BEYOND THE WALL

A study which explores the relevance of the enclosed garden as a landscape architectural type with specific reference to the City of Johannesburg

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In accordance with Regulation 4 (e) of the General Regulations (G57) for dissertations and theses, I declare that this dissertation, which I hereby submit for the degree Master of Landscape Architecture (Professional) at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at this or any other tertiary institution.

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

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

Abigail Walsh
PROJECT SUMMARY

Dissertation title: Beyond the Wall:
A study which explores the relevance of the enclosed garden as a landscape architectural type with specific reference to the City of Johannesburg.

Site Description: A small, derelict and vacant lot situated within the historically significant CNA block on the corner of Rissik and Fox Street, Johannesburg CBD.

Users: The immediate and surrounding Johannesburg CBD public communities associated with the site.

GPS coordinates: 26° 12’ 20.60” S; 28° 02’ 33.97” E

Landscape Architectural Theoretical Premise: Enclosed gardens can perform as relevant and successful urban landscape design tools within the inner city of Johannesburg, by reactivating and regenerating small, abandoned and vacant open spaces.

Approach: A series of spatial design experiments, aim to test and determine the enclosed garden’s potential as a relevant and valuable landscape design tool within Johannesburg’s urban landscape.
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ABSTRACT

Creating sanctuary within an inhospitable world is one of man’s inherent needs. Even in the desert, Man’s sole means of survival is determined by whether he can find oasis: a fertile place within the vast expanse of the dry desert which provides the contrast of water and shade.

In medieval times, Man feared the unknown world of the dense wilderness and used the enclosed garden – hortus conclusus- as a means to protect himself from nature and to create his own internal world of safety.

Today, in the 21st century, Man is contending with the harsh conditions of the contemporary urban landscape: “a hybrid landscape in which the distinction between city and environs is erased” (Aben and de Wit 1999:250), which continues to develop horizontally and vertically. This contributes to presenting and creating fragmented and unstable conditions, which need to be addressed.

Rob Aben and Saskia de Wit (1999) are authors of the book, The Enclosed Garden: History and Development of the Hortus Conclusus and its Reintroduction into the present-day urban landscape. Both writers believe that if the urban wilderness of today can be likened to the feared natural wilderness of the middle ages, then the hortus conclusus or enclosed garden typology could serve as a landscape design tool which provides man with sanctuary and relief from the city.

The enclosed garden typology has withstood and transcended a variety of geographical, climactic and cultural conditions over many centuries. Its adaptability and survival lies in its ability to be the “mediator between dwelling and nature, building and landscape” (Baker 2012:22).

Despite its relevance as an architectural and landscape design tool, it is not commonly considered for use in the present day practice of landscape architecture. Nor is it used by designers to solve the problems which exist in the current urban landscape. It is for this reason that Aben and de wit (1999) have thoroughly documented and analysed the development of the enclosed garden typology from its time of origin, to the present day. In addition to this, they have devised four new theories of enclosed garden typology (based on historical precedent), which they believe, provide suitable spatial design principles which can be applied to the contemporary urban landscape.

The theory of enclosed gardens has validity due to the fact that it critiques the current urban environment. Investigating and testing this unfamiliar theory of enclosed gardens is thus a relevant topic for landscape architectural research.

This dissertation will perform a series of spatial design experiments which will apply and test these theories in order to determine the enclosed garden’s relevance as a successful urban landscape design tool and whether it should be used in the context of Johannesburg’s open space system.
A conceptual image demonstrates the author’s intention of testing enclosed garden theory within the inner city of Johannesburg. (Author 2014)
Problem: Johannesburg’s fragmented open space condition

Potential solution: The enclosed garden and its four contemporary urban typologies and theories
1.1

Summary of the dissertation process. (Author 2014)

Testing the relevance and validity of the enclosed garden and the four theories within the context of inner city Johannesburg.
Definition of Terms
(Following Aben and de Wit 1999:246)

Appearance
The totality of sensory impressions that together with the plan configuration and spatial form fix the form of a design. These impressions consist of image – types and their references, materials and their textures, smells and colours, and impressions penetrating the garden from outside.

Axis mundi
Literally, ‘world axis’, the imaginary vertical line joining the earth’s surface with the heavenly vault. The line spans between the central point of the world- i.e. where the coordinates of the earth’s surface intersect – and the zenith. The axis is represented by a (cosmic) mountain, a tree, a fountain or another such vertical element.

Bosquet
A grove or shrubbery planted in a solid block as a formal wall for the main spaces in a garden. It often contains a recess, a shut-off space to contrast with the extraverted main spaces. Gardens based on interplay of symmetrical and monumental space-organizing axes lined by bosquets were introduced in the French Baroque, the best-known example being the gardens at Versailles.

Cabinet de verdure
Analogous to the small room (fr. Cabinet, literally ‘little cabin’) in a building, the cabinet de verdure is a small compartment (as opposed to the large sale de verdure) in a bosquet or between hedges.

Centrifugal
Tending away from a centre.

Centripetal
Tending towards a centre.

Chahar bagh
Literally ‘quartered garden’. The oldest Persian gardens (c.2000 BC) were square and divided into four equal parts by water channels. This pattern remained the basis of all Persian gardens throughout the centuries.

Cloister garth
A quadrangle surrounded by a covered walk (see cloister walk)

Cloister type
A building type consisting of four bar-shaped volumes set round a square enclosed garden. a covered walk (see cloister walk) stitches the four volumes together, and serves also to relate the building to the garden.
Cloister walk
In a monastery, the walk surrounding the cloister garth or hortus contemplations. It serves to link both the garden with the building as well as the building’s four wings. It is generally sheltered by a lean-to roof projecting from the buildings. The cyclic route of the symbolic processions following the cross that are enacted in the cloister walk, underlines the latter’s ritual character as depicting the experience of cyclic time.

Containment see Enclosure.

Contemplation
A state, or the act, of attentive consideration (from the Latin contemplare). Templum means firmament, but also the space marked off by the augur in which the observe the flight of birds for divining purposes. Hence contemplate essentially means studying part of the sky.

Context
There are three meanings of the notion of context that bear some relationship to the hortus conclusus: 1. Context as a social, time-related given: the chaotic world from which the hortus conclusus turns away, or the overarching order the latter reflects; 2. Context as the (urban) landscape as it exists: the hortus conclusus relates directly or indirectly to the landscape; 3. Context as fantasy: the ideal landscape or the ideal city of which the hortus conclusus is part.

Cosmos
Greek for ‘order’. The Platonists used this term to describe the idea behind nature. This is how the term is understood in this book, rather than in the current meaning of universe.

Eden, Garden of
According to the Christian tradition man’s earthly existence began in the garden of Eden, a paradise where complete harmony prevailed. Since his expulsion from Eden man has looked back on it with longing, so that the Garden of Eden became the model for those western European gardens designed as earthly paradises.

Enclosure
The relationship the observer has with the space he occupies is determined by the palpable presence and solidity of the surrounding walls shutting out the external world. Enclosed or contained is somewhere between open and closed. A space is ‘closed’ as soon as its height prevails over the breadth, and ‘open’ when one seems likely to lose contact with the walls.

Garden
The most condensed unit in which the historical, functional and spatial complexities of the landscape are made manifest.
Genius loci
Literally ‘genius of the place’. The Romans read a place as if it were a human face, an external revelation of the inner spirit. Like each person, each place has its own spirit. This notion was revived in eighteenth century England, where Alexander Pope wrote: ‘Consult the Genius of the Place in all; That tells the Waters or to rise, or fall…’ He regarded nature as an inner force that strives for perfection but is thwarted in this by all means of misfortunes. To consult the genius of the place is to try to gain insight into the potential natural perfection of a place, and where necessary help it to manifest that perfection.

Giardino segreto
Literally ‘secret garden’, although the garden is usually not actually hidden away. The giardino segreto is a component of the fifteenth century Italian Renaissance villa, a transformation of the medieval hortus conclusus which steadily became less enclosed as time went by (the giardino segreto of the Villa Gamberaia is over two hundred metres long).

Ha – ha
A suddenly encountered gully constructed on the edge of eighteenth-century landscape gardens to separate these from the fields beyond and keep cattle from straying in.

Horizonatal alignment
The imaginary line between a fixed point and the horizon.

Hortus botanicus
The garden as a collection of plants whose aim was to acquire and display knowledge. The plants are ordered according to a particular system that can differ from one such garden to the next. This classification can be taxonomical (i.e. a hierarchical ordering of species based on biological characteristics), geographical or functional. This hortus was originally designed in the shape of a hortus catalogi.

Hortus catalogi
A garden in which the plants are arranged in rectangular beds. The first vegetable and herb gardens were laid out in this geometrical configuration to make them easier to tend; it was later adopted almost unaltered for the botanical and ornamental gardens. The parterre (qv) which played a major organizing role in the Renaissance (rational) and Baroque (formal) gardens, is a derivative of the hortus catalogi.

Hortus conclusus
A medieval enclosed garden, whose paradox is to manifest the landscape in all its complexity and exclude that landscape at the same time. It is at once internal and external.

Hortus contemplationis
A garden of contemplation. Informed by a centripetal (qv) plan organized by the surrounding buildings as, it presents a clear spatial and geometrical whole. A gallery provides it with a double outer wall. See cloister garth.
**Hortus ludi**
A delectable garden, the garden of delights as a profane reading of paradise. This bounded flowery mead was given over to play (ludus), courtship, rhetoric, philosophy, dance, music, poetry, but also to games such as vaulting, blind man’s buff, chess and casting dice.

**Labyrinth**
An infinite complex route in a finite simple matrix—a square or circle—that symbolizes the arduous path (the path of life or indeed death, the path to paradise).

**Microcosm**
A condensed version of the macrocosm or great world. Man and in fact all living things can be regarded as a microcosm. So too can the hortus conclusus. A microcosm is an introverted, enclosed and centripetal spatial unit, a cohesive composition of sensory impressions.

**Mount**
An artificial hill in the garden, that enables its occupants to view the landscape without needing to leave the garden. After the Middle Ages the mount became a component of the plan configuration (qv), its function instead being to overlook the garden itself. The embroidered parterres in the garden were in fact designed for observation from above.

**Oasis**
A fertile spot in an inhospitable flat expanse, one of the two natural archetypes of the hortus conclusus the other being the clearing.

**Panorama garden**
A garden belonging to fifteenth-century Italian villas, in which the panorama across the landscape and the city is assimilated as part of the composition, which is predicted on harmony, clarity and quiet.

**Paradise**
From the Persian word *pairidaeza* meaning park or orchard. It is the ideal image of a blissful garden, a place of eternal peace in the hereafter to compensate for a wretched and temporary existence on earth. In the hortus conclusus earthly attributes are excluded and replaced by a tangible paradise.

**Transferium**
A node or interchange of distinct infrastructural lines where users of one transport mode can transfer to another, hence the name.

**Urban landscape**
A hybrid landscape in which the distinction between city and environs is erased.

**Vertical alignment**
The imaginary line joining a fixed point on earth and the zenith. This alignment gains a strong symbolic charge in the axis mundi.

vista a framed view
Prince Feisal: “No Arab loves the desert. We love water and green trees, there is nothing in the desert. No man needs nothing.”

(Lawrence of Arabia 1962)
INTRODUCTION
1. Problem in context

1.1 Johannesburg city's fragmented open space condition

As the city which forms the largest urban complex in South Africa with an urbanisation rate of ninety seven percent, Johannesburg is the biggest city in the Gauteng province. Over the years, Johannesburg has undergone a restructuring process to accommodate high urbanization rates and the accompanying demands. Unfortunately this regeneration process has left the city with a “fragmented open space system”, making it difficult for the city to optimize, protect and manage its open spaces.

(JMOSS 2000:2)

The city of Johannesburg has recognised that open spaces are valuable due to the fact that they contain “resources that deliver essential services crucial to the maintenance of an acceptable quality of life for all communities.” (JMOSS 2000:2) These resources relate to natural biodiversity, ecological systems, recreational amenities for people and infrastructural services such as stormwater attenuation.

Currently there are insufficient policies and guidelines in place in order to prevent further loss of open spaces. This will continue to take place as population densities increase over time. This has prompted the formation of the Joburg Metropolitan Open Space System (JMOSS), a set of tools and guidelines, which aims to ensure “sustainable management of Open Spaces within the City of Joburg” (JMOSS 2000:2)

1.1.2 Joburg Metropolitan Open Space System.

The JMOSS intends to explore the possibilities of creating a connected system of existing isolated spaces within Johannesburg. Although this proposal has not yet proven itself to be viable, it provides insight into what problems need to be addressed when implementing an open space strategy for Johannesburg and what further research is needed in order to respond to Johannesburg’s open spaces in a suitable and effective way.

A list of objectives stated within the JMOSS (2002) indicates what needs to be addressed in order to help bring this strategy into effect:

1. To provide a cohesive, holistic view of the nature and purposes of an open space system and generate principles of approach most likely to lead to its establishment;
2. To formulate a perceptual model that can be used to identify the types of land most worthy of inclusion within an open space system;
3. To propose a methodology, which, if applied, would be most likely to bring any potential open space into effect; (In the context of landscape architecture, this would be a design approach grounded in theory)
4. To determine suitable boundaries for a City of Joburg Metropolitan Open Space System.
5. To provide a holistic view and analysis of existing open space;
6. To identify those potential open spaces that occur throughout the metropolitan area that are worthy of inclusion in an open space system based on applied criteria;
7. To, in terms of the chosen methodology, assess existing and potential open space that should constitute the MOSS.
1.2 Current landscape architectural research encourages theoretical investigation

In the context of landscape architecture, attention has been placed on investigating theories and approaches to landscape design which address and consider the problematic conditions of the urban landscape and how to provide quality public space:

LaGro states: “In my opinion, landscape architecture needs a substantive body of theory on the process of land planning, design and implementation, as well as on the results of that process.” (in Hindes 2014:179)

Corner agrees with this sentiment: “There has been a recent plea by practitioners and academics alike for the creation of a vibrant, all-encompassing body of landscape architectural theory.” (in Hindes 2014:179)

It is for these reasons that objectives three and six from the JMOSS report present themselves as interesting and suitable topics of study.

1.3 Density is replacing void

As the South African population continues to increase over time, much pressure is placed on the City of Johannesburg to accommodate larger quantities of people. In most cases, open spaces and areas of natural landscape are sacrificed in order to fulfil this need. Aben and de Wit (1999)

1.4 There is a lack of sanctuary from the dense city

Despite living within a landscape which lacks definition, society creates walled, gated communities and sheltered shopping malls. This shows that people still have a need for boundaries, clarity and safety. Aben and de Wit (1999)
2. Problem statement

Johannesburg has a fragmented open space condition which is becoming increasingly worse due to population increase and the accompanying urban developments. JMOSS intends to explore the possibilities of a system which connects and preserves existing isolated open spaces within Johannesburg city, with the hopes that it will contribute to improving the quality of life of city residents. Further and necessary research into these objectives is necessary in order to bring this vision into effect. Aben and de Wit (1999) have expressed the importance of including the experience of sanctuary and safe internal worlds within the topic of quality of life in the city and have presented the challenge of integrating both functional amenities and experience of sanctuary into the design of open spaces.

