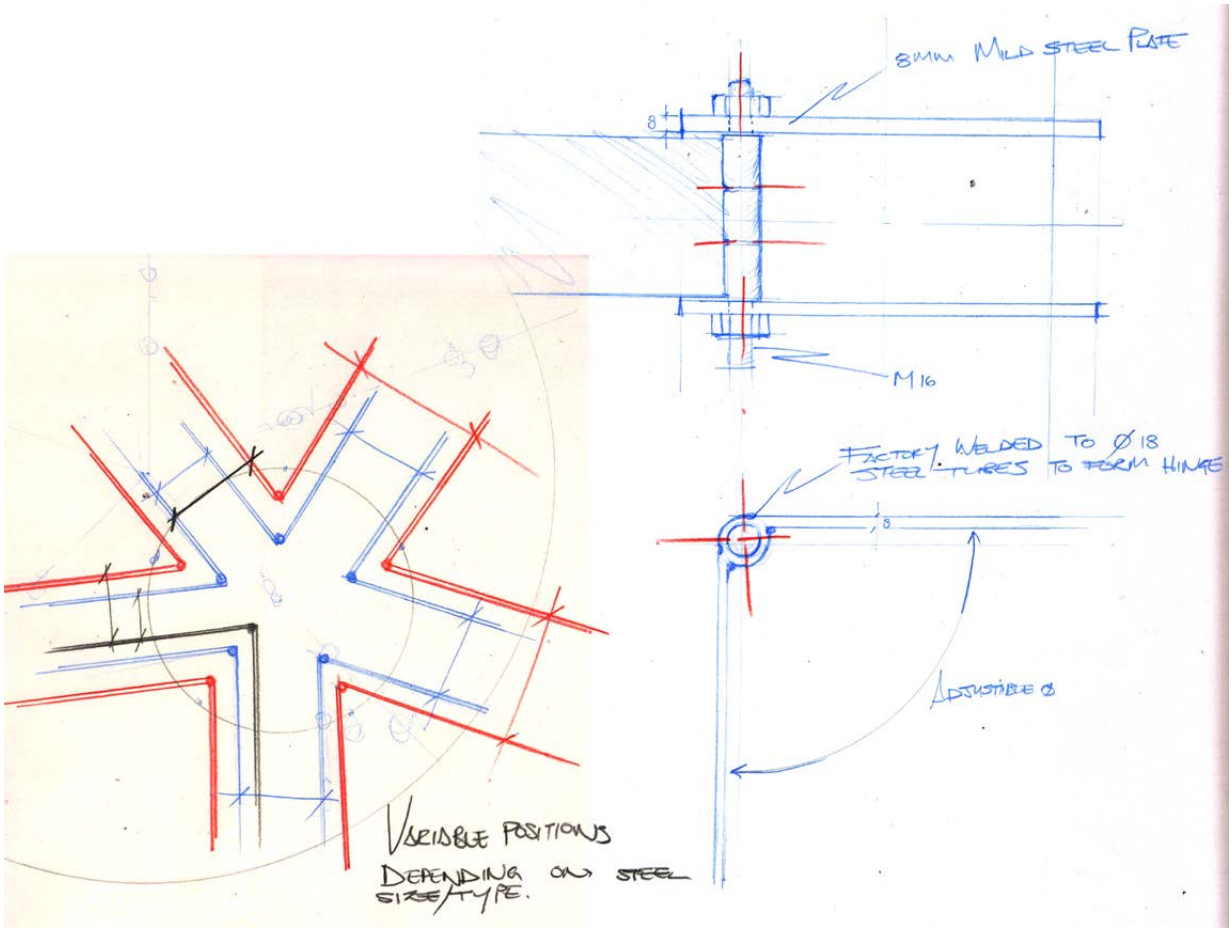
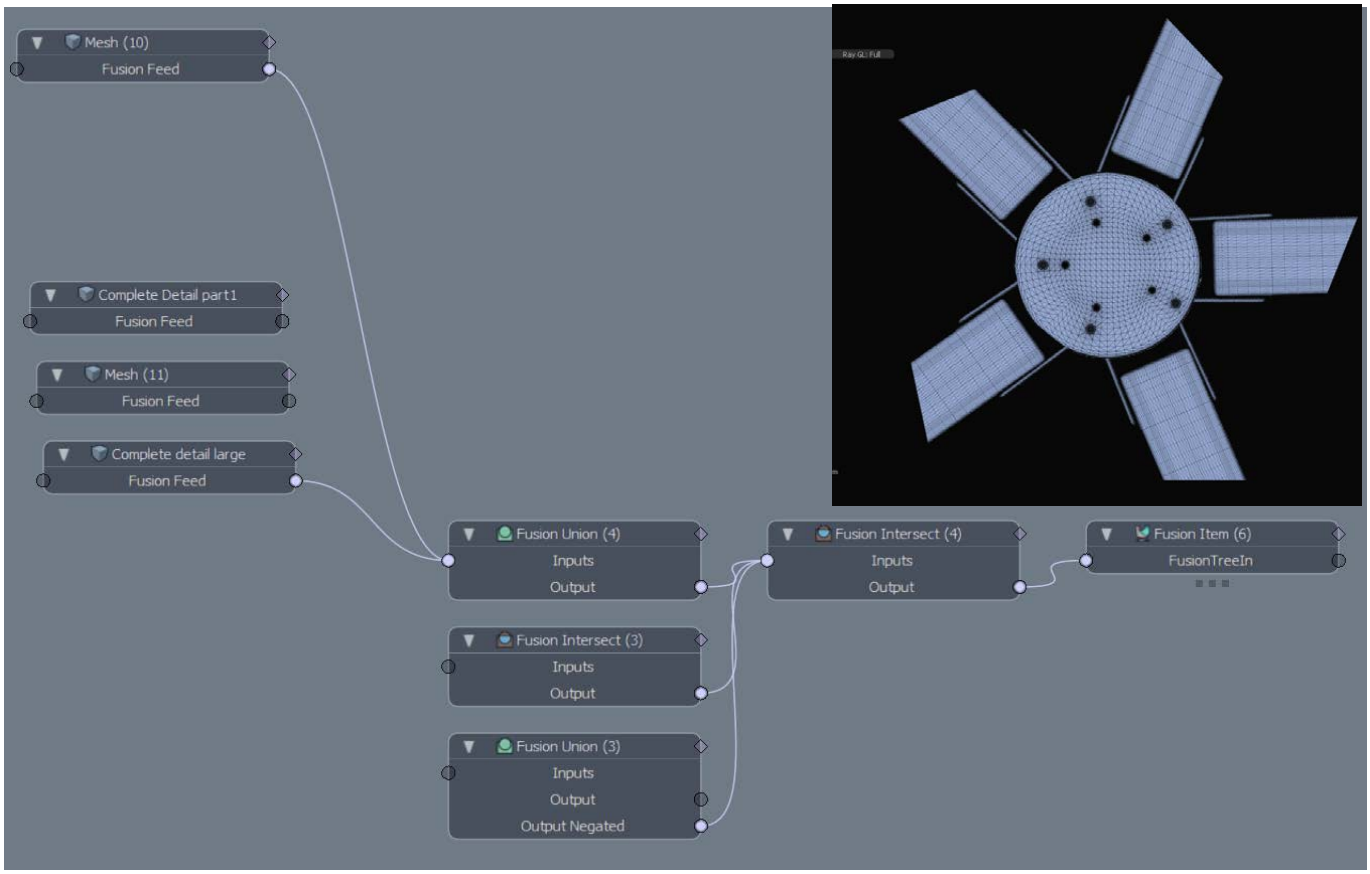


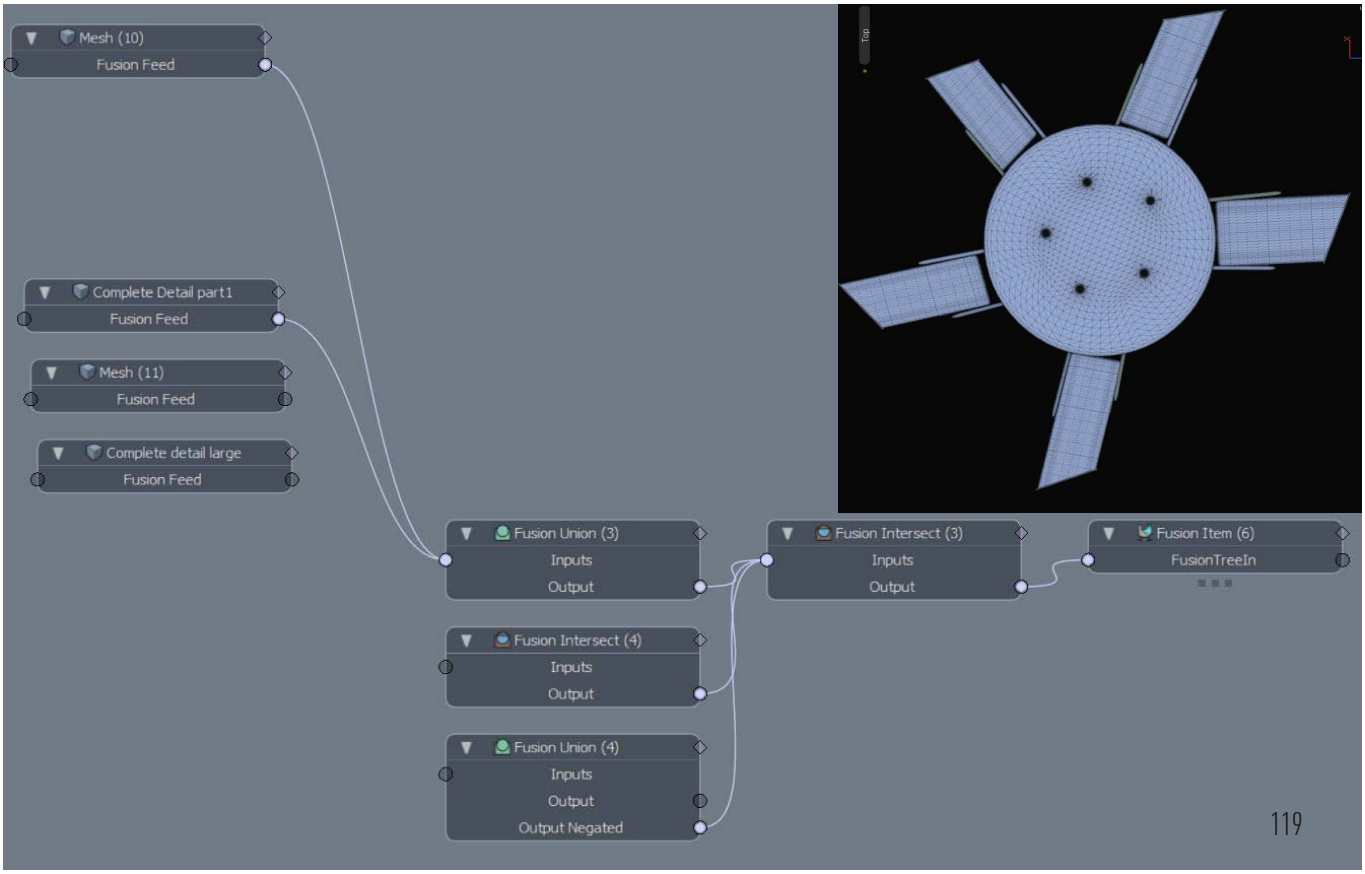
Figure 5.26. Conceptual sketch of the mechanism (Author, 2014)

Figure 5.27. Programmed position one of assembled mechanism, (Author, 2014)

Figure 5.28.

