RETROFITTING MEMORY: RETROFITTING A NON-PHYSICAL

ARCHITECTURE

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ABSTRACT

"There is both a horror and a fascination at something so apparently permanent as a building, something that one expects to outlast many a human span, meeting an untimely end."

-Robert Bevan, The Destruction of Memory: Architecture at War

This project looks at how destroyed architecture, although physically lost, fundamentally continues to exist within human memories as a non-physical entity. The site chosen is *Avonside Girls' High School* in Christchurch, New Zealand, a school heavily damaged during the February 22nd earthquake in 2011. The project focuses on the Main Block, a 1930s masonry building which had always been a symbol for the school and its alumni.

The key theories relevant to this are studies on non-material architecture and memory as these subjects investigate the relationship between conceptual idea and the triggering of it. This research aims to study how to fortify a thought-based architecture against neglect, similar to the retrofitting of physical structures.

In doing so, the importance of the emotive realm of architecture and the idea behind a building (as opposed to the built component itself) is further validated, promoting more broadminded stances regarding the significance of the idea over the object. A new method for disaster recovery and addressing trauma from lost architecture is also acquired. Factors regarding advanced structural systems and programmes are not covered within the scope of this research because the project instead explores issues regarding the boundaries between the immaterial and material.

The project methodology involves communicating a narrative derived from the memories alumni and staff members have of the old school block. The approach for portraying the narrative is based on a list of strategies obtained from case studies.

The final product of the research is a new design for the high school, conveyed through a set of atmospheric drawings that cross-examines the boundaries between the physical and non-physical realms by representing the version of the school that exists solely within memories.

i

TABLE OF CONTENTS

1.INTRODUCTION	1
2. SITE ANALYSIS	3
3. LITERATURE REVIEW	6
4. Case Studies	8
5. Preliminary Design	14
6. Developed Design	23
7. CONCLUSIONS AND CRITICAL REFLECTIONS	36
References	37
Appendices	38

1. INTRODUCTION

Architecture constitutes buildings and more – it carries with it experiences, cultures, and history. Therefore, with the destruction of a piece of architecture comes the symbolic gesture of ruining these aspects along with the physical building. As Bevan illustrates regarding the destruction of German synagogues by the Nazi in 1938, the loss of meaningful buildings can "deny a people its past as well as a future" (Bevan 8).

However, by equating complete loss with the loss of the physical building, architecture is then denied its emotive aspect which should be a significant part of its manifestation. The problem arises here as architecture, after all, embodies both physical and non-physical qualities.

By acknowledging the importance of this non-physical side of architecture as a stand-alone aspect of architecture, the general precedence placed upon the 'superiority' of physical entities as opposed to the immaterial can be challenged. Doing so encourages the validity of the emotive, the idiosyncratic: a problem that can also be extended to fields outside architecture such as the societal stigma regarding the seriousness of mental disorders as opposed to visible, physical injuries.

AIM

The core aim of the project is to investigate how an architecture that is not physical can be retrofitted. If architecture is the embodiment of both the physical and non-physical, then its non-physical component should theoretically be able to be retrofitted just as well.

Investigation into this topic can yield a new approach of understanding loss and memory in architecture – in the event of an unanticipated building loss, whether through natural disasters or warfare, the new mode of understanding can provide insight into recovery of a community affected by the physical loss of an important building.

OBJECTIVE

The research question is therefore about finding out how an architecture that is not physical can be retrofitted. This can be done by acknowledging the significance of immaterial architecture, an architecture that exists only in thoughts and memories, legitimized as an entity that can be strengthened to avoid its loss as an idea – much like how a building can be retrofitted to brace against collapse.

By strengthening the immaterial form of the architecture, the conceptual essence of the architecture is brought significance, highlighting that just because something cannot be perceived by the five senses, it does not mean it is less important. Once the non-physical fundamentals of the piece of architecture is emphasized through its retrofitting, the architecture perseveres as an idea – an idea which possesses a source of influence in remembrance and the aide-mémoire; triggers of memories.

SITE

The site chosen as a vehicle for the design exploration is Avonside Girls' High School, located in Christchurch, New Zealand. Founded in the early 20th century, most of the high school has been demolished due to severe damage sustained during the 2011 earthquake in Christchurch city. The site is appropriate for this investigation because the

demolished Main Block, which served as the icon for the school, has been remembered by many alumni. The way many people have recalled this school block is evidence of the resilient mental image of the building, making it a suitable medium for the aim of this research.

LITERATURE REVIEW

The project began with an investigation into theorists who have studied the relationship of memory and a mental architecture.

Shelley Hornstein's exploration of this in her book Losing Site contributes well to the research question as she looks into the preservation of memory when buildings are lost and when a certain trigger prompts a connection between idea and architecture. This line of thought falls very much in line with the objectives of this project, that is, to evoke a certain set of experiences tied to a mental impression of a destroyed building, making Hornstein's study an effective foundation to begin the investigation of this project.

In understanding the knowledge that Hornstein demonstrates, the notion of trigger is further examined by linking to Saussure's theory of linguistic sign. Saussure's grasp of linguistic sign ties in with the fundamentals of how an architectural trigger could work and is also relevant to the crucial part of the methodology when a survey is carried out to gather keywords related to memories and impressions ex-students and staff members have of Avonside Girls' High.

CASE STUDIES

Throughout his novel In Search of Lost Time, Proust recounts fragments of memories of his life because of sudden triggers, a phenomenon he calls 'involuntary memory'. The process of this abrupt reminiscence is evident in his contemplative writing style. Although not explicitly an architectural design technique this demonstrates how the triggering procedure could possess poetic qualities.

In the Vietnam Veterans Memorial in Washington D.C., Maya Lin uses power of contemplation to bring the notion of death across, done so with the aid of a simple but strong form and building materials. This precedent was chosen chiefly because of her representing a metaphor in a literal built form – the wall as the frontier and mirror into a dark realm not able to be explored beyond the senses.

In Kenzo Tange's Hiroshima Peace Memorial Park, there is the use of a sort of architectural promenade similar to the methods of this project. Movement through the entire park has beginning to end, representing a timeline, and it is a form of narrative technique portraying future towards past.

In Libeskind's Jewish Museum in Berlin, the form design is especially distinctive. The use of materials and exploitations of structural systems to glaringly communicate emotions of holocaust victims is an effective narrative.

GreenInc's Freedom Park in Pretoria, South Africa is not strictly a memorial, as it is a tribute to culture itself. The architects utilised almost every aspect of architecture design to portray this – from the usual mediums like materials and form abstraction to programme, circulation, and the way every space is used throughout the site.

METHODOLOGY

The methodology entails a survey to ascertain an indication of the image the Avonside Girls' community has of the old Main Block. The survey aimed at gathering subjective experiences by requiring participants to submit single words that describe their immediate thoughts about the lost school buildings.

The methodology then proceeds to arrange the most prevalent keywords into a logical sequence (based on an interpretation of how the words might have come about) to derive an architectural promenade with an intended circulation route. This is done to straightforwardly translate the words into an architectural design that acts as an assembly of triggers for these words.

From there, case studies are chosen to provide strategies that can aid in creating a proposed solution through a series of narrative drawings. These are then developed into a feasible architectural design which is presented through atmospheric drawings with elements communicating atmospheric qualities relating to the memories.

SCOPE OF RESEARCH

The project investigates how a particular design methodology facilitates instigation of memories through a built environment. Therefore, other than as a vehicle for driving this goal, programmes, building detailing, and advanced structural credibility are aspects that will not be covered in the project. Although these aspects are vital in contributing to strengthening memories in a non-theoretical building project with the same premise, they are not believed to provide significant contributions to answering the research question.

Although Avonside Girls' High School has lost four key buildings, the project focuses solely on the development of the Main Block because it served as the most iconic and ex-students are most likely to recall it most accurately compared to the other school blocks. This is another reason for the heavy focus on interior articulation of the proposed design as opposed to site-wide planning.