Based on the JMOSS objectives which can be addressed by landscape architects and the need to improve the overall quality of Johannesburg's city spaces, the main challenges which need to be addressed are:

1. To identify possible open spaces and urban conditions occurring in the metropolitan area that are worthy of consideration in the open space system.
2. To investigate and determine the most suitable design methodology or approach which would most likely bring any potential open space into 'positive effect'. This includes its ability to integrate both the functional amenities and experience of sanctuary into an open space.

3. Thesis statement

1. To ensure that this research contributes positively to the JMOSS open space strategy, it is necessary to determine the types of open spaces which have not yet been considered for the JMOSS open space system. Through the author's own observation and analysis of Johannesburg CBD, investigation into published literary documentation and the execution of multiple design experiments, it will be shown that open spaces related to Johannesburg's industrial heritage and small abandoned open spaces in the CBD are valuable and deserve more attention from city development strategies.

2. Rob Aben and Saskia de Wit (1999) believe that fragmented urban conditions such as the ones present in Johannesburg can be addressed by applying the enclosed garden typology in the design of open spaces. The authors have devised four enclosed garden theories which they feel should be tested in the urban landscape. This dissertation intends to perform a series of spatial design experiments which will apply and test these theories in order to determine the enclosed garden's relevance as a successful urban landscape design tool and whether it should be used in the context of Johannesburg's open space system. According to the authors, the original enclosed garden typology – *hortus conclusus* - is known to create and provide the experience of sanctuary. Aben and de Wit (1999) This dissertation also intends to explore the enclosed garden's ability to provide functional solutions to Johannesburg's problematic urban conditions and to cater for current community needs.
Aims

In order to understand and ideally test this argument through this thesis, it is necessary to:

• Research literary examples which explore important open spaces in the City of Johannesburg (CoJ);
• Observe, determine and analyse typical open space conditions which occur in the CoJ;
• Investigate and analyse the history and development of the enclosed garden;
• Research and evaluate recent examples of enclosed gardens used in or applied to the current urban landscape;
• Understand and apply the four new theories of enclosed gardens (as devised by Rob Aben and Saskia de Wit) to a specific site and determine their validity through an iterative design process;
• Use the devised theories as a way of analysing and understanding the site in the context of Johannesburg;
• Analyse and understand examples of dense cities which currently and successfully make use of enclosed garden typologies;
• Compare the enclosed garden to accepted design tools such as the public park and evaluate the comparison;
• Understand how the enclosed garden works, by analysing its constituent parts.

Research questions

How does one determine which types of open spaces are valuable and should be considered for the JMOSS strategy?

What is enclosed garden theory and what advantages does it have over existing landscape design tools such as the public park and square?

Which spatial problems of the urban environment can potentially be solved using enclosed garden typologies?

How does an enclosed garden create the experience of sanctuary while addressing the functional requirements of urban public space?

Is there a type of open space which is better suited for the application of an enclosed garden typology?
Client and User identification

The design and development of CoJ’s open spaces explored in this study aims to provide public gathering spaces for the immediate and surrounding communities. Understanding the community of people which would typically use the chosen open spaces is necessary in order to determine the functional programme of each space and how to create a meaningful experience of contrast.

Research methodology

A selection of research methodologies will be used throughout this dissertation.

For problem one:

• A literary research method will be conducted to help determine the potential value of Johannesburg’s open spaces;
• An analytical survey method will be used during the observation and understanding of Johannesburg’s open space condition and will include mapping and data analysis.

For problem two:

• Literary research into enclosed garden theory will be used to help determine the relevance of this typology in Johannesburg’s urban landscape;
• An iterative, experimental design approach will be used to apply this theoretical research to numerous sites in Johannesburg;
• After a series of general design experiments, the author will conduct more detailed design experiments on a historical industrial open space and on a small, derelict inner city open space;
• Further analytical research in the form of a matrix will be used to determine that small open spaces would benefit the most from enclosed garden theory;
• Theoretical research will continue to be applied during the analysis and design development of a particular small site and will be used to explore the enclosed garden’s capabilities to provide for the functional and experiential (sanctuary) needs of the open space.
2 LITERATURE REVIEW
Part 1
Exploring the problem
1. Determining valuable open spaces in Johannesburg

1. Understanding Johannesburg’s open spaces

The dense and fragmented nature of Johannesburg’s urban fabric has presented a complex and challenging open space condition, as shown in figure 2.1.1. Johannesburg city and its need for a connected system of spaces (for ecological, economic, social, heritage etc.) reasons, provides an interesting and relevant context of study for a landscape architectural dissertation.

As outlined in Chapter One, this dissertation aims to determine which additional types of open spaces should be included in the JMOSS strategy. To aid in this process, it is necessary to understand what JMOSS is and its definition of open space:

JMOSS is “…an inter-connected and managed network of open space, which supports interactions between social, economic and ecological activities, sustaining and enhancing both ecological processes and human settlements. MOSS comprises public and private spaces, human-made or delineated spaces, undeveloped spaces, disturbed ‘natural’ spaces, and undisturbed or pristine natural spaces.” (JMOSS 2000:7)

JMOSS’ definition of open space:

“Any undeveloped vegetated land within and beyond the urban edge, belonging to any of the following six open space categories: ecological, social, institutional, heritage, agricultural and prospective (degraded land).” (JMOSS 2000:6)

The next step in the process of research focuses on finding information and any literary references pertaining to important spaces in Johannesburg. It is necessary for the references to discuss and create awareness about unknown and valuable qualities of the spaces.
1.2 Johannesburg’s small and prospective open spaces are valuable

In their publication *Ruins of the past: Industrial heritage in Johannesburg*, Läuferts and Mavunganidze (2009) recognise the importance of Johannesburg’s inner city regeneration. However, they are concerned that during this process of renewal, buildings and places which contribute to the city’s cultural heritage will not necessarily be protected or conserved.

They state that: “South Africa and indeed many other developing countries have fallen behind the rest of the world in recognizing, declaring and protecting their industrial heritage” (M. Läuferts and J. Mavunganidze 2009:1).

Johannesburg’s identity and existence is strongly rooted in its mining and industrial heritage. However the pressure to develop and upgrade decaying areas of the city has resulted in the demolition of buildings and accompanying open spaces which form part of this heritage. Unfortunately this was the case for the Richmond laundries building in 2008. Läuferts and Mavunganidze (2009)

A similar scenario has been noted within the Johannesburg CBD. During the compilation of several Heritage Assessment Survey’s for the Johannesburg Metropolitan, Dr Bruwer discovered that there are multiple historically significant and architecturally valuable buildings in the city which have been demolished due to their state of neglect and there are numerous more waiting to receive the same fate. Heritage Assessment Survey (2004)

This has created the condition of small, derelict and vacant voids in the city. Many of which are bounded by abandoned and decaying heritage buildings. This is illustrated in figure 2.1.2.
Figure 2.1.3 below aims to demonstrate this condition of small, random and scattered voids throughout the city. The location of these open spaces was determined by the Author’s own observation and analysis of the city. It can be noted that this condition is predominantly focused in the inner City CBD areas as well as dense city residential areas such as Hilbrow.

Even though many of these voids represent the loss of some of Johannesburg’s heritage, they do offer an opportunity to explore the potential for creating small quality urban public spaces in the middle of the CBD and accompanying urban residential areas. Many of these scattered vacancies are located in the densest part of the city, where access to public parks and quality open space is minimal or not within walking distance from business district areas. Blake (2011)

In the USA and in Europe, cities have recognised that these small open spaces are opportunistic and have the potential value to provide retreat and amenities to their immediate communities. Blake (2011)

In many examples, the concept of “diminutive” or pocket parks have been applied to these small spaces. Blake (2011)

Alison Blake defines pocket parks as: “…urban open space at the very small scale. Usually only a few house lots in size or smaller, pocket parks can be tucked into and scattered throughout the urban fabric where they serve the immediately local population” (2011:1).

The table below is a summary of the literary research completed to determine the value of small urban open spaces. A comparison to typical and larger municipal public parks was also used to help determine the relevance of small open spaces.
<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
<th>Advantages</th>
<th>Disadvantages</th>
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<tbody>
<tr>
<td>Environmental benefits:</td>
<td>Residents and city users lack access to main parks.</td>
<td>Benefits overall urban climate; parks within walking distance means less driving for nature experiences.</td>
<td>Lack of spaces for recreational activities especially used by children.</td>
</tr>
<tr>
<td>Trees reduce air pollution</td>
<td>People need transport to get there and have no daily experience of retreat.</td>
<td></td>
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<tr>
<td>Large surface areas allows for effective ways to manage stormwater.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Large surface area for recreational activities</td>
<td></td>
<td>Opportunity for increased permeable surfaces in city and animal activity.</td>
<td>Space is restricted and conflicts arise when designing for different groups of people who use the same small space.</td>
</tr>
<tr>
<td>Large spaces allows for community gathering</td>
<td>Stereotyped landscape image reduced to a few landscape elements such as trees and lawn. Aben and de Wit (1999)</td>
<td>Used in areas of high density and have potential to be easily accessed by large population numbers.</td>
<td></td>
</tr>
<tr>
<td>Potential to become large areas of diverse natural landscape and ecological function</td>
<td>Although functional, it lacks in ecological biodiversity and conserving limited natural landscape.</td>
<td>Can be tucked in or scattered throughout city in order to serve immediate communities.</td>
<td>Designed for heavy pedestrian use so the ecological function of the space can be limited.</td>
</tr>
<tr>
<td>Maintenance is costly.</td>
<td>Small size makes it easier to locate them in close proximity to large numbers of urban residents who can interact with nature daily.</td>
<td>Easier to create than maintain without a functional design approach.</td>
<td></td>
</tr>
<tr>
<td>Designed for heavy use, hard surfaces requires less maintenance.</td>
<td>Make use of vacant building lots, forgotten spaces or irregular places of land typically found in JHB CBD.</td>
<td></td>
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<tr>
<td>Relieve pressure on large parks and devote large parks to habitat and ecological functions.</td>
<td>Can be urban, suburban or rural.</td>
<td></td>
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<tr>
<td>Although small, they meet a variety of needs: small event spaces, play areas, Spaces for relaxing and gathering.</td>
<td>Easy elevation above or below the street provides exclusion of the city.</td>
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2.1.4 A table of comparisons between large and small urban open spaces by the author (2014)
During their observations of a famous pocket park called Paley Park in New York, Supinsky & Lu (2012) determined that it was the small size of the space which contributed to its quality of experience. They state that:

“The success of this park proves that size is no issue. In fact, unlike so many parks which try to be infinitely expansive, Paley Park utilizes its small lot to create a very intimate, even romantic setting through a grand water feature and vertical planes of greenery.”

(LSA 2012:6)

From the table above and the brief literary overview, it is clear that the potential advantages of small urban open spaces, places emphasis on the need for JMOSS to consider the small, derelict and prospective sites identified in Johannesburg. The sites observed fall under JMOSS’ prospective and in most cases, heritage categories.

**1.3 Johannesburg’s historical industrial open spaces are valuable**

As shown in the analysis of Johannesburg city’s condition above, Läuferts’ and Mavunganidze’s (2009) concern for preserving Johannesburg’s industrial heritage is justified and necessary. However, there are examples within Johannesburg which show that there is a growing awareness towards restoring and developing existing industrial heritage buildings and accompanying sites.

44 Stanley Precinct is a successful example of Johannesburg’s ability to restore once derelict industrial architecture into contemporary restaurants, boutiques and filming studios- a relevant response to the surrounding student and residential context. Läuferts and Mavunganidze (2009)

However, despite the success of this upgrade, this restoration revealed that the open spaces which are often associated with Johannesburg’s industrial processes present problems which require solutions that go beyond just cleaning and restoring buildings. The fourteen hectare Egoli Gas Works site shown in figure 2.1.5, is situated within the 44 Stanley Precinct and is an example of a difficult industrial heritage open space:

“Pollution of the river Braamfontein Spruit and the air in the area led to termination of the production… the City of Johannesburg…were at loss at what do with the massive site.” (Läuferts and Mavunganidze 2009:6)
2.1.5

Productive industrial landscape Egoli Gas works. Image by author (2014)
Ecological restoration is necessary before any development can take place in this open space, but the funding necessary to detoxify a site of this scale is not available. Figure 2.1.6 reveals the large extent of site’s contamination. It is for this reason that open spaces such as these are not commonly considered for open space strategies such as JMOSS.

Large and small open spaces related to the Johannesburg’s industrial heritage, outlined in figure 2.1.7, are important and experientially they potentially provide an interesting interplay between green open space and old historical buildings.

According to Läuferts and Mavunganidze:

“The Gas Works form part of the industrial heritage network in the wider inner City circle that informs us on how the industries in the early 20th century depended on each other.”

(2009:7)

It is important for JMOSS to consider open spaces with industrial historical value, but research is necessary to find design approaches that have the potential to deal with the difficult ecological restorations thereof.
The next objective is to determine which methodology, or landscape design approach, would be best suited to bringing out the potential of these open spaces. To help with this identification, it would be beneficial to understand the types of conditions and potential spatial problems which are associated with the small derelict and industrial heritage open spaces which have been chosen for investigation.
2. Determining a suitable design approach

Chapter One provided a brief overview of the problematic urban conditions which exist in Johannesburg city. These include a lack of definition and boundary, the absence of a connected open space system and the need to provide sanctuary and contrast to the dense city.

Now that the objective of finding additional, suitable and valuable open spaces for the JMOSS strategy is complete, it is necessary to find and determine a design approach which can help bring small, prospective and industrial heritage open spaces into “positive effect”. JMOSS (2002)

A suitable design approach is one which can address the spatial and functional problems relating to small and industrial heritage open spaces. In addition, its success will lie in its ability to create definition in the urban landscape and create contrasting experiences of sanctuary.

The following sections will explore the problems which need to be resolved by the design approach.

2.1 Johannesburg’s fragmented urban landscape lacks spatial definition. This reduces the spatial quality of its open spaces

Like many dense and rapidly growing cities, Johannesburg’s urban fabric lacks spatial definition. The distinguishable boundaries which once clearly existed between the natural landscape or wilderness and city are quickly disappearing. This has contributed to the formation of its “fragmented open space” framework. JMOSS (2002)

Rob Aben and Saskia de Wit have drawn the conclusion that open space examples such as the public square and park (commonly found in fragmented urban conditions such as Johannesburg) have reduced to “three-dimension reality: the garden is accepted as being ‘green’ and space is understood as being surface” (1999:122).

Johannesburg’s public spaces are required to be functional and provide the public with necessary recreational amenities such as sports and games. This results in open spaces lacking in “expressive and spatial aspects” (Aben and de Wit 1999:122) A design approach which considers the experience of more than just secular activities within an open space needs to be explored.

2.2 Density is replacing void

Empty space is becoming increasingly scarce and is a rare commodity. For the human being who is constantly exposed to noise, congested roads, high densities of people, buildings and chaos, void and clarity which is experienced in contrast to the city, is a pleasant and relieving experience. Empty space alone thus has value and applying a design approach which helps to define, celebrate and protect void is necessary. Aben and de Wit (1999)
2.3 There is a lack of sanctuary from the dense city

Throughout time, man has had to endure and survive in harsh environments. Even in Persia during the sixth century, man was able to create relief and a contrast to his threatening desert surroundings. An oasis or paradisiacal environment was created by building a high boundary wall around a chosen area which would ensure that humidity could be contained and that lush and dense vegetative communities could be maintained and conserved. These somewhat ‘artificial’, walled gardens of oasis provided man with shade, shelter and relief from the testing desert conditions. Messervy (2007)

The city with its harsh and consistent conditions can also be an unforgiving environment for people to spend time in. Understanding these conditions and then providing a contrasting experience could have the same effect as the desert oasis or paradise. Juxtaposition such as this is not common within the daily life of the Johannesburg city dweller and could be a welcomed surprise for the people of the city.

