Join the Dots
Architecture of Movement and Connections

Averil Moore

Figure 1.1 Locomotor movement of a child
Abstract

Movement is fundamental for a child's holistic development. Architecture has the potential to function as a stimulus for movement. Join the Dots utilises these statements as a catalyst for an architectural exploration, where the architecture facilitates and encourages movement.

The focus of this project is an early childhood education centre, and urban connections within the context of the Victoria Park Market car park. The car park is located next to the newly refurbished Victoria Park Markets, within Auckland City Centre West which is predicted to experience the highest amount of residential growth, of the City Centre areas, by 2031.

Join the Dots investigates current knowledge, visual connectivity, children's interpretation of space, the typology of circulation, as well as the potential experience of movement. This research allows the development of an understanding into movement systems, and the potential encouragement through experience. These themes will then be applied and compared to architectural precedents, to create an understanding within the context of the built environment.

The intention of the design, through the discovery and exploration of the potential of movement systems, is to develop an environment which facilitates and encourages its users to move. An environment which contains a curriculum, whereby the architecture aids this holistic development through the design for encouraged movement, within both a child care centre and within the wider urban environment.

---

Table of Contents

Abstract 3
Acknowledgements 7

1.0 Introduction 9
1.1 Research Question 9
1.2 Outline of the Project 9
1.3 Aims and Objectives 9
1.4 Scope and Limitations 9
1.5 Methodology 10
1.6 Definitions 10

2.0 Define Project 13
2.1 A Discussion of the Problem 13
2.2 Significance of Movement 14
2.3 Piaget and Vygotsky’s Learning Theories 14
2.4 Architectural Devices to Enhance and Facilitate Movement 15
2.5 Derived Design Strategies to Encourage Movement 20

3.0 Precedent Study 23
3.1 The High Line 23
3.2 AUT Sir Paul Reeves Building 25
3.3 Maxxi Museum 26
3.4 Ring Around a Tree 28
3.5 Children’s House Dragen 30
3.6 Derived Design Strategies to Encourage Movement 32

4.0 Physical Context 35
4.1 Site Location 36
4.2 Selection Criteria 36
4.3 Site and Context History 37
4.4 Site and Context Demographics 38
4.5 The Envisaged Auckland City 39
4.6 Urban Analysis 40
4.7 Site and Building Analysis 45
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0</td>
<td>Design Process</td>
<td>51</td>
</tr>
<tr>
<td>5.1</td>
<td>Programme</td>
<td>51</td>
</tr>
<tr>
<td>5.2</td>
<td>Phase One- Initial Concept Investigations</td>
<td>52</td>
</tr>
<tr>
<td>5.3</td>
<td>Phase Two- Park Connection Exploration</td>
<td>55</td>
</tr>
<tr>
<td>5.4</td>
<td>Phase Three- Urban Planning</td>
<td>58</td>
</tr>
<tr>
<td>5.5</td>
<td>Phase Four- Centre Planning and Design</td>
<td>60</td>
</tr>
<tr>
<td>5.6</td>
<td>Phase Five- Centre Design Development</td>
<td>63</td>
</tr>
<tr>
<td>5.7</td>
<td>Phase Six- Movement Systems Exploration</td>
<td>65</td>
</tr>
<tr>
<td>5.8</td>
<td>Phase Seven- Movement Systems Development</td>
<td>70</td>
</tr>
<tr>
<td>5.9</td>
<td>Phase Eight-Developed Design</td>
<td>76</td>
</tr>
<tr>
<td>5.10</td>
<td>Phase Nine- Design Outcome</td>
<td>82</td>
</tr>
<tr>
<td>5.11</td>
<td>Phase Ten- Final Presentation</td>
<td>89</td>
</tr>
<tr>
<td>6.0</td>
<td>Conclusion</td>
<td>105</td>
</tr>
<tr>
<td>6.1</td>
<td>Critical Appraisal</td>
<td>105</td>
</tr>
<tr>
<td>6.2</td>
<td>Concluding Statement</td>
<td>106</td>
</tr>
<tr>
<td>7.0</td>
<td>Bibliography</td>
<td>109</td>
</tr>
<tr>
<td>8.0</td>
<td>List of Figures</td>
<td>115</td>
</tr>
<tr>
<td>9.0</td>
<td>Appendix- A</td>
<td>121</td>
</tr>
<tr>
<td>9.1</td>
<td>Modern Urban Childhoods</td>
<td>121</td>
</tr>
<tr>
<td>9.2</td>
<td>Precedents</td>
<td>124</td>
</tr>
<tr>
<td>9.3</td>
<td>Design Process</td>
<td>128</td>
</tr>
</tbody>
</table>
Acknowledgements

I would like to thank my family for their assistance, support and tolerance during the preparation of this document. Additionally, I am particularly appreciative for guidance, criticism and encouragement from my supervisors Kerry Francis and John Pusateri, as well as David Chaplin. Thanks to Brendan Smith for his invaluable proofreading skills.

I would also like to thank all the early childhood centres that granted me permission to visit their centres, and the many other people who were willing to allow me to bounce ideas off them, answer my questions and suggest areas of further investigation. Thanks also to Unitec staff and guest critics who provided me with their invaluable time and feedback.
1.0 Introduction

1.1 Research Question

How can architecture facilitate and encourage movement in children aged two to six years old in the urban environment of Auckland City Centre?

1.2 Outline of Project

Movement is fundamental for a child’s holistic development. Architecture has the potential to function as a stimulus for movement. This project explores the role of architecture to encourage and facilitate movement in children, aged two to six, within a growing city that currently offers few opportunities for children to move and develop. The project explores child development, as well as educational and architectural theories and how these can be used to influence architecture. In particular how movement and circulation systems can encourage movement.

Small apartment sizes, dehumanisation of the city, the prioritisation of the car and increasingly sedentary lifestyles negatively affect the development of motor and movement skills of urban children. The future development of Auckland City Centre gives the opportunity for these problems to be addressed, not only within the sites boundaries, but as an urban manoeuvre.

This project addresses the issue of motor and movement skills development at two different scales; an early childhood centre and an urban scale. This second scale is to allow the building to become a node in a movement network since the notion of containing movement within the site denies the essence of movement. Both of these scales will be explored within the common thread of movement systems and circulation.

Join the Dots firstly explores and analyses the existing interpretations in literature and precedents, then investigates an architectural response to movement, and how it can enhance and facilitate it. The intention of the architectural response is to develop an environment containing a curriculum of movement that counteracts the delay in the development of motor skills, in particular locomotor skills and some nonlocomotor skills, in modern urban children.

1.3 Aims and Objectives of the Project

Join the Dots aims to gain an understanding of ways movement can be encouraged, rather than just facilitated, or provided for.

To investigate the potential role of architecture to encourage and facilitate movement in children aged two to six. Movement is fundamental for a child’s holistic development. This project aims to aid the holistic development of children, including movement and motor skills, through an architectural response.

The project aims to apply the lessons learnt from the child care centre to a broader urban environment, ultimately enhancing it for all residents.

1.4 Scope and Limitations

The focus of this project is on enhancing and facilitating movement. This project focuses on movement systems, the adjacent spaces and the boundaries between.

The early childhood education centre and urban planning has been broadly planned to meet fundamental requirements. They then act as a platform for the specifics of the project. Where these began to compromise the investigation priority was given to the areas of focus.

Additionally, to allow the project to increase its focus, two particular movements have been selected for exploration:

- Locomotor skills. (The feet moving the body from one place to another; hopping, skipping, walking, and running.)
- Some nonlocomotor skills. (The body into postures; lying down, sitting, kneeling, crouching, bending and standing on tippy toes.)

Visual connectivity has been explored in terms of locating play opportunities and activities, as well as finding other children. Visual connectivity has not been explored according to surveillance.

This project attempts to be sustainable. However, sustainability is not the main focus and where things, including sustainability, began to compromise the investigation, priority is given to the areas of focus.

---

5 Bloomer and Moore, Body, 59.
1.5 Methodology

The first stage was to research for design, review current knowledge (literature and precedents) and site. Current theories on the development and learning of children were researched and analysed to gain knowledge and understanding of the key drivers for development and learning. Movement as an architectural topic was also examined and analysed to develop an architectural approach and language.

Precedent analysis into both movement and early childhood architecture enabled an exploration of developed architectural approaches and languages. This resulted in an evaluation and comparison of the findings and research.

The site selection analysis included looking at predicted future residential population, including families with children, existing early childhood centre locations, and the proximity to recreational areas for out-of-session play opportunities with family. The site was researched and analysed in terms of the current, 2013, context, as well as the planned Auckland City Centre Masterplan. The site was examined at both the contextual scale of Victoria Precinct, as well as at the particularities of the building and immediate site of Victoria Park Market car park. This differing scale allowed the exploration of opportunities, characteristics and constraints at an urban planning level as well as a singular building level, and the connections between the two.

The second stage required research through design. This phase utilised the knowledge gathered in research for design. This knowledge, in application, explores its potential through design. As the understanding of the topic grew, re-evaluation of existing knowledge, as well as the introduction of new material was required.

1.6 Definitions

Encourage: For this project encourage is defined as urging, motivating or increasing the desire for someone to do something.

Facilitate: Facilitate for this project is defined as allowing for, or making possible.

Locomotor Skills: A category of motor skills and a group of movements in which the feet moves the body from place to place. Examples of locomotor skills include walking, running, skipping, hopping, and jumping.

Mirror Neurons: Mirror neurons are neurons which fires or respond not only when a person performs an action, but also when you see the same or a similar action performed by someone else. Mirror neurons convert the sight of someone else's action into the same motor program that we would use to enact the same action. The neuron 'mirrors' the action of another as though the observer was doing the action.

Movement: For this project movement describes the displacement of the body as a whole from one point to another. Movement for this project has been focused on place to place movement, locomotor skills, as well as some nonlocomotor skills.

Movement Systems: Architectural elements that provide movement and circulation: stairs, ramps, bridges.

Nonlocomotor Skills: A category of motor skills and a group of body motion that does not result in travelling from place to place. Examples include stretching, bending, turning, twisting, as well as moving into a particular posture, such as sitting down, lying down and crouching.

Trigger Movement: This movement is dependent on visual connections and observation of other children or people moving or participating in activities to spark the observer to mimic the action observed or move and join in activities.

Zone of Proximal Development (ZPD): This is classed as the difference between the level that the child is capable of independently achieving and the level of achievement the child is capable of with assistance.
2.0 Define Project

2.1 A Discussion of the Problem

Movement is fundamental for a child's holistic development. Small apartment sizes, dehumanisation of the city, the prioritisation of the car and increasingly sedentary lifestyles negatively affect the development of motor and movement skills of urban children. City Centre early childhood education centre managers spoke of their concerns at the delay in the development of motor skills in city child residents compared to those of their suburban counterparts.

City apartments are significantly smaller than the average 1970s and 2011 house size, and usually have very limited or no outdoor space. Apartment dwelling children have very little space to develop.

The dehumanisation of cities, through the increase of traffic, the declining number of public places and the decreasing sense of community make them more difficult in which to live.

Sedentary behaviour of children has been directly linked to reduced motor skills. More children are watching television for longer hours. Similarly, the time spent in vehicles has increased by 250% since 1960. Overweight and obesity rates are also increasing. To achieve a reversal of this trend, research shows that sedentary lifestyle and behaviour must be minimised to less than 2 hours per day.

The project seeks to provide an environment that counteracts the negative effects exacerbated by the above factors.

For a more in-depth discussion of these factors see Appendix 9.1.

---

11 Nikki Darling-Kuria, Brain-Based Early Learning Activities: Connecting Theory and Practice, (Minneapolis: Redleaf Press, 2010), 35.
2.2  Significance of Movement

Childhood is the most important period of learning in a lifespan. Current literature states that movement is important for the holistic development of children and enhances other aspects of learning, such as cognitive development, spiritual, emotional, sociability and behaviour. Studies have also shown a correlation between the development of fundamental movement skills, and the enhancement of the central nervous system, spatial awareness and body awareness. Physical motion also stimulates the growth of brain cells.

Movement grows the brain. A moving child is a learning child. For children, experience comes from the body; their physical and sensory interaction with everyday life.

Moment through space and perception consist of a reciprocal relationship, where they both rely on one another. James Gibson, an environmental psychologist, states "we must perceive in order to move, but we must also move in order to perceive." The movement of children and the manipulation of the surrounding world is their way of finding out about concepts such as ‘far and near’, ‘light and heavy’, ‘curves and straight’.

Bilton describes a situation stating how children learn through movement- a child moving through a tunnel learns through movement, including: sizes, balance, height, width, comparative measurements, and thinking through his ideas. Likewise, Christopher Day argues that movement changes our relationship to things, which ensures sensory variation, resulting in keeping the brain awake.

Bradford Perkins and Raymond Bordwell identify the bodily/kinesthetic learner, who likes to move around, touch and talk, favouring activities which include movement.

2.3  Piaget and Vygotsky’s Learning Theories

Jean Piaget was born in 1896, Switzerland. Piaget’s theory is classed as constructivist, where knowledge is constructed and derived from the child’s own actions and experience. This is known as adaption, the continuous process of using the environment to learn, and learning to adjust to changes within the environment. Learning by doing, means that the child is the protagonist in their own learning, where the built environment, by aiding experience, is able to aid learning.