Theories of effective school design are also not included within the scope of research as those somewhat concern sociological fields. Based on current school enrolment and division among the old number of school blocks, building occupancy for the Main Block is approximately 185 students and 15 staff members. Even though the proposed design could potentially be larger as fiscal restraints are not covered within the scope of the research, the proposed design follows the current size of the school.

The survey performed lists simple, open-ended questions to allow for equally simple single word answers. This encouraged a larger sample size (around 55) and more collected data. This approach is therefore more quantitative than qualitative. For more qualitative data, the sample size must be significantly reduced and questions more multi-faceted for added depth. However, this would have also caused a considerably more biased set of results due to the more subjective data resulting from a smaller sample size, which does not fall in line with the project aims on portraying the memories of the entire group of both ex-students and staff.

THESIS STRUCTURE

Site Analysis: Brief overview of the history of the site chosen for the project. The results of the survey carried out for collecting memories of the school are recorded here.

Literature Review: Begins with an investigation into existing texts involving the themes of immaterial architecture, memory, and triggers, and the theory of linguistic signs.

Case Studies: Study of several artistic precedents to derive a list of strategies to be utilised for the design stage.

Preliminary Design: Key words from the survey are arranged into a sequential system, leading into the first phase of the design experiments: the literal translation the words into a series of communicative sketches that are narratives in themselves.

Developed Design: Critical reflection of the previous phase. The second experiment begins by the introduction of the arrangement of programmes within the space. More pragmatic issues such as buildability and structure are dealt with in this part of the process.

Conclusions and Critical Reflections: Rationale for final design, reflections regarding what has been learnt in the project and critique over the limitations and potentials of findings.

Appendices: A copy of the survey questions, survey results, and RESIST report of conceptual massing

2. SITE ANALYSIS

BACKGROUND

In February 2011, the city of Christchurch was hit by an earthquake of a magnitude of 6.3 (McSaveney). Lives were lost and buildings heavily damaged. At *Avonside Girls'* (Fig. 2.1 and 2.2), half of the school was demolished due to structural damage.



Fig. 2.1. The location of the site in the suburb of Avonside (North towards the top of image).



Fig. 2.2. School land boundaries and building footprints in pre-earthquake arrangement.

THE SCHOOL

The Main Block (Fig. 2.3) has for a long time been the icon of *Avonside Girls' High School*. The prominent early 20th century bricked façade design, along with its position facing the main entrance to the north, appears often in images of the school and is undoubtedly the block that students and staff remember most distinctly. The west wing of the Main Block was completed in 1928, while the east wing and the central entrance were completed in the following year (Denniston 6).

The Main Block housed the principal's office, student enquiries office, library, science and computer labs, classrooms, guidance counsellors, and the cooking lab. A major part of memories consist of experiences and events, thus relating to how the space is used. Therefore, to preserve as much accuracy as possible of the alumni and staff members' recollection of using the Main Block, the new design should reflect as much as possible the same programmes held as before.

The aim of this research lies primarily in the testing of a methodology in developing an architecture design that triggers a set of memories, as opposed to designing a solution for the entire school. This project develops a new design for the Main Block (centre of Fig 2.4).



Fig. 2.3. Pre-demolition arrangement of school blocks and names. Blocks in red have been demolished.



Fig. 2.4. The Main Block façade.

THE SURVEY

INTERPRETIVE PHENOMENOLOGICAL ANALYSIS

In both fields of psychology and philosophy, *phenomenology* is the study of human experience and understanding from the individual's own point of view, as opposed to the third-person viewpoint that is most usually perceived to be objective and factual (Carman 2012).

An interpretive phenomenological analysis (IPA) is a form of qualitative data collection to gather descriptions of personal experiences and to find out what certain "experiences, events, and states" mean for the participants chosen. In analysing the meaning of what participants say, the researcher should raise critical questions about the answers provided by the participants and ask themselves questions such as what the person is trying to communicate (Smith and Osborn).

THE SURVEY AND THE RESULTS

The survey is a fully online questionnaire that required participants (ex-students and staff members) to list one-word adjectives that describe the participants' memories of the building in question. Questions were also kept simple and open-ended in order to maintain the attention of participants.

Data collection lasted for 26 days and 55 responses were recorded altogether. Among the 55 responses, around 70% were alumni and 30% were staff members.

Because the Main Block was a large building the survey presented two questions on the block; one on the east wing and another on the west wing. The words listed by every participant were aggregated and generated into a word cloud (Fig. 2.5 and 2.6) which visually shows the frequency at which any same word appears in the results of the survey. From here it can be clearly seen which words were the most common among the memories of staff and students. These words are key to the methodology and will be the starting point for the design stage taking place after the next two chapters.

For a copy of the online survey see Appendix A. Appendix B also shows a visual interpretation of the keywords.

aesthetic (1) airless (1) appearance (1) awkward (1) beautiful (4) brick (18) bustling (1) busy (4) calm (2) central (1) character (1) classic (1) clean (1) COID (4) colourful (1) comfy (1) compact (1) concrete (1) COSY (3) crowded (1) **dark** (5) detention (2) draughty (1) established (1) exciting (1) fish-tank (1) **foyer** (2) friendly (1) friends (1) friendship (2) front (1) fun (3) giggling (1) girls (1) glass (1) grand (3) groupwork (1) happy (2) heavy (1) heritage (2) historic (4) history (2) homely (1) impatient (1) impressive (1) inflexible (1) inviting (4) juniors (2) labs (2) labs (6) learning (2) library (1) light (5) linoleum (2) lockers (2) longevity (1) loud (2) main-hub (1) memorable (1) **memory** (2) mrs-pal (1) narrow (1) naughty (1) nice (1) **noisy** (2) odd (1) OPEN (3) photographs (1) physics (1) plain (1) prestigious (1) pride (1) cuaint (1) **IEC** (6) **safe** (2) scent (1) **SCIENCE** (3) sculpture (1) shortcut (2) small (2) solid (1) sound (1) space (2) spacious (3) staircase (2) stairs (2) steps (1) studying (1) stuffy (1) sunny (1) sunshine (1) tidy (1) time-consuming (1) traditional (2) two-storey (1) unique (1) view (2) Warm (4) white (1) worn (1)

active (1) aromas (1) aromatic (1) attractive (1) awkward (1) baking (1) beautiful (2) boring (2) **DIICK** (6) bright (2) character (1) classic (1) clean (1) cold (1) concrete (1) cooking (1) cooridor (1) cricket (1) crowded (2) dark (1) dated (2) delicious (1) detention (1) dingy (1) dirty (1) distant (1) draughty (1) empty (1) end (1) fabric (1) faraway (1) field (1) flowing (1) fragrant (2) free (1) friendly (1) fun (1) functional (1) geography (1) green (1) heavy (1) historical (2) history (2) hockey (1) homely (1) inconvenient (1) industrious (1) inflexible (1) interesting (1) inviting (1) labyrinthine (1) lengthy (1) light (1) linoleum (1) locked (1) IOUD (2) memories (1) MESSY (2) naughty (1) noisy (1) old-smell (1) open (1) outdated (1) poor (1) rabbit-warren (1) red (2) rubbish (1) safe (1) scary (1) Sewing (2) shadow (1) shrubs (1) silent (1) silly (1) skills (1) small (1) Smell (4) smelly (1) space (1) Spacious (3) spirit (1) sports (1) Stairs (3) storey (1) sufficient (1) teams (1) thoroughfare (1) views (1) Warm (3) white (1) windows (1) yummy (1)

Fig. 2.5. Word Cloud for the Main Block (West Wing)



3. LITERATURE REVIEW

MEMORY

"...a conversation about architecture is not exclusively about formal, isolated buildings but instead needs to be deepened and broadened as spatialized visualizations and experiences of place, seen across all communications and digitized media."

- Shelley Hornstein, Losing Site: Architecture, Memory and Place

The flow of events within the used space produces experience and memories that make up both collective and individual memories. These affect how a certain space is perceived and defines when a mere 'space' becomes a 'place' that holds meaning to the individual or community (Azizi 23). Robert Bevan, in writing about the ideas motivating the deliberate destruction of iconic structures in warfare, reasons that architecture is tied to memory, history, and identity of the people. Therefore, destroying that architecture is to "deny a people its past as well as future" (Bevan 8).