Although Johannesburg’s public parks make reference to the natural landscape and contain natural elements such as trees and planting, their predominant role is to be functional: to provide the public with adequate surface area (paved or lawn) which can accommodate large quantities of people for gatherings and recreational activities such as sports and play areas. The park typology addresses the functional needs of society, but an authentic and realistic experience of the natural landscape which typically contains higher biodiversity of fauna and flora is reduced and often does not exist in the city. Aben and de Wit (1999)

In addition to this, most open public spaces lack definition and therefore cannot provide a separate and contrasting experience to the city, the way the walled garden did in the desert. A design approach which has the potential to separate an open space from its surrounding environment needs to be explored.

2.4 Problems relating to Johannesburg’s small and prospective open spaces

In Johannesburg, the majority of open green spaces have been transformed into public parks. Most of these spaces are large enough to accommodate recreational and sports activities. As mentioned above, the remaining open spaces which are found in the CBD are infinitely smaller than the typical public park. They are also bounded by a dense, highly architectural context on more than one edge of the site. This condition highlights the importance of investigating a design approach which addresses the relationship and close proximity between architecture and landscape within small open spaces.

If these small open spaces are to be considered for development, they would need to be able to accommodate a high traffic of people who work in and commute to the CBD every day. In addition to this, they would need to provide the public with a functional amenity which would encourage the utilisation of the space. Due to the limited space, this cannot be the typical recreational and sporting programmes. The design approach chosen would need to be able to create a small robust public space and help to determine relevant functional programmes for the site.
2.5 Problems relating to Johannesburg's historical industrial open spaces

The majority of Johannesburg's open spaces are required to be functional. They are either large robust urban gathering spaces (Mary Fitzgerald square and Ghandi square) or green parks which provide recreational and sports activities (Joubert Park). Therefore, the focus of most current open space strategies in Johannesburg is not to ensure that the design of open spaces associated with heritage sites and buildings, responds sensitively and appropriately to the historical context at hand. It is important to consider a methodology or design approach which puts emphasis on understanding and responding to an existing context.

As discussed in, *Ruins of the past: Industrial heritage in Johannesburg*, some of the industrial processes related to these sites, gas production for example, have led to site contamination over time. Läuferts and Mavunganidze (2009)

Detoxifying a site, especially a large one, can be rather costly. A design approach which addresses and provides controlled conditions would be appropriate for a contaminated site. Controlled conditions would ensure that specific areas of a site could be safely utilised and experienced by the public, and it could also contain areas of contamination for the duration that regenerative processes take place. Some heritage sites contain structures and buildings which require protection and conservation. Considering controlled conditions could limit and prevent access to sensitive areas of a site.

The spatial problems which are commonly associated with a heritage or small degraded open space have been explored and defined. This will help to determine which design approach has the potential to resolve the existing spatial problems and ultimately bring an open space into “positive effect” (JMOSS 2002:4).

2.6 Enclosed garden theory is a suitable design approach in Johannesburg's open spaces

In their book, *The Enclosed Garden*, Rob Aben and Saskia de Wit (1999) aim to demonstrate that this old landscape typology, although not commonly used in contemporary urban landscapes such as Johannesburg, is a relevant design tool which can still be applied in order to resolve spatial problems which are associated with the contemporary urban condition. To prove its validity, the authors studied existing enclosed garden precedents and completed their own theoretical spatial experiments.

The following section aims to provide insight into how enclosed garden theory and the enclosed garden typology, has the ability to create definition, provide sanctuary and the potential to be a suitable design approach for heritage and small degraded open spaces in Johannesburg city.

2.6.1 The enclosed garden creates definition, sanctuary and achieves spatial quality

In response to the growing number of Nomadic barbarian cultures in the Early Middle ages, medieval towns became enclosed territories of control and safety. The natural landscape was a dense wilderness, feared by man due to its mysteriousness and power. The *hortus conclusus* or medieval enclosed garden, was a device used to separate the city from the natural landscape through a continuous boundary wall. The enclosed garden and its solid boundary wall created a safe, finite, internal world in contrast to the unknown and feared wilderness.
Although the public square, park, and town garden have developed naturally out of the public’s need for functional open spaces within the city fabric, Rob Aben and Saskia de Wit (1999) believe that applying the spatial defining qualities of the older enclosed garden typologies, such as the _hortus conclusus_, will help improve the quality of the public spaces experienced in the city.

The spatial qualities achieved by the _hortus conclusus_ typology include:

- Creating a clear relationship with the surrounding buildings
- Emphasising and representing nature
- Making it a clearly defined space (celebrating void). Aben and de Wit (1999)

### 2.6.2 An enclosed garden is a suitable design approach for small, prospective spaces and can be adapted for a variety of spatial programmes

An enclosed garden is versatile due to its ability to “…influence architectural designs, regardless of their size or dimensions” (Baker 2012:35). Despite their associations with gardens of pleasure and oasis, enclosed gardens can be functional spaces, especially with the “production and observation of plants” (Baker 2010:20). The boundary wall provides protection from external elements and allows the internal environment to exist under controlled conditions. This means that the microclimate of an enclosed internal space can be manipulated in order to prolong planting seasons. “Solid walls on all sides gives the opportunity to exploit both sun and shade throughout the day” (Baker 2012:20).

According to Aben and de Wit (1999), a small sized enclosed space relates better to the human scale and proportions and allows a person to orientate himself easily within the space.

### 2.6.3 An enclosed garden is a suitable design approach for historical industrial open spaces

According to Baker (2012), the enclosed garden can respond sincerely to a historical context. The simplicity of an enclosed garden’s typology and structure allows designers to respond in a particular way to a specific location. This is a valuable design attribute in the context of Johannesburg’s industrial heritage, where landscapes and buildings need to be celebrated and considered in unique ways.

On historical industrial sites where contamination is likely to occur, an enclosed garden can help to control specific areas of a site and create unique internal environments which can aid in the healing processes:

> “The constructing of an enclosing wall also has material consequences, making it possible to control or alter many features of the interior, including climate” (Baker 2012:6).

This brief investigation into enclosed garden theory has shown that it has the potential to be a suitable design approach for industrial heritage and degraded open spaces. Its potential should be investigated further through thorough literary research and analysis.
Part 2

History and development of the enclosed garden

Introduction

The following section provides a condensed summary of the enclosed garden’s origins, history and development as documented by Rob Aben and Saskia de Wit (1999). The purpose of this investigation is to reveal the enclosed garden’s relevance within the current urban landscape.
2.2

The history and development of the enclosed garden through time. (Author 2014)
1. The origin of the garden is an enclosure

Despite its numerous meanings and associations, paradise finds its origin as a garden:

Paradise (n): from the old Persian word Pairadaeza, meaning “walled garden”
Paira - meaning “around” and daeza meaning “wall” (Messervy 2007:97)

In Persia during the sixth century, a common garden was an enclosed, private space and a refuge from the hot, dusty and noisy world beyond its walls (as illustrated in figure 2.2.1 below). It had an intimate relationship with the architecture surrounding it and was often edged by a porch, palace or pavilion. Messervy (2007)
2. The enclosed garden becomes a sacred Paradise

In Islamic parts of the world, the enclosed garden is used to represent Earthly Paradise as described by the Qur’an. Symbolic motifs such as the Chahar Bagh are used. This is shown in figure 2.2.2.

In the medieval Christian world, the enclosed garden or *hortus conclusus* is used to represent The Garden of Eden as described in the bible. Baker (2012)
3. The medieval enclosed garden

“hortus conclusus: a medieval term meaning 'enclosed garden’ – a secret garden set within a larger garden space” (Messervy 2007:97).

In response to the growing number of Nomadic Barbarian cultures in the Early Middle ages, medieval towns became enclosed territories of control and safety (refer to figure 2.2.3) The enclosed garden provides sanctuary from the feared external world and allows man to explore his spiritual contemplation. This is illustrated in figure 2.2.4. In order to be self-sufficient, the hortus conclusus evolves into three types of enclosed gardens to provide for the town’s needs:

*Hortus contemplationis:* Garden of contemplation.

*Hortus catalogi:* Botanical garden.

*Hortus ludi:* This pleasure garden

Overtime, man’s need to engage literally with the natural landscape is reflected in the dismantling and permeation of the enclosed garden boundary wall.
2.2.4

Hortus contemplationis and its component parts: a door leading into a gallery space; a lawn surface with axial cross and central fountain (Aben and de Wit 1999:55) adapted by author (2014)
4. Elaborating the vertical axis: the Gothic garden

“… the perfection of geometry became a gauge to measure the degree of divinity of man and his creations and this reached a peak in gothic architecture.” (Aben and de Wit 1999:72)

This enclosed garden combined sensory experience with reason and systems of measure. The orthogonal grid and other cathedral elements were imitated in the adjacent garden: The trees imitate the columns and the fountain the altar (refer to figure 2.2.6).

High vertical walls (explored in figure 2.2.5), filtered light, tranquil sounds and coolness are used to heighten the senses and depict paradise.
Enclosed gothic garden of the Cathedral of Santa Eulalia (Aben and de Wit 1999:77) adapted by author (2014)
5. View across the wall: The Mount

According to Francis Bacon: “The purpose of the mount was to give a prospect without sacrificing the sanctuary of the garden” from (Aben and de Wit 1999:80).

After the middle ages, less attention was placed on defence and man’s desire to bring the horizon into the garden was shown in the execution of the mount.

Mounds of earth were compacted into the form of a mount within the garden walls and used as a component to elevate the user in order to experience an external view. This is illustrated in figure 2.2.7 and figure 2.2.8. The solid boundary wall remained out of fear of nature and the unknown wilderness. Aben and de Wit (1999)
2.2.8

Mount from Charles Estienne, La Maison rustique (1564) from Aben and de Wit (1999:80) adapted by author (2014)
2.2.9
The punctured boundary wall invites views of the landscape into the seduced French castle garden. (Aben and de Wit 1999:71) adapted by author (2014)

6. View across the wall: The French castle garden

The desire to enjoy and explore the natural landscape means that experiencing sensual pleasure takes preference over defence. The *hortus conclusus* typology remains, but the boundary wall becomes more permeable and is punctured in order to reveal views of the external landscape (refer to figure 2.2.9 and figure 2.2.10)

The enclosed garden is seen as another room of the house, arranging all the outdoor functions such as kitchen garden, bowling green, orchard and maze into an organized complex. Aben and de Wit (1999)
2.2.10

Chateau Amboise (1498): The wall is replaced by a series of windows revealing views of Loire landscape. Aben and de Wit (1999:82) adapted by author (2014)
7. Panorama as garden wall: the early Renaissance garden

The Renaissance enclosed garden marks the clear shift from a vertical, abstract and mystical experience to a tangible, horizontal one (illustrated in figure 2.2.11). Focus is placed on manipulating and controlling the physical landscape optically through perspective, proportion and vantage points. Aben and de Wit (1999) This is shown in figure 2.2.12.
Villa Medici with a series of terraced enclosed gardens invites external landscape views into the experience of the internal garden. (Luna 2014) adapted by author (2014)
2.2.13.
Integrating both the horizontal and vertical experience within the enclosed garden. Smaller enclosed gardens are used as components within the large garden complex. (Aben and de Wit 1999:71) adapted by author (2014)

8. Giardino segreto and panorama: The Renaissance garden

This enclosed garden explores the integration of endlessness (horizontal) and containment (vertical). This is demonstrated in figure 2.2.13.

The Giardino segreto or ‘secret garden’ (Aben and de Wit 1999:247) is used as a component within the Renaissance garden: an enclosed garden with a central vertical axis which is placed within the open, larger garden. It provides the experience of a ‘hidden world’ (Aben and de Wit 1999:86).

The Villa Lante garden (refer o figure 2.2.14) creates the opportunity for Giardino segreto gardens to be placed within a panoramic setting by pushing the hortus conclusus boundary wall further out. This ensures that wilderness and the town are included in the garden. Enclosure and endlessness are experienced. The main axis is used to combine the town, wilderness and sequence of gardens. Aben and de Wit (1999)
Villa Lante with 'segret garden' elements placed within the larger enclosed garden. Elements and spaces are linked via a system of pathways and axes. (Cornell 2014) adapted by author (2014)
The enclosed garden is a small container of finite space within a vast and larger garden complex. (Aben and de Wit 1999:93) adapted by author (2014)

9. Cabinet de verdure and vista: The Baroque garden

The focus of these gardens was to create containment within the ‘endless’ landscape (Aben and de Wit 1999:95). Small internal garden rooms, cabinet de verdure, are organised within a larger garden complex as a way of displaying and emphasising the infinity of space (refer to figure 2.2.15) Planting was used to decorate and define these hidden spaces.

In order to display man’s power and control over the landscape, Baroque gardens were characteristically large. The vista garden or the notion of experiencing the external landscape at a glance was a strong theme throughout this era. It was thought that inviting the horizon into the garden would allow the user to experience infinity. Aben and de Wit (1999)

The gardens of Versailles (refer to figure 2.2.16) provide the observer with a field glass-like experience, inviting the horizon into the palace complex. Juxtaposed with the viewing of this expansive landscape is a series of small garden rooms (cabinet de verdure). Aben and de Wit (1999)
2.2.16.
The large garden complex of Versailles decorated with smaller garden rooms.
Image by author (2014)
10. Kitchen garden and unlimited space: the landscape garden.

During the eighteenth century, man began to value nature and its intelligent orderly systems—genius loci ‘genius of the place’. Now that the natural landscape was understood as a favourable precedent for the garden, it seemed logical to abandon boundaries all together and experience the natural landscape as if it were a garden, a landscape garden. Aben and de Wit (1999)

The kitchen garden (illustrated in figure 2.2.17), however, remained as a contained enclosure and object within the expansive landscape garden. Aben and de Wit (1999)

The concept of merging landscape and garden was the primary focus for Lancelot ‘Capability Brown’s eighteenth century park landscapes. The only boundary to exist between the garden and landscape was a ‘ha-ha’ or sunken ditch, this ensured a panoramic views. Similar to the hortus conclusus, unwanted elements were removed from the landscape.

Components of the parks include a foreground (fieldglass), middle ground (water) and a background (wooded horizon). In Petworth park (refer to figure 2.2.18), Capability Brown arranges these components within a seemingly ‘unbounded’ landscape. Aben and de Wit (1999)
2.2.18

Petworth Park, West Sussex (1751) illustrating fieldglass, water and wooded horizon. (Aben and de Wit 1999:100) adapted by author (2014)

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11. Dissolution: the modern movement and the demise of the enclosed garden

Due to a colonized world, space and the landscape is perceived to be limitless. This is illustrated in figure 2.2.19. The natural landscape is viewed as being sacred. The modernist house Villa Savoye designed by Le Corbusier, is a free-standing object which is raised above the landscape to ensure the least amount of disturbance (refer to figure 2.2.20).