Lev Vygotsky was born in 1896, Orsha, Belarus, and grew up in Gomel, Russia. Vygotsky’s theory, similar to Piaget’s is constructivist. However, Vygotsky focused on the interaction of social or interpersonal factors as the means of social development. Knowledge is created through children’s interaction with others. The zone of proximal development (ZPD) is classed as the difference between the level that the child is capable of independently achieving, and the level of achievement the child is capable of with assistance. To achieve this zone of proximal development requires guided participation. Therefore, younger children are able to learn from older children, meaning a mixed-aged child care setting may be beneficial.

---

17 Ibid, 8.
21 Bilton, Outdoor Learning, 30.
2.4 Architectural Devices to Enhance and Facilitate Movement

Visual Connectivity

Visual connectedness and transparency enhances the activation of movement between children. Coralee McLaren, Susan Ruddick, Geoffrey Edwards, Karl Zabjek and Patricia McKeever found that children and their movement are categorised as movement triggered through visual connections. Ninety percent of children in the study were observed to be triggered by others to move and join in activities, or observed mimicking movement. These activities were noted as more synchronous movement when it occurs in the path areas of the rooms. Concentration of visual connectivity is noted to cause higher occurrence of activation.

The authors suggest enhancing visual access to multiple spaces to trigger this type of movement. This theory is backed up by behavioural and neuro-physiological research, where perceiving an action, seeing someone running or dancing, activates representations of corresponding motor programs in the perceiver, classed as mirror neurons.

Visually connected activity centres, Lorraine Maxwell states, allow children to see play opportunities, as well as observation by caregivers.

Day suggests connecting room-world with the surrounding out-of-room-world and its goings-on through the utilisation of windows and transparency is essential. However, for attention focus, it is best if they are not viewing any activity. Similarly, children also need places of refuge and relief from stimulation.

Child specialists and studies have similar guidelines and recommendations for circulation paths, those of transparency and interconnectedness whilst maintaining the integrity of spaces for children to remain activity-focused and to allow places of recluse.

---


29 Ibid, 145-177.


33 Ibid, 21.
Perkins and Bordwell state that corridor and transition spaces should be viewed as extensions of activity spaces, rather than areas of pure circulation. They recommend avoiding long, straight hallways in favour of providing open transition spaces with nooks and alcoves for sitting, playing and displaying, whilst also providing visual connections to classrooms by utilising transparency. Day concurs, suggesting circulation space should have wider social areas and balconies to socially link different levels.

Day also states that circulation spaces allow communication and interaction as children bump into each other. Day suggests the spaces should be designed like streams, ‘eddy-space’ widening to the sides of the main current to invite stopping, lingering and sociability. Day also promotes rooms opening off halls and courtyards to allow a cohesive social feeling.

Gary Moore states that children’s exploratory behaviour and social interaction was increased in architecturally well-defined preschool settings, areas with clear boundaries separating circulation space and other behaviour settings. Moore specifies overhead elements (ceiling height, lighting or mezzanines) changes in materials or texture, or other furniture to imply boundaries and different behaviour settings.

Day states that too much movement flow through playspaces dominates, reducing the usability of the areas.

---

A Child’s Translation of Circulation Space

Christopher Day states that adults’ views differ from those of children, stating that adults often think in nouns, where circulation spaces are just links between rooms. Whereas children live in verbs and adverbs, where corridors are places where they are briefly free.

On a similar note, McLaren, Ruddick, Edwards, Zabjek, and McKeever state that open pathways not only allow walking from one place to another, but they also allow running, gliding, crawling and walking backwards. This can be viewed as the removal of classroom rules and the allowance of children’s desires to emerge: to escape and move beyond the physical limits of their environment and own bodies.

---

34 Day, Environment for Children, 21.
37 Perkins and Bordwell, Building Type Basics, 36.
38 Day, Environment and Children, 55.
39 Ibid 51.
40 Ibid, 54.
Circulation

Robin Evans argues against the typology of the thoroughfare for the rise of the matrix of connected rooms. The matrix of rooms prescribes a sequence of spaces one must pass through to reach the desired destination, resulting in the inevitability of intersecting paths, forcing social interaction. He states that corridors have “obliterated vast areas of social experience” as a preventive measure for segregation and privacy, by splitting the building into two areas, inhabited and unoccupied.

Evans also states that the corridor draws distant rooms closer, but only by disengaging those nearby. Evans argues that the matrix of connected rooms is suitable for an architecture arising out of the deep fascination that draws people towards others; an architecture that recognizes passion, carnality and sociality.

Francis Ching provides a description of types of circulation, including path-space relationship and form of circulation.

Ching states that pass-by space allows the space to maintain integrity and that mediating spaces can be used to link the path with the spaces, whereas patterns of movement and rest are created within pass-through-spaces. Spaces open on one side or both sides are viewed as physical extensions of the space they pass through/by.

Ching also suggests widening sections of corridors to create spaces for pausing, resting, or viewing, or merging it with the space it passes through. Whereas, narrow and enclosed paths encourage forward motion.

Herman Hertzberger suggests corridors should be learning streets, “originally a space for passing through is now a place to stay.” Hertzberger states that these spaces must have high visibility to arouse curiosity; he states this requires a balance of openness and visual connection, whilst maintaining a degree of protection.

49 Ibid, 283.
50 Ibid, 283.
51 Ibid, 283.
53 Ibid, 113.
Movement, More than Circulation

Peter Cook describes circulation as much more than just a linear issue. He discusses the poetics, and states it “concerns marking, pausing, and celebrating as much as any other ‘conditioner’.”

Cook describes two categories of circulation, the mundane, forgettable procedure of entrance to room, and the journey- a memorable and episodic experience, where you wish to escape the predictable room in favour of the discovery and ferreting provided by the circulation.

Cook argues for the design of circulation in three dimensions, the possible glimpse during the ascent, and the design according to the climb and descent, meander and dally, the fast pace, versus the slow path full of nooks and crannies.

Le Corbusier utilises an architectural promenade which is designed to promote an engagement from the explorer to the building and its meaning, whereby the architect choreographs a route designed to maximise anticipation and drama. In contrast Lebbeus Woods

utilises free-space, whereby the use-classification of the space is not predetermined, it can be classed as ‘useless’ or ‘meaningless’ space without hierarchy, where use and meaning is applied and created by the people who utilise it.

---

54 Peter Cook, Primer, (London: Academy, 1996), 52.
55 Ibid, 53.
56 Ibid, 58.
Bodily Participation

Kent Bloomer and Charles Moore also discuss the poetics of circulation, where “... our bodies and our movements are in constant dialogue with our buildings.”

Bloomer and Moore state that the built environment is a critical determinant of our range of movement, where we typically move in two axes, or one plane: walking and running.

Bloomer and Moore discuss how easily the built form sparks haptic interaction of the body-form in childhood and discusses childhood games such as hopscotch, and step on a crack which induces these responses. They state that for a building to encourage one into the realm of movement and inducing body response, we must be able to measure ourselves against it, and imagine body participation. They also explain that movement is most exhilarating when we can sense our movement in relation to another person on another path, making one aware of their "own movement by the periodic relation to that of another person. The architecture takes on more life and gives more as it becomes a stage for movement."

---

59 Bloomer and Moore, Body, 57.
60 Ibid, 59-61.
61 Ibid, 68.

---

Figure 2.9 Paths that view other paths to create periodic relationships between users. Above

Figure 2.10 Hopscotch lines inciting the body to move.
2.5 Derived Design Strategies to Encourage Movement

Located below is a summary of design strategies derived from the literature survey to encourage movement.

Pass-through-space and alcoves/nooks
To create play opportunities along a journey, enhancing interaction between children, and to activate trigger movement.

Pass-by-space
To create faster flowing movement. Transparency and visual connectivity should be explored if the spaces passed by are activity rooms.

Visual connectivity
To show play opportunities, to allow children to see a destination, and move towards it. To activate trigger movement and mirror neurons.

Variety of path types
Fast path- direct route and slow dally- indirect route. Where the slow path is a choreographed route designed to maximise anticipation and drama. The excitement of choosing one’s route.

Paths that view other paths
To enhance the experience of movement by sensing the journey in relation to someone else. To locate other play opportunities on other paths. To activate trigger movement and mirror neurons.

Visual connectivity to activate trigger movement
Visual connectivity of seeing another child playing and moving triggers the perceiver to move and join in activities, or mimic the observed movement.
Defined boundaries of activity and circulation space allow children to perceive the removal of activity rules. Similarly, children view corridors as verbs. These views result in the children feeling free, which will translate into their movement behaviour: crawling, running, gliding, etc.

No visual connectivity to focus attention

No visual connectivity aids in focusing attention.
3.0  Precedent Study

3.1  The High Line, Diller Scofidio and Renfro

The High Line, located in Manhattan, New York, is a raised pedestrian walkway and community park built on a historic freight rail line nine metres above street level. The park utilises multiple access points, and four elevators. The number of access points increases the convenience and usability of the park.

The High Line is an alternative walkway from the pathways located beneath. The community park contains a variety of forms and spaces, with landscaping used to define paths and activity spaces, pockets and lawns for lingering, and narrow spaces for pedestrian flow.

The stairs on the 18th Street Plaza section of the High Line, a balustrade is used to delineate space, separating fast flow from slower dallying and lingering pedestrians. The fast flow lane is narrower and linear in design, whereas the slow path is wider and contains activity spaces, such as seating that invite people to take their time.

Being elevated above ground creates a ‘removed from the city’ feeling and is more child-friendly.

Figure 3.1  A child walking independently along the High Line.

Figure 3.2  18th Street plaza, fast path left, slow path right. Top
Figure 3.3  Planting defines paths and activity spaces. Top
Figure 3.4  Planting defining multiple pathways. Middle
The High Line utilises transparency and visual connections to present opportunities and encourage participation and movement along the High Line. The stairs are designed to provide a gradual transition from the noisy streets to the tranquil parklands above and add to the overall journey of the High Line. The balustrades also utilise this transparency. The perimeter balustrades are mostly original with a wire mesh attached to meet safety standards.

The realm beneath the High Line is an important consideration. However, it does not necessarily portray good design as it is a reuse project, originally built in the 1930s. In some places the High Line has a negative contribution to the spaces beneath, typically where it runs parallel to the path below. Less of an impact occurs when the High Line is perpendicular to the footpaths, as shadowing is reduce. Orientation would also play a major role.
3.2 AUT Sir Paul Reeves Building, Jasmax

AUT Sir Paul Reeves Building, Auckland, New Zealand, completed in March 2013, is a 12-storey tower, and glass roofed atrium. The building provides a variety of spaces, both public and private. The publicly accessible areas are located on levels 2-4 and are of most interest for this project.

The columns in this building act as space defining elements. The walls are set back from them, creating space and places of lingering. In a similar manner, the path space on level four widens to create use spaces and encourages lingering within the circulation space, similar to what Day suggests.

The design also utilises interrelating systems of space and movement, allowing periodic relationships between different students as they move through the building, becoming, as Bloomer and Moore states, a stage for movement.  

64 Bloomer and Moore, Body, 68

Figure 3.10 Column helping define alcove space. Above
Figure 3.11 Atrium space.
Figure 3.12 Level 4 plan. Blue void, red stairs, ramps escalators. Top
Figure 3.13 Level 3 plan. Bottom
3.3 Maxxi Museum, Zaha Hadid

Maxxi Museum, Rome, Flaminio Italy, completed in 2009. The Maxxi Museum is an art gallery, requiring a focus on the movement of patrons. This movement focus is highlighted by the dominance of floating black staircases. The main area of interest is the entrance hall, which forms an atrium three storeys in height, with open staircases seemingly suspended in the air.

The design of the pathways and flows creates an architectural journey of discovery and anticipation. Visual connectivity and interconnectedness is achieved through the use of layering flows and pathway with voids. Where they overlap and connect, dynamic interrelating spaces are created, successfully linking levels and creating periodic relationships between patrons, as defined by Bloomer and Moore. This design tool could also prove to encourage and trigger movement, creating a playful and movement orientated typology.

The downside of the movement system is the regular path widths. Day suggests the circulation spaces should be designed like streams, ‘eddy-space’ widening to the sides of the main current to invite stopping, lingering and sociability. Therefore, this constant width encourages passage, but not lingering.

The balustrades of the Maxxi Museum are solid. However, this is juxtaposed with the stairs risers, which are open, flaunting a silhouette as a patron moves along them. The height of the balustrade also blocks the patrons from view on the upper levels, which adds to the contrast of enclosure and solid opaqueness with visual connectivity in the stair risers. This creates contrasting experiences, adding to the excitement and inducing the patrons to become explorers.