Figure 5.29. Programmed position two of assembled mechanism





3.5 TERTIARY SKIN

Lastly, it is possible to create a dynamic relationship between the usage of material and human interaction through the implementation of a final skin. Within the confines of this project, the skin houses organic material capable of fulfilling complex tasks that are directly responsive to the imposed context. These act as positive contributors to the surrounding environment.

The tertiary skin consists of recycled rubber strips harvested from the site. When woven together they form pockets deep enough to allow for plant growth to take place. These pockets are then filled with compost(created by the composting plant that forms part of the greater intervention). Plants capable of filtering grey water are then placed inside these pockets and the woven skin is fixed to the secondary structure. These assembled panels, when acting in series, are capable of being plugged into the grey-water outlets of existing buildings. The process purifies the water so that the inhabitants can re-use this resource without being dependent on a municipal supply. The panels are installed vertically as a secondary facade. The water trickles down the structure and gets filtered by the plant roots that extract harmful nutrients.

The filtered water is, essentially, gravity-fed to a collection point. From there it is transported, by utilising solar water-pumps, to raised water towers where it can be re-used for various functions.

A secondary benefit is that the plants used in the intervention are useful beyond the intended purpose of water filtration. The suggested plants(A Prospect Ritual, 88-89) also have inherent medicinal uses, and can be harvested for cooking or to extract essential oils(A Prospect Ritual, 108-109 & 114-115). The functions that arise from these interventions are not specifically definable and are thus labelled as complex. Although there are certainties contained within the implementation of these structures, it is not calculable what the specific public reception, or the actual implementation value will be. This is where opportunities arise to explore new methods and forms of the implementation of functions and the forms that house them.

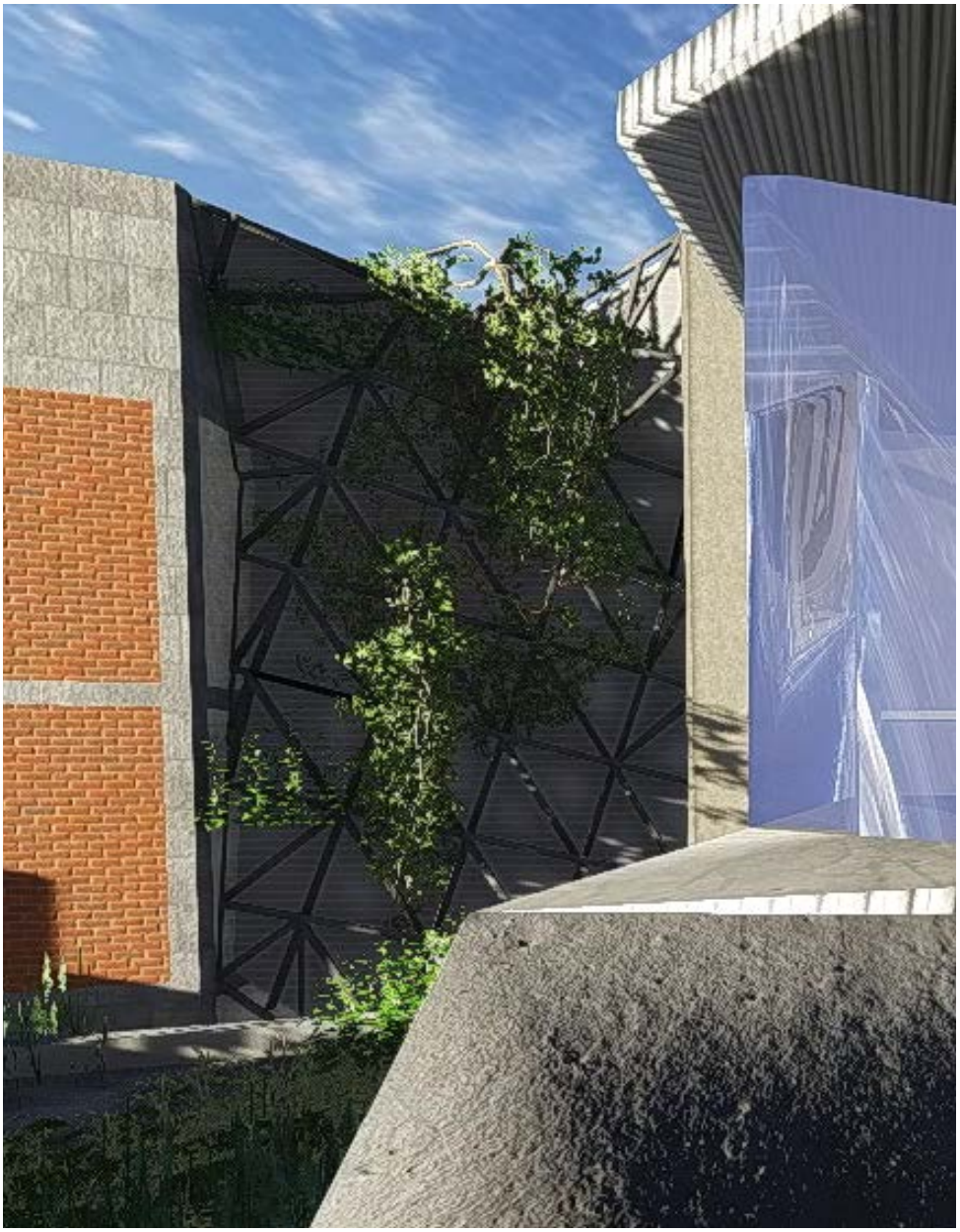
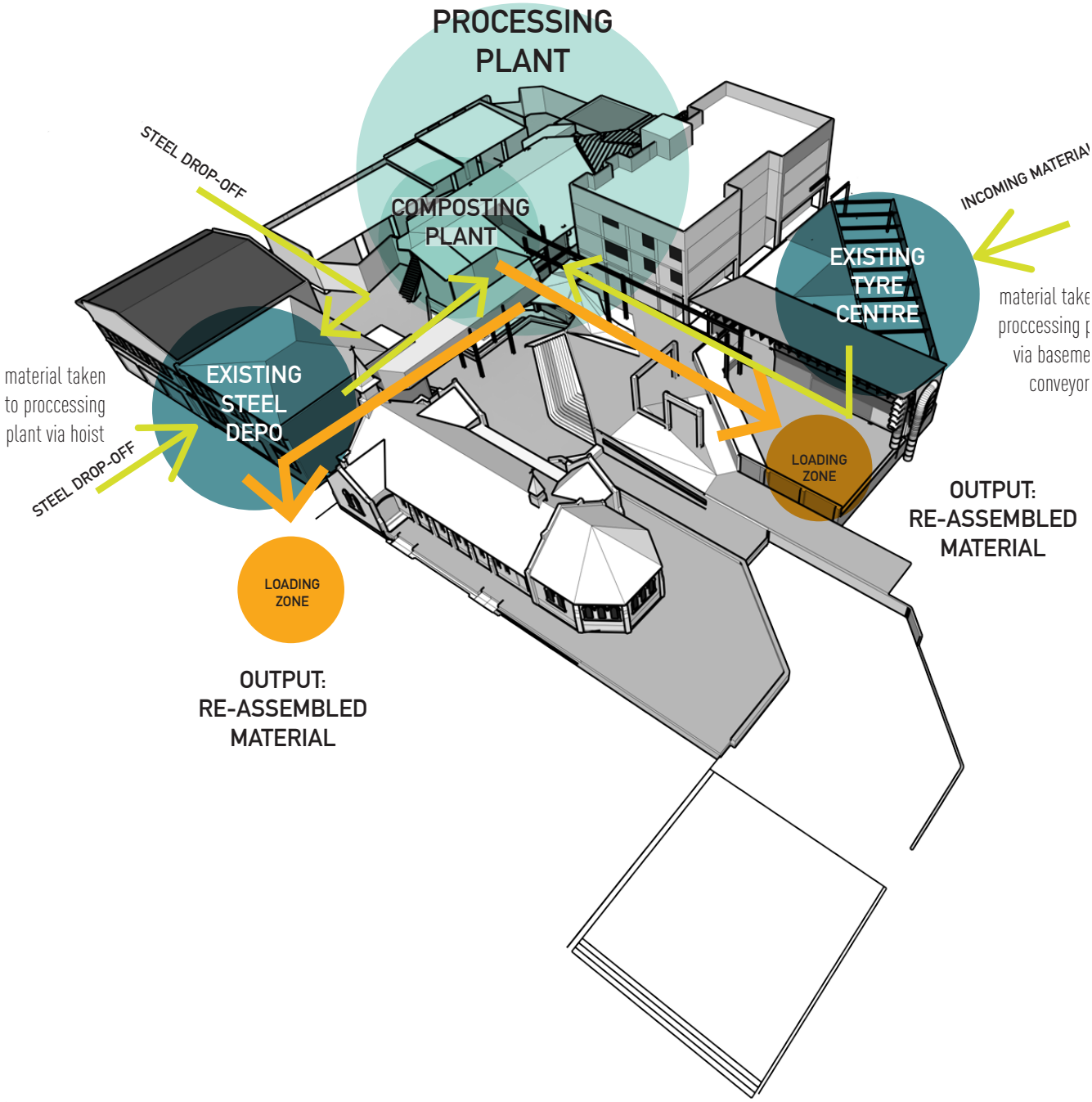


Figure 5.30. Digital render of applied skin, (Author, 2014)

in CONCLUSION

By focussing on current conditions of context as a driver and architectural informant (rather than an observed problem that 'needs' solving), methodologies concerning architectural form and structure are able to be dissolved. Intentionally fixed purposes of observed structure subsequently sheds its characteristic rigidity through dismissing preconceived ideologies. It becomes, instead, amorphous and ambivalent. In doing so, the exploration of formgiving is allowed to emerse from alternative sources. Reflecting on the innitial aim of this dissertation, with regards to creating methods that are non-linear, parametric design becomes a tool able to facilitate not only the formless, malleable and evolving context at hand, but potentially also on a larger scale of application. Due its reliance on the constant input of data, and of its communicative and reconfigurable nature, parametricism's relevance outweighs the permanence prominent in the methods of today. To objectively state whether or not the end result wholly accomplished the goals set out at the start seems unlikely, but a statement such as that would not be true to the nature of this project. It should rather be stated that the exploration as a whole resulted in a project that is truly reflective of its foundations. To further the project the author would suggest creating an encompassing parametric system, 'Pirate utopia', and test different formations of mass in varying scenarios to comparritively understand the full potential of this scheme.