“The relationship between house and landscape is immediate, without the intercession of a garden” (Aben and de Wit 1999:104).

The garden is still present, but takes on the form of a roofscape (refer to figure 2.2.21) to remain separate from the building and of course the natural landscape. Aben and de Wit (1999)
2.2.20
Villa Savoye house sits directly in the natural landscape. The garden is no longer the mediator between architecture and landscape. (Aben and de Wit 1999:104) adapted by author (2014)

2.2.21
The roofscape garden of Villa Savoye is removed from the landscape and is experienced separately to the building. Reference to nature is in the form of planted trays. (Aben and de Wit 1999:105) adapted by author (2014)
12. Urban transformations: The enclosed garden’s development in the city

After the industrial revolution and an increase in urbanity, the garden in the city was not able to engage in a direct relationship with the natural landscape the way it did during medieval times.

Rob Aben and Saskia de Wit (1999) believe that the positive spatial qualities achieved by the enclosed garden are owed to its boundary wall or space defining abilities. The three types of public spaces: square, park and town garden (refer to figure 2.2.22) which developed in the city, lack this definition and as a result of this have reduced in spatial quality.

Figure 2.2.23 below best demonstrate the enclosed garden’s influence on each of these urban spaces.
2.2.23
Evolution and disassembly of the enclosed garden into public square, park and town garden, which lack definition. Aben and de Wit (1999) adapted by author (2014)
2.2.24

13. The public square, park and town garden

“Interwoven with urban types such as the square, the enclosed garden was stripped of its landscape attributes. Deprived too of its clear definition of space, all that was left was a stereotyped landscape image, such as one sees in front gardens and public urban greenspace” (Aben and de Wit 1999:120). This is illustrated in figure 2.2.24.

An example which demonstrates the lack of spatial quality within an urban square is Place de la Concorde in Paris. This traffic interchange attempted to create a sense of place, but according to Aben and de Wit, achieved an ‘absence of space instead’ (Aben and de Wit 1999:121).

Figure 2.2.25 below provides an understanding of the vast openness of the square which is intimidating for the user. In addition, the square struggles to retain any relationship with surrounding buildings.
Place de la Concorde lacks spatial definition and the safe internal world of the enclosed garden has been inverted (Aben and de Wit 1999:139) adapted by author (2014)
14. Summary

During each sequence of public space development the *hortus conclusus* typology was demolished. It would seem that in many areas of the world, other than the Mediterranean climates, the enclosed garden has disappeared. However, the enclosed garden has survived these changes and continues to demonstrate its strength and versatility by returning to the contemporary urban landscape.

Rob Aben and Saskia de Wit (1999) have recognised the renewed strength of this landscape design typology. They aim to show that the enclosed gardens which have manifested in the urban landscape, have displayed an ability to solve specific spatial problems of the city.

The following section of writing will explore Aben and de Wit’s (1999) research into urban enclosed gardens and how to use these typologies as tools to improve our understanding of the urban conditions which need attention.
Part 3
Contemporary enclosed garden theory

Introduction

The history and development of the enclosed garden over time has been analysed and understood in the previous section. Research has helped to inform the conclusion that current urban landscape design tools such as the public square, park and town garden might not be able to provide the contained inward-looking spaces which Aben, de Wit (1999) believe society needs. The following writing is an overview of Aben and de Wits’ investigations into the enclosed garden’s relevance in the contemporary urban landscape.
1. Enclosed gardens in the urban landscape

“The enclosed garden has accordingly become, as it were, a tool enabling us to critically view the city, the landscape and the urban landscape” (Aben and de Wit 1999:155).

Conditions of various natures exist in tandem in the urban landscape. Congestion and fragmentation can easily be neighbours in the city. The transition between two contrasting environments can often be sudden or confusing. Therefore it is necessary for designers in the urban landscape such as landscape architects, to consider how to create better examples of threshold between contrasting spaces.

In previous chapters it has been acknowledged that returning boundaries and creating a distinction between landscape and city is necessary in order to improve the spatial quality and experience of the urban landscape. Due to its defining qualities, the enclosed garden has been known to pay attention to edge conditions and has provided numerous examples of successful transition between contrasting situations and town and country (Aben and de Wit 1999).

It is for this reason that Aben and de Wit (1999) wanted to explore its potential to address spatial problems which exist in the urban landscape.

Firstly, the authors (1999) analysed existing examples of urban enclosed gardens. Particular attention was placed on understanding the urban conditions which were associated with them. Four types of urban situations were identified:

- Lack of void in a dense landscape
- Lack of contrast or experience of paradise
- Lack of awareness and disappearance of the landscape view
- Lack of comprehension in a complex landscape and awareness of its subtle hidden treasures

The results of the study showed that many of the enclosed gardens which they documented had the potential to address one or more of these conditions. The authors assigned a type of garden to each type of scenario explored above and saw the opportunity to categorise the urban gardens into four types, based on their problem solving abilities.

During the authors’ investigation, the enclosed garden took on the form of an analysis tool, helping the authors identify and understand the urban condition at hand.

The types of the four gardens devised by Aben and de Wit (1999) are based on instruments which are commonly used for observation. Each type indicates the function of the garden it describes.
1.1 The enclosed garden as telescope

Like the name suggests, the focus of this garden is to define and celebrate open space and void as a value. Due to an increasing dense urban landscape, space itself has become rare. Any space which is defined clearly by walls provides focus and isolation from the external chaotic world, and like a telescope, encourages one to become aligned with the vertical experience. Here attention can be placed on elements such as the sky and the cosmos. Spaciousness, endlessness and uniformity can be explored freely, even within the smallest of spaces and without the distraction of the city Aben and de Wit (1999). This is illustrated in figure 2.3.1 below.
1.2 The enclosed garden as kaleidoscope

To experience a contrast to an existing condition, it is necessary to understand the existing condition in its entirety in order to create its antithesis or paradox. Like a kaleidoscope the garden captures and identifies aspects of the context and distorts, manipulates and contradicts it in a playful way in order to achieve a magical and unexpected contrast. A paradisiacal experience is truly heightened by its contrast to the desert. This experience is illustrated in figure 2.3.2

Completeness is said to be achieved through the use and the illusion of nature in abundance:

“This abundance suggests a landscape of far greater dimension than that of a garden and thus transcends the limits of the space. The containment is not just created by the walls but also by the density of the planted species” (Aben and de Wit 1999:156).
1.3 The enclosed garden as field glass

In an environment that is subject to constant development and altering landmarks, it can be difficult to find anchoring points of reference and orientation within a changing city landscape. In addition to this, our views of what is left of the surrounding landscape and natural landscape are being distorted and or erased.

This garden aims to show that an unchanging field of view or window can provide comfort, familiarity and perspective even if the image or view it displays is forever changing. Alternatively, the frame could be used to preserve and highlight existing views of the landscape which are valuable.

Unlike the other three examples, this garden focuses on an outward experience of the external landscape. It attempts to bring the external world, literally, into the enclosed space, in the hopes that the user will find understanding and or an alternative perspective of the chaotic city. This is shown in figure 2.3.3.
1.4 The enclosed garden as magnifying glass

The most valuable attribute of a magnifying glass is its ability to zoom into a defined area of detail or complexity and break it down into simply, comprehensive and essential components or ideas. The complexity of a developing city lies in the expectation for it to add, overlay and include various systems of networks and infrastructure over time.

This garden has the potential to be used as a tool to organise the city: By isolating areas of the landscape using walls, layers of complexity can be heightened and magnified to the point where they can be identified as separate entities. This garden aims to provide the user with a better understanding of the environment in which he or she lives and can be used to expose important and hidden elements of the city which are normally overlooked by the everyday eye. This concept is illustrated in figure 2.3.4

Creating a moment of isolation from its surroundings allows the garden the opportunity to explore and portray an ‘ideal’ image of the city.

“A tension is thrown up between the autonomy of this ideal image and the strong ties with the surrounding structures and infrastructures” (Aben and de Wit 1999:156).
Conclusions

Aben and de Wit (1999) have devised four enclosed garden types which they believe can be applied spatially by designers in the contemporary urban landscape. Below are examples of actual precedents studied by Aben and de Wit (1999) as well as a selection of their own spatial experiments which helped to inform the theoretical principles outlined above.
2. Urban examples of the four enclosed garden types

The following examples of existing enclosed gardens and theoretical application thereof, aim to show which urban conditions can potentially be counteracted or created by using this typology. In addition to this, insight into the type of spatial experience these gardens create will be given.

2.1 The enclosed garden as telescope: Enclosed gardens which condense emptiness

The Mariavall convent garden

Although this enclosed garden is not set within a dense urban context, it is a noteworthy example of how to create a clear experiential contrast to a particular surrounding.

Similar to the historical monastic examples of the *hortus contemplationis*, the focus of this garden is to simplify the internal experience of the space and clearly define the sky. This is to ensure that the user experiences a tension between the earth and sky, cosmic orientation and ultimately contemplation. The external landscape has been excluded and a lawn surface is the only reference to nature. This is shown in figure 2.3.5.

The success of this space lies not only in its celebration and emphasis on void but in its contradictory response to its context and awareness of genius loci. Attention has been placed on the user’s transition from dense exterior to empty garden interior. This is illustrated in figure 2.3.6.

The periphery of the enclosed garden consists of multiple layers of threshold and boundary. First, the convent is enclosed by a wooded forest. This is followed by a consistent double row of trees and then finally the convent building itself with thick internal gallery walls which hold the empty garden space. The void captured by the enclosed garden is also emphasised by the movement the user undergoes from larger sized external spaces to smaller condensed internal spaces (Aben and de Wit 1999).
2.3.5
The interior convent gardens make reference to the monastic hortus contemplationis model type. This is confirmed by the gardens’ strong definition by adjacent buildings and the use of pure geometric principles (Aben and de Wit 1999:164).
Image adapted by author (2014)

2.3.6
Plan showing the spatial organisation of Mariavall convent and the transition of threshold from dense context to open garden interior. (Aben and de Wit 1999:162) Image adapted by author (2014)
2.2 The enclosed garden as kaleidoscope: Enclosed gardens which create artificial nature or paradise

Design experiment at the Kralingen Transferium

In this example, Aben and de Wit (1999) wanted to test the enclosed garden in an everyday urban condition: a vast, exposed and heated asphalt parking surface. Keeping in mind the principles of contrast which are associated with this type of garden, the authors likened the harsh conditions of the parking lot to a desert and aimed to provide antithesis in the form of oasis. This is explored in figure 2.3.7.

“This game of opposition can be played to bring out the urban condition, the artificial as a means of making the real visible” (Aben and de Wit 1999:198).

The result of this intention was a small shaded “Arcadian world” (Aben and de Wit 1999:182). A thick concrete boundary wall provides clear definition between the two environments. This is shown in figure 2.3.8. The monotonous paving surface is juxtaposed with undulating ground which imitates a diverse flowery meadow. The garden is elevated above the external paving surface, emphasising a change in spatial experience. Movement is provided by a traditional gallery pathway which circles the entire garden. At one moment it penetrates the wall to create a balcony which overlooks the adjacent parking lot- a reminder of the world which is being distorted and contradicted in the kaleidoscope garden. The cosmos is invited into the garden through a pool of water which reflects the sky.

“…nature is conceived as a simple, tangible given, a harmony of nature and trees” (Aben and de Wit 1999:184).
Plan and section of Kralingen Transferium show the garden’s strong sense of containment and separation from the external world.

The intersection between gallery walkway and concrete wall is a subtle and playful moment. (Aben and de Wit 1999:183)

Image adapted by author (2014)
2.3 The enclosed garden as field glass: Enclosed gardens which capture the external landscape

The enclosed garden on the Rotte, Rotterdam

“Yet this moment, captured in the lense of the field glass, is not just simply a question of holding onto a landscape that will soon be history; it is the act of registering changes against the backdrop of a changing context” (Aben and de Wit 1999:181).

Aben and de Wit (1999) have recognised that people find pleasure in discovering vantage points which capture the image of the landscape or bring unique elements of the landscape into the fore. In this example, the authors explored how to frame a view of the landscape and how to enhance the experience of the vista. The enclosed garden has demonstrated its ability to isolate the user from the external world, whether it be physically, mentally or visually etc. By puncturing the boundary wall at a specific moment, the user shifts his or her focus from inside the garden to the external landscape view which is put on display. The use of a solid boundary wall ensures that the user's attention cannot be swayed by other visual distractions (Aben and de Wit 1999).

In this design experiment on the Rotte, Rotterdam, the authors used the existing dyke embankments as the walls of the enclosed gardens. Three concrete wall elements are strategically placed in the landscape between the embankments and each perform different roles. The first wall screens the enclosure from the motorway, the second wall with an elongated window, is used to frame a panorama of the Rotterdam landscape which includes an old village, church and windmill. The third wall is placed at an angle within the enclosed garden and is used to direct the user's view towards the windmill (Aben and de Wit 1999). This is shown in figure 2.3.9 below.

![Diagram of the enclosed garden at the Rotte, Rotterdam](image)
2.4 The enclosed garden as magnifying glass: Enclosed gardens which expose the hidden city

Enclosed garden at Utrecht central station

“Hidden urban workings are made manifest at hidden places” (Aben and de Wit 1999:207).

Infrastructure dominates our cities. It is a source of complexity and confusion but also has the potential to organise human needs efficiently. Not many gardens in the city consider or engage with these processes. Unlike the other three typologies, the purpose of this garden is to include and celebrate the complex city context. However, it still allows the user to withdraw from the city and experience mystery: representing selected items of the city in the same way that a paradise garden represents nature as an ideal image and not reality.

Like a magnifying glass, multi-layered processes can be enhanced and understood as separate and simple entities. The enclosed garden box can be used as a tool to isolate, highlight and organise infrastructural elements. This has the potential to encourage the user to contemplate on and consider an alternative perception of the city and his or her reality (Aben and de Wit 1999).

Utrecht central station is a chaotic transport interchange in Holland. Aben and de Wit (1999) chose this site for design experiment to test whether the enclosed garden can keep up with the complex goings-on of a city. On the one hand, the authors wanted the garden to convey the complex systems and busy nature of the interchange and on the other provide the user with a contrasting space which allowed for more static activities such as reading and sitting.

In order to create a “detached view of the world” (Aben and de Wit 1999:200) the enclosed garden is raised metres above the railway station. As shown in figure 2.3.10 the process of moving up a staircase represents ascension away from the station. However, the sounds of the station and the city in the garden are a strong reminder of the user’s context below. The centre of the garden is a pool with convex glass bottom which enlarges, isolates and distorts the mundane activities of the station. This was intended to evoke contemplation of one’s everyday reality and environment.
The enclosed garden at the Rotte, uses the existing landscape to help create enclosure and vantage point for framing the view.

(Aben and de Wit 1999:242) Image adapted by Author (2014)
Conclusion

The design examples and experiments explored above aimed to demonstrate that the enclosed garden has the potential to be a relevant design tool in the contemporary urban landscape. This is due to the fact that it responds to, analyses and critiques the urban environments in which it's situated.

The author sees the potential and value of the research and experiments documented above. However, she is reminded of the fact that all of this research was completed within a European urban context. In order to evaluate whether Aben and de Wits' research and theory can be applied within the general urban landscape, it is important for the author to test and apply this research and theory within the local context of Johannesburg city. This will be explored in chapter three.

