CRITICAL PRESERVATION

An architectural research project exploring Post Traumatic Architecture in Christchurch.

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ABSTRACT

The focus of this research is to explore the concept of Post Traumatic Architecture in the context of Christchurch. It is aimed to provoke a discussion on an alternative way of rebuilding a city devastated by a traumatic event, such as an earthquake, by retaining memories from the past and creating a transition into the present, through exposing the evolution of the built environment.

The site chosen for this thesis reflects the trauma sustained through two structurally damaged buildings and an empty lot where demolition has taken place. The decision to retain the existing buildings preserves the story, memory and meaning of what once was. In order to deal with the challenges this site presents I have followed the theory of Critical Preservation to achieve a successful architectural solution. This theory is neither restoration, nor removal, but instead, renovates existing architecture to display the historic qualities, as well as integrating modern design. The existing structure is restored and exposed to make way for the history of the site to merge with a contemporary architectural intervention.

Lebbeus Woods is an architectural theorist who aligns much of his philosophies with Critical Preservation. His ideas on rebuilding cities post war or natural disaster have been explored and referenced throughout this research project to challenge the traditional way of thinking about rebuilding post trauma.

The program selected, being an architectural school, reinforces the need to strengthen our awareness of how we approach architectural education for the future.
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A series of devastating earthquakes in Christchurch, in particular February 22nd 2011, has left behind a trail of destruction, resulting in most of Christchurch City needing to be rebuilt. Thousands of buildings have been lost to demolition, including many landmark buildings that have been identified for their modernist and victorian architectural qualities, unrecognizable with very few traces of past memories. However, restoring old, built fabric post earthquake must be considered when given the opportunity. Buildings express the story of a memory, the progression of change, the transition from the past to the present, which people will respect and remember.

This research explores the concept of Post Traumatic Architecture. The term ‘post-traumatic’ refers to the evidence of the aftermath – “the remains of an event that are missing. The spaces around this blind spot record the impressions of the event like a scar.” Post Traumatic Architecture is a term used for the rebuilding of cities after a disaster. The architectural concept follows similar theory with Critical Preservation. Woods' philosophies allude to new ways of approaching a disaster zone. Although Woods has only one built project, his ideas are highly relevant and will be explored in the context of Christchurch.

The demand for new buildings in Christchurch is significant; the city is the driving theory behind this thesis, which is not currently being met. The rise in the building industry has had a significant impact on the city of Christchurch. The demand for new buildings in Christchurch is significant; the city is the driving theory behind this thesis, which is not currently being met. The rise in the building industry has had a significant impact on the city of Christchurch. The research gathered through the process of this project will be used as a generative tool for exploring architectural concepts.

The aims is to see Christchurch become a city of innovation with leading technologies in not only earthquake engineering, but also sustainable urbanism. Christchurch will become a destination spot for the building industry of New Zealand with architects, builders and engineers coming there to see new technologies being implemented. The aim is to see lecture series and workshops held to inform the community on the developments of their city and contribute to the knowledge and skills of the industry.

New Zealand already has three established schools of architecture. Therefore, a fourth school would have to provide an identifiable point of difference. All three existing schools are somewhat withdrawn from the industry and the community. Therefore, the aim of this project is, not only to advocate a private school of architecture for Christchurch, but also to create a facility that supports the profession in Canterbury by providing a flow of trained graduates and serving as an intellectual center to bring together academics and practitioners. This school of architecture will be a private school of architecture and will aim to attract students from around the world due to the unique educational opportunity, and collaboration between the different fields which will further enrich the development of Christchurch and, indeed, New Zealand.
ARCHITECTURAL EDUCATION

2.0
HISTORY OF ARCHITECTURAL EDUCATION

Architectural education can be traced back to the world famous Ecole des Beaux Arts in Paris, which was established in 1797 and offered an alternative education of architecture to the existing articled pupillage - an apprenticeship-style of learning where a student exchanged his labour for instruction from a senior architect in the office. This alternative education allowed students to work in studios run by prominent leading architects and universities in Liverpool, Manchester and London university schools of architecture adopted this style of architecture education in the 19th Century.