The idea illustrated by Bevan is applicable to this project; architecture embodies more than function, as the basis behind its construction is just as important. In this sense, the physical building acts as merely a catalyst for the individual to relate to a certain memory. Shelley Hornstein writes about this idea, exploring memory and how the triggering of remembrance occurs when the architecture is not physically close enough to be seen and touched, or when it no longer stands.

She argues that the act of remembering requires a trigger to allow for the occurrence, a notion called 'involuntary memory'. She alludes to French novelist Marcel Proust's account in his famous novel *Remembrance of Things Past*, in which he had written about his sudden recalling of a particular memory when he had a sip of tea, which involved having madeleine on a Sunday morning. Because of the apparent theme of memory, Proust's novel is inherently one of the main case studies chosen in this project.

"An exquisite pleasure had invaded my senses, something isolated, detached, with no suggestion of its origin ... I sensed that it was connected with the tea and the cake... And suddenly the memory revealed itself."

- Marcel Proust, Remembrance of Things Past

Hornstein perceives that architecture can embody and trigger memories or mental depictions of the place. This can be done with the aid of key material objects that allow for that which she calls 'architecture mobility', where the object carries the architecture within it. The idea is a crucial one to the aim of this research, in which understanding the frontier between the non-physical and physical is the main theme explored.

Hornstein considers postcards as an example of a key object for a place. The origin of a postcard is most often the place it depicts, and the photo on the postcard becomes an indication of a sort, evidencing and recording one's visit to the place. The postcard is sent to someone else, and when the recipient sees the picture on the card they are viewing a virtual version of the place in their mind - an element of it. In this sense, the photo (the key object) plays the vital part of reinforcing the longevity of the idea of the place for any viewer.

Above all, Hornstein argues that remembering requires a trigger and that a place requires an object aiding the triggering of memories and thoughts of it, and that without the aiding object it runs the risk of being forgotten.

CONVEYING MEMORY WITH TRIGGERS

It is important to recognise that the keywords from the survey results are not a reduction of memories of the school. The keywords are not merely single word simplifications; they carry the meaning and intentions communicated by the participants which, through my own interpretation as an alumni, will correspond with the new proposed design.

While it should be acknowledged that experience and memories are complex matters governed by narrative and background, and may be virtually impossible to be completely captured in both words and architecture, the goal here is to encapsulate the collective memory of the school, not the arbitrary nature of individual memories.

The collective memory, the memory of the masses, is the most common understanding of the school, and is therefore aimed to be the one portrayed in the new design. Consider Hornstein's example of the postcard, in which this idea is evident; during the 1920s and 1980s postcards of Israel were distributed with photos and place names such as the Promised Land and the Holy Land, which, in time, contributed to a new impression of the country, as a way of "surmounting the controversies" associated with the country.

"Picture postcards of ancient and modern architectural sights were designed to convey an overall sense of place."— (Hornstein 62)

Although the photos depicted in postcards of Israel might have carried a different meaning at one point, the postcards (acting as the catalyst and trigger for the mental interpretation of the place; akin to memory) constructed a different view of the country as time passed. The inference here is that although the catalyst is unable to trigger the exact same memory for every person involved, it is able to trigger certain ideas shared by the majority. The same concept applies to the method in this study.

The portrayal of something as intangible as memory in a built form may not be entirely achievable, therefore a line will be drawn here because this is not exactly the theme discussed in this thesis. The goal is to provide a way for the memories of the school to continue existing. This can be done by making the architecture the postcard and not the memory itself.

If one argues that directly depicting something as subjective as memory is impossible, then it can be deduced that the immaterial side of architecture is not plausible, causing architecture to cease being architecture. Therefore, for the purpose of this study, this debate is set aside in favour of exploring the theoretical possibility of the idea itself.

The emotive interpretation of space ultimately depends on established notions of thought – a building will not be perceived to be a building at all if there is no pre-determined understanding of its definition and function – and this is essentially the underlying idea within the field of phenomenology and even language itself. The key notion of referencing an existing idea to communicate a new one is fundamental to the methodology and is further explained in the following section.

principle used by signboards. Additionally, by referring to the list of strategies derived from the case studies (in the next section) this can be done more effectively. The first stage of the design phase therefore revolves around the experimentation of different ways to portray the essence of the words in order to determine the most effective approach.

THE LINGUISTIC SIGN

SIGN, SIGNIFIED, AND SIGNIFIER

In *Course in General Linguistics*, Swiss linguist Ferdinand de Saussure wrote of the system of the linguistic sign, an idea widely read and critiqued during the early 20th century in western philosophy.

Saussure defines language to be, when condensed to its basic constituents, "a list of words, each corresponding to the thing that it names" (Saussure 65). The linguistic sign that he writes of essentially explains the structured system of how meaning comes about in each word.

A sign, that is the linguistic unit, consists of two immaterial entities, the signifier and the signified:

- Signifier The signifier is the 'sound-image', which is not exactly the physical sound, but a "psychological imprint of the sound" (Saussure 66). He further elaborates by stating that words are made up of syllables, and that one can "mentally recite" words when reading, without moving one's lips.
- Signified The signified is essentially a sound-image that portrays an idea. It is the non-physical concept that is rendered mentally when the sound-image is heard.

If we take the word cat as an example, the letters and phonetics, /kæt/, is the signifier (Fig. 3.1). The idea that arises when we read the letters or hear the word, the small, furry, four-legged animal, is the signified. This entire system of signified/signifier makes up the sign itself, and like two sides of a coin, a signifier can never exist without the signified to refer to.



Fig. 3.1. Saussure's sign.

This is evidently another form of Hornstein's understanding of the trigger. If we translate this core idea into this methodology, then the architectural elements are triggers (the signifiers) for the memories (the signified).

Evoking an immaterial concept through a physical object is complex in itself but in borrowing from the concept of Saussure's sign, the process can be simplified. This allows a considerably less arbitrary execution of methodology because a widely-understood convention is followed when the process of symbolising is involved, much like the

4. CASE STUDIES

INTRODUCTION

Only certain works, ones that mainly focused on memory and approaches for conveying non-physical concepts, were chosen as case studies for this project.

To date, retrofitting an article that is non-physical is not a topic that has been widely explored in the field of architecture, meaning that there are not many built projects on this. The closest relevant theme is memorialisation, which involves remembrance and rousing thoughts within the minds experiencing the space – highly similar to the topic of this study. As part of the methodology, a list of design strategies is then extracted from the case studies to help with the preliminary design stage that follows this chapter.

1. MARCEL PROUST - IN SEARCH OF LOST TIME

"...after the people are dead, after the things are broken and scattered, still, alone, more fragile, but with more vitality, more unsubstantial, more persistent, more faithful, the smell and taste of things remain poised a long time, like souls, ready to remind us, waiting and hoping for their moment, amid the ruins of all the rest; and bear unfaltering, in the tiny and almost impalpable drop of their essence, the vast structure of recollection."

- (Proust 873)

Marcel Proust's novel *In Search of Lost Time*, although a non-architectural work, offers a unique understanding of memory through the use of emotive metaphorical comparisons. This helps in visualising how the intangible may appear in physical terms and is a worthwhile approach that can be useful in the design stage of the project when the keywords are translated into material forms.

Proust's narratives give an exceptional poetic vibrancy when he writes of past events he is reminded of and descriptions of objects which trigger them. Time is the most prominent theme in Proust's novel and the event of objects triggering past memories is what Proust calls 'involuntary memory'.

Involuntary memory is a phenomenon of one abruptly remembering a certain moment or image in one's past without conscious effort, which accurately describes the role of architecture is intended to take in this study – to remind. There is a clear correlation here with Hornstein's notion of memory and trigger, mentioned in chapter three of this thesis.

Triggers of Proust's memories may spring from a mere piece of madeleine cake, from objects that may seem minute but to him is the in fact the catalyst to a world of reminiscence. The architecture developed in this project should use this sort of process; a trigger to a memory. The trigger, however, should be more specific and be as subjective as possible in order for a group (in this case potential users of the school) to be able to relate to.