Figure 2.3.11 below provides a summary of the enclosed garden's development over time. Attention has been placed on the current and fragmented urban landscape and its accompanying landscape design tools, such as the public park, which lack spatial definition. Aben and de Wits' (1999) four contemporary enclosed garden typologies (with their strong reference to successful historical examples) are intended to provide remediation to the current urban problems.

Before the author begins to test the enclosed garden typology within the context of Johannesburg, in chapter three, she feels that it is necessary to further study the workings of the enclosed garden. This will be discussed in chapter two part four.
The enclosed garden dissasembles overtime

The enclosed garden finds relevance as four contemporary urban examples as determined by Rob Aben and Saskia de Wit (1999)

The enclosed garden as field glass

The enclosed garden as magnifying glass
Current fragmented urban landscape and design tools such as park, town garden and square, lack spatial definition.

The enclosed garden as telescope

The enclosed garden as kaleidoscope

Public town garden

Public square

Public park

2.3.11

Summary of enclosed garden theory. (Author 2014)
Part 4
How the enclosed garden works
The constituent parts: the factors which modify its physiology and its ability to create a sensuous world

“Rooms provide security, privacy and safety and confinement, places where we are removed and distant from the world at large. Enclosed gardens provide these conditions as well, but where nature is brought in alongside the man-made, climate and ground conditions are utilised, and where the ceiling is the sky” (Baker 2012:10).

An enclosed garden is often regarded as an outdoor room as it has similar characteristics and properties to an internal room. These include: an internal space, walls, floors, a ceiling (the sky), at least one entry point or door and an opening which provides light and a view of the external world. (Baker 2012)

The overall experience, sense of place and character of an enclosed garden is strongly determined by how these components are designed and arranged within a space (conceptually explored in figure 2.4.1). Therefore, studying examples of each of these components and their spatial qualities will provide understanding on how to use them effectively when designing an enclosed space.

In addition to creating experience, the use of these components is strongly determined by the functional requirements of the enclosed garden. Manipulating vertical and horizontal conditions allows for the natural elements, shade, sunlight, climate, planting and shelter to be controlled.

The outcome of this study aims to show that the enclosed garden has the ability to integrate sensuality (how one experiences sanctuary) with utility (its functional purpose).
2.4.1

1. The floor or horizontal ground plane

According to Kate Baker, the design of an enclosed garden’s floor is of utmost importance as it “…connects us directly with the structure of the earth, and with nature.” (2012:10)

Soil and planting is commonly associated with the ground floor of any garden. However, in areas of the world where water is scarce and planting cannot be maintained, innovative design of the enclosed garden floor is necessary. In Mediterranean and Middles eastern enclosed gardens, the floor is predominantly paved in ways which provide a substitute for the aesthetic and sensory experience created by planting which is lacking. The impermeable surface is often expected to fulfil the functional role of effectively collecting and transporting water to designated areas of the garden such as to a fountain focal point or to small areas of planting. This can be seen in figures 2.4.2 and 2.4.3. In Islamic mosques, the channel systems found in the accompanying enclosed gardens contribute to intricate paving patterns.

In dense urban areas where large traffic flows of people need to be accommodated and where access to water can be limited, this approach to designing a functional as well as interesting floor for an enclosed garden or space should be considered and explored.
1.1 Harmonious floor plan proportions

Vitruvius devised three atrium proportion plans, which when applied to an enclosed space, was believed to create the feeling of harmony for the user (Amadouni 1994).

The diagram in figure 2.4.4 below demonstrates the appropriate relationship between the length and width of an enclosed floor space:

1.2 The square creates a relation to the centre

The square is the simplest geometric shape with the distance from the sides to the centre being all the same. A hierarchic relationship is created between the edges and the centre which acts as a force field. An empty square can fix the form of a space and create a vertical coordinate to the sky (axis mundi) as shown in figure 2.4.5.
The axis mundi created by the square (Aben and de Wit 2012) Image adapted by author (2014)
2. The wall:

“The wall is the major component that shapes an enclosed garden and gives it much of its character.” (Baker 2012:12)

A solid boundary wall is predominantly used for functional climate control purposes such as sun and shade manipulation and protection from prevailing winds. This allows the internal environment of the enclosed garden to be flexible and easily adapted to suit the needs of plants and humans. For example, cooler and shaded environments can be created by high, shadow casting walls. A solid wall can be used to clearly define one space from another.

A hedge can provide a defined space in the same way as a wall with the advantage of bringing the user closer to nature and an adjacent building façade can be used to define a garden’s boundary and architectural character (Baker 2012).

2.1 Degree of enclosure:

The sense and degree of enclosure is dictated by the height of the wall in relation to the user. The diagrams below in figure 2.4.6 demonstrate how to create a sense of enclosure when designing an enclosed space.

2.3 Containment creates metaphorical space and a sensuous world

“The vertical endlessness of the sky is emphasized by intensifying the containment of the space” (Aben and de Wit 1999:210).

The boundary wall is the one component which has the greatest influence on creating a distinct internal space to that of the outside world. This is due to its ability to eliminate the user’s sensory awareness of the external environment. According to Baker (2012), boundary walls may curtail our visual perceptions but other senses become heightened in the enclosure including our hearing, smell and sense of touch. Shutting out images of the external world can also allow for a strong connection to the sky the moon, the stars and the sun. According to Aben and de Wit, this creates the feeling of timelessness: “Instead of a succession of images marking the passing of time there are only the constantly repeating rounds of the day and night, spring, summer, autumn and winter, an endless cycle” (1999:220).

The precision of a wall can also replace unpleasant odours, noise and inclement weather with the beautiful scent of flowers and the gentle murmur of water providing a more sensuous world. The materiality and degree of transparency of the wall directly effects which external sounds can be dampened and what (if any) visual connection can exist.

The sunken garden at Louis-Jeantet Institute, Geneva, is a successful example of how to use a solid boundary wall to separate an ideal internal space from the noisy external world. Figure 2.4.7 and 2.4.8 illustrates this clear definition of threshold.
The feeling of containment which the enclosed garden provides activates both the imaginative and practical aspects of the user. On the one hand it can be a functional space which nurtures and protects plants and on the other hand it can be a metaphorical space which encourages contemplation on the human condition (Baker 2012).

It is for this reason that many religious cultures have used the enclosed garden as a tool to represent and symbolize philosophies on life and sacred meanings. In Islamic and Christian monastic communities, Earthly Paradise and the Garden of Eden have been represented through the perception of a “condensed version of nature” (Baker 2012:18) which the enclosed garden creates.
2.4 Porous wall, colonnade or cloister walk

This is a covered walkway which can adapt to a variety of needs within an enclosed space. Firstly it is commonly used as the main circulation route around a centralised enclosed space. Historical precedent in monastery cloister gardens, show that the consistent rhythm of movement created by using this space helped monks to access a contemplative state of mind. Aben and de Wit (1999) Secondly it can provide protection from the elements and acts a threshold and transition space between interior and exterior spaces (Baker 2012). This is shown in figure 2.4.9 below.
2.4.1 Cyclic route

According to Aben and de Wit (1999), a cyclical route around a fixed central point forces observation within an enclosed space.

2.5 Openings in the wall:

Curiosity from the outside of an enclosed garden can be created by a hole in the wall. Restricting views within an enclosed garden can also create mystery for the user. Openings can be used to guide the user into adjacent spaces, a device which helps the user journey through the garden the way the designer intended them to.

2.5.1 Keyhole perspective

The enclosed garden has the ability to shut itself off from the external landscape while allowing select views of the very same landscape into its internal space. A view from a window provides an understanding of the landscape and the garden's place in it (Aben and de Wit 1999).

2.6 Threshold

"Enclosed gardens mediate between public and private areas within a city by creating an intermediate zone between the street, and the interior of a building" (Baker 2012:56).

The enclosed garden's threshold is at the edge of its site. This transitional experience from an external to an internal environment needs to be considered when designing the boundary wall and the entrance. The door marks the changeover from outside to inside and identifies the garden as a series of spaces. This is shown in figure 2.4.10

2.4.10

3. Water

Enclosed gardens are dependent on water for practical and imaginative reasons. The contrast of shade and planting to the dry desert created by oases is solely dependent on the availability of water. In hot climates, the scarcity of water has encouraged designers to practise ingenuity in the collection, transportation and storage of this valued element. Apart from their experiential value, pools of water or fountains are used to create natural air conditioning for the enclosed space. In cooler environments, water is used for symbolic reasons rather than practical ones.

4. Planting

Planting is often used to help create the association of Garden of Eden and Earthly Paradise, but it can also be used for functional, horticultural purposes within the enclosed garden. Protection from the elements created by the boundary wall allows for prolonged growing seasons and the potential to experiment with growing species which require controlled climate conditions to thrive.

5. Climate control: manipulating and combining the components of the enclosed garden for desired conditions

Water, planting, building and paving

According to Aben and de Wit, even making reference to the bare essence of nature in the form of symbols, such as in the Islamic gardens, can add to the experiential quality of the garden: “Water and greenery in the hortus conclusus is a ritual of magic and illusion enacted using an extreme form of abstraction” (1999:220).

Apart from adding to the spatial quality of a place and having soothing psychological effects on the user, the components and elements of an enclosed garden can be integrated in different ways in order to achieve various temperate and climatic conditions.

In hot climates, the combination of water, greenery and shade within an enclosed space can drastically cool an internal environment. Water in the form of trickling pools and fountains is used for humidifying purposes. Plants are able to contribute to this by expiring water through their leaves. Tree canopy can also be used to slow water evaporation down (Baker 2012). The Gothic garden of the Cathedral of Santa Eulalia, shown in figure 2.4.11, demonstrates these processes well.
In Mediterranean examples, water, planting, paving and adjacent mosque building are used together to conserve water. The roof of the building provides sufficient surface area for water collection. A detailed channel system carved intricately into the paving can be used for irrigation, to carefully transport necessary water quantities to areas of planting. Or it can be used to supply fountains or water features for ritual purposes. Whether these enclosed gardens are used for practical or meaningful reasons, their components are often detailed beautifully and carefully. The enclosed garden in the Amber palace, India (figure 2.4.12), is a successful example of this.

2.4.12

The enclosed garden in the Amber Palace manipulates the internal climate to create comfortable conditions (Jaipur 2012)
5.1 Sun and shade

Quite simply, the orientation of an enclosed garden can help a designer maximise on the amount and quality of sunlight which enters the space. Where a cooler environment is required, shade can be created through the manipulation of the boundary wall’s height. This is illustrated in figure 2.4.13. Selecting plant species which are deciduous ensures that the space is shaded during summer and filled with sunlight during winter.

Sunlight and climate can also be moderated by covering the open space. Covers can be used to control the amount of light entering the space or alternatively, be used to retain the sun’s heat and radiation for greenhouse purposes (Amadouni 1994).
6. Type and size

“Whether they are domestic, institutional or urban, well-designed enclosed spaces have a scale to fit their purpose and surroundings. They invite participation” (Baker 2012:17).

Enclosed gardens are characterized according to the ground plane. Thus there are standard, sunken and elevated enclosed gardens. The width of the courtyard can be determined by the angle of the sun at different altitudes. Larger enclosed gardens can be used to cultivate food and smaller examples are sufficient for light and air wells only.

Size and proportion of the enclosed garden can be determined by the amount of sunlight, wind and the amount of introvertedness required.

According to Aben and de Wit (1999), smaller sized enclosed gardens are important because their proportions and scale are based on the relationship between the human body and the enclosure.

7. Programme

As discussed above, the enclosed garden has the potential to take on both utilitarian and metaphorical roles. However, Aben and de Wit believe that the freedom of no programme in the enclosed garden allows us to take a breather from the regulations imposed by the city.

They state that: “It is the very emptiness of the enclosed garden that acts as a screen on to which one can project one’s own imagination, as a frame which viewers can fill in themselves” (1999:221).

Summary:

The study above has provided insight into the versatility of the enclosed garden typology and the ways in which it can be manipulated in order to achieve desired climatic and experiential effects. It is clear that the strength of this typology lies in its ability to address both the functional and sensual requirements within one space. In some examples, it is the functional ingenuity of a space which contributes to its spatial quality and metaphorical experience. It will be important for the author to approach the design of her enclosed garden with the awareness that each component requires attention but more importantly, creating a harmonious interplay between all the elements is what makes good quality space.
3 APPLICATION OF THEORY

Iterative design experiments in Johannesburg's open spaces

Introduction

The investigation into the enclosed garden, and the four contemporary urban typologies in the previous chapter, revealed that it is necessary to test this typology within the context of Johannesburg. This chapter provides insight into the author’s experimental design process.

Figure 3. on the following page aims to orientate the reader within the context of Johannesburg and to indicate the locations of the numerous sites used within the experimental design process.
The locations of 8 site experiments in Johannesburg. (Author 2014)
1. Design experiment iteration one: 8 sites

Although it was determined that small, prospective and historical industrial open spaces should have preference over other types of open spaces, the author sees the importance of applying this typology to the problematic conditions which are common to most of Johannesburg's open spaces. These include creating definition, defining void and creating contrast or sanctuary.

The author also aimed to test whether the four theories have the ability to address additional problems which Aben and de Wit (1999) claim they can do. This includes the garden's ability to uniquely display and bring awareness to a city's complex infrastructure and its ability to frame and enhance an important landscape view.

Existing public open spaces which have already been considered for the JMOSS strategy (such as Ghandi Square) were included in this experiment. This is to determine whether Aben and de Wit's (1999) opinion about these spaces' lack of clarity and definition is viable, and whether these open spaces could benefit from an enclosed garden intervention.

1.1 Experiment one: A sunken enclosed garden in Ghandi Square (enclosed garden as telescope)

Experiment one takes place within the public open space, Ghandi Square. This site was chosen due to its association with Ghandi. Despite its reference to a man who supported the notion of sanctuary and non-violence within the city, (Itzkin 2008) the site does not provide protection from the elements or comfortable places to sit while waiting for transport. Figure 3.1 illustrates a sunken enclosed garden placed within the Square to create a place which feels separate from the hustle and bustle. This ensures that views across the Square are still possible.

Critique

After analysing the design experiment, the author realises that this intervention could be unsafe within this environment and considers the option of a raised, translucent garden which filters out the chaotic noise of the Square.
Experiment 1: An enclosed garden placed within public open space, Ghandi Square, aims to create definition and sanctuary within a vast and exposed space. (Author 2014)
1.2 Experiment two: A suspended enclosed garden under Nelson Mandela Bridge (enclosed garden as magnifying glass)

The shunting yard which lies beneath the Nelson Mandela Bridge presents a complex but fascinating part of the city’s landscape. As shown in figure 3.2 a translucent enclosed garden is proposed as a suspended space beneath the bridge. This intervention aims to give pedestrians using the bridge the opportunity to observe and experience the shunting yards below.

Critique

Although this design experiment is rather adventurous, the experience it aims to create for the user is interesting and unique.
GARDEN AS MAGNIFYING GLASS: UNDERSTANDING TRANSPORT COMPLEXITY

ENCLOSED GARDEN BENEATH NELSON MANDELA BRIDGE

PLAN

EXPLODED DIAGRAM

3.2

Experiment 2: A transparent enclosed garden placed beneath Nelson Mandela Bridge. (Author: 2014)
1.3 Experiment three: An enclosed water garden at No. 1 Fox Street (enclosed garden as magnifying glass)

This historical warehouse site situated in Ferreirasdorp, sits above a main underground stormwater collection point. As shown in figure 3.3, an enclosed garden is used to celebrate and contain a waterscape within the urban context.