final **PRESENTATION**



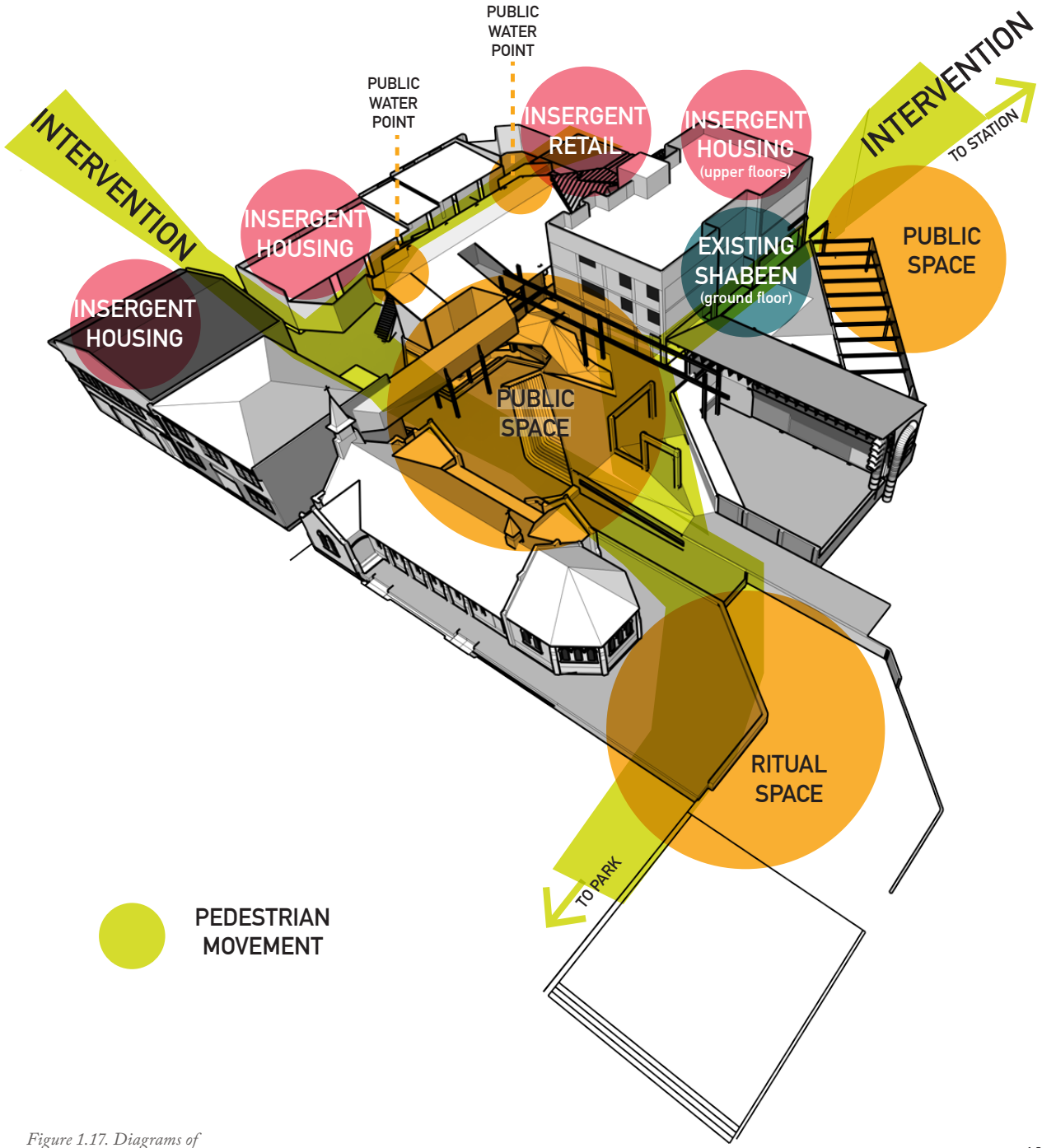
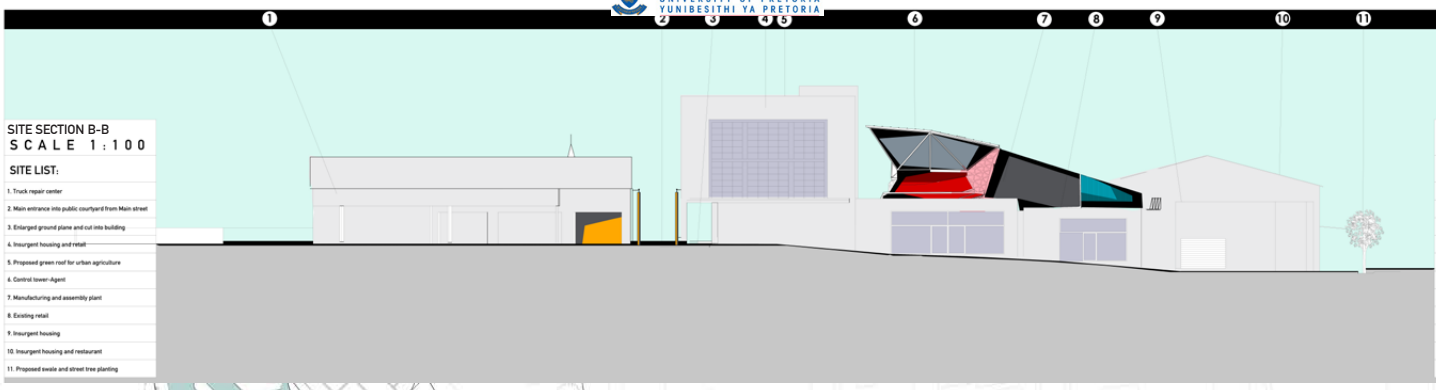


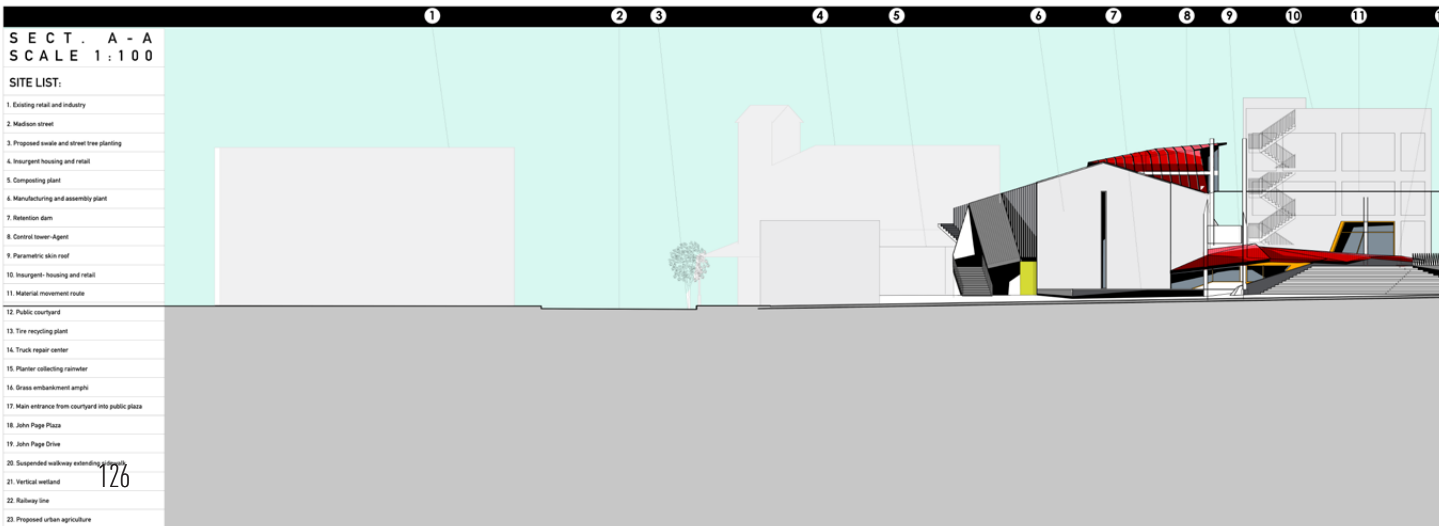
Figure 1.17. Diagrams of site process



SITE SECTION B-B
SCALE 1:100

SITE LIST:

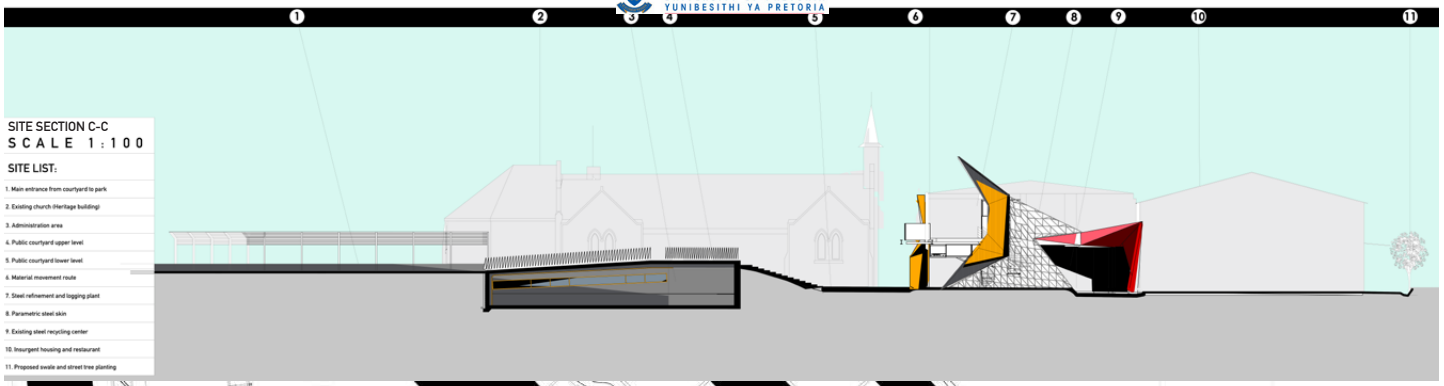
1. Truck repair center
2. Main entrance into public courtyard from Main street
3. Enlarged ground plane and cut into building
4. Insurgent housing and retail
5. Proposed green roof for urban agriculture
6. Control tower-Agent
7. Manufacturing and assembly plant
8. Existing retail
9. Insurgent housing
10. Insurgent housing and restaurant
11. Proposed swale and street tree planting

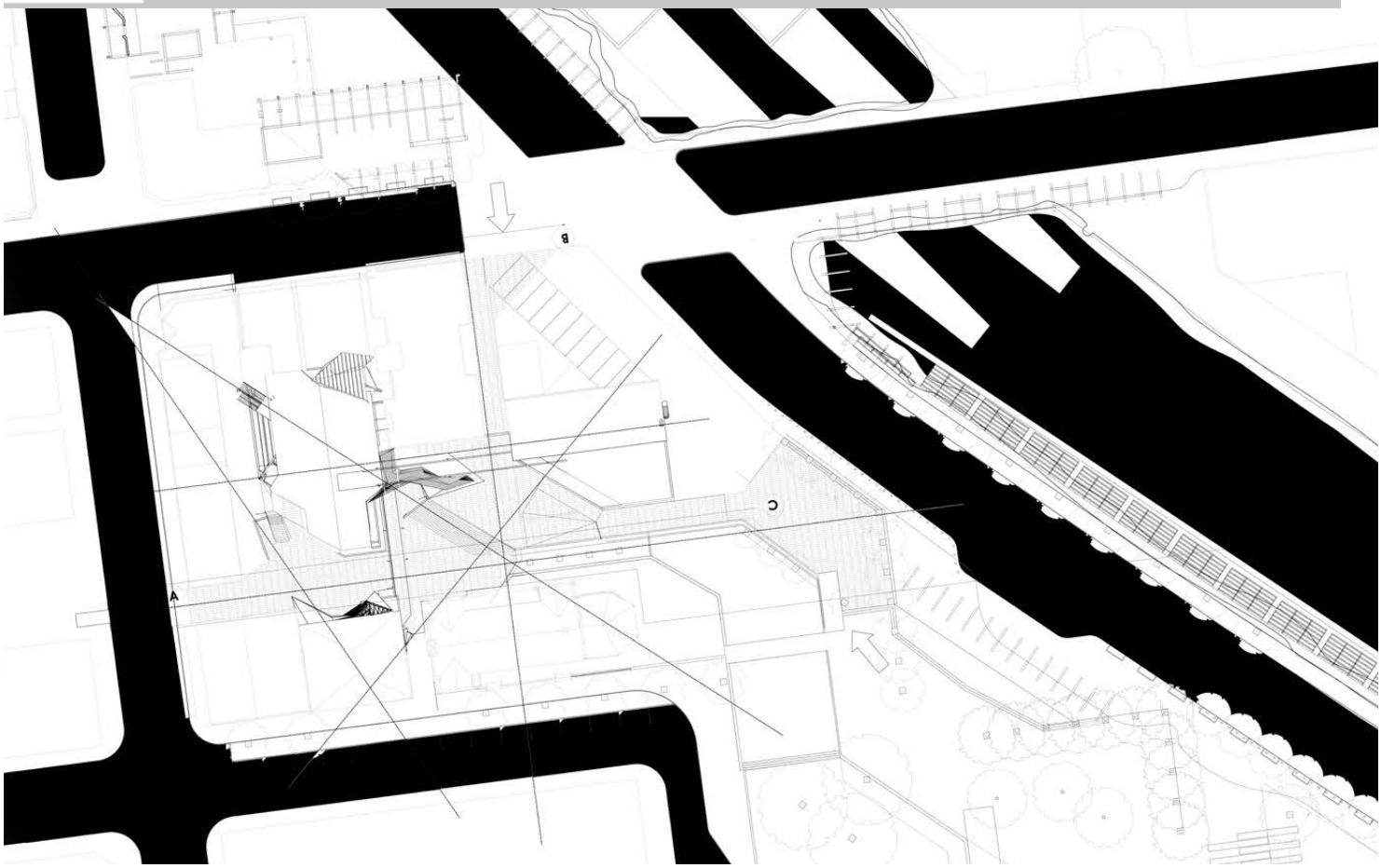


SECT. A-A
SCALE 1:100

SITE LIST:

1. Existing retail and industry
2. Madison street
3. Proposed swale and street tree planting
4. Insurgent housing and retail
5. Composting plant
6. Manufacturing and assembly plant
7. Retention dam
8. Control tower-Agent
9. Parametric skin roof
10. Insurgent- housing and retail
11. Material movement route
12. Public courtyard
13. Tire recycling plant
14. Truck repair center
15. Planter collecting rainwter
16. Grass embankment amphi
17. Main entrance from courtyard into public plaza
18. John Page Plaza
19. John Page Drive
20. Suspended walkway extending over
21. Vertical wetland
22. Railway line
23. Proposed urban agriculture





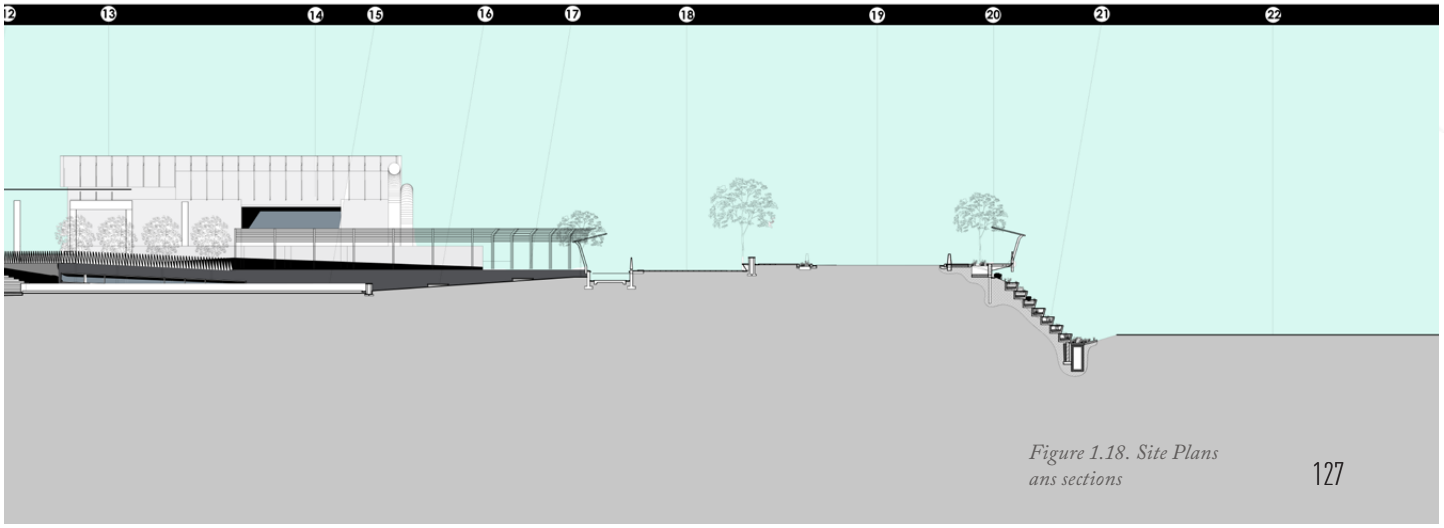
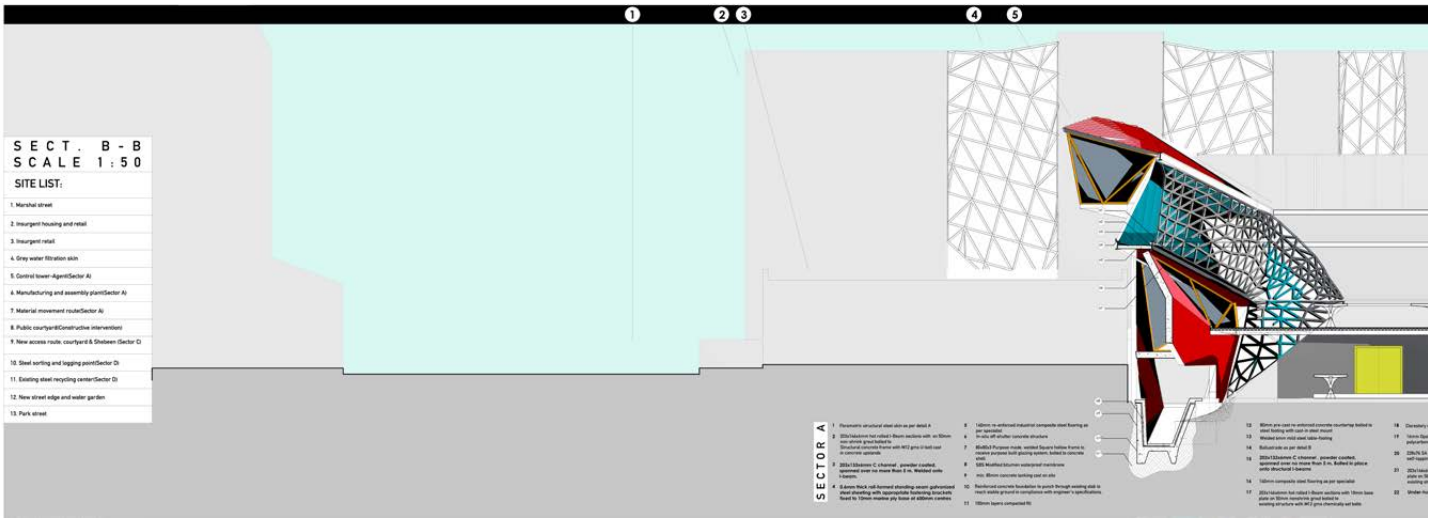
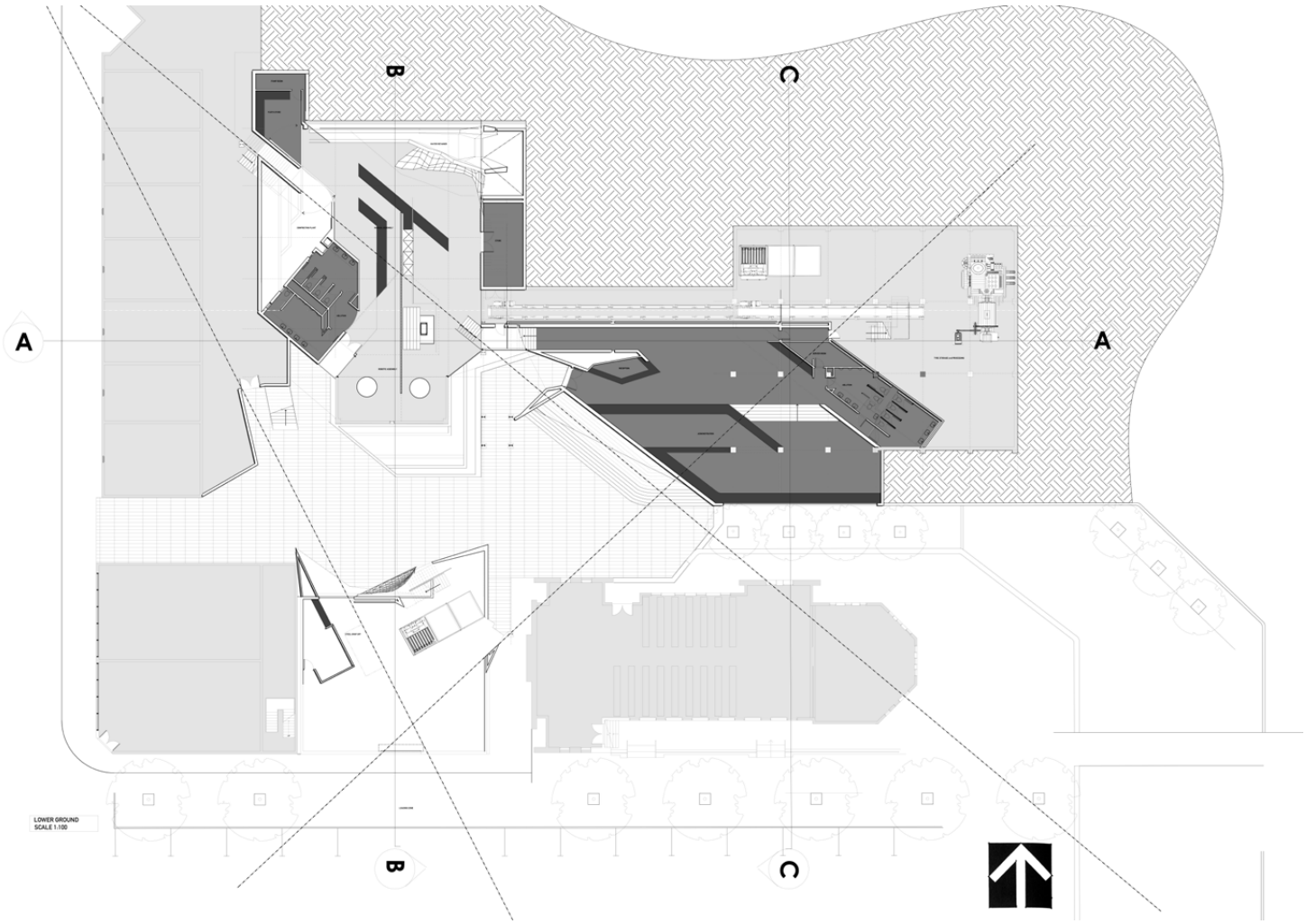
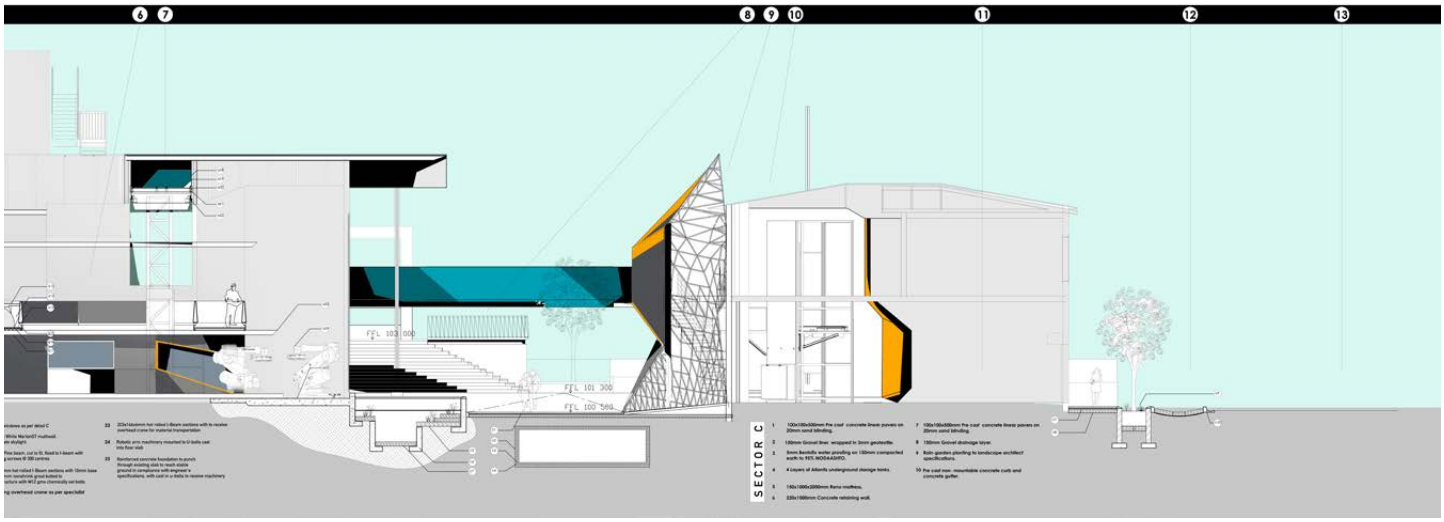