Figure 3.14 Plan of path width, people negotiating lingerers. Left

Figure 3.15 Open risers flaunt the silhouette of patrons moving along them. Above

Figure 3.16 Interrelationship between different paths. Top right
The paths split allowing the patrons to choose the path way they wish to take. This could add to the journey, creating an elevated experience. The patrons are also required to move around the building to reach their destination, with few short cuts, creating a ferreting, journey type experience, which Cook favours rather than the mundane procedure of entrance to rooms.63

63 Cook, Primer, 53
Figure 3.17 Direct view of journey, indirect route. Top
Figure 3.18 Plans of splitting path, showing the extended journey and relationship to start position. Bottom
Figure 3.19 Layering of movement systems in entrance hall to show interrelationship
Figure 3.20 Paths in voids. Top right
Figure 3.21 The entrance hall showing void space and movement systems. Bottom right
3.4 Ring Around a Tree, Tezuka Architects

Ring Around a Tree is a separate building added to the existing Fuji Kindergarten, Tokyo, Japan. Located adjacent to the existing kindergarten it provides an additional 145m², including classrooms, as well as a waiting room for the bus stop. As a secondary building the design utilises the service facilities of Fuji Kindergarten, and can be described as a dual-purpose building, one integrating play and education.

The building is five metres in height, appearing to have two floor levels; which contain the classrooms. The stairs/outdoor areas are dimensioned for children, creating a volume that has six floors. The spaces range in scale, some crawl spaces, around 600mm, to a standing height of 1200mm. The spaces are connected by stairs. These spaces allow children further freedom of movement, promoting the body and movement as a tool for learning. As Bloomer and Moore discuss, the architecture becomes a stage for movement.

66 Bloomer and Moore, Body, 68

Figure 3.22 Classrooms left, stairs which vertically connection, and double as a play space, right.
The two classrooms are located stacked above each other on the two adult sized floors. The playground style vertical connection of six volumes connects the two main levels. The design utilises the idea of blending activity and circulation, where the circulation realm takes in the idea of verbs and adverbs, like Christopher Day discusses, creating a journey and an experience, like what Peter Cook suggests, rather than a mundane procedure.

The design utilises full transparency, every wall is glazed. Thin metal balusters enhance the visual connection of the outdoor spaces, but also create a constant experience.

---

67 Day, *Environment for Children*, 21
68 Cook, *Primer*, 53
3.5 Children’s House Dragen, CF Moller Architects

Children’s House Dragen is a two storey childcare centre located in Odense, Denmark. The stairs and ramps within Dragen are noted to challenge children’s senses and motor skills.

The ramp, at a very steep incline, does not provide access to the upper level and is closed off by a balustrade. Internally, access to the upper space is achieved via the stairs. The balustrades are also glazed planes, providing visual access for the young children. However, once again, the experience is a constant, due to no variation.

This space is centrally planned, around a common area, in a cluster typology (see Appendix 9.2 for further discussion on spatial planning typologies). Vertical visual connectivity is achieved by designing this common space as double height. A pathway around the periphery of the void gives access to the surrounding classrooms. The adult oriented rooms are grouped and located along the rear of the building on the lower level.

Figure 3.26 Atrium, showing lack of visual connectivity to the cluster space.
Cluster typologies concentrate all the movement within a central area, and radiate towards the associated spaces, this typology has the capability to allow good visual connectivity. However, the lack of transparent wall treatment of Dragen centre means there is no visual connection between the classrooms and the double height common space. This lack of transparency is due to the spatial planning and orientation, where the classrooms face towards the outside wall, and the interior wall adjoining the common space housing the toilet block. This lack of connection increases the enclosed feeling of the space, and isolates each room.
3.6 Derived Design Strategies to Encourage Movement

Located below is a summary of design strategies derived from the precedent analysis to encourage movement.

Choice of pathway
Allowing the user to select the pathway and journey, not only adds convenience, but could also add to the overall experience.

Form of pathway and integration of activity
Could be determined, internally, by balustrades and walls, externally by planting. Incorporating activity would mean that children would utilise the circulation, not only to move between spaces, but also to play.

Cluster spatial planning
This central planning, if transparency of the bounding spaces is designed for, will enhance visual connection. If designed full height this central space will also vertically link the building.

Direct view of destination, indirect journey
The direct view of destination allows children to choose to make their way there. The indirect pathway extends the path taken, creating the possibility of an enhanced experience, where it becomes a journey.

Voids/Visual Connectivity/paths that view other paths
To visual connect multiple levels. This interrelationship between levels allow children to locate play opportunities, activate trigger movement, and mirror neurons, as well as enhanced experience of movement by sensing the journey in relation to someone else.

Figure 3.32-3.38 Derived Design Strategies to Encourage Movement.
4.0 Physical Context
4.1 Site Location

The site is located within Auckland City Centre, in Victoria Precinct. The site, 206 Victoria Street West, is currently occupied by the Victoria Park Market car parking building. This project seeks to utilise and retrofit the existing structure. The site is bordered to the north by Victoria Street West, Drake Street on the southern side, Wellesley Street to the east and the Victoria Park Market to the west. To the north of Victoria Street West is Victoria Park.

4.2 Selection Criteria

The education, care and recreation of young children are typically determined by parental work patterns. Early childhood care and education facilities are typically located nearby parent’s workplaces, homes or transport routes.

This site has been selected for the following reasons:

- Predicted urban family housing development in Victoria Precinct. Therefore, close proximity to the homes of children
- Residential population predicted to experience the highest increase by 2031 in the City Centre
- Located on the western city fringe. The Masterplan identifies this area as a place of urban family living
- The proximity of the site to recreational opportunities, Victoria Park
- Public transportation: city link, inner and outer link, northern
- The site orientation is desirable, with an east-west elongation
4.3 Site and Context History

The site location was the former foreshore and headland of Freemans Bay. This area was reclaimed between 1875 and 1879, forming the site of the car park and Victoria Park Market.

To the west of the site was the Municipal Destructor and Depot, built 1905-1918, with operations fully ceasing by 1972. The land and the buildings were sold in 1984 and retrofitted as Victoria Park Market. The car parking building was constructed in the 1980s to support this change of use.
4.4 Site and Context Demographics

Auckland Central West housed 7,986 residents, with a median age of 26 years, in the 2006 census. The estimated residential population in 2010 was 10,400. This is expected to double by 2031 to 20,100, resulting in the highest residential population within the City Centre.  

The age distribution recorded in the 2006 census was 3% under 14 years, 60% were aged between 15 to 29, and 29% 30-55 years, and 8% over 55.

The largest portion of people living within Auckland Central West is couples without children, at 75.6%, whereas the Auckland region is 34.8%. The remaining 24.4% have children, 10.8% of these families are single parent.

---

4.5 The Envisaged Auckland City

The Auckland City Masterplan sets the Auckland City Centre’s vision for 2032. The residential population is expected to double to 45,000. 72

The Masterplan vision is to create a liveable city and to increase the number of child residents within the City Centre. 73

Currently there are nearly 2,000 children residents within the City Centre, less than 1% of activities recorded within the City Centre involved children playing. 74

To encourage a growing child population within the City Centre, the Masterplan includes the development of new play parks, incidental play opportunities and child activity centres. 75 Parks, urban spaces, streets and the waterfront will incorporate playscapes, sports and recreation facilities for all ages. 76 The Masterplan drives the notion for the City Centre to become the region’s biggest playspace. 77 However, figure 4.8 is the only image within the document showing a ‘child focus’ by incorporating a tiny play structure a few metres from Hobson Street, a busy motorway feeding street, currently consisting of five lanes.

The Masterplan also addresses pedestrians, or the lack thereof, and focuses on improving the pedestrianscape through shared space, improved intersections, lowered speed limits. 78

---

73 Ibid, 54
74 Ibid, 54
75 Ibid, 54
76 Ibid, 57
77 Ibid, 57
78 Ibid, 52

---

Figure 4.8 City Centre Masterplan Hobson Street playground. Top
Figure 4.9 City Centre Masterplan Victoria Street Green Link, improved streetscape. Bottom
4.6 Urban Analysis

Victoria Quarter

Victoria Quarter, located on the western edge of the city, bordered by Hobson, Fanshawe and Union Streets is currently a mixture of residential and commercial uses. The vision for this precinct is to become a vibrant, quality urban community, with a mixture of residential and commercial uses. The residential typology will include urban family living.

The Masterplan envisages transforming Victoria Street or Wellesley Street into a “high-amenity Green Link” that will connect Albert and Victoria Park. For this project, Victoria Street has been selected to incorporate the Green Link.

The Green Link emphasises a pedestrian priority with wider footpaths, fewer lanes for cars and a slower speed limit.

---

79 Auckland Council, “City Centre Masterplan”, 63
80 Ibid, 101
81 Ibid, 156
82 Ibid, 159

Figure 4.10 Victoria Quarter and the Masterplan proposed Green Link connecting the city’s parks.
Victoria Park

Victoria Park is the only active recreation area within Auckland’s City Centre. Currently, Victoria Street West isolates Victoria Park and acts as a barrier to pedestrian movement. An opportunity exists to improve the pedestrian linkages with the surrounding areas, including Victoria Park Market, and the current location of the car park.

Victoria Park Markets

Victoria Park Market has recently been redeveloped to provide a destination place for people within the area. This will increase the pedestrian activity within the area once development is complete.

Walking Distances

Figure 4.11 shows 10 minute walking distances. The central ring represents a slow 3-5 year old, the next shows the distance travelled by an average 3-5 year old. Lastly, is an average adult travel distance. It creates an understandable area the site can serve utilising pedestrian movement and locations where the family home may be located. The distance travelled was calculated using timed children’s stride and the distance travelled.

Current Licensed Early Childhood Education Services

Figure 4.12 shows the location of licensed early childcare education services within the site vicinity. The site proposed is in close proximity to other centres. However, with the increase in residential activity in Victoria Precinct and Wynyard Quarter the location is justified. The closest child care centre is Les Mills Kids Club, located further east on Victoria Street West, which is a two hour session type care, and is not direct competition with the proposal.
Vehicular Use

Victoria Street West is currently a six lane, district arterial road that feeds cars to the northern motorway on-ramp and College Hill. During peak times Victoria Street West is highly congested, whereas Drake Street remains quiet. Over a seven day period around 24,000 vehicles travel along Victoria Street West.²⁶

The site is adjacent to a five way intersection, with Victoria Street West, Halsey Street, Wellesley Street West, Vernon Street and Drake Street, as well as two laneways located to the south, Adelaide Street and Centre Street. The lack of separation between the traffic lanes and the foot path makes Victoria Street West not ideal for young children.

In the 2001 to 2005 period, pedestrian related fatalities was ranked the third highest cause of death in child injury related fatalities.²⁷ An arterial road poses an increased risk to children, 55% of child pedestrian injury rates occurred on arterial or major roads, whereas 25% occurred on local roads.²⁸

---

Pedestrian Use

Victoria Street West is a popular route for pedestrians and is a major commuter walking route from Freemans Bay, Ponsonby and Herne Bay. Victoria Park Market has been extensively refurbished, and is likely to become a destination within Victoria Quarter. The most convenient route from the City Centre to Victoria Park Market is either through the car parking building or along Victoria Street West.

The route through the car park is undesirable. The car park currently acts as a deterrent and isolates the market from the city to the east. Currently the western portion of Victoria Park Market has high pedestrian usage and flow, whereas the eastern side is in the final stages of restoration and is not currently tenanted. Once tenanted, the pedestrian flow within the area will be substantially increased.

To provide access to the markets from Drake Street a stair is located on the southern side of the car parking building. The positioning of the stair makes it visually inaccessible, reducing its use. The stairs are currently in poor condition and are closed.
Conclusions Drawn from Urban Analysis

As a result of the site selection, the following aspects summarise the most important design opportunities and influential factors of the site context:

- The potential connection of the site to Victoria Park through an intervention across Victoria Street West
- The potential connection through the site, allowing Victoria Park Market to connect better to the city
- Redesigning Victoria Street West to incorporate the Green Link
- Increased pedestrian flow due to a predicted increase in residential population
4.7 Site and Building Analysis

The site area is approximately 1,600 m². The car parking building has a footprint of approximately 1,000 m². It was constructed circa 1984. Its current condition is average and appears to have received little maintenance. The building in its current state does little to enhance the area.

The rectilinear building is five levels and consists of column and beam structure, with double tee flooring. The building consists of low floor to ceiling heights of 2.2 metres on levels one to three, the ground level ceiling height is approximately 3.2 metres and level four is an open air top level.

The building consists of deep floor plates of approximately 18 metres and has poor natural lighting.

The structure of Victoria Park car park is planned to be reused and adapted to suit this project.

Approaches

As stated earlier, the site is adjacent to a six way intersection, Victoria Street West, Halsey Street, Wellesley Street West, Vernon Street and Drake Street, as well as two laneways located to the south, Adelaide Centre Street.

The building acts as a visual barrier to Victoria Park when approaching from Vernon and Adelaide Street.
Figure 4.23 Location of views. Top left
Figure 4.24 Adelaide Street- building blocks visual connection to the park. Bottom left

Figure 4.25 Vernon Street view- building blocks visual connection to the park. Top centre
Figure 4.26 Wellesley Street West view. Bottom centre

Figure 4.27 Victoria Street West view from the west. Top right
Figure 4.28 Halsey Street view. Middle right
Figure 4.29 Victoria Street West view from the east. Bottom right
Existing Building Circulation

Figure 4.30-31 is a positive/negative model highlighting the circulation space. The negative space is the use space, or the buildings car parking spaces, whereas the modelled area shows the spaces which the cars and pedestrians utilise as circulation.