Critique

Although the experience within this enclosed garden is unexpected and unique within the urban context, it will not be experienced by many people due to the low population density within the area.
GARDEN AS MAGNIFYING GLASS: INFRASTRUCTURE, WATER

ENCLOSED GARDEN WITHIN NO.1 FOX STREET SITE

PLAN

PATHWAYS

BIO POOLS

WALLS/TROUGHS CARRY WATER FROM GUTTERS

EXISTING STORMWATER

3.3

Experiment 3: An enclosed garden defines and celebrates an underground storm water collection point. (Author 2014)
1.4 Experiment four: Creating access to the existing enclosed garden at Ponte Towers (enclosed garden as telescope).

The hollow Ponte Towers building, located in Hilbrow, naturally creates an enclosed garden and defines a view of the sky. However, its central space is congested with rubbish and is not accessible by its residents. As shown in figure 3.4 a pathway and central platform are proposed to help people gain access to this existing cathedral experience.

Critique

Although the design intervention will help to lead people into the central point of the enclosed space, it does not alter the telescopic experience which already exists naturally in the space.
Experiment 4: An enclosed garden is used to clear the dumpsite situated within Ponte towers and provides the ultimate, vertical and cathedral experience of the sky. Image by Author (2014)
1.5 Experiment five: A paradise enclosed garden within Egoli Gas Works (enclosed garden as kaleidoscope).

As shown in figure 3.5, the enclosure of this garden is an existing industrial structure found on the Egoli Gas Works site. In order to create a contrasting experience to the industrial site, a diverse and ecological environment is proposed.

Critique

Making use of existing contained spaces provides abandoned structures with new purpose and ensures that less money is spent on building enclosure.
Experiment 5: An enclosed garden makes use of existing industrial structure for its enclosure. A lush oasis contrasts with the derelict structures and processes of the site. (Author 2014)
1.6 Experiment six: An enclosed garden frames the view of Ponte Towers (enclosed garden as field glass).

Despite the beautiful landscape view of Ponte Towers and its surroundings, the poverty in this area of Johannesburg is desperately high. The intention of this enclosed garden intervention is to frame this view and encourage the users to contemplate this social paradox. Figure 3.6 illustrates how an enclosure is recessed into an existing retained earth mound. A hole is punctured in the existing retaining wall to frame the view.

Critique

Using existing elements in the landscape to aid in creating enclosed gardens is efficient and encourages design improvisation.
Experiment 6: An enclosed garden makes use of an existing, retained mound in the landscape. A sunken entrance into the garden and one hole in the wall focuses one’s view toward Ponte Towers. (Author 2014)
1.7 Experiment seven: An enclosed garden is used to link important landmarks in the city (enclosed garden as magnifying glass).

Mandela Bridge and Old Park Station are both important landmarks within Johannesburg city. Despite their close proximity to each other, it is difficult to move from one to the other due to a steep gradient in the landscape. An enclosed garden is used to create a gradual transition between the two landmarks.

Critique

As shown in figure 3.7, the enclosed garden proposed creates a gradual transition between the two landmarks. However, its complexity distracts the user from the two main landmarks. A simpler intervention is necessary.
Experiment 7: An enclosed garden is used to link two important icons within Johannesburg city: Nelson Mandela Bridge and Old Park Station heritage building. (Author 2014)
1.8 Experiment eight: An enclosed garden is used to define and celebrate void in the city (enclosed garden as telescope).

Figure 3.8 shows how the proposed enclosed garden intervention suspends itself in a playful way to bring the public’s attention to the space. Once in the space, the user’s eye is drawn up into a vertical enclosed garden. The adjacent buildings on either side of the enclosed garden are given the opportunity to enter the enclosed garden from above.

Critique

Although this proposal creates an interesting experience for the public, it is structurally impractical.
Experiment 8: An enclosed garden is used to define the void between two buildings within the dense city. The garden provides a foyer space for adjacent buildings. (Author 2014)
Conclusion

As shown in the critiques above, there are positive and negative outcomes to the experiments completed. The author is aware of the fact that where there are negative outcomes, she perhaps did not apply the principles of the enclosed garden theories correctly.

Based on the research completed in Chapter One, it is important for the enclosed garden’s potential to be exercised in more detail on a historical industrial and small open space. The second design iteration aims to further develop the first design experiments which took place on the historical industrial site and a small derelict site.
2. Design experiment iteration two: Historical industrial open space and small derelict open space

In Chapter One, the author explored the problems which could present themselves when working on a historical or small open space site. The focus of this design iteration is to address these problems highlighted by using the enclosed garden typology and the theories suggested by Aben and de Wit (1999). This experiment aims to show the enclosed garden's ability to successfully resolve the following problems:

- site contamination;
- responding sensitively and suitably to a historical context;
- maximising the functional programme of a small site;
- catering for heavy traffic flow of people;
- reactivating adjacent abandoned heritage buildings.

2.1 Iteration two: Egoli Gas Works site

The first enclosed garden iteration of this site made use of the existing steel gas containers for its enclosure. Although this attempt gave the empty historical structures a new purpose, the author thought it would be interesting to explore the enclosed garden's ability to control and manipulate its internal climate conditions. The robust boundary walls of these enclosed gardens aim to protect the internal garden from soil contamination leaking into the space. This is illustrated in figures 3.9 to 3.12. The sunken garden provides a consistent internal temperature. Covering parts of the enclosure (greenhouse effect) creates warmer conditions which will allow a mushroom species to flourish and gradually remediate the contaminated soil. This process could be completed over time. The enclosed garden intervention directs and controls the movement through the site, preventing any wandering users to access dangerous or protected areas. This is shown in figure 3.12.
3.10

Sunken gardens manipulate their internal climate conditions. (Author 2014)
Components of the overall design. (Author 2014)
Critique

When analysing the design experiment, the author realises that creating a natural ecology within the enclosed gardens does not provide enough contrast to the natural landscape which surrounds them. Ironically, hard robust materials provide a suitable contrast to the contaminated green open space. She also realises that she did not explore the enclosed garden’s potential as field-glass. This could have given the user the opportunity to experience important views of the existing industrial heritage structures. In addition to this, she acknowledges that using existing enclosed structures on site (as explored in design iteration one) to create the enclosed garden is still relevant, economical and creates experiences unique to the site.

Furthermore, the author is concerned about the public’s awareness of the enclosed gardens due to the fact that they are not adjacent to the street.

Conclusion

Although the author has recognised the historical and experiential value of this open space, she is concerned that this enclosed garden intervention will not be able to serve the masses the way it would if it were located in the CBD. Although the site is important, it is not a common condition of Johannesburg city, where there are many more valuable open spaces which would benefit from this sort of attention.

Plan of enclosed gardens located within contaminated Egoli Gas Works site. (Author 2014)
2.2 Iteration two: the small derelict site on the CNA block, Johannesburg CBD

This iteration aims to explore the vertical enclosed garden experience and definition of void which was achieved in the previous iteration. Although the void in the city is a necessary and justified contrast to the surrounding congestion, the author aims to explore other ways in which it can provide contrast and sanctuary. This takes the form of a soft, planted, paradise environment.

As shown in figure 3.13, the enclosed garden is still suspended between the two buildings. This is intended to create an easy thoroughfare through the site. This also emphasises the sudden vertical alignment one would experience if one moved beneath the enclosure. Figure 3.14 further illustrates this vertical experience. Figure 3.15 explores the view of paradise one would experience while walking beneath the structure. A terraced element is used to contain an abundance of plant species. Figure 3.16 illustrates the experience from inside the enclosed garden, looking down towards the main amphitheatre space.
Section of the enclosed garden explores the emphasis on the vertical experience as one moves beneath the structure.

(Author 2014)
3.14

View of the sky and the cosmos as one aligns vertically within the garden’s enclosure. (Author 2014)
View up into the enclosed garden as one walks beneath the suspended structure. (Author 2014)
View from inside the enclosed garden, looking down into the main amphitheatre space. (Author 2014)
Conclusion

Practically and structurally this elevated enclosed garden is problematic. The response to, and integration of, existing heritage buildings has not been adequately considered. However, it has provided a contrast of oasis together with a robust and functional ground floor urban thoroughfare. The qualities of this design should be investigated further.
4 SITE SELECTION AND ANALYSIS
The enclosed garden is a tool for observation

The enclosed garden has fared well during its experimental design iteration. In many cases, it achieved what Aben and de Wit (1999) claimed it would achieve, and in other cases it made the author aware of spatial problems which presented themselves during her own experiments and study. The concerns about the historical industrial site which was selected for the JMOSS strategy encouraged the author to analyse and study examples of dense urban cities which make use of the enclosed garden typology. This study aims to provide the author with insight into the urban conditions which coincide with these urban enclosed gardens and also into what kinds of open spaces typically make use of their typology.
1. Case studies: Enclosed garden within dense cities

The following section is a brief study into dense cities which base their urban fabric on the enclosed garden (or similar) typology.

The aim of the study is to determine the nature of the open spaces which have accommodated the enclosed garden typology successfully and which urban conditions encouraged the adoption of the typology. After studying these urban examples, the findings of the study are summarised into common characteristics of the case studies.

1.1 Courtyards of Eixample, Barcelona

In response to the crowded living conditions in Barcelona, Ildefons Cerdà attempted to expand the city using a grid pattern layout which accommodated more open spaces between buildings. This can be seen in figure 4.1. Originally, buildings were to be constructed on the edge of every block, leaving a small green space in the centre. Figure 2 is an example of the spatial arrangements of proposed buildings around an interior open space.

However, since this implementation began in 1859, many of the open spaces have been compromised. Proeixample S.A. is an organisation which is determined to restore the original courtyard typology envisioned by Ildefons Cerdà in order to counteract the experience of density in the city. Eight courtyards have been restored so far and are simple, quiet open spaces which provide contrast to the busy city. Figures 3 and 4 show how the simplicity and robustness of the enclosed spaces can accommodate different activities and programmes.
4.3 Sunday dancing at the Garden Sebastià Gasch, one of the restored Eixample courtyards (Buonamici 2014)

4.4 The courtyard at the end of the Pasaje Rector Oliveras, accommodates a variety of activities (Buonamici 2014)
1.2 Courtyards in old Medina of Fez, Morocco and in old Kuwait

Fez is a medieval city with a very dense urban fabric. It has narrow streets and lacks public open space. Figure 5 shows that the residual space created by the informal urban grid has provided the opportunity to enjoy smaller internal courtyard spaces. Houses and buildings are designed to look out onto these internal spaces. The busy public street and more sensual internal enclosed spaces are separated by a high wall. A single door creates the threshold between the contrasting experiences.

Figure 4.6 is a plan of old Kuwait which shows a similar improvising of small random open spaces.

Residual space creates the opportunity for an internal open space or courtyard typology within the dense city (theatlantic 2012)
Old Kuwait explores the opportunity of internal open space within its dense city fabric (Beeshi 2010)
1.3 New York City’s pocket park typology

New York has seen potential in the small, scattered, vacant and sometimes forgotten spaces found within its dense urban fabric. Greenacre Park and Paley Park are examples of pocket parks, or diminutive parks, which provide relief and sanctuary to their immediate communities.

Greenacre and Paley Park are small design interventions which simply provide shade and seating to the public. Figures 4.7 and 4.8 show how the waterfall features are used to create focal points within the space and provide tranquil sounds which dampen the surrounding noisy streets. The success of these projects lies in their ability to create a contrast to their surrounding context within a limited space while being visible from the street. (pps.org 2012)
All of the case studies analysed share similar conditions and characteristics. These conditions which support the successful integration of an enclosed garden typology have been summarised into the following points:

- A high density environment such as the city CBD
- Area needs a contrasting green or shaded space
- Existing park or open space is unsuccessful
- Close to public transport
- Close to private business/investors
- Adjacent to the street
- Has existing walls or boundaries
- Adjacent to buildings
- Specific community with needs
1.4 Site Matrix

From the information gathered and summarised above, the author formulates a site matrix using the ten points of research as the criteria (refer to figure 4.9). The author uses this matrix to evaluate the validity of the historical industrial and small prospective open spaces which she has chosen. All nine small prospective sites which were documented earlier in the thesis are evaluated and compared. Finally, the Egoli Gas Works open space is evaluated.

When referring to the matrix in figure 4.9, it can be seen that the typical Johannesburg city condition of small scattered open spaces, fares well during the study. In contrast, the historical, industrial Egoli Gas Works site fall short during the evaluation.

Conclusion

The outcomes of the site matrix study revealed that out of the two spaces chosen for investigation and design experimentation, the small derelict site and the enclosed garden theory should pair well together. The potential of this spatial relationship should be explored further. In addition to this, the results of this research could be tested and applied to other small open spaces identified to ensure that thorough testing of this typology, on this type of site is completed and observed. The small derelict space situated within the CNA block in Johannesburg CBD will be the focus of the main design development and technical investigation.
CRITERIA
1. HIGH DENSITY ENVIRONMENT [10]
2. NEEDS PUBLIC GREEN SPACE/PARK [10]
3. EXISTING PARK UNSUCCESSFUL [5]
4. CLOSE TO PUBLIC TRANSPORT [5]
5. CLOSE TO PRIVATE BUSINESS/INVESTORS [5]
6. ADJACENT TO STREET [8]
7. EXISTING WALLS OR BOUNDARIES [8]
8. SMALL AND ABANDONED [10]
9. ADJACENT TO ABANDONED BUILDINGS [5]
10. SPECIFIC COMMUNITY WITH NEEDS [8]
11. OPPORTUNITY FOR ENHANCEMENT [8]
12. APPLICATION OF THEORY

SITE 3
OLD PARK STATION
EGOLI GASWORKS
SITE 4
EGOLI GASWORKS
SITE 2
MANDELA BRIDGE
SITE 1
GHANDI SQUARE
STARTING LOCATION

42% 28%
53% 79% 79%
4.9 Locations of the matrix sites in Johannesburg (Author 2014).
2. Using the enclosed garden as an observation tool to analyse a specific site

The author has completed several experimental design iterations and is focusing her main design development and technical investigation on the one small derelict site on the CNA block in Johannesburg. After revising the enclosed garden theory by Aben and de Wit (1999), the author realises that she did not make good use of the enclosed garden as an analysis tool during her previous design experiments. These four theories of analysis will be used to observe and document the site information found on the small derelict site on the CNA block.

“A sense of utter desolation and abandonment surrounds this whole city block. The open wounds left by the demolition of once proud buildings, signifies an irreplaceable loss; the brick-up and dirty broken windows as dim eyes, the unfinished lateral sides disposing the vulnerable and naked sides of the buildings. Facades that were never intended to be exposed to the outside world and a void of any human activity shroud the city block in a deep crevice of total depression” (Bruwer 2004:6).

This is Catherine Bruwer's (2004) description of the small, vacant site situated within the CNA block between Commissioner and Fox Street. After completing the Heritage assessment of this area of the city, she was particularly concerned about this CNA block. As shown in figure 4.10, the CNA block is comprised of three historically significant buildings: the CNA building, Shakespeare House and the New Kempsey building. There is also a void where a fourth building once stood.