2. MAYA LIN - VIETNAM VETERANS MEMORIAL, WASHINGTON D. C.





The Vietnam Veterans Memorial (Fig. 4.1) is virtually a literal representation of a metaphor, the frontier between the world of the living and the dead, in the form of a wall. The wall is a slab of black polished granite, creating a length of reflective surface on which visitors may see themselves among the names, leading to a clear perception of the two worlds.

Maya Lin provides an allegory of her understanding of death and its connection to life. This may also be compared to the concept of loss itself; whether it is a lost object or individual, the lost exists only as a thought from the moment it is physically unattainable. Illuminating this relationship in a metaphor is an effective approach because it gives the immaterial a tangible form, and in doing so distinctively highlights the correlation between the physical and non-physical.

Lin had been very precise about the typography of the engraved names because she believed that names are enough to trigger the memory of the individual. Typography is therefore a prime design strategy in Lin's work. On the other hand, it is most likely not applicable to this project because the keywords should not be literally written into the space as a mere list of data. Instead, the goal is to express the survey keywords using architecture.

At the time of its opening, some had claimed the memorial was much too abstract to be understood and taken as an effective memorial to the lost troops. However, Ochsner argues that the 'incompleteness' of the memorial lets it become flexible for the mental projection that occurs from a space of absence. The simplicity of the memorial design also allows a flexible spatial experience (Ochsner 163).

This provides a good precedent for creating a design that is simple enough to provide flexibility in interpretation. A complicated suggestion or division of programming may over-dictate users' experience and runs a risk in lacking design resiliency because of its rigidity.

As they read the engraved names one sees themselves in the mirror-like wall, and this moment of simultaneous existence in the memorial wall makes it an object acting as a catalyst between the material and non-material world. Along this line of thought, it is easy to connect back to Hornstein's idea of an object trigger that allows the manifestation of an immaterial version of an architecture that is not physically near, providing more credibility to the core intention of strengthening memory.

3. KENZO TANGE - HIROSHIMA PEACE MEMORIAL PARK





Alignment within the site and view framing are techniques evident in Tange's Peace Memorial Park. The park consists of the Memorial Complex which entails the conference hall and museum. The typical visitor moves from the entrance towards the cenotaph arc in the centre of the park, through which there is a frame of the view to the skeletal structure of the Atomic Bomb Dome located across the Ota River (Fig. 4.2).

The Memorial Park uses physical ruins to convey memory. When interacting with ruins, users tend to make attempts in remembering or imagining the moment of the atomic bombings of Hiroshima and Nagasaki because there is an authentic remnant of the past beyond their eyes – this is a clear prioritising of the physical object over an idea. Ideally, this strategy could be incorporated into this project by utilising a somewhat hands-on method of linking to memories of the old school. With an obvious juxtaposition of past and present, the relationship has more impact.

A form of reproduction of the demolished buildings, perhaps even as a sculpture, could be produced - similar to Radford's TIP display at Western Park, Auckland, where concrete replicas of buildings are partially sunken into the earth as a critical rhetoric regarding the extensive demolition of buildings in the city (Radford). However, a literal replica is not necessarily an effective approach for this study because there is a connotation of encouraging the replacement of the lost architecture as opposed to the primary notion argued in this thesis - the architecture is not lost and still exists in a non-material form. Hence what is needed is not a replacement but a reinforcement of memories of it.

Because of their arrangement along a straight line the intended narrative is clear – an unbroken metaphorical timeline along which visitors may stand and contemplate (Cho 76). It gives a "counter-chronological" sequence of experience from the future that is the Peace Memorial Complex and museum, onto the destroyed dome that is a look into the past. The Dome then becomes less threatening, almost like a mere photograph of another place.

This further enunciates its status as History and its part in a former age that should never be forgotten or repeated – the ideal that drove the vision of peace that is perpetuated by the city of Hiroshima and the Memorial Park. The narrative is effective chiefly due to its straightforward alignment which becomes evident for visitors from anywhere in the park. This should be kept in mind for this study; by locating key spaces along a simple circulation route, the intended idea becomes more prominent.

4. DANIEL LIBESKIND – JEWISH MUSEUM, BERLIN





At first glance, Libeskind's museum looks almost painfully out of place as a building with a striking scar-like form tearing through the land very noticeably. This is a type of symbolisation. A bold, sharp form is as likely to arouse alarm as much as a soft, rounded form evokes comfort in many individuals. This technique indicates that following a conventional understanding of the relationship between forms and experience is vital to successfully convey intended sensations; which, in the case of this project, are the ideas driven by the memory keywords.

The evident lack of windows in the museum makes light a rare commodity in the space. Around the building light flows from a high ceiling as if to play a part in the image of the false proximity of freedom perceived by the holocaust victims. The area leading to the Holocaust Tower is purportedly not heated or insulated in order to further perpetuate an uncomfortable spatial quality for visitors (Fig. 4.3).

As such, playing with elements of light and heat within space is a valuable technique. One could even limit air just as well as Libeskind had done with light and heat. By purposefully removing something usually provided in 'good' design, users would then be more aware of its existence in the first place, making experience easily manipulated. This could be a chief stratagem that can be applied to my project, more specifically for quantitative words such as 'dark' or 'cold' as they describe environmental attributes.

Choice of building materials is also important. Just as a timber-panelled wall may convey warmth and rusticity, a slab of concrete is widely associated with impregnability and indestructability. This conventional emotive association with certain building materials should be exploited in order to craft the relevant qualities intended.

Structure is also one of the means of communicating discord throughout the museum. There are narrow corridors where structural beams slice through the adjacent walls at alarming angles very unlike a typically right-angled postand-beam system in order to induce unease. Structure can positively be a strategy used in my project. As structure typically symbolises stability, when it is made askew it conveys a powerful emotive quality because it is counter-intuitive and may render insecurity among users who are now much more aware of their surroundings. Swaying structure can be a technique used for conveying words associated with safety.

5. NEWTOWN LANDSCAPE ARCHITECTS; GREENINC & GALLERY MOMO - THE FREEDOM PARK, PRETORIA



Fig. 4.4. Keso S.

"The day should not be far off, when we shall have a people's shrine, a Freedom Park, where we shall honour with all the dignity they deserve, those who endured pain so that we should be experiencing the joy of freedom."

- Nelson Mandela

The non-physical loss that Freedom Park honours is not about memories, but of the robbed culture and history of a race of people in post-apartheid South Africa. It is a tribute to a culture and history interrupted by the apartheid along the fight to freedom (Oliphant 305). In this way, the Freedom Park aligns very much with the intentions of the Hiroshima Peace Memorial in representing a significant idea as opposed to memories.

The light poles lining the site are abstractions of reed plants which denote the South African traditional legend of reeds giving birth to the people. Form abstraction is certainly an effective strategy that can be applied to my project. The abstraction should be performed on symbols that hold a significant meaning to the intended audience. Creating a refined translation of a specific object or image would provide an enhanced spatial design.

However, the main vehicle used to extend the idea behind Freedom Park is the programme and usage of space around the complex. The buildings housing the museum create a central courtyard for circulation and assembly spaces while other areas like the outdoor amphitheatre also offer spaces for group-based activities. The driven idea is unity among South Africans and strength in brotherhood.

If memories consist of events, then activities carried out by users within a building should be as important as the aesthetics. The way spaces in the rebuilt school are used should then be taken into account so that specific modes of movement or usage can be encouraged as a way to drive keywords about circulation within space, like 'busy' or 'inviting'.

STRATEGIES EXTRACTED FROM CASE STUDIES

Based on the investigation into the chosen case studies, below is a list of strategies that have been implemented in the case studies. This gives a clear overview of effective design and artistic techniques, and <u>underlined</u> are strategies deemed applicable to the goal of the thesis.