The first American attended the Ecole in 1846 to study architecture due to the lack of regulation in American building industry and architectural profession. The Ecole des Beaux Arts became the model for the first American university architectural programme at Massachusetts Institute of Technology (MIT) in 1865, and by 1900 fourteen architectural degree courses were offered across American universities. During this time in Great Britain, articled pupillage was still the prevailing method of architectural training.

Great Britain and the Commonwealth finally adopted the American Beaux Arts model after the discrimination against university education for architects was abolished. It was accepted that formal tuition would not damage architectural creativity.

Before the establishment of a school of architecture in New Zealand architects were educated in the office environment under senior architects, following the Great Britain ‘articled pupillage’ approach. Pupillage was never really considered to be adequate training for an architect, however; it was seen as the foundation of all architectural education by the profession in Great Britain and its colonies until around 1880/1890.

In New Zealand and Australia evening classes at technical and university colleges were introduced in 1880 to develop design and construction knowledge. However, this was not compulsory and was not seen as a substitute for office practice. At the turn of the century correspondence based learning was the most formal and structured alternative to an architectural apprenticeship available in New Zealand. Reading building manuals, pattern books and architectural publications that were published in Great Britain and America was, however, not seen as satisfactory for learning the required skills needed for architects in office-based settings.

In New Zealand, Canterbury College introduced a diploma course in architecture in 1914 which was run in conjunction with the School of Arts and Engineering. Christchurch had the first course of architecture in connection with a New Zealand university. Samuel Hunt Slager, the director of this course, was a prominent local architect and strong advocate of architectural education. The classes were predominantly evening classes as an addition to office work.

In the early 1900s three New Zealanders, William Thomas of Ashburton, J W Chapman-Taylor of Taranaki, and Joseph Daw- son of Wellington chose tuition by correspondence in America over pupillage in New Zealand due to the few local architects at the time.

Post World War 1 New Zealanders were given the opportunity to study in London or America and gain an architectural education within a professional environment.

John Mair and Roy Lippincott's personal experience overseas provided encouragement for architectural education within universities for New Zealand.

Beaux Arts teaching principles and the American implementation of those principles guided the foundation of University of Auckland's School of Architecture in 1918.

During the first few years the college only held evening classes until 1924, when the New Zealand Institute of Architects appointed a chair in Architecture – Professor Cyril Knight. Cyril Knight exemplified the compound nature of contemporary architectural educational practices. Thus by 1925 Auckland’s School of Architecture had a full stable academic course and the enrolments at Canterbury dropped, and the course closed.

6  Ibid.
7  Ibid. 7.
8  Ibid. 6.
9  Ibid. 5.
10  Ibid. 6.
11  Ibid. 7.
12  Ibid.
In 1926, in addition to the diploma courses, Auckland’s Architecture faculty established a degree programme which was a combination of British, American and French educational systems. The course essentially adopted the principles of the Ecole des Beaux Arts of Paris. In 1922, as a reaction to the exclusive control created by the only architectural school situated in Auckland, Bill T rengrove gathered local Christchurch architects together and formed the ‘Atel ier’ 13, a workshop-type environment, to train the first architecture students in Christchurch. The Atelier was a loose association and never gained national accreditation as it was practice based training and not linked to any educational institution.14

In 1964 the NZIA was insisting on a second school of architecture within New Zealand as the number of graduates from Auckland each year was not enough for the booming New Zealand industry. The location of a second school was highly competed for by Wellington and Christchurch. Suggestions were made to expand Auckland’s facilities by Wellington and Christchurch. However, Auckland’s facilities were relatively similar in the ways the institutions are run, despite Unitec being slightly more practical and technology driven. Therefore, a fourth school of architecture in New Zealand must offer a unique alternative to architectural education.

Architecture is a multi-disciplinary, multi-skilled, multi-dimensional and multi-media field 15 that is evident in architectural practice through the communication of many industry professionals during the design process. However, architectural education is not preparing students well for this participative practice and Lawson argues, “The studio in a design school is in many ways a bad model of design practice. One of the ways in which it is most far removed from practice is the absence of collaborators, whether they be clients, users or other associated professional consultants.” 16 The studio being isolated from outside influences and collaboration encourages individualism, which contradicts the fundamental principles of professional practice.17 However, this is a common, inevitable characteristic of schools of architecture, and communication and teamwork are two essential elements which should be improved.