All three buildings are older than sixty years, are abandoned and derelict and contributed positively to Johannesburg’s economic prime, before its decline in the eighties. Bruwer is concerned that despite the significance of this site, no attempt has been made to regenerate and integrate the site and its buildings into the existing business and commercial city context.

The four theories of enclosed garden analysis will be used to analyse and understand the valuable qualities of this important site and its context.
3.1 Observation using the enclosed garden as telescope

During this analysis, the author is reminded of the importance of experiencing void within the dense CBD. As shown in figure 4.11, the site itself is a void, but is only bounded on two of its sides. Therefore, this justifies the author’s need to explore the complete definition of the site. The nature of this type of garden encourages the user to align vertically. This is emphasized by the high boundary facades of the adjacent buildings which define the site. The metaphorical experience of sanctuary which is associated with this typology therefore could also be explored during further design development.

Many of the examples of the enclosed gardens explored previously demonstrate the movement between a succession of spaces or rooms. On this site, there is not much horizontal ground floor space to explore this experience. However, the strong vertical nature of the site could be explored in a similar light.
3.2 Observation using the enclosed garden as kaleidoscope

As indicated in the theory description, it is important to understand the surrounding context of the site in order to create the ideal contrast. As shown in figure 4.11, the concept of defining void is already a contrast to the dense city, but previous experiments show that this concept of contrast can be taken further. Figure 4.12 conceptually explores this idea.
Ghandi Square is an iconic public space which is associated with the site. According to Itzkin (2008), Ghandi Square was a decaying bus terminus until its redevelopment into a public heritage site in 1999. The development of the space, and the inclusion of a bronze statue and heritage plaques were used to commemorate Ghandi’s experiences within Johannesburg. Despite its upgrade and reference to a man who supported the notion of sanctuary and non-violence within the city (Itzkin 2008), the author observed and experienced the site negatively, as a vast and exposed open space which does not provide its users with adequate protection from the elements or comfortable places to sit and wait for transport. This is illustrated in figure 4.13.

Ghandi himself experienced Johannesburg as a chaotic city and emphasised the importance of experiencing sanctuary:

“Johannesburg is full of bustle…It would be no exaggeration to say that the citizens of Johannesburg do not walk but seem as if they run. No one has the leisure to look at anyone else, and everyone is apparently engrossed in thinking how to amass the maximum wealth in the minimum of time” (in Itzkin 2000:4).

Providing the public with the opportunity to experience a place of comfort, tranquility, shade and seating will help to create an alternative and a more suitable contrast to the harsh conditions of the city. The overall pedestrian experience of this area of the CBD is rather two-dimensional. All walking experience takes place on the ground floor plane and is accompanied by intimidating high-rise buildings. By exploring the vertical opportunities which this site provides, the enclosed space could elevate the user above and away from the city chaos.
3.3 Observation using the enclosed garden as field glass

Despite the site’s strong association with Ghandi Square, one’s view of the square is blocked by adjacent high rise buildings. Figure 4.14 demonstrates that by elevating a person within the site, one could experience an unexpected view of Ghandi Square. Integrating the metaphorical experience of the telescope garden with a view over a symbolic place in the landscape, has the potential to ignite unique experiences for the user.
3.4 Observation using the enclosed garden as magnifying glass

As explored previously, this process of analysis aims to highlight and celebrate hidden processes or information about the site at hand. Previously, this site was a historical building which was demolished. Figure 4.15 makes reference to the ‘missing’ building. This loss of heritage needs to be considered and made reference to. The adjacent, abandoned and neglected historical buildings were once important contributors to the active urban street. Their bottom floors contributed to retail and commercial processes and their top floors were office spaces which were used by leading and influential businesses of the time (Bruwer 2004). These qualities need to be re-integrated into the scheme in order to ensure that the site contributes relevantly to the city.
During the process of literary research and observations of the inner city, it became clear to the author that areas of upgrade and regeneration taking place in the city are directly linked to the presence of improved transport infrastructure. In the inner city, this is the Rea Vaya Bus Rapid Transport (BRT) system.

According to Garner, “More efficient public transport is the key to inner-city regeneration as it makes the area attractive to potential residents, shoppers, businesses and tourists alike” (2011:148).

Figure 16 illustrates the intention of making reference to the city’s regeneration by representing the

4.16
Adapting the BRT route to the scale of an enclosed garden (Author 2014)
Conclusion

This process of applying the enclosed garden as a tool of analysis allowed the author to explore and understand the site and its surrounding context in a unique and informative way. The next chapter will document and convey the author's intentions of applying and integrating this information into her design process.
5 FINAL DESIGN ITERATION

Design development of the small derelict open space.
1. The enclosed garden theories are used to create spatial experience and generate form

The previous chapter discussed the enclosed garden’s potential as a tool for analysis. Each of the four theories of observation was used to explore and understand the site and its surrounding context. The author aims to use this third and final iteration as a means to respond to and convey the information uncovered in the analysis chapter in the hopes that she will have a more appropriate and relevant design approach towards the site.

Although the second design iteration of this small site succeeded in creating a necessary and contrasting paradiisical experience, its practicality however was not justified. In addition to responding to the analysis process, the author aims to investigate how this enclosed garden can provide a paradise experience using more practical solutions. Its utilitarian potential and whether it can become more than just a pleasure and contemplation garden needs to be explored.

The tall adjacent buildings which bound the site create a strong vertical experience within the space. Studying design precedents which respond to conditions of a similar nature will help the author during her design process.

The following section of writing illustrates the design decisions made for the site, based on the four theoretical observations which took place in the previous chapter. Diagrams will be used to convey the spatial decisions made by the author.

1.1 Exploring the spatial representations of the enclosed garden as telescope

Observing this space through the telescope revealed the importance of defining and enhancing the experience of void which already exists on site. However, figure 5.1 illustrates that creating definition and boundaries anywhere on the site does not always have a suitable outcome. The sequence of diagrams in figure 5.1 reveals the importance of defining a square void within the space rather than creating threshold at both edges of the rectangular site. In addition to this, experiencing the void as a moment within the space heightsens and intensifies the vertical experience. Although creating a place of rest and pause is necessary and justified, it is still necessary to allow easy movement through the site.
1.2 Exploring the spatial representations of the enclosed garden as kaleidoscope

There are several ways in which the author can create the experience of contrast within this enclosed space. However, it is important for the author to ensure that the spatial experiences she does explore still adhere to preserving the site’s void and do not obscure the user’s view of the sky.

The diagrams in figure 5.2 explore the potential for the enclosed garden to provide a contrasting vertical movement through a space in contrast to the horizontal pedestrian experience of the city. The site is rather limited in terms of its horizontal space, so taking advantage of the tall adjacent building facades which face the site would make good utilisation of the site. Although the common association with paradise within a harsh environment is one of dense planting and foliage, creating a softer spatial experience using an abundance of planting is still a relevant juxtaposition to the city’s concrete jungle. However, this concept of contrast and planting can be taken further within a vertical space. The climatic and temperate conditions of this site vary considerably between the ground floor of the open space and the higher adjacent building roof tops. This has a direct effect on the types of planting communities which thrive in different environmental conditions. In this case, contrast can be experienced between planting communities and temperature zones. These conditions can become heightened through a greenhouse effect by enclosing the space overhead. Transparent materials need to be considered in order to preserve the view of the sky.

5.2
Diagrams exploring vertical and horizontal contrast and climate effects (Author 2014).
1.3 Exploring the spatial representations of the enclosed garden as fieldglass

During the analysis chapter, the author identified that there are views and experiences of the city which are not accessible on ground level. It was shown that elevating a person within the open space will provide a unique view and perspective of busy public Ghandi Square. The need for this experience pushes the author to explore how one could access an elevated view within a small open space. This is exercise is shown in figure 5.3. If the view of Ghandi Square is viewed as a destination point within the space, the vertical movement towards this moment could be the equivalent of moving through a sequence of spaces which lead one to the point of arrival. Each of the spaces encountered on this journey could have their own unique spatial qualities and could in fact be individual enclosed gardens themselves. Once again, these additions cannot interrupt or obscure the main internal enclosed space which defines the sky.

5.3 Vertical journey towards a destination point
(Author 2014).
1.4 Exploring the spatial representations of the enclosed garden as magnifying glass

In the previous chapter, the hidden historical value of the site’s adjacent buildings was realised. In addition to this, the BRT transport system was acknowledged as the inner city’s infrastructure which represents positive regeneration and upliftment. Figure 5.4 explores how the adjacent buildings can be integrated into the enclosed garden design. Due to the vertical nature of this design iteration, the author explores how to relate the levels of the enclosed garden to the floor levels of the adjacent buildings. This provides the opportunity to access the garden from the adjacent buildings and not just from the public ground floor space below.

The enclosed garden begins to contribute to the adjacent buildings as a unique internal foyer space and has the potential to be a link between all the heritage buildings on the site. Now that the adjacent buildings have been linked literally with the internal open space, the author investigates how the buildings (which currently have no purpose and programme) can contribute positively to the design intervention.

The spatial representations of the kaleidoscope enclosed garden revealed the site’s potential to create a variety of environments for different plant communities. The top floors of the adjacent historical buildings, which were once office spaces, could become places of research which use the enclosed garden as a testing ground for bringing the natural landscape and diverse planting communities back into the city. The bottom floors of the buildings could be restored to their original commercial and retail uses which would help activate the street and bring necessary attention back to the site.

Figure 5.5 explores the incorporation of the BRT system into the floor plan of the garden and how it could be translated into a channel system to aid in water collection towards a central point within the enclosed garden.
2. Programme: Enclosed gardens within an enclosed garden

The potential of this site as an enclosed garden has been investigated. Applying the four enclosed garden theories has revealed the site’s potential to be a small and robust urban gathering space which contains an enclosed garden of contemplation. This is illustrated in figure 5.6. This enclosed garden fulfils its main functional role of defining empty space and being a connective internal foyer space between the existing heritage buildings.

Due to the vertical advantages of the site, smaller enclosed gardens of kaleidoscope and or fieldglass can be located within the main enclosed garden. This is shown in figure 5.7. Each of these gardens could cater for the functional needs of the specific planting communities implemented and could use these specific environments to provide unique spatial experiences for the user.

According to JMOSS (2002), an open space which provides opportunity for urban agriculture and growing food is relevant and necessary (JMOSS 2002). This will be integrated within the smaller enclosed gardens where necessary.

In order to help with the detailed design process, the author will study examples of precedent which consider small and vertical design intervention.
3. Design precedents for small, vertical open spaces

The following design precedents were chosen according to their ability to relate to and integrate surrounding architectural urban context, their ability to explore an open space vertically or their ability to make use of a small open space successfully.

3.1 MFO Park, Zurich, Switzerland

This design precedent is suitable for study due to the fact that it deals with open public space and makes architectural reference to its surrounding high rise building context. This project questions what a park or public space should be within an urban context. According to Archidose (2013) “Its design elevates what a park can be in an urban context: vertical and spatial, architectural and green”.

As shown in figures 5.8 to 5.11, this three-dimensional plaza makes use of a galvanised steel frame and steel cabling to create the illusion of a building without the use of structural walls. A diverse selection of climbing plant species (shown in figure 10) is used to define spaces within the steel structure to create the experience of outdoor rooms. Figure 9 illustrates how the ground floor is kept simple with a robust paving surface to allow for heavy pedestrian traffic flow. The vertical park is lit up at night in order to remain open and useful to the public (Margolis 2007).
This design is a relevant example of how to create interesting spatial experiences by integrating architecture and landscape architecture. This precedent helps to justify why a vertical and architectural intervention is suitable within the urban context and helps the author understand how to translate these ideas technically. It is important to remember that this is a vertical landscape structure and that elements and components of enclosed gardens still need to be integrated within the design.
3.2 Square des Bouleaux, Paris, France

This enclosed garden aims to integrate with and relate to its adjacent buildings, as shown in figure 5.12. A clump of tall silver birch trees compliments the modular cross-beam structure of the building façade. The garden performs the functional role of providing an entrance to the building which sits at the opposite edge of the site. One can only enter the garden through a single gate and the two entrance points on opposite edges of the site are staggered so that they are not insight of the user. The success of this enclosed garden is its ability to make a small space seem bigger than what it is. Figure 5.13 illustrates the plan configuration and components of the garden.

5.12

A rigid formation of tall silver birch trees compliments the structure of its architectural boundaries and are used to emphasis the height of the space.
The components of the enclosed garden are likened to the architectural elements of its surrounding buildings.
Conclusion

After exploring the enclosed garden theory observations spatially and investigating suitable design precedents, the author synthesizes her design informants and decisions. The following section of writing will explore a detailed exploration of the design, starting from the main components of the design towards the detailed construction and spatial quality of the smaller internal enclosed garden rooms.
This chapter focuses on integrating the functional and experiential qualities of the enclosed garden. The following section of writing will introduce and convey the enclosed garden design through a sequence of scale, starting from its main components towards the detailed analogy of its smaller internal enclosed garden rooms.

The main challenge behind this technical design investigation is how to integrate the functional and systematic qualities of the design with the experiential qualities needed for the specific spaces.
Section perspective of design showing the components and spatial quality (Author 2014).
1. Main Components

Four main components have been identified with this design (refer to figure 6.1), and will be explored in figure 6.2 below.
1.1 The floor

As stated in previous chapters by Baker (2012), the first part of the garden which should be addressed and designed is its floor. In this case, the design intention focused on simplicity and robustness in order to ensure versatility of programmes and activities.

Due to the high population density of Johannesburg and the need to allow easy flow of movement between Ghandi Square and the Rea Vaya bus interchanges, the floor which flows through the open space and into the enclose garden is a robust and paved surface. In addition to this, this surface needs to provide a spill out space for the re-activated retail and commercial stores of the adjacent historical buildings. This is illustrated in figure 6.3.
Although the main vertical enclosed garden occurs as a moment within this open space, as shown in figure 6.4, the floor acts as a unifying element which encourages the users of the site to flow between the contrasting spaces.

The floor as unifying element, provides seating, shade and water channel system (Author 2014).
The BRT system which has been recognised previously for its association with positive change within the city has been translated into a scaled down channel system and laid into the paved surface. This is shown in figure 6.5. Together, these elements work together to collect and transport necessary water towards a point of collection within the enclosed garden.

Figure 6.4 shows that a series of Celtis Africana trees have been used on the eastern side of the site to protect the public from the harsh western sun and to ensure easy movement in the space. This species has been chosen for its ability to grow well with paving surfaces. These are accompanied by a selection of benches which are arranged in a way which still ensures easy movement around the space.
1.2 The wall

As discussed in the previous chapters, it is very important for the enclosed garden to respond to the existing adjacent historical buildings and to acknowledge the historical building which once used to occupy the space prior to demolition. The author uses this opportunity to explore how the boundary wall could make reference to a building façade and uses the adjacent buildings with their regularly spaced windows and architectural elements as precedent for a modular system of wall façade components. This concept is illustrated in figure 6.6.