1. Narrative

- <u>A journey</u>; a route based on sequence, similar to an architecture promenade
- Chronological timeline

2. Form

- <u>Simplicity</u>; acknowledging the appropriate situations when less is evidently more
- <u>Symbols and signs</u>; abstracted forms of familiar objects as a style of aesthetics

3. Materials

- <u>Colour</u>
- Finishes and Texture

4. Typography

- Literally incorporating text in the space

5. Light

- Mood
- <u>Highlighting particular elements</u>; drawing attention to certain parts of the space to further augment driven qualities

6. Programme

- The way spaces are used

5. PRELIMINARY DESIGN

FUNDAMENTALS OF THE METHODOLOGY

As mentioned before, the words from the survey are key to the methodology as they are the summary of what is remembered of the Main Block of the school and shape the design itself.

From there, the foremost strategy that is implemented is making the architecture work as a **narrative**; one that is based not on chronological events, but of a journey through a certain order of spaces which are connected to memories of the old school.

By making sense of the survey participants' answers based on my own experience as an alumni of the school, the keywords are put into a sequence specific to a set of major circulation routes in the old layout of the school. By organising the keywords into a sequence like so, the list of memories are given a more solid structure to adhere to when spatial design is taken into account.

MEMORY FLOWCHART

As the initial step, a diagram very much like a flow chart is drawn up (Fig. 5.1). By giving an order for each word conveyed in the new architecture, the memories are given a sort of structure from which the designing of spaces can start.

Movement throughout any site generally consists of different routes undertaken by different users – the derived sequence of spaces that make up the narrative in this methodology is based on this idea. By interpreting the survey results and overlaying the keywords onto a plan drawing of the old school, there is a proper estimate to where these memories might have been derived.

Based on the circulation routes from the old school layout, the flowchart comprises several possible starting points - several routes. As with the pre-demolition layout, each one may then coincide with another, leading to different spaces or back to a single one eventually. For an indication on the origins of these routes on the old school layout, please refer to Appendices chapter at the end.

The implementation of routes is not only based on the way the pre-demolition school blocks worked (and therefore a trait reflective of the old school), but also as a form of introducing order and structure to the multitude of memories of the old school. Memory as we know it is an intangible presence, and if not given a chronological property - a 'when' – it could be said that its constituent pieces then threaten to meld into one another into an imperceptible sense; much like bleeding the colours of an art piece together without consideration and in the end producing a mess of mere brown. The 'structuralisation' of memories here should therefore be taken as an aid to the method in designing architecture which strengthens the reality of the memories of the past-students of the school.

The central idea that must be remembered here is that this methodology seeks to create an architecture that acts as a catalyst for communicating non-physical ideas. As mentioned in the literature review, it is the architecture as the 'postcard' and not the memories itself.



Fig. 5.1. Memory Flowchart

EXPERIMENT 1 - THE IMMATERIAL, MATERIAL, AND THE CATALYST

The memory flowchart from before consists only of words, therefore a secondary diagram is drawn, to portray the keywords visually (Fig. 14). What is key here is not the words itself, but the idea and meanings carried behind them, as well as the best way to visually convey these ideas.

SEQUENTIAL SKETCH 1

The first sketch in the preliminary design stage (Fig. 5.2) is a representation of the word flowchart, to be read in a similar way to an elevational drawing. The key idea is, once more, communication. With the use of line weights and sketching techniques incorporated into the making of forms and shapes decided based on the list of strategies from the case studies, the sketch portrays a journey guiding the eye throughout the image.

Because of the fundamentals of reading an elevational sketch, connections between routes and where they intertwine could not be clearly understood in this drawing, causing the three routes established from the word diagram to be lost. The balance between narrative and communicative techniques were not properly challenged. Moreover, although the sketch was evocative, several less significant words were omitted from representation for the sake of a clearer preliminary experimentation in testing how to transition from purely ideas and into visuals.

SEQUENTIAL SKETCH 2

The narrative element is carried on in Fig. 5.3 with a representation from a plan view. The composition of the sketch is a nod to the pre-demolition Main Block; elongated with a central entrance. The shading around the centre shape on the drawing portrays a sense of magnitude and brings an architectural aspect to the sketch study. However, representation of the three routes is not deemed to have been executed very effectively due to the restraints caused by the overall rectangular form inspired by an old plan drawing of the Main Block.

Very much dissimilar to the previous test, the sketch in this stage attempts to communicate in a more 'objective' approach by basing itself on conventional architecture drawings (formal understanding of plans, line weights and materials, light sources, and so on).

However, in doing so, much of the evocative and striking qualities of the previous sketch is lost to give way to a clearer, accommodating mode of communication that is somewhat catered to the pragmatist. The disjointed lines cutting into and across the block, is very much a direct representation of students using the elongated Main Block as a thoroughfare while the gridded sketch of 'lockers' abstracted into grey-toned grooves insinuates outlines of systematically-aligned squares that are rather conservative.

SEQUENTIAL SKETCH - ISOMETRIC

The final outcome from the previous stage is extruded into an isometric drawing which brings a spatialized element to the sketch (Fig. 5.4).

A conceptual view of how the final result could be is seen here as colours and shapes now have form and solidity. Sketching out these isometric drawings also allows the testing of ways to create buildable atmospheric qualities that reflect the essence of memories of the old school.

The key intention here is to essentially view the sketch from a different way. Therefore, although the outcome in this stage is three-dimensional, spatial configuration is not relational to the site whatsoever. Programme and function is a secondary consideration for the purpose of this study, and will be resolved in Experiment II where they will still be defined based on memories of the old school.



and concept. From this line of perception comes the gridded profiles of definitive lines shown in this narrative sketch.



Fig. 5.3. Narrative Sequential Sketch 2



SEQUENTIAL SKETCH - REITERATION

This reiteration involves repeating the first two steps of producing a narrative sketch and then reviewing it as a 3-D extrusion once more.

The new sequential sketch (Fig. 5.5) appears much more diagrammatic and communicative than the previous sketches (Fig. 5.2 and 5.3).

By this stage, it is decided that not every single keyword that arose from the survey should be represented in the sketch and only the top most frequent keywords are. Other than the three clear starting points of each route flowing easily from left to right (following the typical western reading direction) the portrayal of 'shortcut' as dark gashes cutting across the usual alignment of graphics on a page easily shows the idea of corridors of sorts which link different courses of movements.

As with Fig. 5.4, the finalised sequential sketch is extruded into a narrative sketch exhibiting isometric trends (Fig. 5.6 and 5.7) so that formal design may begin in Experiment 2 with a clearer foresight on what spatial qualities should be achieved.

EXPERIMENT 1 CRITICAL REFLECTION

The goal of Experiment 1 was to produce a sketch that is a visual reflection of the branches of promenades derived from the word diagram. The process constitutes several sketch experiments exploring how to achieve this. By the final communicative sketch, the aspect of spatial design progressively came into attention. With this in mind, the final outcome of Experiment 1, as an extruded form of its two-dimensional precursors, provided an intuitive insight into how the next experiment can proceed when programme is incorporated.

Throughout the process, with the primary aim of 'communication' in mind, the main strategy utilised is a combination of triggers and form abstraction. The basic thought process consists of interpreting the keywords that the survey had yielded and understanding what might have triggered them. Any triggers that are not under considered to be part of programme and the way spaces are used must be a physical part of the building itself. These building elements are then abstracted into symbolic architectural forms that can ideally work just as well as a trigger. The rest of the triggers, which must involve how space are being used by students, rely on programme and circulation throughout the new school design in order to drive the meaning of the keyword.

However, due to the heavily abstract explorative method, which in turn produced an abstract image, translating the final communicative sketch into a buildable architectural form may be challenging as emotive qualities of a mere picture run the risk of being lost along the way.

During Experiment 1 an issue arose regarding how the methodology seemed arbitrary. This feedback highlighted potential clashes between the objectiveness in the structuring of memory keywords (into a flowchart) and their representation in the sketch experiments. The sketches were deemed to be too subjective due to an apparent lack of standards upon which to measure their success.