The planning of learning spaces, therefore, becomes essential in forming this relationship by creating a more integrative and supportive culture so a sense of community between students is created as well as independence of thought.18 The design studio is effectively the most important part of an architectural school, as it is within this space that the greatest interaction between staff and students occurs.

16 “Canterbury Feasibility Study.”
17 Ibid.
18 Ibid.
23 Ibid. 13.
Judith Farren Bradley, a chartered architect and course director at Kingston University of Architecture and Landscape in London, believes the separation between education and practice is inadequate for the 21st century: “Academic study and experience are not separate aspects of learning – they interact and they inform and enrich each other.” The gap between architecture education and practice is increasing and practitioners are blaming the institutions for producing graduates with little understanding of the technical side of architecture and little experience in teamwork. A unified partnership between these two fields will only improve the development, experience and learning within the school. The practitioners will equally benefit from the partnership as they both have much to learn from one another. This could be generated through more industry professionals teaching within the universities. This is starting to happen, but more of it is needed. Generally, the lack of industry professionals in universities is largely due to the strict nature of teaching qualifications. However, practicing architects teaching studio classes can further develop the studio towards a more professional learning environment. Whatever the bridging, great opportunities lie in this unique territory, and it should be explored. The education of architects is somewhat removed from the outside world, with studios isolated from the street. Unitec School of Architecture may be removed from the street but are trying to bridge this gap through real experience opportunities, and real problems in the cities in which we live and work in. This is what architectural education needs more of.

Mark Wigley is implementing a new way of thinking about architectural education at his school in Columbia University. Spaces within the school allow for projects to be undertaken by people both inside and outside, developing a new kind of experimentation, creating a greater interface between the school and the rest of the world. Kenneth Frampton expressed, “In the interest of the future of the architectural profession, schools of architecture have a pressing duty to connect with their surrounding communities.” A school of architecture is effectively a community of learning where connections should be created and compartmentalisation removed.

The design of this building will explore these ideas to foster a stronger connection between architectural education, professional practice and the surrounding community. The spatial experiences inside and outside the design will be important to create the connection through learning internally and externally. The design will also be able to accommodate the changes architectural education will face over the coming years and also create spaces that promote communication and teamwork.
I certainly support the school, if there had been a school in Christchurch years ago, I would possibly have continued my studies having passed intermediate in 1965, but simply could not afford to go to Auckland so instead went to Polytech.” – Colin Hill

“We have had extreme difficulty hiring architects or graduates for a long period over several years. I believe it is an endemic problem in Canterbury.” – Alun Wilkie

“I have had great difficulty hiring students and architects over the last few years and believe a school here would help relieve this situation.” – David Sheppard.

resulted in Canterbury University doing feasibility studies in 1995 and 2008.

As Christchurch in the past has been known for the Atelier, a workshop-type environment, a practice-based school with strong relationships with local architects would be appropriate for this region. In June 2008 a survey was undertaken among the Canterbury architects on support for a school of architecture in Christchurch. 29 replies were positive, and 25 out of the 29 were keen to teach, tutor or take studio projects. The ratio of architectural designers to architects in Christchurch is significantly higher than other main cities in New Zealand. Students leave CPIT and start up their own practice, competing with professional architects. Christchurch has a strong tradition of high quality architecture with influential architects, such as Sir Miles Warren and Peter Beaven, who have contributed greatly to architecture in New Zealand. A school of architecture within Christchurch would support and foster such a tradition.

Christchurch Polytechnic Institute of Technology (CPIT) currently runs the only Bachelor of Architectural Studies in the South Island. However, this programme is not an accredited course and does not lead to registered architect status, leaving students with no option other than to move to the North Island to study at University of Auckland or Unitec, in Auckland, or Victoria University in Wellington.