The existing pedestrian circulation is confined into two stairwells located at either end of the building. These towers do not receive direct light or outlook. The towers do not create an experience; rather they are reduced to utility, providing pedestrian movement in the vertical axis.

Both vehicular and pedestrian movement within the site is stacked. There is no vertical integration of circulation, which is not ideal according to literature findings, where visual connectivity is important.
The following aspects summarise the most important design opportunities and influential factors of the site context:

- The building does not utilise the full site
- The floor plate depths require design to allow light into the centre of the building
- The circulation within, and access to, the building requires improvement
- The topography of the site allows for two levels accessing ground level
- The ability to redefine what is grade or ground level is due to the reclamation
- Viability of visual connectivity from Adelaide and Vernon Street to Victoria Park to connect the wider context

Topography

The southern site boundary on Drake Street slopes up four and a half metres towards the west and is likely representative of the original sea cliff. The highest point in the southern boundary, Drake Street, is supported by a retaining wall six metres tall. Ground level of the site is at a constant with the northern boundary of Victoria Street West as typified by the early reclamation activity.

Figure 4.33 Contour model. Top
Figure 4.34 Contour model. Bottom
5.0 Design Process

5.1 Programme

This project explores two different scales of design:
- Child care centre
- Urban planning

The movement systems are a common element in both the centre and the urban planning and act to bind them together.

Child Care Centre

The child care centre will operate as a seven day, community-based, mixed age early childhood service to provide care for children aged two to six years old.

Early childhood centres appear to be set up around two different care based strategies, age stratification and mixed age. Age stratification segregates children into rooms according to age, where differing activities and functions are located in the corners of each room. Alisa Densem and Barbara Chapman state that this grouping classes by age system, helps simplify administration, but also allows the centre to provide particular learning environments which cater for age related learning needs.89 Lilian Katz, Demetra Evangelou and Jeanette Hartman argue that this focus on chronological age ignores the development and learning readiness of a child.90 Additionally, age divided rooms result in stagnant circulation routes due to access restrictions to other rooms. This type of system is not appropriate for this project, where the built environment must encourage and facilitate movement.

A mixed age centre enhances zone of proximal development. Similarly, younger children are able to learn through mirror neurons by watching more capable children moving. Also, by providing an environment programmatically accessible for the children to explore, the children have the ability to move and experience more than in age confined rooms, reinforcing movement.

The lack of grouping, programmatically, puts more importance on the movement systems, which children utilise to move between activities rooms. This also creates the idea that some of the centre’s curriculum is located within the movement systems. These connective spaces become a space of learning, rather than just providing a route.

Spatial Requirements:

- Adult Oriented:
  - Office
  - Staff facilities
  - Meeting room
  - Laundry
  - Kitchen
  - Storage
  - Reception

- Child Oriented:
  - Quiet room
  - Nap room
  - Common area
  - Activity rooms
  - Toilets and changing facilities
  - Outdoor areas
  - Movement systems

Urban Planning

In exploring the potential of architecture to encourage and facilitate movement the notion to contain movement within the site disregarded this idea. The project was expanded to investigate movement concepts between the site and its surroundings. By utilising this approach the quality of the urban environment will be enhanced for all residents, not just the users of the centre. The projected increase in population density within the site context supports these urban moves.

The visual connection between the public realm and the private realm can create interaction, and encourage children to move within their spaces to observe and mimic the public realm.

Spatial Requirements:

- Enhanced pedestrian connections to and from the centre

---

5.2 Phase One- Initial Concept Investigations

The initial design exploration looked at keeping as much of the existing car park structure as possible, including the ground level ramp located on the Drake Street façade. It also utilises the entire building, except for the ground floor, as the private child care centre. The ground level would be an extension of the public realm, consisting of retail and plaza areas.

Urban Planning

The design builds on the Masterplan’s Green Link concept. This concept has been extended along Victoria Street West at ground level, widening the footpath, and narrowing the carriageway to two lanes.

The existing roading network acts as a barrier, isolating Victoria Park. The Green Link concept provides an opportunity to create improved connections within the context, especially to Victoria Park. As mentioned earlier the conjunction of Victoria Street West, as a main arterial road with a high flow of cars, the disconnection of Victoria Park, the Green Link, as well as the projected increase in population density, and therefore increase pedestrian activity, are strong indicators a connection would be beneficial, and would facilitate and encourage movement.

This exploration does not address Vernon and Adelaide Street visual disconnection to the park. Also, the reduction of Victoria Street West to two lanes does not seem a viable option due to the high traffic flow within the area.
Centre Planning and Design

The Victoria Street West ground floor of the building is retail tenancy. This would likely increase the pedestrian activity located around the building, and can be seen as an extension of Victoria Park Market.

The topography of Drake Street means that there is a secondary ground level entry off Drake Street on level 1. This entry off Drake Street for the centre is more convenient than Victoria Street West due to the lower traffic flow, which poses a lower risk to children. Level 1 is utilised as ‘adult’ zones of the centre and provides for administration and service areas.
This exploration utilises the cluster spatial planning approach, with a central piazza or common area, this space is a double height atrium. The movement systems have been designed to bridge over this area to connect each floor, both physically and visually, similar to the approach of Zaha Hadid’s Maxxi Museum.

The upper levels house the child oriented areas, the outdoor space is located on the roof space. This shows a disconnection from the ground plane and is seen as a disadvantage. Likewise, the utilisation of the rooftop space as outdoors organisationally provides another space that needs to be staffed and observed. This is also a disadvantage.

The existing building is also out of scale with the neighbouring market buildings, especially the depot buildings.

Figure 5.5 Ground level- retail.
Figure 5.6 Level One- Care centre lowest level. Top right
Figure 5.7 Level Two- Care centre. Middle right
Figure 5.8 Level Three- Care centre. Bottom right
5.3 Phase Two- Park Connection Exploration

As a result of the initial response, exploration into a pedestrian connection to Victoria Park to encourage and facilitate movement was begun. The park is currently isolated by roads.

Existing Connection

- Carriageway acts as a barrier, and isolates Victoria Park and emphasising traffic
- Victoria Street West, two lanes each way, plus a bus lane and one side of parking
- Poor streetscape

Connection 1 - The Green Link Masterplan

- Lower emphasis on traffic
- Carriageway still acts as a barrier and isolates Victoria Park
- Victoria Street West reduced to one lane each way
- The reduction in road width allows investigation of shared space (could also apply to Drake Street). The widened footpath allows ‘safe zone’, ‘intermediate zone’ with furniture or planting and a shared ‘vehicle way’
- Improved streetscape through planting and widened footpath
- Allows car parking at ground level

Proposed Connection 2

- Lower emphasis on traffic
- Carriageway still acts as a barrier and isolates Victoria Park
- Victoria Street West reduced to two lanes each way, widened footpath
- Improved streetscape through planting and widened footpath
- Allows car parking at ground level

Proposed Connection 3

- Reduced emphasis on vehicles by locating them underground
- The streetscape is pedestrian focused
- Drake Street and Victoria Park connected- carriageway no longer acts as a barrier
- Drake Street designed as shared space
- Reduced car parking and difficulty of car park entrance
- This connection is unachievable due to the length of road required


Figure 5.9 Existing Victoria Street West and Drake Street, Top right
Figure 5.10 Masterplan proposed Green Link. Second from top right
Figure 5.11 Reducing lanes proposition. Second from bottom right
Figure 5.12 Tunnel proposition. Bottom right
Proposed Connection 4
- Lower emphasis on traffic by stratifying pedestrians and traffic
- Change in levels restrict people flow and usability
- Ground level streetscape need to be addressed for the pedestrians, and the effects mitigated in design
- Drake Street and Victoria Park connected—carriageway no longer acts as a barrier.
- Drake Street designed as shared space
- Allows the car parking ground level

Proposed Connection 5
- Drake Street to Victoria Park connection creates useable plaza
- Streetscape is pedestrian focused and encourages movement that is not dictated by lights, or traffic
- Drake Street is connected to Victoria Park—carriageway no longer acts as a barrier
- Mitigates the negative effects of a busy road by creating two interrelating system of movement to separate the different means of movement, vehicular and pedestrian

Conclusion
From the initial concept investigation design connection 5 has been selected for more in-depth exploration

With the projected population increase, (the 24,000 vehicles that travel this stretch of road per week) as well as the location of “attractors” (Victoria Park, the markets, and the centre) this north-south connection, which separates pedestrians and vehicles, is preferable. This stratification reduces the pedestrian accident risk, reducing the threat to child pedestrians.  

The connection allows the building and site to become a node within a wider movement pattern. The pedestrian orientation of the connection helps humanise the area. The northern orientation of the connection suggests it could be utilised as a lingering space, a more relaxed feel than the ‘active’ park.

The bridging utilises the existing level 1 floor level. The road is required to be higher than the 4.25 metre maximum vehicle height. Therefore, the road level requires lowering 1.5 metres.

Connecting to the Park

The connection was initially explored as a single mass, a plaza, spanning the full width of the building, as well as the extended corner, integrating public and private (centre) movement to the park. The initial plaza was noted as too large and did not consider the carriageway located beneath.

The second exploration investigated the idea of varying widths to determine the use of the space; it also improves the streetscape of the carriageway beneath. This presents the opportunity to explore two connections, a public connection and a private connection. The latter could be used as an outdoor playspace for the centre. This requires exploration.

Both investigations removed pedestrians from Victoria Street West and made them walk up, along the raised plaza. After this exploration, this has been considered disadvantageous as it extends the journey for some commuters.

Therefore, further exploration of Design Connection 4 approach is required, where the pedestrians are able to cross the road to the park via a bridging system whilst retaining pedestrian activity along Victoria Street West.
5.4 Phase Three-Urban Planning

Addressing Space Left Over After Planning

Similar to the first phase, the corner of Victoria Street West and Wellesley Street West has been extended to mitigate the space left over after planning within the intersection, including the some of the large island located directly east of the site. By integrating this space into the site, the land gains more use value, enhancing the urban fabric of the city.

This manoeuvre requires the road layout to be addressed, resulting in the turning lanes from Drake Street to be relocated to the east. Victoria Street West has also been narrowed down to four lanes to allow the integration of the Green Link. These design moves follow the Auckland City Centre Masterplan. Auckland Council in the Masterplan showed Victoria Street West as a two lane road. However, due to traffic congestion, this was deemed inappropriate. The narrowing of Victoria Street West also prioritises pedestrian movement and provides space for the footpath to be widened.

94 Auckland Council, “City Centre Masterplan”, 159

Figure 5.17 Urban planning.
Redefining Form

The building form was derived from site and building analysis. The building currently acts as a visual barrier, visually blocking the park from Adelaide and Vernon Streets. Visual connectivity is important for people to locate play opportunities. Reid Ewing and Keith Bartholomew state that spaces should be highly accessible to pedestrians, which includes linking visually through sightlines. Therefore, it is highly desirable to link these streets to the park and provide a pedestrian connection.

This also reduces the size of the building, reducing its overall scale; however, comparative to other buildings within the site vicinity the massing is still very large. This ‘breaking down the grain’ would need to be investigated in the form and planning of the building. This reduction in floor-plate would require remedial strengthening of the existing structure as well as additional structure to support the building.

The public connection acts as a pedestrian extension from Vernon Street, linking Victoria Precinct to the park. A stair located on the eastern side of Victoria Park Markets, as an extension of Adelaide Street, connects the markets to the city, as well as creating a public square. This would create a hub of activity and could create an interesting relationship between the public realm and the private centre.

These design manoeuvres of pedestrian access to the courtyards and Victoria Park Market and visually connecting Adelaide and Vernon Streets correspond to the Auckland Council’s Victoria Quarter plan.

Two Grids

The existing car parking building has a rectilinear grid of columns and double tee flooring. By altering the building’s form to allow visual connectivity from Adelaide and Vernon Streets to Victoria Park the building takes on another rectilinear grid, that of the buildings on the southern face of Drake Street.

This skewing of the building respects the building grid located directly behind the site. Also, by allowing the building to sit on the boundary line, the same architectural language is utilised as the southern boundary buildings of Victoria Park Market. This also aids in contextualising the building from its former ‘distinct’ form.

This secondary grid brings architectural opportunity to the planning of the building and allows for the design of obtuse angles.
5.5 Phase Four- Centre Planning and Design

Similar to Phase one centre design, this exploration exploits the contours of the site, allowing the stratification of public and private, whilst maintaining a connection of the centre to ‘ground level’.

Retail tenancy is located on the Victoria Street West ground level and the child care centre is located on Drake Street ground level, or level one.

Figure 5.21 Cross section of the proposed concept.
Concept Development- Modelling of Floor Plates and Voids

This study was undertaken to analyse and explore the building in three dimensions. This approach was deemed appropriate as circulation, especially in this project, is much more than just a linear issue, as the complexity of levels requires a holistic, three dimensional approach.\textsuperscript{97}

Critique of Model Exploration

Figure 5.27 was the most successful, due to the interrelationship of floor plates. This model has been selected for future exploration.