However, while there is inherently a certain respective understanding of how the narrative sketches work, their conceptions are in actuality based on the list of strategies derived from case studies investigated. The arbitrariness of the sketches are reduced when there is a criteria a reader can refer back to, that is the strategies. The final narrative drawing (Fig. 5.7) should then be self-explanatory in order for the final design in Experiment 2 to be successful.





Fig. 5.6. Reiterated Narrative Sketch - Isometric



Fig. 5.7. Experiment 1 Final Sequential Sketch

6. DEVELOPED DESIGN

EXPERIMENT 2

In this phase the feasibility of the narrative-based design is tested alongside the introduction of programme and structure within the space and the final series of communicative sketches from Experiment 1 are translated into a tangible piece of architecture. While the design stage finds a solution for transforming the results of Experiment 1 into a buildable project, building services and detailing are not covered within the scope of design.

CONCEPTUAL PLANS & MASSING

This experiment begins by deriving conceptual plan drawings based particularly on programmes the Main Block had previously housed. These include:

- main office for visitors and students
- staff and head of school offices
- student services
- library •
- science labs
- computer labs
- food and technology labs
- general classrooms
- restrooms ٠

In carrying on the narrative theme, the building programmes should reflect the community's memories of the old school because many of the memory keywords (such as 'busy' and 'noisy') have to do with activities these ex-students and staff members undertook during their using of the building.

The sketches in Fig. 6.1 are some of the initial exploration of the overall form that is dictated by the word flowchart of memory sequence, as well as a nominal reference to where some of the keywords might have been derived from in the pre-demolished Main Block layout.

The longitudinal layout predominant among the exploratory sketches helps create a wide, continuous façade which would make the building appear larger (many survey participants recall the word 'big' when posed with a question on the Main Block before demolition) when viewing from the front entrance of the site.

As the sketches demonstrate, there are more conflicting forms on one side of the building while the other side is based on a regularly gridded lines. The contrast between the two is not only due to faithfulness to the memory flowchart, but also a purposeful design move using direct contrasts to highlight their respective meanings. During this stage of the design, the idea of creating an oppositional part to any design (a concept that is an extension of Saussure's sign in his theory of structuralism) was explored, as the oxymoronic relationship was intended to play a part in driving the meaning of the keywords represented. However, as the development progressed, the emphasis on this dual opposition concept was reduced. Although it provided a critical stance in the design process, the route and sequence system should be propelling the design instead of a focus on creating contrasting opposites of spatial atmosphere.

The exploration yielded a bold massing design. This sort of exaggeration in form draws from the intention of having a significantly expressive form – around which space division and interior walls will be moulded to ultimately generate a design where there is minimal loss of communicative elements during the transition between conceptions to development, while reflecting the previous arrangement of programmes the pre-demolition Main Block had.

The final developed form was created in the digital rendering programme SketchUp to envisage a three-dimensional interpretation (Fig. 6.2). This allowed more explicit understanding of the form and its scale (Fig. 6.3), and aided in the design of room layouts in the next step of the experiment – which although is not a crucial aspect to develop, plays a considerable role in structure design and in determining where structure can aesthetically tie with the purpose of memory-portrayal (Fig. 6.4).





Fig. 6.1. Preliminary Massing Sketches

By the end of this design iteration the overall massing design was deemed to be ineffective as a buildable architecture. When programme and room layout were tested as the final step, the robust form proved to have contributed to severe issues of inefficient circulation and lack of space which provided a drawback to the buildability and effectiveness as a school design. On top of this, the form was also somewhat primitive due to its over-excessive expression of only a particular set of words like busy and noisy and abstracted representation of thoroughfares cutting across the building (Fig. 6.5 and 6.6). This resulted in a weaker representation of the rest of the keywords.

In referring back to the case studies, simplicity in design can be an effective approach. The next step was to simplify the design and find a form which should straightforwardly cover this dichotomy of disordered profiles and uniformed patterns while clearly communicating the other keywords that have been inadvertently omitted (Fig. 6.7–6.9). Instead of trying to make the exterior aesthetics strictly adhering to the memory and experience flowchart, the key may be to focus on interior execution and spatial atmosphere.

The next stage utilised form generative techniques like fragmentation and abstraction in order to take the core of the base form design and develop that further into a simpler design that solely encompasses the vital components. In the final iteration the design is split into two separate buildings to reflect how the pre-demolition Main Block prompted memories of 'warm' on one end of the wing and 'cold' on the other. By introducing the gap between the two buildings in this design, the distinction between these two keywords will be more prominent (Fig. 6.10).

Due to the division, the design then ceases to appear as one singular block. Based on the survey, students and staff remember the Main Block to be 'large'. In reality, the building was narrow and elongated, providing a façade which extended from east to west of the site. The new design uses a similar technique in creating that perception. In the final design stage, a structural system of moment frames is implemented on the front and back elevation in order to visually connect the two buildings and let the whole design appear larger.





Fig. 6.3. Assessing scale and building circulation towards buildings to the south, most of which still stands currently



Fig. 6.2. Preliminary Massing on Sketchup

Fig. 6.4. Programme and Interior Layout



Fig. 6.5. Investigating core structural frames and their role in exterior and massing design



Fig. 6.7. Iterations for simplifying design



Fig. 6.8. Iterations for simplifying design

Fig. 6.6. Developing a final form for the rooftop

-lessens front lown (x)







Fig. 6.9.

Fig. 6.10. Final sketch of simplified design

FINAL DESIGN

RATIONALE

Memories run the risk of being lost if they are not made stronger to withstand the course of time. Like buildings, this can be prevented by reinforcing memories which can be done by developing triggers that are, at their core, catalysts in order to remind people of certain memories.

This project is about the immaterial architecture that exists in what the community remembers of a demolished school. Throughout the design process, the keywords concerning the memories the survey participants have of the old school have been treated with respect and the design methodology constantly refers back to them. The new design is founded based on these memories and not so much the physical design of the old school building. This reinforces how the experiences of these people are much more crucial than how the building was built before.

By strictly adhering to the keywords and committing to the memories and their perceived sources from within the old building, the proposed design can both continue running as a school while giving tribute to the image of the old school; its essence itself. It is not a memorial and instead becomes, unceasingly, a school (Fig. 6.11 - 6.17).

Each space in the proposed design has been tailored to trigger a set of keywords (Fig. 6.12). This way, the new users can travel through an architectural promenade of these memories, in some ways experiencing and reliving what the past users had as well (Fig. 6.18 and 6.19). This creates high mental involvement by the community affected by the initial loss, bringing more significance to the role of the building as a trigger of immaterial concepts.

The new design utilises the power of the mundane, the day-to-day memories and experiences of the ex-students, where more meaning lies. By doing its role as a school, the life of the school is sustained. The design is then a representation of the entire timeline of the school's existence and not solely a reminder for the loss.

(For the preliminary structural design of the proposed form, refer to the RESIST report in Appendix C.)

POTENTIAL CHANGES AND ALTERNATIVE METHODS

What has been demonstrated in this project should be merely one of several approaches to strengthening memory and producing architectural triggers. The methodology could potentially be more meticulous by using more complex schools of thought that involve deconstructing the supposed experiences of the students and staff. This may be to further pinpoint sources of their triggers while critiquing the meaning behind these memories. For instance, a more rigorous usage of Saussure's theory of dual opposition from the linguistics standpoint can be brought in to identify more of how and why each word appears in the survey results (for example, the Main Block might have appeared 'large' only because the other school blocks were exceedingly smaller).

There may be an apparent lack of a critical stance in the method used in this project. The intention is that the architecture produced here is only supposed to be narrative, in that it is not a piece of architecture that is a critique. Because the goal is to continue the timeline of a supposed destroyed history, the proposed design is a somewhat of a reflection of a certain point in time and not an evolution. It is not a rhetoric but instead a communicative device.





Fig. 6.12. Envisioned Routes for Circulation – based on Fig. 5.1. Flowchart. Each circle indicates a step within the flowchart.













Fig. 6.18. Atmospheric Render of East Wing Feature Area.