Due to the vast number of opportunities in this field in Christchurch many more students are, and will be, looking into this area of study and current capacity is limited. Discussions with senior staff at CPIT have confirmed that the numbers of students enrolling in their course has significantly increased since 2010 from 109 to 130 students and first year intake has risen from 40 to 60 students. Classroom space is becoming short on supply, with first and second year now occupying two large studio rooms, as opposed to one. Due to growing numbers, and limited space, discussions are currently being held on planning for a new school of architecture and engineering to be built next door to the current facilities.

There has been an immense amount of support for a school of architecture in Christchurch over the years. The New Zealand Institute of Architects (NZIA), the local profession and the Christchurch City Council have all expressed their full support. This

DEMAND FOR ARCHITECTURAL EDUCATION IN THE SOUTH ISLAND

Figure 2.5 A) CPIT Main Entrance, B) Studio C) Computer Suite D) Hall way, E) Rakiar Centre, central hub

33 "Canterbury Feasibility Study."
The workshop type is neither an internalized object (such as the courtyard), nor an integrated piece of urban fabric (like the compound), rather, it reaches outward in a way that communicates a sense of optimism and activism. The workshop conveys a craft-like curriculum with various disciplines interacting, breaking down the boundaries amongst them. The Bauhaus is a prominent example of this type with the interdisciplinary nature of architects, designers and crafts people all working together in large spaces.

The atelier type blurs the distinction between school and practice where architects, their students and staff work in one large room. This type eliminates distinctions but also limits the diversity of activities that occur there. Fisher uses the Taliesin West, by Frank Lloyd Wright as an example of the atelier.

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2.5.2 OVERSEAS EXAMPLES

Yale School of Architecture.

The Art and Architecture building at Yale University was designed by Paul Rudolph in 1963 and reflected the Brutalism style. The school falls into the courtyard type category as Rudolph designed the school around a central core that enabled visual connectivity across all floor levels, encouraging movement and communication among the students. What Rudolph excelled in with this building was the concept of creating different hierarchies of space through the slight shift in floor levels to ensure the spirit of openness was not disturbed. 56 floors levels are created through the 7 stories inside this building creating an intricate network of interlocking interior spaces. This is a great example of using architecture to define space and the sectional perspective illustrates the complexity of the internal environment. However, the downfall of this design is the disconnection from the outside, which Neutel, Prenter and Fisher describe as a common downfall of the ‘Courtyard Type.”

Melbourne School of Architecture

To what degree do you design the pedagogy? Melbourne School of Architecture is a great precedent for this. John Wardle Architects and Office dA won the competition-based project in 2009. The requirements of the brief meant the school had to reflect a design that responded to the academic environment, the design studio, the living building and built pedagogy. John Wardle Architects and Office dA achieved this with their concept of architecture being an instrument of pedagogy itself, by having a didactic mission. Wardle stated, architecture schools have a captive audience, an educative audience unlike other university programmes.

The design also responds to the development of the design studio, from a space to sit and draw, to a more flexible environment, with strong connections with the library, exhibition spaces and workshops. The design of this school of architecture does not clearly fall into one of the four ‘types’, however through the function, it tends to align closely with the ‘workshop type’ due to the close connection and flexibility to various different spaces. Through form, the building moves away from the typical ‘courtyard type’ with a public realm that divides the building, and does not create an internalised object.


Ibid.

2.5.2 OVERSEAS EXAMPLES

Figure 2.10 Yale School of Architecture.

Figure 2.11 Section through Yale School of Architecture.

Figure 2.12 Proposed Render of Melbourne School of Architecture.

Figure 2.13 Public Realm Through Ground Floor.
41 Copper Square

41 Copper Square in New York, designed by Thom Mayne of Morphosis, is a great example of transparency within an educational centre for art, architecture and engineering. With the campus downsizing, and three schools combined under the one roof, transparency between the three disciplines was essential. The vertical piazza, a 135-foot high atrium down the core of the building containing all vertical circulation and creating a transparent social core where students continually interact. Mayne said “schools are not about transferring information – they’re about the social development of young people as they mingle with other tribes.”

41 Cooper Square also engages well with its surroundings through the building’s façade, which was designed to “invite the community into the school and give back energy to the city.”

Thom Mayne’s design of 41 Cooper Square using transparency within a central core of the building to nurture integration is a great concept that this project will explore.