Figure 1.18. Site Plans ans sections







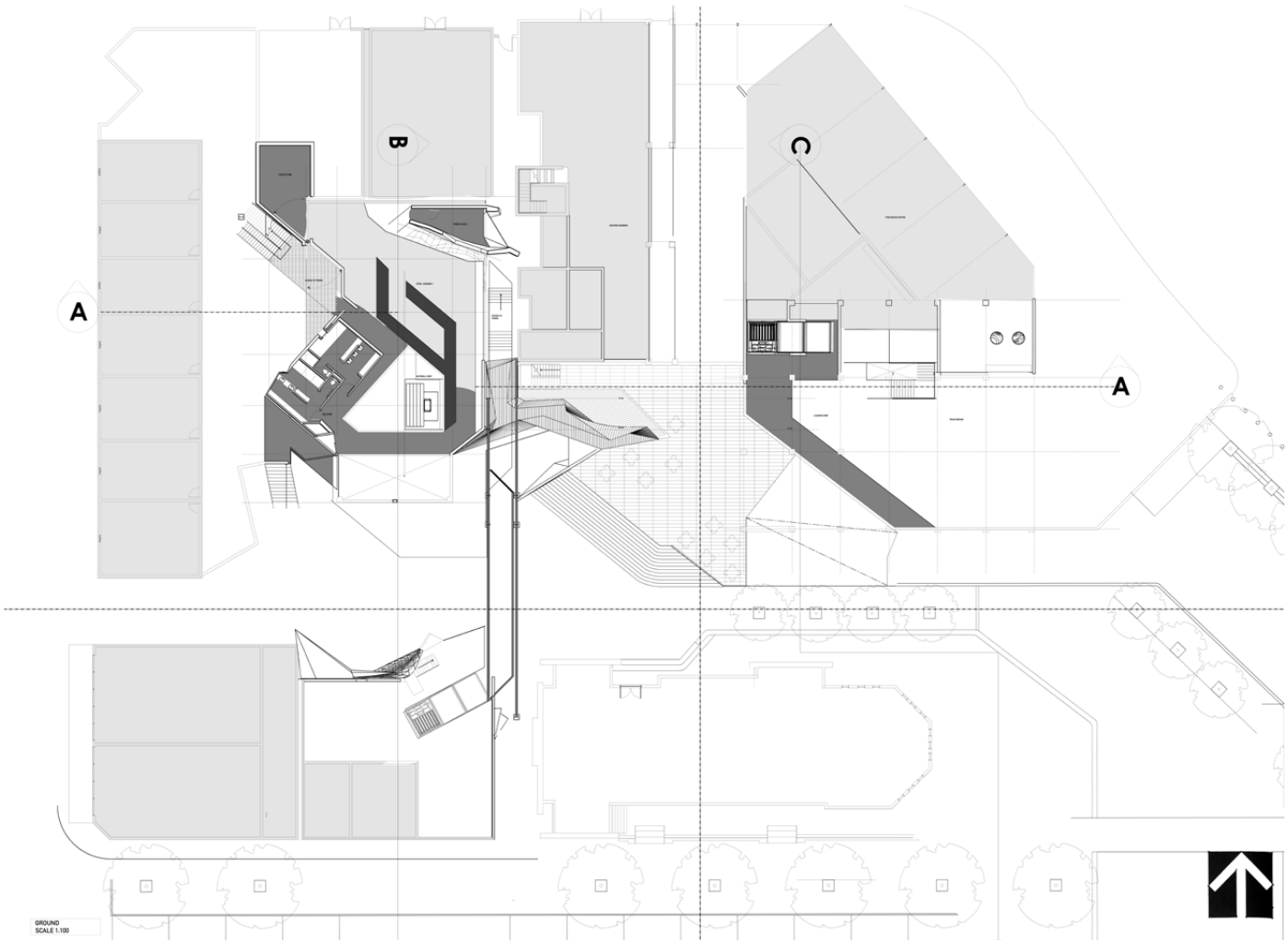
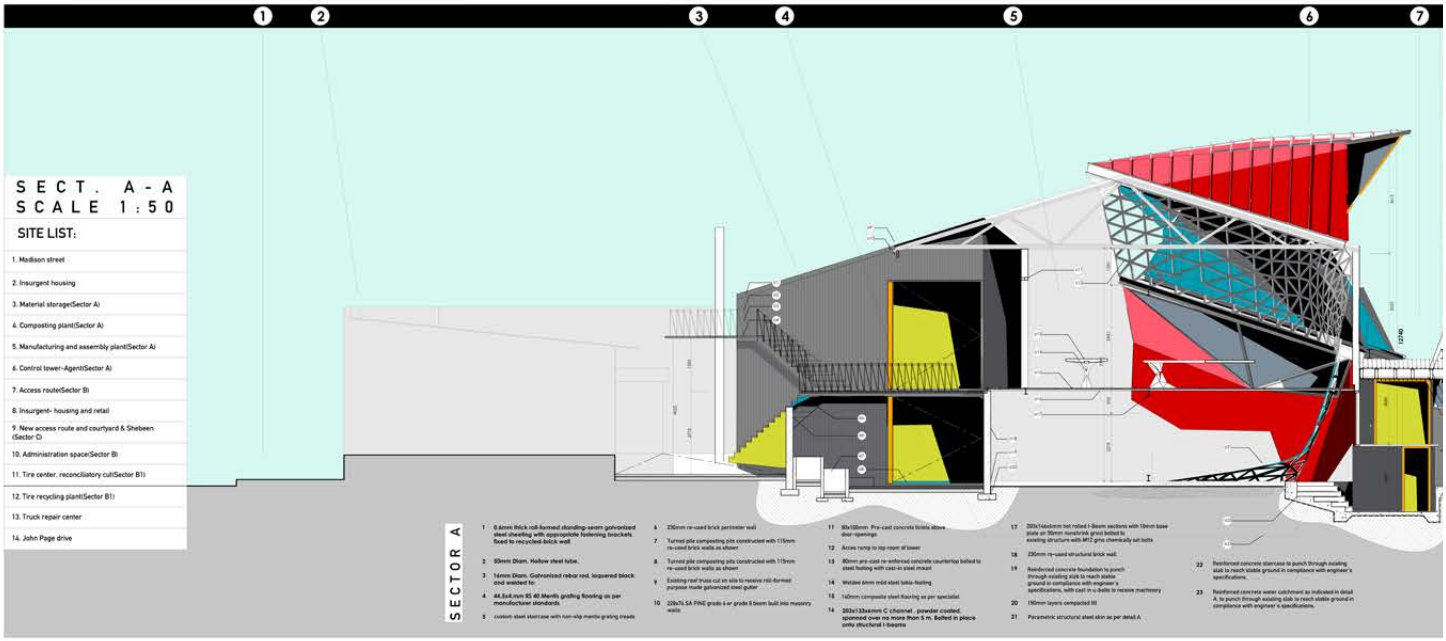