The downside to this exploration was the small scale and focus on the ‘feel’ of the interrelating spaces, rather than a functional exploration. The three dimensional approach has allowed the floor plates, voids and circulation to be designed holistically and interrelate, creating a choreography between the levels.

These models do not address the original grid of the existing columns.

\textsuperscript{97} Cook, Primer, 52
Interrelationship of Levels

This study was a direct result of the implication of the small scale approach of the previous study of floor-plates. This study explores visual connection between levels and the degree to which these can occur.

Critique of Model Exploration

Each of the explorations have both advantages and disadvantages and would suit different areas of behavioural expectation due to the variety of visual connectivity. They require to be explored holistically within a design.

Figure 5.31 is the most successful due to the visual connectivity between floors; however, an exploration into balancing use space and voids is required.

Figure 5.28 Constant floor line reduces visual connection. Top left
Figure 5.29 Slight step in floor line increases visual connection. Bottom left
Figure 5.30 Step in floor and void enhances visual connection. Top right
Figure 5.31 Irregular floor plates enhances visual connection. Bottom right
5.6 Phase Five- Centre Design Development

This design utilises the findings from the phase four model explorations of floor plates and voids, and interrelationship of levels and has been applied at a larger scale to address the two grids as mentioned earlier. Lessons from the phase one initial concept have also been implemented.

Spatial Planning

Similar to phase one, the Victoria Street West ground floor is retail tenancy. Activating the street’s edge, and encouraging pedestrian movement.

The centre’s cluster spatial planning and entry off Drake Street has also been continued in exploration from the initial phase.

The adult focused services have been located along the southern spine and the centre’s office located next to the entrance, providing observation and security. The child focused spaces are located in the more advantageous northern position on this level and receive natural light. The location of the child oriented spaces on level one enhances the connection to the ground level of Drake Street, as well as providing access to the outdoor playspace and private connection to Victoria Park.

The full height common area acts as the central cluster space, with movement systems intersecting the space above, both physically and visually connecting all levels. This creates interesting, interrelating systems of movement and paths that view other paths. The quieter zones are more removed from these spaces to retain integrity.

The rectilinear planning is generated from the two grids. This planning is backed by Aldo van Eyck’s theory of elementary forms, in which he states that primal, elementary forms stimulate the imagination, where children are able to apply their imagination. Likewise, the built environment is generally rectilinear, therefore the types of spaces within the centre relate to the spaces outside.

The movement systems have been spatially planned and located. The overlapping and interrelationship between the movement systems are preferable, lower level systems are coloured in fading red. However, the route on level three is unnecessarily long, creating large areas requiring observation, which is not preferable. Not enough attention has been placed on these design elements. They require exploration in three dimensions to realise their potential.

Francis Strauven, “Neglected Pearls in the Fabric of the City,” in Aldo van Eyck: The Playgrounds and the City, ed. Liane Lefaivre, and Ingeborg de Roode, (Amsterdam: Stedelijk Museum, 2002),70
Private Connection

A private centre connection has been designed above Victoria Street West and provides an outdoor playspace as well as a connection to the park. This secondary bridge creates an interrelationship between Victoria Street West, the vehicles and pedestrians, as well as to the pedestrian public bridge located to the east. The exploration of the bridge included form and voids.

In the initial exploration the bridge is constant in width, and moves away from the public bridge. This creates poor interrelationships between the public and private bridge, as well as to the realm below.

The second exploration flares towards the park and improves the interrelationship to the public bridge, but not to the realm underneath, which is a disadvantage.

The third exploration utilises voids, which visually connect to the realm below, enhancing both the pedestrianscape as well as the interrelationship.

Figure 5.35 Bridge exploration 1.
Figure 5.36 Bridge exploration 2.
Figure 5.37 Bridge exploration 3.
5.7 Phase Six- Movement Systems Exploration

All movement systems were initially approached at a small scale or in plan, reducing the opportunities in design, defining a more planar route. A different approach is required to explore the movement systems as a network of sequential, orchestrated experiences, as well as an understanding into visual connectivity and how visual connections can incite the body to move.

Visual Connectivity

The movement systems have been identified as important to enhance and facilitate movement. Likewise, visual connectivity has been noted to aid this through trigger movement and locating play opportunities.

Young children are small in stature, the 5th and 95th percentile heights of two to six year olds range from 850mm to 122cm, with standing eye levels of around 740mm to 1170mm. A standard handrail height is between 900-1000mm. The design of the balustrades is incredibly important. If they are solid they act as a visual barrier, which is highly undesirable. A seated eyelevel ranges in height from 380-570mm.


Figure 5.38 Plan- Solid balustrade blocks visual connections. Top
Figure 5.39 Section- No visual connection. Bottom
A fully glazed balustrade allows full visual connectivity; however, there is no episodic experience where the journey and visual connection have little interdependence. The question here is- how can frozen architecture induce the body to move?

Figure 5.40 Plan- Glass balustrade allows visual connection. Above Figure 5.41 Upper glazed section allows partial visual connection. Top right Figure 5.42 Half glazed allows partial visual connection for both sitting and standing. Center right Figure 5.43 Fully glazed balustrades allow full visual connection in any body position, and does not necessarily incite movement. Bottom right
Inciting the Body to Move

Bill Hillier states that children are space explorers, not intent on everyday goals, “but whose spatial purpose are essentially about discovering the potential of space,” Hillier cites the game of hide and seek as an example of this. 100 Similarly, Hillier states that “space does not direct events, but it does shape possibilities.” 101

Bloomer and Moore discuss the relationship of the body and built form in childhood games. 102 Cook also discusses the excitement of the possible glimpse whilst ascending and descending, an episodic experience. Likewise, Le Corbusier explains the architectural promenade, a choreography to maximise anticipation and drama. 103

Combining these views highlights the potential between the design and choreography, the potential of design and inciting a body response movement.

Exploration One

This looks at the how ‘windows’ can be interrelated to line up at certain points in the path to achieve partial or full visual connectivity. When the body moves, so does the visual connection. Therefore, the body’s position has a relationship with the built form. In order to see, one must move. Also, as one moves the viewpoint changes and so does the visual connection achieved, inducing movement.

101 Ibid, 206
102 Bloomer and Moore, *Body*, 59-61
103 Samuel, *Le Corbusier In Detail*, 127-165
Exploration Two

Like the above exploration, vertical and horizontal louvres also create a relationship between movement and visual connectivity. Vertical louvres create an episodic experience when moving along a horizontal plane, whereas horizontal louvres affect the visual connection achieved in the vertical journey.

Exploration Three Series

This exploration looks at placing glazing within the balustrade and how differing heights and locations require the body to respond.

Low glazing would allow low angle viewing whilst standing, creating visual connectivity to the space directly below. It could also induce the child to drop to the ground to achieve a better view and also allow people on the lower level to view the legs of those walking past.

Mid height glazing, vertically placed at the height of a child’s torso, would require a bending movement to view horizontally and also, when viewed from below, view the child’s upper body.
Exploration into the opacity of the visual connection was explored. What could happen when you utilise both opaque or translucent glass and transparent glass? If obscured glass is utilised at eye level, and transparent glass below, this could induce the child to bend down to view. Also, the person viewing the child within this space would have a blurred or crisp view of the explorer.

The left window (figures 5.58-59) and right window (figures 5.60-61) have been explored in section. The dark grey represents the vision cone of the transparent glass, and the light grey the translucent, obscured view.

The final exploration investigates glazing that changes with the journey, requiring differing bodily positions to achieve a view out whilst moving.
5.8 Phase Seven - Movement Systems Development

The stairs, ramps and balustrades of the movement systems were developed through spatial analysis. Questions in design included; what is the use of the spaces? Does visual connectivity enhance or hinder the spaces? What type of bodily response could be harnessed?

**Stair Systems**

The initial approach to the entry stair was a straight basic stair that provided access to the upper levels. This design, although functional, did not add to the experience of movement, and also ignores Ching, Day, Perkin and Bordwell where alcoves and nooks are advised to create play opportunities.

The result of this first approach was to investigate the potential of introducing activity spaces within the stairs, exploring the potential of extending the treads.

Carlo Scarpa in Olivetti Showroom, located in Venice, explores the potential of stairs and explores tread width. The widening of the stairs to the left hand side also expands the feeding area of the stair, as well as making it more welcoming.¹⁰⁴

---

¹⁰⁴ Ching, Architecture, 288
This idea of the creation of platforms led to the investigation of extended stair treads as activity spaces, for both sitting and standing work bench heights, creating nodes of activity. By visually connecting to these play opportunities children are also likely move to participate in them. Also, the ability to view other children will set-off trigger movement and activate mirror neurons. The bridging of the circulation space located on level two also utilised these ideas of fluctuating path size to provide activity nodes.

The position of the entry stairs prioritises entry from the western portions of the building. However, the flare of the bottom steps has also been explored to widen the stair ‘feed’ area, making it easier to negotiate. The stair is designed to be inviting by the visible landing, wide base and shallow step.105

The design of the entry stair influenced that of the private park connection. Spaces were designed according to the activity: sitting, playing, standing and walking. Thus, activity is integrated with circulation, creating play opportunities along the journey and encouraging movement.

The balustrades require more exploration.
Ramp Systems

Like the entry stairs, the initial exploration of ramps was a generic, utilitarian ramp, which defined a discrete linear route to the upper level, which encircled space rather than defining it.

Bernard Tschumi’s Lerner Hall utilises the ramps as an activated surface. The ramps cut through and intersect a void space, with lounges placed around its perimeter. The ramps become a sociable, active space, a place of movement as well as exchange.

This notion of movement and social space drove the idea of integrating the movement system and activities. The ramp becomes an activity in itself. This requires a more integrated approach.
The ramp was, therefore, relocated and redesigned. Rather than encircling a room, the ramp became the room. The room and the ramp utilise an interrelationship, similar to that of the Maxxi Museum, and creates two spaces, one above and one below. Therefore, this room approach allows more opportunities for the space.

The downfall to this approach was not following Ching, Day, Perkin and Bordwell where alcoves and nooks are advised to create play opportunities. Day also advises that wider social areas and balconies should be used to socially link different levels. Thus, the stair system design strategies of the integration of journey and playspaces became important to the exploration.

Alcoves and nooks were integrated into the design to allow relief spaces where the children are able to linger, play and socialise, also creating different flows within the movement system. This exploits Tschumi’s idea of activated surfaces, of active and social spaces.

Play opportunities located within the movement systems will enhance movement as the systems will not only be a tool to get from A to B, but also provide activities along the way, which may be the child’s destination. Likewise, the designs of these spaces also focused on the idea of children viewing these spaces in verbs, where these spaces are more of a playground in themselves.

Balustrades

The “Weird and Wonderful” exhibition, at Auckland Museum by Pearson & Associates, is a space designed for children. The visual connectivity of the balustrades has been carefully considered, and transparency utilised to achieve this. The balustrade in some areas has been utilised as a shelving element, with some viewing areas. This depth of the balustrade/shelving induces the body to move, as it blocks and reveals different views.

AUT Sir Paul Reeves Building, contains three balustrade designs within the atrium, the type and design appears to respond to the activity of the spaces behind and the floor level within which the space is located. The bridging balustrade is constructed of metal sheets, reducing the visibility to these spaces, but not from them. The perimeter balustrade, on level four, is largely concrete with a metal upper section, enhancing the visual connectivity, especially from a seated level. The upper levels are fully transparent, with planes of glass, which may reflect the seated activity spaces behind.
All of the balustrades and vertical elements had a similar approach to design, through an investigation into the interrelationship of the movement systems and surrounding space. This included the analysis of the potential type of movement to suit the space, if the space was high flow, or if lingering and activity could occur. These spaces were then examined in terms of the surrounding spaces to identify where and why visual connectivity would occur and the problems and opportunities of each manoeuvre.

Figure 5.77 Spatial analysis to determine balustrade design. Top Figure 5.78 Ramping system balustrade exploration
5.9 Phase Eight- Developed Design

The previous explorations, critiques and design ideas have been accumulated and incorporated where suited in this design. Some of the explorations have been phased out due to conflicting requirements.

Centre Design

Similar to the previous explorations, ground level is retail, which activates the street’s edge, and provides the public with a destination. This would likely increase pedestrian activity around the building and allows the children the opportunity to watch this activity, inciting movement to get better vantage points. Similarly, mirror neurons and mimicking movement have the potential to be triggered.

Figure 5.79 Ground floor. Retail
The centre is located on levels one to three, and entered off Drake Street. It is planned around a central three level atrium, which visually connects all levels. The centre contains a range of scales, single height, double height and triple height spaces. The triple height spaces, the atrium and ramping room have a strong scale difference from activity rooms, which spatially reinforces the removal of classroom rules. 107


Figure 5.80 Level 1. Lowest level of the centre.
The movement systems have become the main focus. Rather than corridors, stairs and ramps, the systems become an activity, part of the curriculum. These systems interrelate to the surrounding spaces, where they flow past and above each other, enhancing that excitement of sensing one’s movement against another. Additionally, the journey of the movement systems is an experience, where one may wish to escape the predictable room in favour of the discovery and ferreting provided by the circulation.