Ibid. 189.
Victoria University of Wellington School of Architecture

The Victoria school of architecture is located inside Wellington’s CBD. The building has been designed around a central atrium which visually connects all the floors together. However, a sense of connection has been lost due to the upper edges of the atrium requiring glazing to cause a noise break. These upper floors contain all the studios, administration offices and library which are enclosed and quite shut off from the public’s view. Exhibitions are regularly held in the ground floor of the atrium where there is a large, open public space. The lecture theatre is also located off the atrium area, allowing for ease of way finding for public users. The circulation can get quite confusing on the higher levels, which contrasts with the clarity within the atrium.66


Figure 2.16 Victoria School of Architecture, Wellington.

Figure 2.17 Atrium used as exhibition space.

University of Auckland School of Architecture.

The Auckland school of architecture is located among the other faculties at University of Auckland in the CBD. Due to the limited space within the central city the school had no option other than to become a multi-storey building. There is no central atrium connecting all spaces together. However, they have tried to achieve a social connection through the use of mezzanine floors in studios. The studios are arranged on top of each other, with a mezzanine level connecting two studios. Therefore, there are four floors of studio space across the five-year levels. An open staircase connects both floors together, allowing students to observe other year levels work while going from point A to point B. The studio space is broken down into smaller spaces, with partition walls creating areas for drawing, modeling and computers, removing the concept of the ‘computer lab.’ The vertical structure of the building does not allow much in the way of circulation, creating quite secluded stairwells and lifts.

The main downfall of Auckland’s school of architecture is the set back from the street, totally removing any chance of public interaction in or around the building.67

The school falls into the ‘courtyard type’ as the multi-storey building and the library form an external courtyard environment. This space is not isolated within the school, however due to the set back from the street, it is only utilised by the students.

67 Ibid. 15.
architectures as seen in Yale and Victoria, creating a core which fosters collaboration among a variety of public and private occupants. And lastly, Melbourne’s concept of designing the pedagogy is a very rich concept for an architectural school and very appropriate for Christ Church.

2.5.4 CONCLUSIONS

The analysis carried out by Nasar, Preiser and Fisher is intriguing. However, choosing a specific ‘type of architecture school’ is not really relevant for this project. These types reflect the origins of the profession and now that we are in the 21st century, it seems appropriate to create a new typology within architecture schools. The ideas discussed through each type do have merit, and efforts will be made to integrate a few of those ideas to create this new typology. For example, an internal atrium and an external courtyard that integrates into the public realm will be taken from the courtyard concept. Integrating the school into the urban fabric through the placement of built-form on site, while also maintaining a sense of community, will be taken from the compound concept. Creating an internal flexible environment, which fosters the collaboration between various disciplines, will be taken from the workshop concept. The idea adopted from the atelier will be the blurring of the boundary between architectural school and practice.

From the above precedent studies several key ideas have emerged. In most examples the studio spaces were aligned in close proximity to one another, but were still not very well integrated. University of Auckland achieved a greater connectivity among studio year levels with the mezzanine floor and connecting open stairwell. Partition walls are generally the result of disconnection within schools of architecture and Paul Rudolph’s concept at Yale of creating different hierarchies of space through floor levels is a very effective concept. The atrium appears to be an integral part of a school of architecture as seen in Yale and Victoria, creating a core which fosters collaboration among a variety of public and private occupants. And lastly, Melbourne’s concept of designing the pedagogy is a very rich concept for an architectural school and very appropriate for Christ Church.
3.0 CONTEXT
3.1 **CHRISTCHURCH PRE-EARTHQUAKE**

In 1847 John Robert Godley and Edward Gibbon Wakefield met to plan the Canterbury settlement. By 1848 the Canterbury Association was formed and Christchurch was named after the college Godley attended in Oxford University. Christchurch City is known for its grid layout of rectangular city blocks, which were a result of its flat topography and the intentions of its early surveyors. The city was first contained by Salisbury, Barbadoes, St Asaph and Antigua Streets, but as the city grew it became extended to the four avenues: Bealey, Fitzgerald, Moorhouse, and Deans Ave. The 100m by 200m rectangular block pattern is broken by the sinuous curves of the Avon River and its parallel Oxford and Cambridge Terraces. High Street and Victoria Street diagonally cut through the grid to allow for access to Sumner and Papanui. As the city has grown suburbs with their own large shopping malls and amenities now surround the central avenues, leaving few people coming into the city.