Figure 1.19. Floor plans and sections



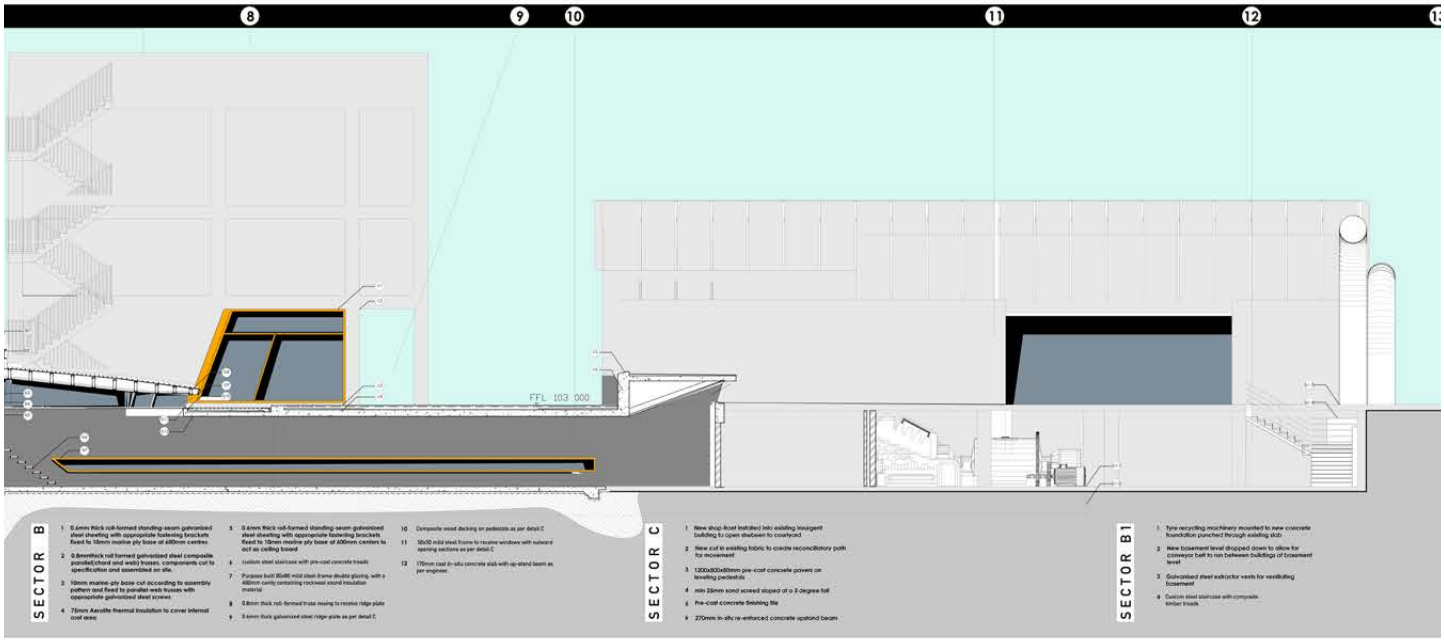
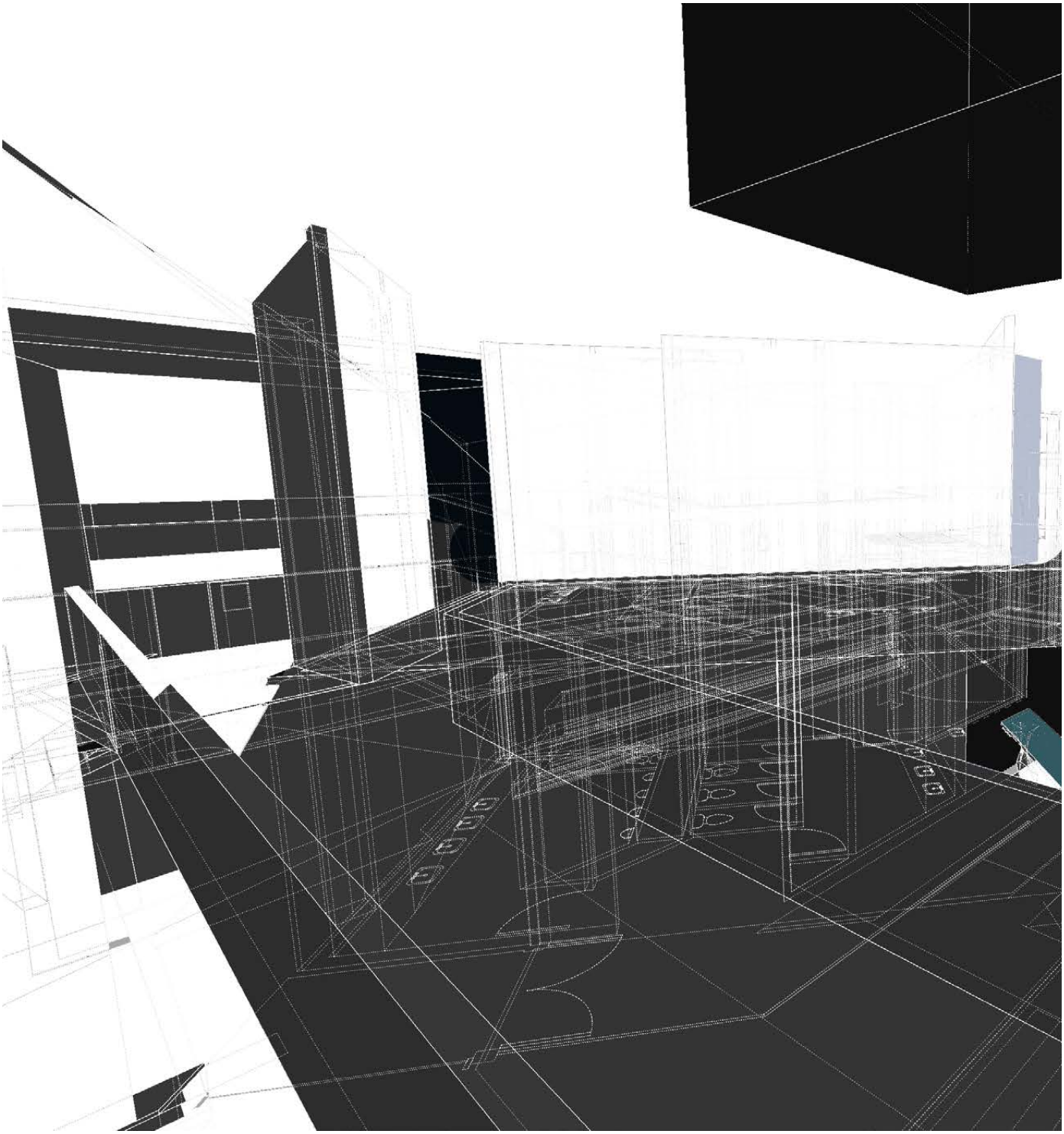


Figure 1.20. Section



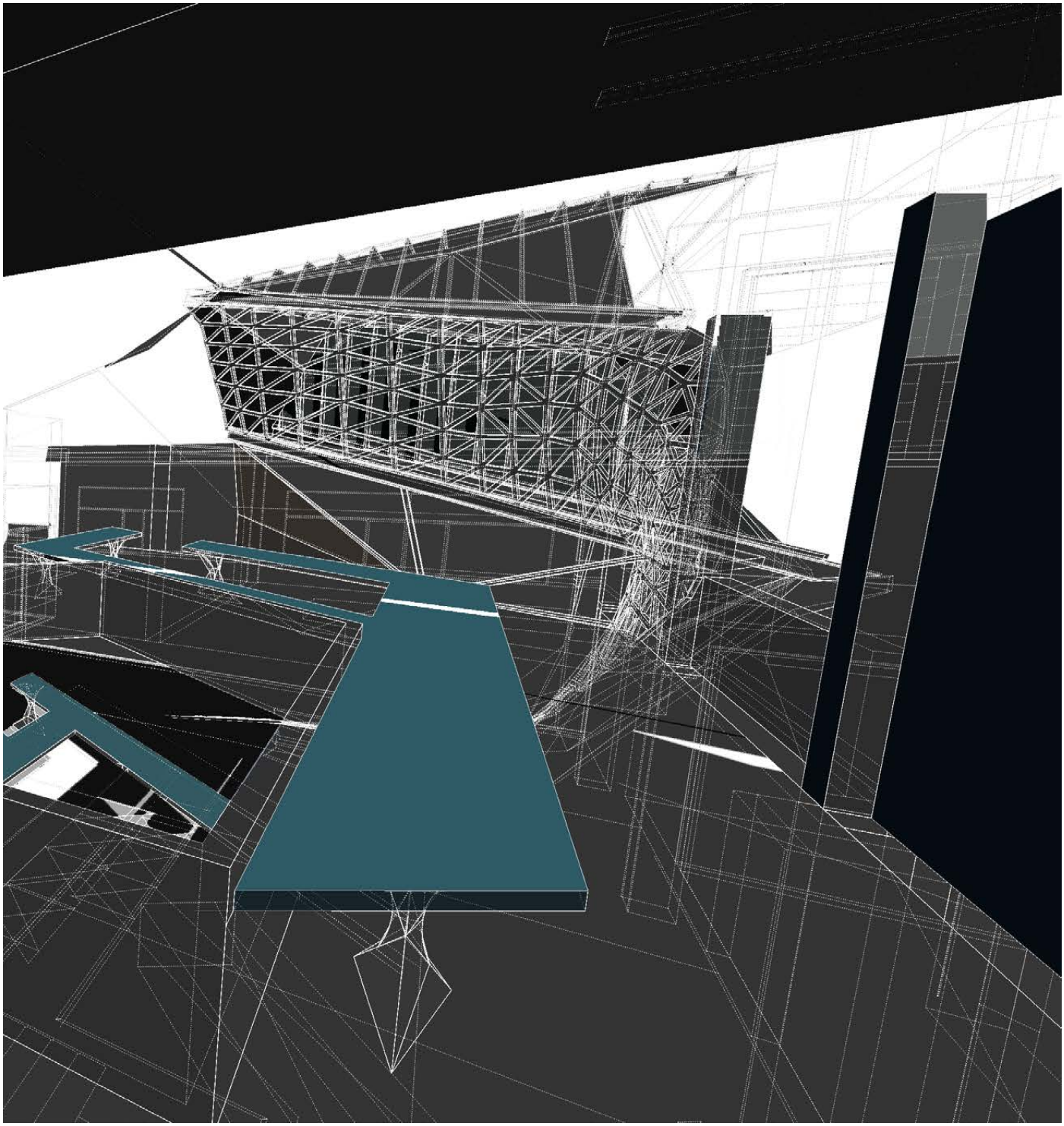
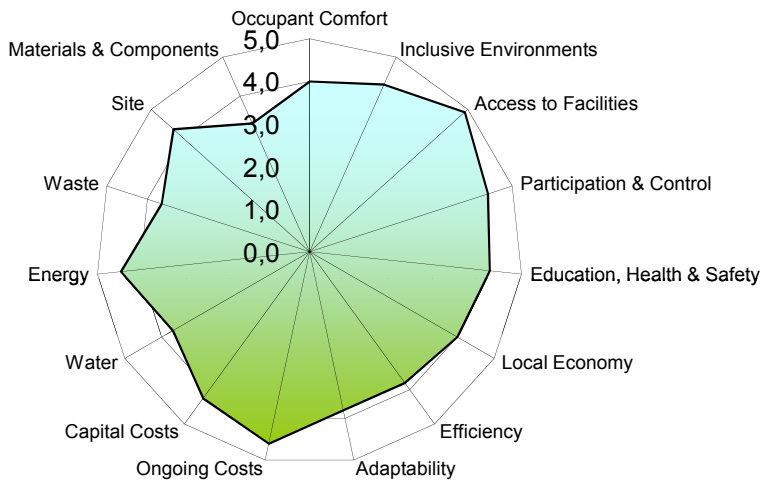


Figure 1.21. Interior render

APPENDIX A

SUSTAINABLE BUILDING ASSESSMENT TOOL (SBAT- P) V1

PROJECT		ASSESSMENT	
Project title:	Deconstructing permanence	Date:	2014-10-25
Location:	Jeppestown Johannesburg	Undertaken by:	A. J Smuts
Building type (specify):	Manufacturing/Mixed-use/Social/Economic	Company / organisation	University of Pretoria
Internal area (m2):		Telephone:	Fax:
Number of users:		Email:	
Building life cycle stage (specify):	Design/Construction/Operation		