108 Bloomer and Moore, Body, 68
109 Cook, Primer, 53.
The balustrades of the movement systems provide episodic views. Where the positioning of the glazing incites the body to move to gain visual connection. This type of body position was determined by the bounding spaces, where flow was required visual connectivity was reduced, or directed towards a play opportunity to pull the child through. Where an activity node of the system was located, visual connectivity to induce lying down and crouching was explored.

Figure 5.83 Entry stair.
Figure 5.84 Ramping system.
Urban Planning

The urban planning utilised the lessons learnt from the centre. As mentioned above, an increase in surrounding pedestrian activity could incite movement in the children to get better vantage points, as well as potentially activate mirror neurons and mimicking movement.

The stratification of pedestrians in a connection to the park reduces road risk and allows the park to infiltrate the city.

The use of two bridges, public and private, creates an interrelation between the two, which allows the public pedestrian and children a fascination of sensing each other’s movement whilst on separate bridges.  

Critique

The exploration into the movement systems has been successful due to the analysis of the interrelationship between the bounding spaces. However, the floor located under the ramps, in contrast to the movement systems, is flat and expansive.

Secondly, the park connections are very wide and additional consideration is required for the pathways located underneath. The voids currently help mitigate the effects from the bridging, they require more exploration. The bridges are also very wide, and exploration into refining them could benefit the spaces beneath. The environment created also requires addressing - acoustics, ventilation and light.
5.10  Phase Nine- Design Outcome

Figure 5.88 Ground floor. Retail
Centre Design

Spatial Planning

The centre is a cluster/hybrid typology; the common space becomes the hub of the network, linking all the spaces horizontally. This full height space also links vertically. This type of planning concentrates all the movement in the centre within this central area and radiates towards the periphery spaces.

This concentration of movement and visual connectivity within this space increases the potential for children to experience trigger movement, as well as seeking out play opportunities, resulting in movement. This atrium space with the movement systems interlinking the adjoining spaces creates a setting where the children can sense their movement in relation to other children on other paths, which is more exhilarating, and allows the architecture to become a stage for movement.  

To allow the children to have focused behaviour within the activity rooms, the movement systems were designed as connective elements, rather than integrated into the activity rooms. Due to the requirement of a variety of space types to allow children relief from over stimulation, the separation also allows for this. The children are able to retreat from the experientially rich movement systems, and withdrawal to other areas.

A secondary reason to separate the movement systems from the activity spaces was to allow for the children’s desire to emerge, through the perceived view of the removal of classroom rules.

---

111 Bloomer and Moore, Body, 68

Figure 5.89 Level 1. Lowest level of the centre.
Movement Systems

The movement systems have become an activity in themselves, and part of the curriculum. This has been designed for in form, as well as the treatment of the bounding elements, such as balustrades. This notion of designing these spaces as activity spaces is supported by Day’s belief that children view circulation in verbs. 113

To move between levels within the centre, two pathways have been designed a slower route, and a faster route, which was influenced by Cook. 114 This selection of route also adds to the experience of the movement systems, by adding options to move between levels, each system is less utilitarian and more focused on each child’s whim for discovery or position within the building.

113 Day, Environment for Children, 21.
114 Cook, Primer, 58
Form of Movement Systems

The designs of these systems have utilised the functionality of the utilitarian systems, whilst going beyond this, and taking on room identity through the incorporation of activities, similar to the views of Ching, Day, and Perkin and Bordwell. In the same manner as Tschumi the activity nodes around the movement systems activate them. By incorporating these ideas the movement systems are not just a place for movement, but they are a place of play and exchange. Combining this opportunity, and providing for it in form with nooks and alcoves, encourages lingering and play. The movement systems in areas, become pass through spaces, rather than pass by, and consist of an element of Evans’ matrix of connected rooms, thereby increasing the social experience and fascination of passing activities and others.115

The speeds of each movement system, a slower path and a faster path, was also explored in form. The slower path allows the child to dally, due to the integration of alcoves and play opportunities, as well as a longer path. The faster path is a more direct, shorter route, with play alcoves typically located at either end.

Similarly to the Maxxi Museum, the movement systems are not straight. The ramp and bridging moves past itself, creating visually close spaces; however, the journey to these spaces is longer. The direct view is of the destination and its indirect journey. This also increases the interrelationship between people moving past each other on paths, increasing the exhilaration and journey and, therefore, encouraging movement.

115 Evans, Translation, 89-90.
Visual Connectivity of Movement Systems

Visual connectivity was highlighted as an important driver of movement not only to trigger movement, both physically and via mirror neurons, but also through presenting play opportunities to the observer. Visual connectivity has differing stages, full, partial or episodic, or no visual connectivity.

The project investigated utilising all of the types with selection of treatment depending on the activities of the adjacent spaces, and their opportunities and constraints, and the type of movement that would suit the space. Where visual connectivity, and therefore body positioning, was deemed to interfere with movement through a path, no visual connectivity or directed visual connectivity was utilised to draw the children through the space.

Figure 5.92 Ramping system.
**Environmental Systems**

To cool the centre, operable windows are located on the southern façade, and air returns through the atrium. The envelope is controlled by a building management system. If a high level of carbon dioxide is detected the envelope shuts down and the air handler starts up. The centre utilises underfloor heating via an air to water heat pump. A central station air handler, located on the level two roof, supplies fresh air, and returns via the atrium. The air handler is served by a chiller to cool the building, as well as a heat pump. The retail tenancies require fan coil units, these are connected to the chiller and heat pump.

Façades are designed according to orientation, as well as to incite movement. The atrium has a glazed roof; a shading system is located on the exterior of the building to reduce the solar heating impact.

Cloud absorbers have been located in the atrium for acoustic treatment. The underneath of the movement systems are also acoustically treated. Both are filled with Autex, and faced in acoustically transparent, perforated plywood. Soft furnishings will also absorb sound.

**Structure**

The existing columns and beams have been jacketed as required and the floors have been strengthened through a screed. To resist lateral movement, cross bracing is located on the west and east faces of the building. Perimeter beams have been constructed around the voids as required. Load bearing walls are also located on the perimeter of the building. The internal walls of the building are not load bearing; therefore, the internal partitioning of the building is able to be adapted as required.
Urban Planning

The urban planning scale of this project applies the lessons learnt in the centre design. The application has been adjusted, such as materials, to suit the scale and location.

The main stairs within the public and private bridge incorporate activity, similar to the centre design.

Instead of form dictating activity spaces on the bridges itself, planting as well as voids have been utilised to create alcoves and a hierarchy of spaces.

Bridge Connection and Environmental Systems

The lowering of Victoria Street West allows the opportunity to bridge over, whilst utilising the existing level one floor height. Traffic noise is created by vehicle engines, exhaust systems and the contact point between tyres and the road. Tyre/road noise makes up 75-90% of this noise.\textsuperscript{116} The lowering of the road allows the application of acoustic treatment closest to the source of noise.

Additionally, the undersides of the bridges have been acoustically treated with Reapor panels, thus reducing the overall noise emitted into the space. The placement of voids increases the natural lighting and ventilation of the space below. The angling of the void balustrades also enhances lighting for the pedestrians, funnels air pollution, as well as acting to deflect sound away from the pedestrians and playspace located above.

5.11 Phase Ten - Final Presentation

Figure 5.94 Final presentation layout.
Figure 5.95 Ground level plan
Figure 5.98 Level 3 plan
Figure 5.99 Atrium - free play space.
Figure 5.100 Alcove- free play space.
Figure 5.101 Lower Ramp room - free play space.
Figure 5.102 Upper Ramp room- on the ramping system.
Figure 5.103 Section- Drake Street to Victoria Street West facing west.
Figure 5.105 View towards Victoria Park.
Figure 5.106 Model- Connections to the park.
Figure 5.107 Model- Internal circulation system.
6.0 Conclusion

6.1 Critical Appraisal

Movement is fundamental for a child’s holistic development. Architecture has the potential to function as a stimulus for movement. Join the Dots set out to investigate how architectural design can encourage and facilitate movement in children, aged two to six, within a growing central city environment that currently offers few opportunities for children to move and develop.

The first step was to gain an understanding of how movement could be encouraged, rather than just being facilitated. Movement, as an architectural topic, is often discussed relating to general users, which is not entirely applicable to children. To achieve this objective, the research scope required expansion, including, movement system design and theories of space behaviour of children. These two strands required integration to develop an architectural approach and derived design strategies, which have proved to be successful in design exploration and application.

Precedents typically either focused on movement or children. The encouragement of movement was primarily focused on the form of movement systems and visual connections. Thus, this investigation resulted in a shift of focus and this aim of encouraging movement took on a new dimension.

The second aim was to investigate the role of architecture to encourage and facilitate movement. This has been partially discussed above. However, in the design outcome the role of architecture became focused on a few architectural elements relating to movement systems. Other architectural elements were investigated in terms of encouraging movement, such as façade design and spatial planning. However, facilitating movement was found to be largely connected to floor planes and movement systems. This focus was also due to the requirements for useable space, utilising an existing structure, as well as an increased interest and focus into how movement can be encourage.

This emphasis on encouraging movement has been largely successful through utilising the design strategies developed through the research for design process. This includes the design of the movement systems and the integration of play opportunities, visual connectivity, as well as enhancing the experience.

Future research into this topic could focus on broadening the area of enquiry to include different types of movement. The facilitation of movement could also be explored further.

The overarching idea of the project to aid the holistic development of children by encouraging movement has been largely theoretical and remains untested as none of the outcomes have been put into a working child care centre. However, this project has explored how movement can be both facilitated and encouraged. Therefore, by encouraging the whim of children to use these systems, and the theory that movement is fundamental for a child’s holistic development, the assumed outcome is that this architectural project is proven and will likely enhance a child’s development.

The applications of the lessons learnt from the child care centre have been extended to a wider urban context to explore whether the same findings can be used to enhance the environment for all residents. The design techniques of the stairs and ramps were successfully applied to external features, but required further exploration in materiality, form and the integration of activity spaces. The bridges over Victoria Street West not only provide movement but also play and lingering spaces, with the paths defined by voids and landscape, rather than balustrades. Further development could explore the potential of treating these bridges more like the internal systems which are defined by balustrades, with intermittent activity nodes along the way. However, the multipurpose nature of the bridges confounded the project in this regard, and focus directed to the movement systems of stairs and ramps providing access to these bridges.

The project by creating facilities for families, better connections to Victoria Park Market (from both Drake Street and the eastern end of Victoria Street West), and to Victoria Park (where pedestrians do not have to wait to cross Victoria Street West) improved streetscape and larger footpath widths, as well as the activation of Victoria Street West street frontage, would improve the overall amenity and streetscape of the site vicinity, which would likely encourage the settlement of new residents within the area and enhance the environment for all residents.

117 Kazimierczak, “Physical Activity,” 7
118 Bloomer and Moore, Body, 59
119 Kazimierczak, “Physical Activity,” 7
6.2 Concluding Statement

Join the Dots, the final design and documented process demonstrates how architectural design can facilitate and function as a stimulus to encourage movement. The project has sought to rectify the delayed development of movement skills in young, city dwelling children. An early childhood centre provides an ideal setting to explore architecture as a catalyst for movement. The public connection to Victoria Park utilises the lessons learnt from the centre exploration and applies these through urban design, which not only enables an easier connection to the centre from the north, but also enhances the environment for the general public through pedestrian orientation and connection to the park.

Additionally, the urban design outcomes of; improved streetscape, pedestrian orientation, and connection gives effect to the Auckland City Centre vision set by the Masterplan for the Victoria Street Green Link between Albert and Victoria Parks.

The design and document suggests that visual connectivity is an important component in designing for encouraged movement. Similarly, the design of the type/form of path and its bounding elements are imperative for architecture to incite movement.

Architecture that is designed to facilitate and encourage movement in young children is much more than a built environment. It becomes integral to the pedagogy, a hidden curriculum, or third teacher, whereby the building assists the holistic development of children, stimulates brain cell growth and enhances the central nervous system through the design for encouraged movement.\textsuperscript{120,121,122}

A moving child is a learning child.\textsuperscript{123}

\textsuperscript{120} Kazimierczak, “Physical Activity,” 7.
\textsuperscript{121} Hendricks, Designing For Play, 71.
\textsuperscript{122} Kazimierczak, “Physical Activity,” 8.
7.0 Bibliography


Lefaivre, Liane, and Ingeborg de Roode, ed. *Aldo van Eyck: The Playgrounds and the City*. Amsterdam: Stedelijk Museum, 2002


8.0 Figure List

All photographic aerial views are reproduced and edited from Auckland Council Gis Map Viewer.

Title page Join the Dots image of a child

Figure 1.1 Locomotor movement of a child

Figure 2.1 Visual connection to show play opportunities.
Figure 2.2 Trigger movement through visual connection.
Figure 2.3 Focused attention through lack of visual connectivity.
Figure 2.4 Corridors are places of freedom.
Figure 2.5 Nooks and alcoves in paths.
Figure 2.6 Pass by spaces or corridor typology.
Figure 2.7 Pass through spaces, or Matrix of connected room.
Figure 2.8 Fast and slow daily paths
Figure 2.9 Paths that view other paths to create periodic relationships between users.
Figure 2.10 Hopscotch- Lines inciting the body to move.
http://4.bp.blogspot.com/-JVfOHUktH_U/TciVl-2W_rI/AAAAAAAACfc/C_E2VnmXP4Kw/s400/hopscotch1.jpg (accessed August 1, 2013)

Figure 3.1 A child walking independently along the High Line.