Keywords: Loud, busy, spacious, messy, warm, stairs



Fig. 6.19. Atmospheric Render of West Wing. Keywords: Dark, lockers, noisy, cold, science

7. CONCLUSIONS AND CRITICAL REFLECTIONS

Throughout the project, the design process frequently refers back to memory and the existence of immaterial architecture in conjunction with its material counterpart. Findings from the project show that the gap between immaterial and material is extremely wide as memory and experiences hold different meanings to different individuals. However, in order to even begin to explore this theme, there is the need to start to derive the line to know when and where to cross back and forth between the subjective and objective, hence the mixture between qualitative and quantitative components in this methodology.

Such derived limitations are, for example, the communicative element of the preliminary sketches that translated from the word sequence diagram; the sketches spoke to some and not to others. This may in fact be sufficient because the final proposed design may in some ways only speak to alumni of the school and not towards newer batches of students, who will develop their own set of experiences from the building even if the school had never been demolished

Limitations of the project lie in the execution of the survey and the use of programme and structure. Because the survey answers are singular words submitted by the participants, the documentation of memories of the school is merely skimming the surface. Without time constraints, an in-depth account (likely to be found through one-on-one interviews from a much smaller sample size) may be elected to be part of the scope, though the methodology may need to be more complicated in order to accommodate the sheer amount of detail in what is remembered about the school.

The project concerned a school, which generally has a predictable set of events and agenda that affect the experiences of users, and the programmes incorporated follow the same ones as the school block before its demolition. If the findings from this study are applied to a project that requires a less strict set of programmes, the keywords will require more deliberate planning of sequence. The sequence of keywords for this project was based entirely on the previous progression of these memories in the pre-demolition Main Block.

If extended beyond merely the design of the Main Block, the project can continue to develop the other buildings on the site as well. Moreover, if the design development is not limited to revolve around the interior and circulation within the building, this representation of the immaterial can be extended and applied to outdoor areas – landscaping and building connections can contribute to the triggering of the memories of other school blocks.

A building that cannot be seen or touched is argued here to be just as real as a physical built environment, if not significantly more resilient. The project can potentially lead to architectural designs of a more critical stance, which if taken further, can present an effective rhetoric. In a broader scope beyond the field of architecture, the focus on memory provides validity to the value of the emotive element of experiences (which is often perceived to be the secondary, the feminine) and can critically interrogate the frontier between fact and perception.

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SOURCES OF FIGURES

All images sourced from author unless stated here:

Fig. 2.1. The location of the site in the suburb of Avonside (North towards the top of image). Source: Google Maps. Google. 22 Apr 2015. Web.

Fig. 2.2. School land boundaries and building footprints in pre-earthquake arrangement. Source: Koordinates, 14 Jul 2015. 22 Apr 2015. Web.

Fig. 2.3. Pre-demolition arrangement of school blocks and names. Blocks in red have been demolished. Source: Koordinates, 14 Jul 2015. 22 Apr 2015. Web.

Fig. 2.4. The Main Block façade. Source: Author's photograph. 30 May 2002.

Fig. 4.1. Roverto, Mario Durán Ortiz. US Flag Reflexion on Vietnam Veterans Memorial 2011. Wikimedia Commons. Web. 19 Jan 2016.

Fig. 4.2. BriYYZ. Memorial Cenotaph, Hiroshima Peace Memorial. 2012. Toronto. Wikimedia Commons, Web. 23 Nov 2015.

Fig. 4.3. Studio Libeskind. Jewish Museum Berlin. Studio Libeskind. Web. 23 Nov. 2015.

Fig. 4.4. Keso S. Freedom Park, Pretoria. 2009. South Africa Tourism. Web. 23 Nov. 2015.

APPENDICES

APPENDIX A: THE SURVEY

The survey was carried out online using *SurveyMonkey*. Although the thesis covered only the design for the Main Block, the survey had posed questions on all four demolished buildings of the school. The survey questions are shown in the next page.

Below are colour-coded graphs recording the types of answers received regarding the Main Block. Types of answers include: colours, physical building features (e.g. concrete), emotive building features (e.g. welcoming), physical spatial qualities (e.g. spacious), emotive spatial qualities (e.g. decorated), circulation (e.g. busy), programmes (e.g. science class), and other experiences (e.g. friendship).





COLOURS
BUILDING FEATURES - PHYSICAL
BUILDING FEATURES - EMOTIVE
SPATIAL QUALITIES - PHYSICAL
SPATIAL QUALITIES - EMOTIVE
CIRCULATION WITHIN
PROGRAMMES
EXPERIENCES & EVENTS



Welcome to My Survey on Memories of Avonside Girls'

This survey is for my Victoria University of Wellington architectural project about a hypothetical rebuilding of Avonside Girls' High School's lost buildings and facilities. Although most of the buildings at Avonside Girls' have been demolished due to the 2011 earthquake, they still exist in our memories about the school. The idea behind this project is to physically convey the buildings that are still clear in our memories.

In this survey, recall what you can about the demolished blocks atAvonside Girls' by describing your memories of them. Participants and their responses will be utterly anonymous to the researcher (me) and other participants.

The survey would take approximately 5 minutes to complete. It has 14 questions.



Your response is very important to this project. I sincerely hope you are able to take a bit of time to complete the survey. Thank you very much in advance.

-Soon Yie (Sam) Low, AGHS student from 2005 to 2009



Memories of Avonside Girls' High

The predominant emphasis of this survey is on the recollection of Avonside Girls' prior to the events of the 2011 earthquake. However, if you are uncomfortable with reminders of the earthquake occurred you are free to withdraw your participation now.

Continuing with the survey will be taken as consent and you will not be able to withdraw your answers. As a reminder, all participants and answers will be completely anonymous.

Click 'next' to begin the survey!



1.

Students: Were you an Avonside Girls' student during or after 1980?

Staff Members: Have you worked at the school anytime during or after 1980?

Yes, I have studied/worked there during or after 1980.

No, I studied/worked there before 1980.



Memories of Avonside Girls' High

Memories of the Main Block: Library Wing

* 2.

The Main Block, Library Wing (library, science, classics & computer labs) Pick which end of the scale reflects how positive your memories are about the building.





* 3.

1. 2. 3. 4. 5. 6. 7. 8.

Please list 1-word adjectives that describe your memories about the library wing of the Main Block. List anything at all that comes to mind (e.g. brick, bored, small). Try to put them in order of the significance these words have to you (with 1 being the highest).

la contra c

The Main Block, from Cowlishaw Street. Source: Author.

Neutral Positive \bigcirc \bigcirc \bigcirc \bigcirc





Memories of the Main Block: Food Technology Wing

* 4.

The Main Block, Food Technology Wing (food labs, science, classics & computer labs) Rate how positive your memories are about the building.



The food technology wing viewed from the school field. Source: Works Consultancy Services Ltd, Avonside Girls' High School: South East Wing Additions

From the Back And End. 1963. Photo. Archives New Zealand, Wellington.

Negative				Neutral				Positive
0	0	0	0	0	0	0	0	0

* 5.

1.

2. 3.

4.

5. 6. 7. 8.

Block.

- List anything at all that comes to mind.
- Try to put them in order of the significance these words have to you.

Please list 1-word adjectives that describe your memories about the food technology wing of the Main

-
1
1
]
1
1
ì
1
1
- 10

6



Memories of Gresson Block

* 6.

Gresson Block (languages, art & staff room)



Gresson block backyard. Source: Avonside Girls' High School, " Avonside Girls' High School Celebrate 75 Years of Independence," 46 (2003): Print.

Negative				Neutral				Positive
0	\bigcirc	0	0	0	0	0	0	0

* 7.

Please list 1-word adjectives that describe your memories about Gresson Block. List anything at all that comes to mind.

Try to put them in order of the significance these words have to you.





Memories of Avonside Girls' High

Memories of Jobberns Block

* 8.



Negative

* 9.

Please list 1-word adjectives that describe your memories about Jobberns Block. List anything at all that comes to mind.

1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	

Jobberns Block (mathematics & economics)

words have to you.

- 1



Memories of Stevenson Block

* 10.