Social	4,4	Economic	4,1	Environmental	3,9

Overall	4,1

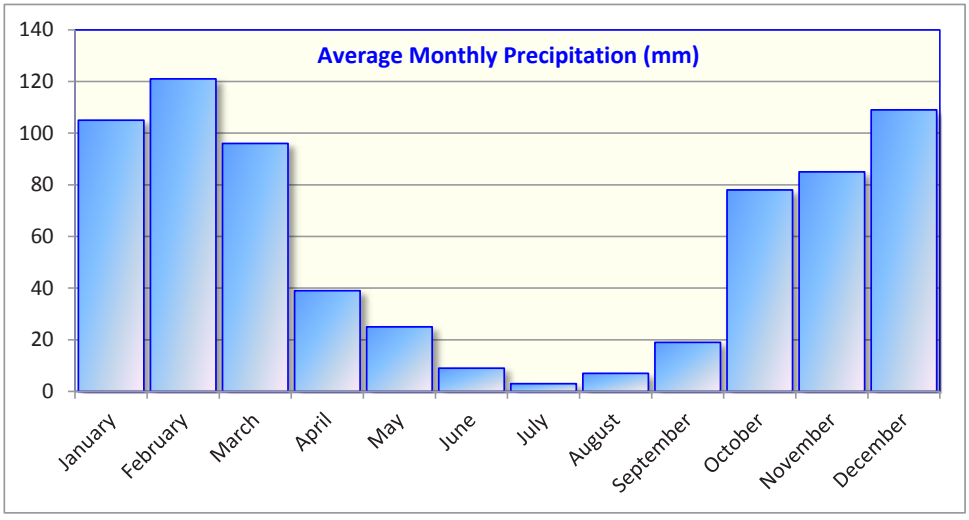
CLIMATE STUDY

Place: ɔhannesburg

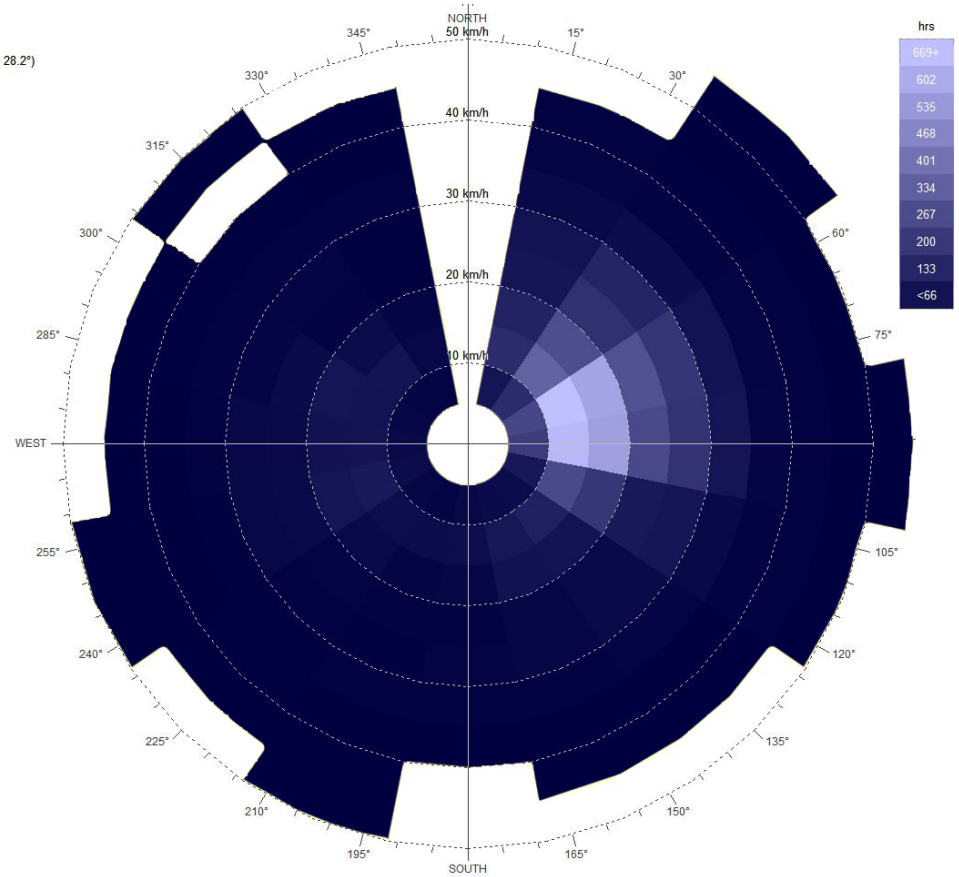
Position: 25°44'S, 28°11'E
Height: 1330m
Period: 1961-1990

Descriptive text

	MONTH	Temperatur				Precipitation		
		Highest Recorded	Average Daily maximum	Average Daily Minimum	Lowest Recorded	Average Monthly (mm)	Average number of Days >== 1mm	Highest 24hr rainfall (mm)
1.	January	36	29	18	8	105	14	160
2.	February	36	28	17	11	121	11	95
3.	March	35	27	16	6	96	10	84
4.	April	33	24	12	3	39	7	72
5.	May	29	22	8	-1	25	3	40
6.	June	25	19	5	-6	9	1	32
7.	July	26	20	5	-4	3	1	18
8.	August	31	22	8	-1	7	2	15
9.	September	34	26	12	2	19	3	43
10.	October	36	27	14	4	78	9	108
11.	November	36	27	16	7	85	12	67
12.	December	35	28	17	7	109	15	50
	YEAR	**36**	**25**	**12**	**-6**	**696**	**87**	**160**

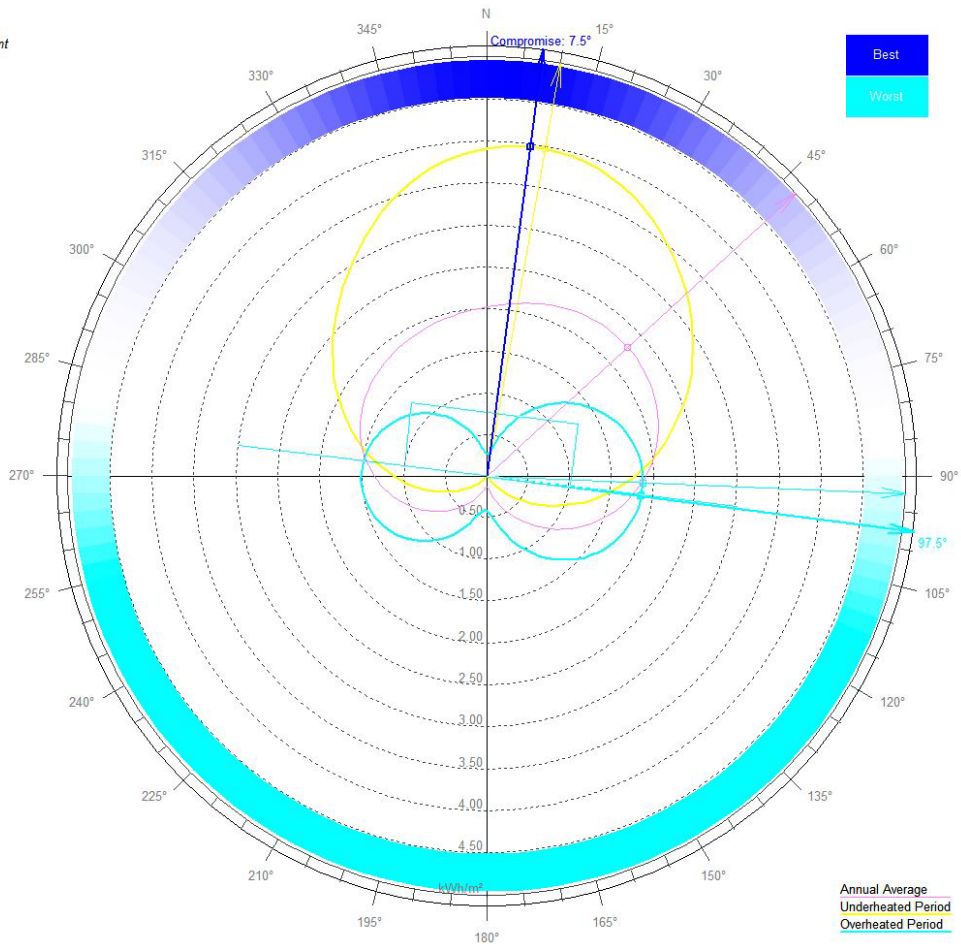


Prevailing Winds
Wind Frequency (Hrs)
Location: Johannesburg/Jan 19, - (-26.1°, 28.2°)
Date: 1st January - 31st December
Time: 00:00 - 24:00
© Weather Manager



Optimum Orientation

Location: Johannesburg/Jan 19, -
Orientation based on average daily incident radiation on a vertical surface.
Underheated Stress: 142.0
Overheated Stress: 69.8
Compromise: 7.5°
© Weather Tool



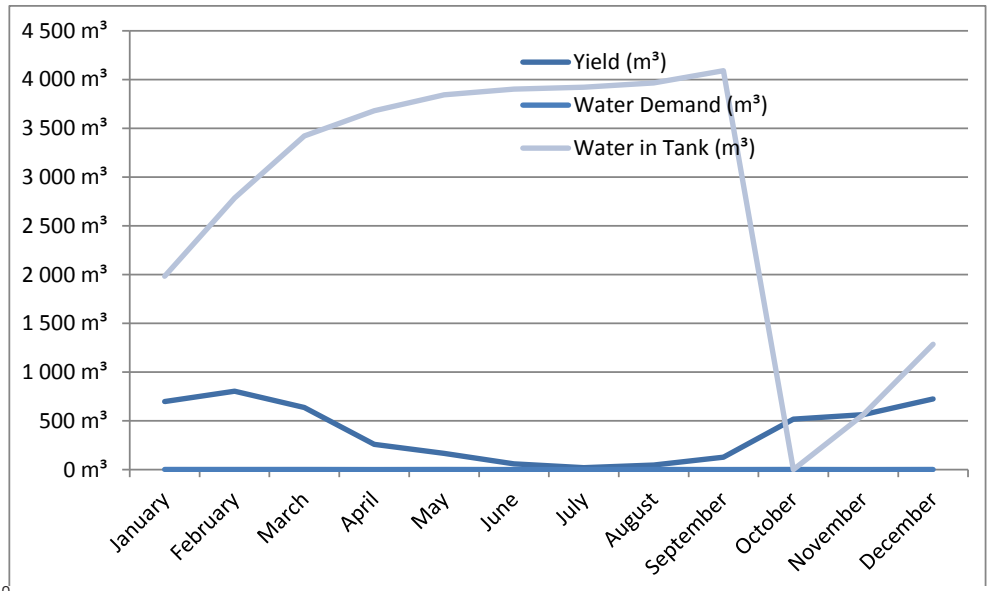
Avg. Daily Radiation at 7.0°
Entire Year: 2.05 kWh/m²
Underheated: 3.94 kWh/m²
Overheated: 0.28 kWh/m²