Figure 3.2 18th Street plaza, fast path left, slow path right.

Figure 3.3 Planting defines paths and activity spaces.

Figure 3.4 Planting defining multiple pathways.
Figure 3.5 An access point to the High Line.

Figure 3.6 Balustrades, original and new.

Figure 3.7 Balustrade, new.

Figure 3.8 Alternative walkway from the street below.

Figure 3.9 Under the High Line.

Figure 3.10 Plan of path width, people negotiating lingerers.

Figure 3.11 Open risers flaunt the silhouette of patrons moving along them.

Figure 3.12 Interrelationship between different paths.

Figure 3.13 Direct view of journey, indirect route

Figure 3.14 Plans of splitting path, showing the extended journey and relationship to start position.

Figure 3.15 Layering of movement systems in entrance hall to show interrelationship

Figure 3.16 Paths in voids.

Figure 3.17 The entrance hall showing void space and movement systems.

Figure 3.18 Column helping define alcove space.
Figure 3.19 Atrium space.
Figure 3.20 Level 4 plan. Blue void, red stairs, ramps escalators.
Jasmax Plans- edited by author
Figure 3.21 Level 3 plan.
Jasmax Plans- edited by author
Figure 3.22 Classrooms left, stairs which vertically connection, and double as a play space, right.
http://www.e-architect.co.uk/images/jpgs/japan/fuji_kindergarten_ring_around_a_tree_t290911_k1.jpg (accessed August 3, 2013)
Figure 3.23 Classrooms left, stairs which vertically connection, and double as a play space, right.
Figure 3.24 Low heights requiring differing body positions.
Figure 3.25 Low heights requiring differing body positions.
Figure 3.26 Atrium, showing lack of visual connectivity to the cluster space.
Figure 3.27 Spatial planning reduces visual connection to the cluster space.
Figure 3.28 Cluster typography, movement radiating from central point.
Figure 3.29 Visual connections to common area from balcony, but not rooms.
Figure 3.30 Level one plan.
Figure 3.31 Ground level plan.
Figure 3.32 -3.38 Derived Design Strategies to Encourage Movement.
Figure 4.1 Site location, shown from an aerial view of wider Auckland Region
Figure 4.2 Site location.
Figure 4.3 Reclamation of Auckland city centre's waterfront.
Figure 4.4 c1870s, Drake Street before reclamation c1973.
Sir George Grey Special Collections, Auckland Libraries, 4-98 (accessed May 21 2013)
Figure 4.5 1905, looking east from the destructor chimney, up Victoria Street West and Wellesley Street West.
Sir George Grey Special Collections, Auckland Libraries, 1-W1247, (accessed May 21 2013)
Figure 4.6 Junction of Wellesley, Drake and Victoria Streets, c1973.
Sir George Grey Special Collections, Auckland Libraries, 786-A016-3, (accessed May 21 2013)
Figure 4.7 Auckland Central West. West of Queen Street.
Figure 4.8 City Centre Masterplan Hobson Street playground.
Figure 4.9 City Centre Masterplan Victoria Street Green Link, improved streetscape.
Figure 4.10 Victoria Quarter and the Masterplan proposed Green Link connecting the city's parks.
Figure 4.11 Walking distances. Slow, average 3-5 year old, Adult.
Figure 4.12 Early childhood education services- red dots.
Figure 4.13 Road and vehicle dominance around the selected site.
Figure 4.14 Victoria Street West peak time traffic.
Figure 4.15 Yellow highlights footpath. Orange shows pedestrian paths through and around the car parking building.
Figure 4.16 Pedestrian route- Entry into the car parking building to get to Victoria Park Market.
Figure 4.17 Pedestrian route- looking from inside the car parking building to the market.
Figure 4.18 Stair entry from Drake Street.
Figure 4.19 Stair entry from Victoria Park Market.
Figure 4.20 Site.
Figure 4.21 The existing building.
Figure 4.22 Low floor to ceiling height, and large floor widths reduce light.
Figure 4.23 Location of views.
Figure 4.24 Adelaide Street- building blocks visual connection to the park.
Figure 4.25 Vernon Street view- building blocks visual connection to the park.
Figure 4.26 Wellesley Street West view.
Figure 4.27 Victoria Street West view from the east.
Figure 4.28 Halsey Street view.
Figure 4.29 Victoria Street West view from the west.
Figure 4.30 Model of circulation space- in black.
Figure 4.31 Model of circulation space- in black, use space is void space.
Figure 4.32 Car parking building stairwell.
Figure 4.33 Contour model.
Figure 4.34 Contour model.
Figure 5.1 Masterplan’s Green Link
Figure 5.2 Urban planning, integrating the Masterplan’s Green Link
Figure 5.3 Section A. Stratification of public and private.
Figure 5.4 Section B. Stratification of public and private. Bottom
Figure 5.5 Ground level- retail.
Figure 5.6 Level One- Centre lowest level.
Figure 5.7 Level Two- Centre
Figure 5.8 Level Three- Centre. Bottom
Figure 5.9 Existing Victoria Street West and Drake Street
Figure 5.10 Masterplan proposed Green Link.
Figure 5.11 Reducing lanes proposition.
Figure 5.12 Tunnel proposition.
Figure 5.13 Bridging proposition.
Figure 5.14 Raising ground level proposition.
Figure 5.15 Plaza- initial exploration.
Figure 5.16 Integrating voids.
Figure 5.17 Urban planning.
Figure 5.18 Extending Adelaide and Vernon Street view shafts.
Figure 5.19 Vernon Street extension becomes a public pedestrian connection to Victoria Park.
Figure 5.20 The application of the southern grid to the existing grid.
Figure 5.21 Cross section of the proposed concept.
Figure 5.22 Floor plate model exploration
Figure 5.23 Floor plate model exploration
Figure 5.24 Floor plate model exploration
Figure 5.25 Floor plate model exploration
Figure 5.26 Selected floor plate model exploration.
Figure 5.27 Floor plate model exploration
Figure 5.28 Constant floor line reduces visual connection.
Figure 5.29 Slight step in floor line increases visual connection.
Figure 5.30 Step in floor and void enhances visual connection.
Figure 5.31 Irregular floor plates enhances visual connection.
Figure 5.32 Level 1- lowest centre level.
Figure 5.33 Level 2- Centre
Figure 5.34 Level 3- Centre
Figure 5.35 Bridge exploration 1.
Figure 5.36 Bridge exploration 2.
Figure 5.37 Bridge exploration 3.
Figure 5.38 Plan- Solid balustrade blocks visual connections.
Figure 5.39 Section- No visual connection.
Figure 5.40 Plan- Glass balustrade allows visual connection.
Figure 5.41 Upper glazed section allows partial visual connection.
Figure 5.42 Half glazed allows partial visual connection for both sitting and standing.
Figure 5.43 Fully glazed balustrades allow full visual connection in any body position, and does not necessarily incite movement.
Figure 5.44 Plan- visual connection based on view point.
Figure 5.45 Plan- visual connection based on view point.
Figure 5.46 Model of view point visual connection.
Figure 5.47 Model of view point visual connection.
Figure 5.48 Vertical louvers front view.
Figure 5.49 Partially obscuring visual connection.
Figure 5.50 Blocking visual connection.
Figure 5.51 Low glazing.
Figure 5.52 Mid-height glazing.
Figure 5.53 Low glazing-visual cone (standing 3.5 year old)
Figure 5.54 Low glazing-visual cone (sitting child).
Figure 5.55 Mid glazing-visual cone (standing 3.5 year old)
Figure 5.56 Mid glazing-visual cone (sitting child)
Figure 5.57 Two treatments of translucent and transparent glass. Left side uses translucent glass at the upper portion, and transparent underneath.
Figure 5.58 Visual cone- (standing 3.5 year old).
Figure 5.59 Visual cone- (sitting child)
Figure 5.60 Visual cone- (standing 3.5 year old).

Figure 5.61 Visual cone- (sitting child).
Figure 5.62 Relating the journey to bodily positions.
Figure 5.63 Carlo Scarpa Olivetti Showroom Stairs, Venice.
Figure 5.64 Carlo Scarpa Oliveit Showroom Stairs, Venice.
Figure 5.65 Plan of entry stairs.
Figure 5.66 Private connection to the park.
Figure 5.67 Stairs providing activity space and movement.
Figure 5.68 Bernard Tschumi, Lerner Hall. Movement system.
Figure 5.69 Bernard Tschumi, Lerner Hall. Movement system.
http://www.nextbillion.net/pubs/images/4e0f9b832acb50a055a8418cd0c29117.jpg (accessed August 20, 2013)
Figure 5.70 Plan- Ramp sketch.
Figure 5.71 Plan- Ramp sketch.
Figure 5.72 Plan- Ramp sketch, incorporating activity space and movement.
Figure 5.73 Weird and Wonderful exhibition. Divider acts as balustrade and shelving/seating. Inciting movement.
Figure 5.74 Weird and Wonderful exhibition. View to activity beyond.
Figure 5.75 Different balustrades. Starting from bottom left, clockwise, A, B, C.
Figure 5.76 Balustrade designs, A, B C.
Figure 5.77 Spatial analysis to determine balustrade design.
Figure 5.78 Ramping system balustrade exploration
Figure 5.79 Ground floor. Retail
Figure 5.80 Level 1. Lowest level of the centre.
Figure 5.81 Level 2.
Figure 5.82 Level 3
Figure 5.83 Entry stair.
Figure 5.84 Ramping system.
Figure 5.85 Ground level
Figure 5.86 Level 1
Figure 5.87 Level 2 and 3 integrated
Figure 5.88 Ground floor.
Figure 5.89 Level 1. Lowest level of the centre.
Figure 5.90 Level 2.
Figure 5.91 Level 3
Figure 5.92 Ramping system.
Figure 5.93 Section.
Figure 5.94 Final presentation layout.
Figure 5.95 Ground level plan
Figure 5.96 Level 1 plan
Figure 5.97 Level 2 plan
Figure 5.98 Level 3 plan
Figure 5.99 Atrium- free play space.
Figure 5.100 Alcove- free play space.
Figure 5.101 Lower Ramp room- free play space.
Figure 5.102 Upper Ramp room- on the ramping system.
Figure 5.103 Section- Drake Street to Victoria Street West facing west.
Figure 5.104 View from Victoria Park
Figure 5.105 View towards Victoria Park.
Figure 5.106 Model- Connections to the park.
Figure 5.107 Model- Internal circulation system.
Figure 9.1 A child in their 2.5m² allocated indoor space.
Figure 9.2 Cluster movement pattern.
Figure 9.3 Red spaces, yellow linkages .
Figure 9.4 Visual connection if full transparency of bounding walls
Figure 9.5 Linear movement pattern.
Figure 9.6 Red spaces, yellow linkages .
Figure 9.7 Visual connection if full transparency of bounding walls
Figure 9.8 Hybrid movement pattern.
Figure 9.9 Red spaces, yellow linkages .
Figure 9.10 Visual connection if full transparency of bounding walls
Figure 9.11 Suburban typology.
Figure 9.12 Podium typology.
Figure 9.13 Tower typology.
Figure 9.14 Exploration one
Figure 9.15 Exploration two
Figure 9.16 Exploration three
Figure 9.17 Exploration four
Figure 9.18 Exploration five
Figure 9.19 Development of exploration five
Figure 9.20 Exploration one.
Figure 9.21 Exploration two.
Figure 9.22 Exploration three.
Figure 9.23 Exploration four.
9.0 Appendix A

9.1 Modern Urban Childhoods

Housing Sizing and the Lack of Accessible Outdoors

The average suburban section size has dramatically shrunk and the proportion of building coverage has increased. In 1970 the typical single storey house was 120m² and on a 1012m² section, resulting in an 11.85% coverage. In 2011 this has changed to an average new home of 210m² on a 450m² section, a site coverage of 46%, assuming the house is single storey.124

In 2004 Auckland City Council imposed minimum size standards over new apartments in the central area. Prior to this there were no restrictions, producing shoebox apartments as small as 18m².125 From 2004 the minimum apartment sizes were set at 35m² for a studio, 45m² for a one bedroom, 70 m² for a two bedroom and 90m² for three bedroom apartments.126 These sizes are inclusive of balcony area.127

City apartments are significantly smaller than the average 1970s and 2011 house size, and usually have very limited or no outdoor space, thus, providing apartment dwelling children with very little space to develop. A resolution to this is quality, large spaces for children located outside of the home.