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**Figure 3.1** View of Christchurch city.

**Figure 3.2** Historic Map of Christchurch Central City.

**Figure 3.3** 1900s Christchurch City Streetscape.

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Christchurch was a different city in the late 19th and 20th centuries, and the hundreds of university students roaming the streets accounted for much of the difference. What is now known in Christchurch as the Arts Centre was once home to the Canterbury College from 1877-1975. Canterbury College was very much a part of the city. The Avon River banks were frequently used as a sketching ground for art students, and the staff and students from the college enriched the life of the city by sharing their skills, knowledge, creativity and enthusiasm with the community.

In 1882 the Canterbury College School of Art opened and was closely connected to South Kensington in London. It was a very traditional school with an emphasis on trade and craft related skills. The Canterbury school was at the forefront of the arts in New Zealand from 1920-1930.

52 Ansley, Christchurch Heritage. 56.
Canterbury College being situated within the city was evidently a positive aspect. It brought in a different element, filling the streets with pedestrian activity, which is something Christchurch lacked in recent years, even before the earthquake in 2011. However, a significant amount of pedestrian activity was removed when Canterbury College (now known as Canterbury University) relocated to Ilam in 1975, 6km west of the central city. Lincoln University is also removed from the city, being located 22km from central Christchurch. The detachment of these two large campuses is detrimental to the Central Business District, as large shopping centres in surrounding suburbs contain all the amenities students require. A new university situated along the Avon edge may be just what Christchurch needs to reactivate the city to the vibrant nature it once was.
3.2 CITY OF RUINS

On 4th September 2010 a magnitude 7.4 earthquake struck Christchurch, however little damage was reported. On February the 22nd, 2011 an earthquake measuring 6.3 magnitude struck Christchurch, causing a lot of damage and taking 181 lives. The city’s post war heritage buildings designed by architects such as Sir Miles Warren, Don Donithorne, Paul Pascoe and Peter Beaven,54 were in a state of ruin, with their future uncertain. The city within the four avenues was nearly all contained within a locked down ‘red zone’, one that would stay for the next two and a half years.

Much of the inner city is gone. Sir Miles Warren sees it as an opportunity to undo past mistakes.55 There is an opportunity to bring pedestrians back into the city and a university in the center has been shown to achieve this in the past.

A Christchurch recovery plan, produced by Christchurch City Council, was released in August 2011, providing a vision for the city and involving an extensive communication and engagement process. An extensive selection of well-trained professionals worked alongside the Christchurch Central Development Unit (CCDU) to produce a blueprint plan in 100 days. This plan was produced out of the development of the Christchurch City Council draft, and completed in July 2012, providing a spatial framework for central...
Christchurch. 'The Blueprint' explains the form in which the central city can be rebuilt as a whole, and identifies key principles such as making a compact, green, vibrant, market, accessible city that reflects a great place to live, learn, study, play, set up business, and invest. Anchor projects such as a new sports facility, convention centre, health precinct, performing arts precinct etc., are designed to stimulate further development within the central city.56

Christchurch, even before the earthquake, was undergoing significant change with many buildings in the central city empty. David Sheppard, Architect from Sheppard and Rout said, “The city was in need of an injection of energy.” The Blueprint’s goal is to create a vibrant and distinctive new city. However, the history of the city cannot be forgotten. Building upon the layers of history will enrich the city as a whole.57

Figure 3.11 Christchurch central city post earthquake.
Christchurch is a city of ruins, with the recent earthquakes wiping out a huge amount of the urban city fabric and heritage. Buildings have been demolished, sites have been cleared and car parks have been made. The original urban grain is lost. But how does a city with so little left re-build? Where does a city start when so much of the city is tabula rasa? The impact of earthquakes on Christchurch will be everlasting. Memories cannot be removed from one’s mind. Why not build upon those memories?