As noted in previous sections, this enclosed garden would need to explore the potential to grow plants vertically within a space. The modular components of the wall could be used to house a green wall system of planting and an efficient hydroponic irrigation system.
In order to control the negative effects of the elements and help to extend planting seasons, it is decided that the garden’s enclosure is completely contained to ensure a greenhouse effect (this includes an overhead glazed roof with louvered system for necessary air flow). The boundary wall needs to contribute to this closed system and the modular framed components which collectively form the wall either contain glass or a sealed system of planting (refer to figure 6.7 above).
In order to create awareness about the internal planted space, the author explores the opportunity to reverse the modular wall frames so that planting can be displayed on the wall’s exterior façade and be visible from the street. The planting chosen for these external planters would need to be indigenous to the area so that minimal maintenance is required.

As shown in the previous chapter, it is necessary to recess the enclosed garden boundary wall in order to define a square on a rectangular site. This also provides the space with the opportunity to gather and collect people before filtering them through the main enclosed garden.
The building is recessed into the space to provide adequate room for gathering.

Author (2014)
1.3 The structure

The purpose of the wall’s structure is to house the modular wall components, support the flooring which divides the vertical space into smaller enclosed rooms and provide plants with the means to grow vertically using a steel cable system.

It is galvanised steel and comprised of I and H-beam members which connect independently to the floor and are horizontally connected to the adjacent building facades. The regular spacing between elements formed as a result of the modular system of components.
1.4 Movement

Moving vertically through this enclosed space and accessing it from adjacent buildings and the ground floor level has presented challenges, especially for wheelchair access.

Initially the author explored a ramping system to connect the different floor levels, however, the condensed size of the enclosure did not allow for suitable ramp gradient. It was decided that a central lift could be used to connect the main floor levels. This allows for better universal access. Adequate floor width also ensures comfortable wheelchair use. People using the adjacent buildings can access the enclosed garden via an existing fire escape staircase, however, this is a one way system to ensure controlled access.

Spaces which need to accommodate heavier traffic of people take place on lower floor levels and smaller, intimate areas for contemplation and solitude are located higher up within the structure.

The next section of writing and images illustrates how these components work collectively to form the main contemplative garden.

The section through the main enclosed garden illustrated in figure… demonstrates the relationship between the main components and the smaller enclosed gardens. It will be used to indicate a variety of systems which are necessary for the success of this enclosed garden.
2. Solar and temperature analysis

This design encourages the interaction of human and plant communities. However, plants have a higher tolerance of temperature and climatic conditions in comparison to humans (especially in a humid greenhouse situation). In order to ensure that both plants and humans can share space and environments comfortably with each other, it was necessary to model and consider suitable temperature conditions.

Figure … is an image generated using the Ecotect modelling programme. After several iterations with the overhead glazed roof and louvered structure, the author found a way to regulate and sustain the internal temperatures between 15 and 25 degrees Celsius. The louvre system is used to release the hot air accumulated within the internal space.

This exercise helped to locate which temperature conditions occur where and will be used to determine which planting communities can tolerate and thrive in the specific conditions.

Figure… is a compilation of sun studies. These were used to understand the pattern of sunlight and where to position plants within the space accordingly.
3. Planting

Based on the solar and temperature analysis completed above and literary research undertaken, the author was able to pair the specific planting communities with the relevant temperature conditions. This is shown in figure…

Each of the planting zones indicated requires a detailed investigation into its specific species and the combinations thereof. However, this level of investigation will be completed for the planting strategy of the external modular wall and southern internal wall.

3.1 Northern external modular green wall and southern internal wall plant strategy.

The main intention behind this planting strategy is to re-introduce planting communities which would have naturally occurred in the area if it were not for urban development disturbance. In addition to this, the strategy would need to display dense and an abundance of species to create a paradise experience as suggested by Aben and de Wit (1999) and will need to adhere to low maintenance and minimal soil medium depths (for the purpose of the shallow planter wall containers).

According to Mucina and Rutherford (2006) this area typically falls under the Soweto Highveld grassland community which consists of graminoids, low shrubs, geophytic herbs and herb plant species. The author also investigates into ‘Resurrection’ or Rock pavement plant communities. These species require very little soil and exhibit ‘resurrection’ behaviour in that they appear dead when dry, but can resume metabolic activity within hours of receiving water, only to dry up again if need be. These species have been extensively studied by geneticists locally, for greater drought tolerance in crop species via genetic modification. Not only are these species suited to the maintenance and soil requirements of the modular planter wall, but could be used as part of the urban planting research taking place within the site’s overall programme.

Figure… is a planting elevation which illustrates the author’s intention to combine these communities for aesthetic and diversity reasons. Each square represents a shallow steel planter container which is easily attached or removed from the main modular frame. Planting quantities are based on the size of these containers.

The focus of the southern elevation's planting strategy is to explore the integration of food plant species. Species were selected based on their ability to climb up or spread horizontally over the tensioned steel cables, whether they could tolerate full sun conditions as well as thrive well on a hydroponic irrigation system. Beans, okrah, and tomatoes are used to climb vertically. Cucumber and squash species are used in horizontal cases.
Fynbos and succulent fynbos biome
Warm and dry conditions

Grassland and Albany thicket biome
Moderately warm conditions

Subtropical and Azonal forest biome
Cooler and damp conditions
6.15
Northern external facade planting elevation
(Author 2014).
Northern Vertical green wall
combination of Soweto highrld grassland and
resurrection plant communities

Planter containers have restrictive soil
depths making indigenous and resurrection
communities suitable

Vertical green wall containers: Each planter
container is 0.9m². Planting plugs are used

Legend

**Mix 1:** Anthericum ramosum 30%
Schizachyrium scoparium 20%
Delagoa densiflora 30%

**Mix 2:** Aristida bipartita 40%
Panicum miliaceum 30%
Vernonia oligoneura 30%

**Mix 3:** Dicoma anomala 30%
Wahlenbergia undulata 30%
Argyrostachys racemosa 30%

**Mix 4:** Lippia scaberrima 4%
Hesperostipa montana 25%
Herbsacea depressa 15%
Rubus idaeus 3%

**Mix 5:** Cynodon dactylon 30%
Argyrostachys racemosa 10%
Aristida adscendens 40%

**Mix 6:** Gasterostigma vilanum 30%
Salix pyrifolia 20%
Eryngium reticulatum 30%
Myrtus communis flabellifolia 30%

**Mix 7:** Xerophyta humilis 3%
Tortula ruralis 20%
Eryngium viscosum 3%
Fruthicum humilis 10%

This method of mosaic planting
ensures complexity and an abundance of
biodiversity

6.16
Northern external facade planting strategy.
(Author 2014)
Vegetable plants which climb or spread horizontally are used to define and create intimate spaces.

Legend

- **Beans**
- **Okra**
- **Cucumber**
- **Tomato**
- **Squash**

6.17 Southern internal wall planting strategy focuses on food plant species (Author 2014).
4. Water strategy

Due to the harsh environment of the city and the limited access to natural resources in the CBD, it is necessary for this enclosed garden to be self-sufficient and sustainable. The components of the garden need to work together to ensure an efficient water harvesting strategy.

It is important to identify which surfaces can be used for harvesting, where harvested water can be collected and stored and how the water will access areas of planting. This system of harvesting is best illustrated in figure…

As discussed earlier, the paved ground floor is the main surface for water harvesting. Water collected on this surface is transported using a channel system towards an underground storage tank located beneath the lift shaft.

The closed overhead structure or glazed roof of the enclosed garden will also contribute to this surface area. The roof structure is angled to allow for adequate air movement through the enclosure, but this can be used to collect water at one point using a gutter. Water collected by the roof is stored in containers at the top of the enclosed structure and in water tanks located at the top of the lift shaft. This allows water to be gravity fed to the areas of planting.

The lift structure is used to house the water pipes through which water is pumped up to the elevated storage tanks.

A hydroponic irrigation system has been chosen due to the fact that it allows easy control over limited water quantities. It also ensures that water is transported directly to the plants so that minimal evaporation and water loss takes place.

This enclosed garden is naturally a closed-system this ensures that minimal water evaporation takes place and that the internal space remains relatively humid overall.
Underground storage tank
BRT channel system directs water underground
Water pumped up lift shaft to storage tanks
Hydroponic irrigation system gravity fed
roof collection towards gutter
gutter collection point
storage tanks
BRT channel system
5. Enclosed gardens within the enclosed garden: An interplay between functionality and creating quality space

The underlying functional systems of the enclosed garden’s main processes have been established. It is now important to explore how these systems and strategies contribute to the spatial qualities relating to each of the smaller internal enclosed gardens. The climatic and planting research completed above also contributes to the spatial characteristics of each of the gardens. The author will continue to make reference to the four contemporary enclosed garden types to further explore the experiential potential of each garden.

As established in previous sections, the main public space is the ground floor of the enclosed garden. The smaller enclosed garden rooms located within the larger enclosed garden structure allow for interaction with each other as well as the public ground floor below. This means that the smaller enclosed gardens which are nearest to the ground floor will be public to semi-public spaces and the gardens located higher up in the structure will naturally be more isolated and quieter spaces. Starting from the ground floor upwards, each of the seven smaller enclosed gardens will be explored individually and in more design detail.

1. The cathedral enclosed garden

As shown in the previous solar analysis images, the enclosed gardens that are located lower down in the structure receive the least amount of sunlight. In order to maximise on the amount of light received in this space, the height between the garden’s floor and its ceiling is increased, similarly to that of a tall cathedral space.

Planting would need to be located higher within the space to receive adequate sunlight. In order for users of the space to interact with the planting, pendulus species which grow downwards into the space were chosen. Suspended planter containers create a central planted feature which draws the user’s eye upwards and vertically into the space. The enclosed garden as telescope was applied in this example. The furniture seating in this space incorporates the suspension system used in the planter containers.
The cathedral enclosed garden with its strong vertical experience and suspended elements. Author (2014)
6.20
Detail 1
Suspended planter
Author (2014)

Eye nut with screwed external thread

Pendulous plant species allow for hanging effect of foliage into space

Light-weight coco peat soil medium

10mm thick steel planter container suspended with tensioned rope system

Support casing for tensioned rope with nut and washer tightening

Treated marine plywood decking

6.21
Detail 2
Suspended seating
Author (2014)

6mm diameter tensioned steel rope by GKD Webnet mesh

Nut, washer and tubing support for tensioned cable

400x200x1500mm laminated timber bench suspended by tensioned rope system
2. The botanical enclosed garden

This garden displays an abundance of plant and agricultural species. Tensioned steel cables are positioned vertically and horizontally at different levels within the space to create an undulating landscape experience. A variety of species creates complexity and keeps the user's attention within the garden.

Vertical tensioned cables and climbing plant species are used on one side of the garden to create a hedge. This helps to separate the garden from the other spaces. Benches are placed in front of vertical tensioned cables for backrest and are positioned to face the glazed façade which looks out onto the public space and street below. The enclosed garden as kaleidoscope was applied in this design.
6.23
Abundant display of plant species in the botanical enclosed garden. Author (2014)
6.24
Detail 3.
Seating with tensioned steel cable backrest

- Climbing foliage
- 6mm diameter tensioned steel rope by GKD Webnet mesh spaced @ 100mm centres
- Turnbuckle with monofork screwed
- Eye nut with screwed external
- 24x100mm marine plywood
- 5mm thick steel frame bolted
3. The enclosed waterscape garden

Based on the solar analysis, it was decided that dense planting areas would be located on the top northern area of the site. As mentioned previously, the author recognised the opportunity to display planting communities on the exterior of the main garden wall. A modular system of planting will be placed on the upper northern parts of the wall. This prevents sunlight from certain entering areas of the internal enclosed garden. The author sees this as an opportunity to explore other materials and elements of the garden and chooses to celebrate the necessary water system within this shaded area. The irrigation strategy is based on a gravity fed system. This is imitated and celebrated using a trough water feature which descends down into the space.
4. The enclosed lounge and balcony garden

This enclosed garden gives the user the opportunity to break away from the louder public areas of the space below. Large seated areas encourage people to spend more time within the space. Once again, the backrest of the seating has been integrated with the tensioned cable system which allows vertical plant growth. This time it incorporates a large planter for denser plant growth. This helps to filter out any visual connection to other gardens and noise. A dense ‘ceiling’ of planting is used to create intimacy in the seating areas. To create light suspended planter containers, the author explores epiphytic and resurrection plant species which require shallow soil medium. The staggered placement of these planters imitates the cliff face environment in which these species are naturally found.

This garden gives people, using the adjacent buildings, the opportunity to enter into the garden privately via a viewing balcony. This provides a variety of experiences within one enclosed space.
Detail 4

6.27

Lounge seating with dense foliage backrest

6mm diameter tensioned steel rope assembly Webnet mesh spaced @ 100mm centres with turnbuckle and eye nut screwed to thread end

10mm thick steel planter container

24x100mm marine plywood planks
5. The enclosed garden of solitude

Moving vertically up into the structure, this enclosed garden provides a more private user experience. The height between the floor and the ceiling is compressed to create the feeling of being inside a comfortable room. The water motif is brought into the space on a small scale through a channel system and leads the eye into the centre of the space. The sound of water trickling in this space creates a calming atmosphere. A tensioned cable system with dense foliage helps to isolate this space from its surrounding environment. The enclosed garden as magnifying glass was applied in this example.
305 x 305mm galvanised steel H-beam structure chemically bolted into paved surface

165x305 mm galvanised steel I-beam profile, chemically bolted to adjacent building walls

24x100mm marine plywood decking fixed to substructure with hidden clips

55x100mm galvanised steel I-beam profiles spaced @ 600mm centres
6. The enclosed oasis garden

This garden receives the most sunlight and can naturally cater for more plant growth. In order to heighten this experience of lush, abundant planting, the planted walls are used to completely surround the user. The width of the space is decreased to bring the user into close proximity with the numerous communities.

The transparent roof structure overhead, allows the user to have clear views of the sky and cosmos. the enclosed garden as kaleidoscope and

A modular planted wall helps to display a variety of plant species.
Modular steel frame component adapted for providing glazing or planting.

Steel channel 'hook' to mount steel frame onto I-beam structure.

200 x 75mm steel channel frame component to contain glass pane.

10mm thick toughened glass.
7. The enclosed garden for Ghandi

As shown in previous sections, elevating people within this space will provide them with a unique opportunity to view Ghandi Square. A modular frame component was used to provide a framed view of the desired vista. In addition to this, the author wanted the enclosed garden to provide a contrasting experience to that of Ghandi Square. Planting is used to create dappled shade in the space.

The gutter collection container has a translucent base to allow water to reflect into the space and add to the peacefulness of the garden. Seating is placed according to the position the user needs to be in to look out the window.
An experiential perspective illustrates the cloister walk between the waterscape and lounge and balcony enclosed gardens.
6.34
A perspective elevation illustrates the relationship between the individual enclosed gardens and the common modular structure.
View within the enclosed garden for Ghandi
CONCLUSION

This dissertation completed a series of spatial and theoretical design experiments in order to determine whether the enclosed garden typology is a relevant landscape design tool and whether it should be used to help improve the fragmented open space condition of Johannesburg.

Although the enclosed garden showed the potential to address the spatial problems within different types of open spaces, it was realised that applying its unique problem solving abilities and potential to create metaphorical spatial experiences within small, derelict inner city open spaces, would provide the public in the area with much needed places of sanctuary and refuge.

After analyzing and critiquing the design iterations, it became clear that the designs which made reference to and applied the four enclosed garden theories during analysis and or the design process, had more relevant and positive outcomes.
REFERENCES