Minimum Space Standard in Early Childhood Education Settings

The minimum activity space requirements for an early childhood education and care centre facility is an indoor space of 2.5m² per child, and an outdoor space of 5 m² per child.128,129

Sedentary Life Styles

More than 53% of children, aged 2-14 years, watch TV for more than two hours every day.130 The child obesity rate for children aged 2-14 years old, increased from 8% in 2006/07, to 10% in 2011/12. A further 21% of children were classed as overweight and 9% of children aged 2-4 years were classed as obese.131

Nikki Darling-Kuria states that hundreds of hours of critical motor development have been lost. The amount of time an average two year old spent in a car over the course of a year has increased by 250%, to 500 hours since 1960.132 Bloomer and Moore discuss our repertoire of movement, concluding that, despite travelling faster and further, we are utilising a reduced repertoire of active movement, whereby our own body’s movement is increasingly replaced with “propulsion of the immobilised body”, motion is replaced by “frozen speed.”133

Dr Luis Lopes, a specialist in physical activity and motor co-ordination, found a direct correlation between high sedentary behaviour and reduced motor co-ordination, whereby a high sedentary lifestyle has a negative effect on motor skills, and is linked to lower

---

125 Ibid, 4.
127 Ibid, 3.
129 The indoor space is defined as play area, not including space occupied by all fittings, fixed equipment, and stored goods and excludes passage ways, toilet facilities, staff rooms, specific sleeping areas for children under 2 years of age, and other areas not available for play.
131 Ibid, 36.
133 Ibid, 3.
134 Ibid, 4.
135 Nikki Darling-Kuria, Brain-Based Early Learning Activities: Connecting Theory and Practice, (Minneapolis: Redleaf Press, 2010), 35.
136 Ibid, 72.
137 Ibid, 72.
138 Cashin-Garbutt, “Motor coordination in children”
self-esteem, decreased fitness, increased obesity and decreased academic achievement. Lopes also states that during infancy and childhood the development of motor competence is dependent on biological factors (including, genetics, gender and maturation) and environmental factors (which include experience, opportunity, encouragement, demographics and social factors). Lopes found that physical activity did not counteract the negative effects of sedentary behaviour. Rectifying the problems requires less sedentary behaviour which should be limited to a maximum of two hours a day.

The Problematic City

Antonella Rissotto and M. Giuliani discuss the dehumanisation of cities, making our cities more difficult to live in because of the increase in traffic, the declining number of public places and the decreasing sense of community. This dehumanisation reduces the freedom of movement of children, in particular school age children’s independent travel to and from school and public spaces.

Rissotto and Giuliani’s concern with the increase in vehicular travel is the reduced possibility of acquiring sensor-motor information through active moving. This reduction of acquisition results in adverse consequences on the development of children’s spatial skills, especially in creating coherent spatial representations. Rissotto and Giuliani also argue that the reduction in movement is evidence of a childhood over-controlled and over-structured by adults, resulting in a loss of experience in childhood.

The most common parental justification of restricting children’s movement is a concern for safety: road safety and stranger danger. Rissotto and Giuliani also propose other viable, but less mentioned, reasons for this restriction, including: falling birth rates, car-dominated society, increasing time pressures and changing models of parenting.

Boggi argues that the changing model of parenting reflects the idea that ‘good parenting’ is one of protection, rather than one of child independence.

Mark Francis and Ray Lorenzo describe the increasing disappearance of children from urban spaces of developed cities. Francis and Lorenzo describe children as “captive in their homes, institutionalised, over-programmed, information stuffed, TV dependent, ‘zoned in’, and age segregated,” as well as nature-deficient.
Auckland City Centre

Auckland’s city centre is currently an adult oriented space. This is recognised in the draft Auckland City Master Plan which has as a liveable city goal that the city centre will be a welcoming space for children and families by 2032. The council’s success indicators include, increasing the number and sizes of play spaces, increasing the number of family-friendly events organised, as well as an increase in the number of children living within the city centre.

Auckland city’s centre population is projected to double by 2041. The Council’s vision is to increase the number of families living within the city centre. Therefore, architecture which supports families and children will be in demand.

Cars versus the Child

Vehicles are very dominant within the central city and pose a risk to both adult and child pedestrians.

The largest cause of child death from unintentional injury from 2001 to 2005 was transport related injuries, including: vehicle occupancy, pedestrians, cyclists and ride-on motorised vehicles.

Auckland poses an increased pedestrian risk compared to other cities in New Zealand. While Auckland is home to around 30% of New Zealand’s population, the region accounts for 41% of the total national pedestrian hospitalisation rate. This is also reflected in the statistics of child pedestrians. Children in the Auckland Region make up 32% of the nation’s children (2001 Census), in the period 1997-2001, they Auckland children made up 41% of child pedestrians killed.

Auckland City, local authority region, made up the highest portion of total child pedestrians hospitalised in the Auckland Region, 36%, in the 1999-2003 period.

A review by Auckland’s Injury Prevention Research Centre, between January 1992, and February 1994 on child pedestrian injury rates provides data on where and when these injuries occur.

- Over 75% of children were injured when crossing the road
- 2% were injured while playing on the street
- A third of children were injured during the school journey
- 60% of children were injured within 500 metres of home, another 15% (75%) within a kilometre
- 55% of injuries occurred on arterial or major roads, whereas 25% occurred on ‘local’ roads

The highest number of child pedestrian fatalities in the 2000-2009 period occurred between 3pm – 4pm, directly after school, and 6pm - 7pm.

\[144\] Auckland Council, “City Centre Masterplan”, 54.
\[145\] Ibid, 38.
\[146\] Ibid, 23.
\[147\] Ibid, 54.
\[150\] Ibid

9.2 Precedents

Spatial Planning Models of Early Childhood Education Centres

Bradford Perkins and Raymond Bordwell identify typical spatial planning arrangements of early childhood centres. The cluster models, the linear model and the hybrid.\(^{153}\) Below is an analysis of these models according to the literature survey.

The Cluster Model

The cluster models are centred around a primary space, such as a common area, with secondary activity rooms and tertiary spaces, (private rooms such as bathrooms) surrounding it. The user is able to circulate around the edge of this space, or pass through the middle, whilst maintaining high visual connectivity to all spaces, as long as permeability and transparency is designed.

This type of planning concentrates all the movement within this central area and radiates towards the associated spaces. The cluster model has lower levels of spatial hierarchy than the linear typology due to the similar spatial proximity of the secondary spaces.

This prominent central space enhances visual connectivity between spaces, assuming transparent walls, and enhances the potential for children to move via visual connection triggering, as stated earlier.

---

\(^{153}\) Perkins, and Bordwell, Building Type Basics, 34-35.
The Linear Model

The linear model is organised around a central spine. All spaces are connected to this spine. The corridor in this model is simply for access, it does not act as an extension of the classroom, nor does it provide any other use which Perkins and Bordwell state as being important.\textsuperscript{154} However, in contrast the corridor can be viewed as a separate entity from the classroom, symbolising the removal of classroom rules and the allowance of children’s desires to emerge: to escape and move beyond the physical limits of their environment and own bodies, allowing for freedom of movement.\textsuperscript{155}

The linear model offers poor visual connectivity and a journey is required to expand the visual connections. There is poor connectivity between rooms, creating self containment and isolation where the children are separated by a variety of criteria, such as age or activity creating a hierarchy of rooms. This model would not be suitable for the pedagogy of utilising movement to aid the development of a child within.

\textsuperscript{154} Perkins, and Bordwell, \textit{Building Type Basics}, 36-37.
The Hybrid Model

The hybrid model is a combination of the cluster and the linear model. The spine is arranged as central play spaces and common rooms and also acts as the central point for connections to the associated spaces, activity rooms and bathrooms.

The amount of corridor space has been minimised, compared to the linear model, and has the advantage of centrally arranged rooms, like the cluster model. This prominent central space enhances visual connectivity between spaces, assuming transparent walls, and enhances the potential for children to move via visual connection. There is a hierarchy of rooms; however, the visual connectivity makes it less prominent. High visual connectivity can be achieved if transparency is designed for. This is a good typology for enhancing movement.

Spatial Planning Model Findings

The cluster or the hybrid model would be best suited for a centre which is of vertical, mixed age arrangement. The high visual connectivity of this model provides opportunities for movement enhancement due to visible play opportunities and triggered movement. These typologies would also suit being multiple levels due to the ability to connect vertically using voids over the central common playspaces with movement and circulation around the perimeter of the void spaces.
Typology 3: Tower Typology

This typology is located on the upper levels of a building. The outdoor areas are man-made and direct access can be maintained. Centres located above ground require entry via elevators or stairs, creating operational challenges. The elevation may be advantageous in terms of sunlight and security, but is challenged by issues such as increased fire safety risk and outdoor access.

Typology Conclusions

All of the typologies have both positive and negative aspects, as mentioned above. The site selection and its analysis, including orientation and context, are key determinants to selecting the suitable typology.

Current Auckland City Early Childhood Education Facility Typologies

To understand Early Childhood Education facilities a selection of city centre and suburban centres were visited and analysed.

The suburban centres were very much alike, consisting typically of child centred rooms located on the ground floor, opening to the outdoors. A building typically positioned within landscape, whereas urban typologies differed. Some were home-based, other centres were located on building podiums, above ground level, or more of a typical suburban approach, the building being situated within landscape. Some of the centres within the city have no connection to the ground level or the outdoors. The centre typology is largely dependent on the site.

Typology 1: Suburban Typology

This typology utilises a building at ground level and could be classed as a building within landscape. Such a typology is prominent among suburban centres. This typology enables easy connection between indoor and outdoor space.

Typology 2: Podium Typology

The podium typology utilises a raised building platform where outdoor space is typically man-made. The building’s structural layout determines the interior spaces. As with the preceding typology, this typology is dependent on context, orientation and site.
9.3 Design Process

Concept Development - Modelling of Floor Plates and Voids

This study was undertaken to analyse and explore the building in three dimensions. This approach was deemed appropriate as circulation, especially in this project, is much more than just a linear issue due to the complexity of levels requires a holistic three dimensional approach.\textsuperscript{156}

Exploration One

This exploration looked at retaining high levels of the floor plates and utilising the cluster spatial planning model.

The downfall of this exploration is the lack of connectivity between levels, both physically and visually, which is a fundamental design requirement.

Exploration Two

This model explores the cluster spatial planning model. The large central void enhances connectivity between levels and creates spaces of differing scales.

The negatives of this exploration are that paths that view other paths and the interrelationship of spaces have not been exploited to their potential. However, they may suit quiet areas, which require higher levels of visual separation to enhance their integrity.

Exploration Three

This investigation starts looking at the idea of layering floor plans, as well as creating destination or nooks along the paths. This takes the circulation space away from the architectural promenade, where circulation is the primary idea, and investigates Hertzberger’s streets of activity, as well as Ching, Day, Perkin and Bordwell where alcoves and nooks are advised to create play opportunities.

The disadvantages of this exploration is the lack of a full height void to connect all the floors. The ramp located at the rear of the building also creates low spaces underneath. The low incline of the ramp makes a lot of this space unusable, but also adds variety of scale to the spaces where children are able to retreat into the resultant confined spaces.

\textsuperscript{156} Cook, Primer, 52
Exploration Four

This model splits the building into two halves, creating a central void space penetrated by circulation routes, enhancing the interrelationship of spaces. It also explores the idea of movement penetrating the building façade, allowing a system which interrelates to the movement in the public realm.

The narrow void width is a disadvantage and restricts visual connectivity.

Exploration Five

This model extends layering floor plates of differing shape to achieve visual connectivity between levels, creating a variety of scales, and a richer experience. This also enhances perception of spaces, as well as compression and relief, which may be translated in the behaviour of the users, where children view in terms of verbs, rather than nouns. The exploration of the circulation activity nodes, formalistically create interesting relationships between spaces - paths and spaces that view other paths and spaces.

The downfall of this exploration could be the containment of movement within the bounding walls, the lack of interrelationship with the outside world. The ground plane also feels, formalistically, very linear and flat compared to the rest of the building.

Critique of Model Exploration

The downside to this exploration was the small scale and focus on the ‘feel’ of the interrelating spaces, rather than a functional exploration. The three dimensional approach has allowed the floor-plates, voids and circulation to be designed holistically and interrelate, creating a choreography between the levels.

These models also do not address the original grid of the existing structure of columns.
Interrelationship of Levels

This study was a direct result of the implication of the small scale approach of the previous study of floor-plates. This study explores visual connection between levels, and the degree to which these can occur.

Exploration One

This study looks at the stacking of floor-plates which have similar bounds. There is no interrelation between the two upper levels due to the lack of connection. The relationship between the upper level and the lower level is also not desirable due to the need to crane over to view the lower areas.

Exploration Two

The stepping in the floor-plates increases visual connectivity between levels. However it is still limited and requires a close proximity to the balustrade.

Exploration Three

The stepping of the floor-plates has been increased, also increasing visual connectivity and access to the viewed level. It also explores the possibilities of a void space, creating activity nodes on either side, as well as enhancing the connectivity between levels.

Exploration Four

This model continues the exploration of the potential of the void spaces, which enhances the visual connectivity between floor levels. However, the challenge could be balancing void space with usable activity space and would require ‘in-situation’ design, rather than a conceptual exploration.

Large split levels would also be disadvantageous due to the retention of the existing floor levels, requiring three levels to be slip into two, as well as the requirement for retrofitting a new structure. Therefore, split levels should be minimised.

Critique of Model Exploration

Each of the explorations has both advantages and disadvantages. Each would suit different areas of behavioural expectation, due to the variety of visual connectivity. They need to be explored holistically within a design.