Stevenson Block (technology, english, & graphics)



The Entrance to the Stevenson Block. Source: Avonside Girls' High School, " Avonside Girls' High School Celebrate 75 Years of Independence," 111 (2003): Print.



* 11.

Please list 1-word adjectives that describe your memories about Stevenson Block. List anything at all that comes to mind.

Try to put them in order of the significance these words have to you.





Memories of Avonside Girls' High

Memories of the Outdoor Areas

* 12.

If you were a staff member, please select 'staff member' from the drop-down menu directly below and finish the survey.

For students, please select 'student' from the menu and answer the rest of the survey. •



As students we were supposed to spend our lunchtimes outside if we didn't have club activities (unless it was raining!). Where did you usually spend your lunch hour when you were a student?

-			
Other places (please specify)		, Annue,
14. Please	rate how positive th	is memory	is for you



This final question is for past students only.



15.

Please list 1-word adjectives that describe whatever you remember about having lunch times at this place.

Try to put them in order of the significance these words have to you.

1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	

APPENDIX B: PERCEIVED ORIGINS OF SURVEY KEYWORDS



APPENDIX C: RESIST REPORT



ARCHITECTURAL REPORT

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RESIST is an application for the simplified evaluation of the structural performance of lateral load-resisting systems in a building under seismic and wind loads. It is designed to be used in educational settings as a guide for the sizing of lateral load resisting systems for Architectural and Civil Engineering students. RESIST should not be used as a final preliminary design; a full, complete preliminary design should be carried out by a structural engineer.

Modeller: Acer

ANALYSIS RESULTS

Results are percentage of max. allowable: $\langle = 100\%$ is OK; $\rangle 100\%$ is Failure. U=Ultimate Limit State, S=Serviceability Limit State (for smaller earthquakes that occur more frequently).

X-Direction: Steel Moment Frame				Y-Direction: Reinforced Concrete Wall			
	Wind	Seismic (U)	Seismic (S)		Wind	Seismic (U)	Seismic (S)
Drift	2%	28%	29%	Drift	3%	46%	19%
Shear	16%	43%	22%	Shear	3%	41%	14%
Moment	20%	90%	46%	Moment	3%	41%	17%

Wind Vibrations

The building does not appear to be susceptible to wind vibrations or other serviceablility problems caused by wind. $H^{1.3}/M = 0.191$ (should be less than 1.60; where H=building height (m) and M=Mass of building per unit height of building (tonnes/m))

BUILDING CONSTRUCTION

Building Importance	Contains crowds/high-value contents
category	
Number of storeys	2

Floor plan points (-27, -8.65), (27, -8.65), (27, 8.65), (-27, 8.65) Floor plan properties Area: 934.2 m²; Perimeter length: 142.6 m; Centroid: (0, 0) m; Bound lengths: (54, 17.3) m Inter-storey height 6 m Floor Weight type: medium, Dead load: 2.90 kPa, Live load: office (3.00 kPa) Weight type: light, Dead load: 0.30 kPa (over floor area) Interior wall External wall Weight type: heavy, Dead load: 3.10 kPa (over wall area) Weight type: heavy, Weight type: heavy, Height: 2 m, Dead load: 4.80 kPa (over floor Roof area), Live load: 0.25 kPa (over floor area) Structure in X direction Steel Moment Frame (x 2) Locations: (0, -8.401), (0, 8.401) Reinforced Concrete Wall (x 4) Locations: (-26.75, 5.44), (-3.2, 0), (26.75, 0), (20.3, 0) Structure in Y direction

WIND AND TERRAIN INFORMATION

Design code	AS/NZS 1170.2:2002
Wind Region	A7
Terrain category	Suburban
Lee effect zone	None
Site elevation	100 m

Regional 3 sec Gust Wind Speed

The regional 3 second gust speed (V_R) depends on the wind region, building design working life, building importance, and the limit state under consideration.

Limit State	Ultimate	Serviceat (SLS1)
Recurrence interval (yrs)	1000	25
Regional 3s gust wind speed, V_R (m/s)	46	37
Seismic Information		

Design code:	NZS 1170.5:2004
Hazard factor, 7:	0.30



Total height

bility

Soft soil (F

Soil:

Recurrence interval years: 1000 (U); 25 (SLS1)

Return Period factor, R: 1.3 (U); 0.25 (SLS1)

LATERAL LOAD STRUCTURE, X DIRECTION

Туре	Steel Moment Frame	2. 3.	Once a o re-evalu Final des
Design method	Limit-state		design.
Number of frames	2	RESIS	T DOI
Number of bays	7	•	Floor dia element the Stru
Bay length	7.5m	•	Connect
Floor width supported by beam	7m	•	RESIST a design b
Column size	Depth: 0.6m, Width: 0.6m	•	The desi the desi RESIST u
Beam size	Depth: 0.749m, Width: 0.262m	•	RESIST d The late restrain
Foundations	Foundation beam: centre-line distance between pads: 52.50 m, square pad width: 2.70 m, pad depth: 0.55 m To anchor the lateral resisting component against tensile uplift, provide 250 mm diameter tension resisting piles. These piles will probably have bulbs or bells at their bases to provide the tension resistance.	•	Fire prot RESIST d RESIST a

RESIST LIMITATIONS

RESIST has been designed as an education tool, primarily for Architecture students, as a means for initial sizing of lateral resisting elements for wind and earthquake loading.

RESIST may be used as a small part of the overall design process:

ES NOT ANALYSE OR DESIGN THE FOLLOWING:

- uctural Engineer.
- uilding, and are assumed by RESIST to be have sufficient strength to ensure the expected performance of the resisting elements.
- by the Structural Engineer.
- sign of the EBF; there are many other aspects to the design of EBF that will require design by the Structural Engineer.
- does not carry out a design of gravity load support system, e.g. columns and beams, floor system.

- allows only resisting systems aligned to X and Y axes.

LATERAL LOAD STRUCTURE, Y DIRECTION

Туре	Reinforced Concrete Wall
Design method	Limit-state
Number of walls	4
Wall length	6.000 m
Wall thickness	350 mm
Foundations	Foundation beam: centre-line distance between pads: 4.80 m, square pad width: 4.90 m, pad depth: 1.00 m To anchor the lateral resisting component against tensile uplift, provide 575 mm diameter tension resisting piles. These piles will probably have bulbs or bells at their bases to provide the tension resistance.
Penetrations in structural walls	Penetrations for doors, windows and services up to 15% of the wall length at ground floor, and greater above are allowed.
Minimum thickness	The minimum thickness to prevent wall buckling is 320 mm. The current thickness of 350 mm is sufficient.

1. Initial preliminary design. RESIST can be used as a way of initial sizing and testing options, providing a point of discussion between architects and engineers. conceptual design has been formulated, the Structural Engineer will carry out another preliminary design, where ALL assumptions and initial sizes are uated for accuracy and appropriateness. RESIST cannot be used as a substitute for a complete preliminary design by a Structural Engineer. sign will follow from the structural engineer's preliminary design, and the results from RESIST should have no influence on this stage of the structural

aphragms are not evaluated by RESIST. It is assumed that the floor diaphragms have sufficient rigidity and strength to transfer loads to all the resisting nts. They are assumed to be rigid. The floor plan editor allows non-rectangular floor diaphragms, which if highly irregular will require careful design by

tions within the resisting elements and the rest of the building are not analysed or designed by RESIST. Such connections are critical to the performance

assumes the lateral structure to be uniform for the full height of the building. In practise section sizes will reduce with height, but this requires careful

ign of Steel Eccentric Braced Frames (EBF) requires careful design to ensure they behave as expected. RESIST only carries out an initial assessment of

uses an elastic approach for evaluating torsion effects. Generally torsion effects should be evaluated by taking into account inelastic deformations.

eral resisting systems provided by RESIST are only representative of the possible choices currently available. New technologies such as buckling ed braced frames, base isolation, and other systems may be a suitable choice for a building. The Structural Engineer will provide guidance.

tection of members is not accounted for by RESIST. If required this may require an increase in the overall size of the members.

does not analyse hybrid resisting systems where different resisting systems are used in the same direction, e.g. walls and frames.