WATER USAGE AND HARVESTING ANALYSIS

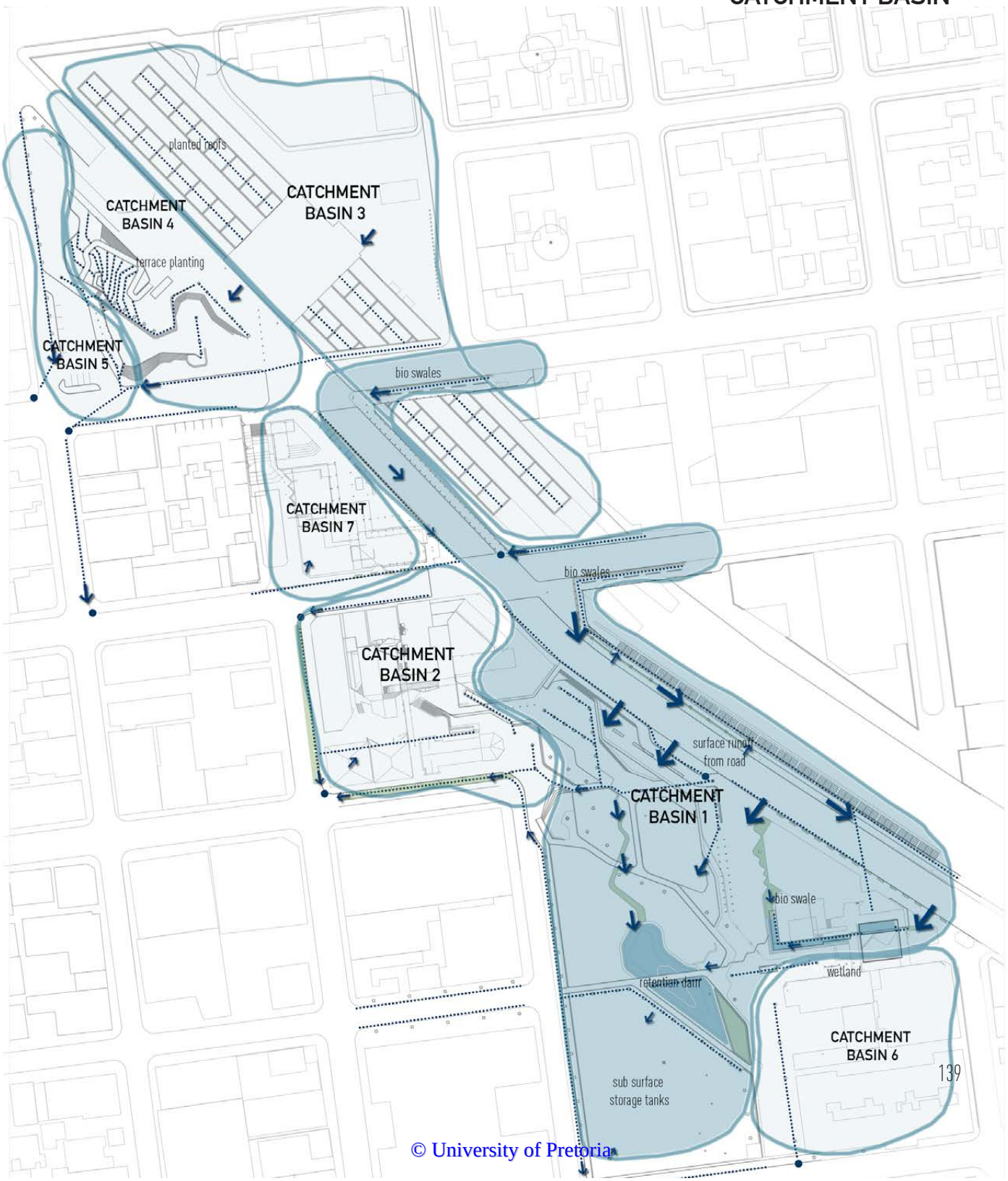
	YIELD from onsite runoff (m^3)	DEMAND total onsite water demand (m^3)	Monthly Balance	Water in Tank/Reservoir (m^3)
January	698 m^3	2 m^3	696 m^3	**1 983 m^3**
February	804 m^3	1 m^3	803 m^3	**2 786 m^3**
March	638 m^3	2 m^3	637 m^3	**3 422 m^3**
April	259 m^3	2 m^3	258 m^3	**3 680 m^3**
May	166 m^3	2 m^3	165 m^3	**3 844 m^3**
June	60 m^3	2 m^3	58 m^3	**3 903 m^3**
July	20 m^3	2 m^3	18 m^3	**3 921 m^3**
August	47 m^3	2 m^3	45 m^3	**3 966 m^3**
September	126 m^3	2 m^3	125 m^3	**4 091 m^3**
October	518 m^3	2 m^3	517 m^3	**0 m^3**
November	565 m^3	2 m^3	563 m^3	**563 m^3**
December	724 m^3	2 m^3	723 m^3	**1 286 m^3**
YEAR	**4 644 m^3 (Total)**	**18 m^3 (TOTAL)**		

Greatest volume of water in tank/reservoir at any time is the minimum capacity of the tank	**4 091 m^3**

Safety Factor:	**1,8**	**Final Tank/Reservoir Size:**	**7 364 m^3**
Proprietory Tank Volume: (e.g. Jojo Tanks)	**10 000 l** **10 m^3**	**Number of Tanks needed**	**737**



CATCHMENT BASIN

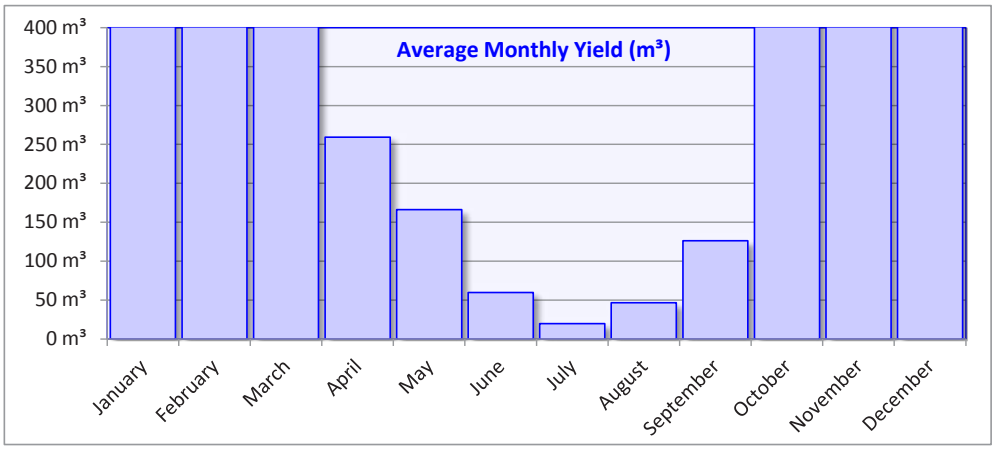


2. Yield

Yield (m^3) = P x A x C (Where P=precipitation (m), A=area (m^2), and C=run-off coefficient)

Area of Catchment: (Per surface)	Area (m^2)	Run-off Coefficient
Roofing	3 992,00 m^2	0,9
Paving	3 308,00 m^2	0,8
Veldgrass		0,4
Lawn	441,00 m^2	0,4
Planting	770,00 m^2	0,3
Gravel		0,7
Grey water		1
TOTAL:	**8 511,00 m^2**	0,78

	MONTH	Precipitation Average Monthly (mm)	Area	Run-off Coefficient	Yield P(m) x A(m^2) x C
1.	January	105 mm	8 511 m^2	0,78	698 m^3
2.	February	121 mm	8 511 m^2	0,78	804 m^3
3.	March	96 mm	8 511 m^2	0,78	638 m^3
4.	April	39 mm	8 511 m^2	0,78	259 m^3
5.	May	25 mm	8 511 m^2	0,78	166 m^3
6.	June	9 mm	8 511 m^2	0,78	60 m^3
7.	July	3 mm	8 511 m^2	0,78	20 m^3
8.	August	7 mm	8 511 m^2	0,78	47 m^3
9.	September	19 mm	8 511 m^2	0,78	126 m^3
10.	October	78 mm	8 511 m^2	0,78	518 m^3
11.	November	85 mm	8 511 m^2	0,78	565 m^3
12.	December	109 mm	8 511 m^2	0,78	724 m^3
	YEAR	**696 mm**	**8 511 m^2**	0,78	**4 626 m^3**



3. Demand (Irrigation and Domestic)

IRRIGATION DEMAND

	Planting Area (m^2)	Irrigation Depth per week (m)	Irrigation Depth per month (m)	IRRIGATION DEMAND (m^3)
January	770 m^2	0,040 m	0,177 m	136 m^3
February	770 m^2	0,040 m	0,160 m	123 m^3
March	770 m^2	0,040 m	0,177 m	136 m^3
April	770 m^2	0,030 m	0,129 m	99 m^3
May	770 m^2	0,020 m	0,089 m	68 m^3
June	770 m^2	0,020 m	0,086 m	66 m^3
July	770 m^2	0,020 m	0,086 m	66 m^3
August	770 m^2	0,020 m	0,089 m	68 m^3
September	770 m^2	0,030 m	0,129 m	99 m^3
October	770 m^2	0,040 m	0,177 m	136 m^3
November	770 m^2	0,040 m	0,171 m	132 m^3
December	770 m^2	0,040 m	0,177 m	136 m^3
YEAR	**770 m^2 (Average)**	**0,032 m (Average)**	**1,646 m (Total)**	**1 267 m^3 (Total)**

DOMESTIC DEMAND

	Number of Individuals	Water / capita / day (Litres)	Total Water / month (Liters)	DOMESTIC DEMAND (m^3)
January	100	50 l	155 000 l	155 m^3
February	100	50 l	140 000 l	140 m^3
March	100	50 l	155 000 l	155 m^3
April	100	50 l	150 000 l	150 m^3
May	100	50 l	155 000 l	155 m^3
June	100	50 l	150 000 l	150 m^3
July	100	50 l	150 000 l	150 m^3
August	100	50 l	155 000 l	155 m^3
September	100	50 l	150 000 l	150 m^3
October	100	50 l	155 000 l	155 m^3
November	100	50 l	150 000 l	150 m^3
December	100	50 l	155 000 l	155 m^3
YEAR	**100 (Average)**	**50 l (Average)**	**151 667 l (Total)**	**1 820 m^3 (Total)**

4. Water Budget Exercise + Safety Factor + Number of Tanks needed

	YIELD from onsite runoff (m^3)	DEMAND total onsite water demand (m^3)	Monthly Balance	Water in Tank/Reservoir (m^3)
January	698 m^3	291 m^3	406 m^3	**1 123 m^3**
February	804 m^3	263 m^3	541 m^3	**1 664 m^3**
March	638 m^3	291 m^3	347 m^3	**2 010 m^3**
April	259 m^3	249 m^3	10 m^3	**2 020 m^3**
May	166 m^3	223 m^3	- 57 m^3	**1 963 m^3**
June	60 m^3	216 m^3	-1 56 m^3	**1 807 m^3**
July	20 m^3	216 m^3	-1 96 m^3	**1 611 m^3**
August	47 m^3	223 m^3	-1 77 m^3	**1 435 m^3**
September	126 m^3	249 m^3	-1 23 m^3	**1 312 m^3**
October	518 m^3	291 m^3	227 m^3	**0 m^3**
November	565 m^3	282 m^3	283 m^3	**283 m^3**
December	724 m^3	291 m^3	433 m^3	**716 m^3**
YEAR	**7 713 m^3 (Total)**	**3 087 m^3 (TOTAL)**		

Greatest volume of water in tank/reservoir at any time is the minimum capacity of the tank	**2 020 m^3**

Safety Factor:	**1**	**Final Tank/Reservoir Size:**	**2 020 m^3**

Proprietory Tank Volume: (e.g. Jojo Tanks)	**240 000 l** **240 m^3**	**Number of Tanks needed**	**9**

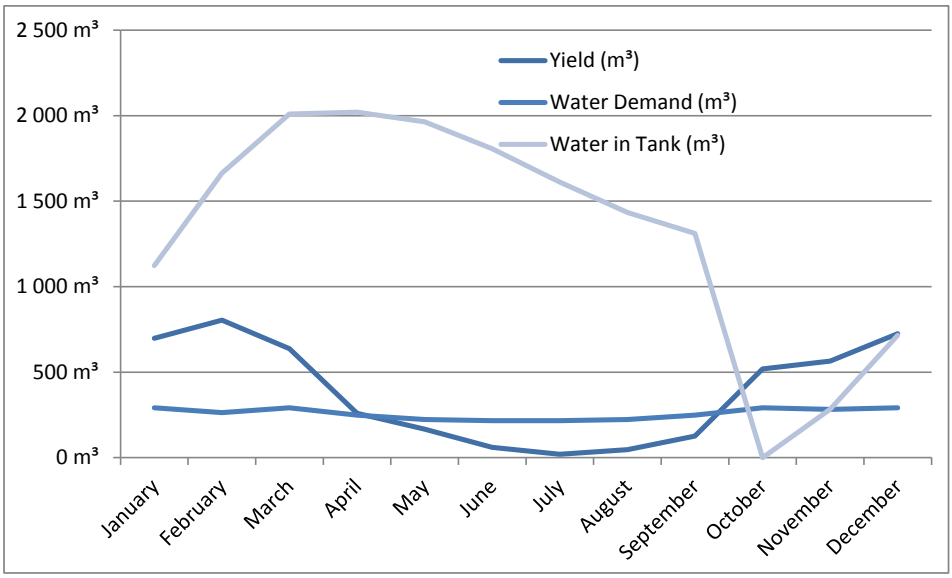


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FIGURE LIST:

DECLARATION

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

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

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

Albert J Smuts
MArch(Prof)