The trauma Christchurch experienced from the February 2011 earthquake has left not just a traumatic memory, but a lasting physical scar on the built environment. This scar is a visual reminder of what has occurred, it cannot be removed, nor can it be concealed beneath new construction, as it will forever be in the memories of the people who experienced the trauma. The subsequent response of whether to deny or reconcile with the event becomes crucial to the experience gained.

3.3 POST TRAUMATIC ARCHITECTURE

Figures 3.12 Christchurch Cathedral in ruins.

Figures 3.13 Destruction inside the Cathedral.

Figures 3.14 Wall containing CTV buildings lift shaft.
ical Preservation I will be adopting for this project will align more with John Ruskin’s philosophies, as opposed to Viollet le Duc. The notion of restoration prevents the removal of post trauma artifacts from the site, allowing a physical representation of the traumatic memory to remain, which ties a connection with the past and present day.” 67

“Reconstruction of the traumatic memory through architecture can free the present from the past. However, any act of transformation must recognize recovery as a process of construction, just as trauma was a process of destruction.” 68

A traumatic event, such as an earthquake, can have a huge impact and it is the architect’s role to restore a sense of place and normality where it has been lost. This does not necessarily mean re-building, as re-building can more often than not do more harm than good, expressing ignorance to the trauma. “The site – at least its memory – is not the same. The response must address this. Gene is a sense of community. It is our duty to rehabilitate the area, acknowledge the tragedy (not surrender to it), and build.” 69

67 Dickson, Move. 48.
68 Ibid. 13.
69 Ibid. 56.
4.0 THEORETICAL DISCUSSION 1.
LEBBEUS WOODS
Lebbeus Woods is an architectural theorist who spent most of his time challenging the traditional way of thinking about building. Much of his philosophy aligns with the theory of Critical Preservation, which heavily contrasts with Viollet Le Duc who espoused restoration, Le Corbusier’s Modernist tabula rasa approach, and is arguably what a city like Christchurch is in need of. Although his work was generally promoted through drawings and not built form, he had very strong ideas on re-building cities post war or natural disaster.

Woods believed that there are three elements affecting the development of architecture today: disguise, illusion and passivity. His response to these elements was “Sites will not be disguised, method should find its way out of illusion, and it is with ethics that one will face passivity.”

Woods addresses these three controlling elements through his analysis on cities torn apart by the destruction of war or natural disasters, revealing the truth behind the wretchedness and healing process experienced. He opposes the Modernist movement and their morals to erase the most “conceptually corrupt” parts from war in order to build more “humane cities.” However, Woods acknowledges that their goal of “better” was never achieved. The cities were as single layered and ordered as the damaged cultural issue it demanded to remove. He said “Modernist architecture was too classical in its knowledge, too tired to cause-and-effect conceptions of process, too disdainful in its worship of the machine (and its determinist processes) to embody the chaotic spirit of the new age. Architecture, tied then and now to hierarchies of authority of both left and right, to modernist and post modernist doctrine, has missed out on the revolution in knowledge that occurred in the first three decades of the twentieth century, and that continues today.”

The modernist dogma of erasing old cities for the new ‘better’ city is today considered an unacceptable concept. Although it seems logical to restore or replace war/disaster damaged buildings, it prevents the evolution of the building from the past to the present day and ignores the catastrophe that has occurred, erasing all cognitive memories the building endured.

Buildings damaged from war/disasters embody a history that should be respected. Their damaged state suggests new forms of thought and new formations of space. The new spaces created amongst the traces of the disaster are not seen to symbolize or commemorate the destruction, rather they acknowledge with honour, what has been experienced and lost, as well as what has been gained.

New spaces inserted into the existing remnants of the past are not there to create entirely new knowledge, not to discard existing ideas or systems of knowing, but rather to develop them at their past or present boundaries.”

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Figure 4.1 Lebbeus Woods San Francisco earthquake drawings.
Lebbeus Woods is known for his radical unorthodox spaces and had a strong interest in space, particularly focusing on the relationship of pre- and post-war/disaster spaces and the potential this destruction offered. Woods’ design concepts explored how space could be created from the ashes of the tragic past and healing sections of the city through scaps of the wreckage. His creativity of destruction, focused on the possibilities of re-inhabiting damaged spaces beyond simple reconciliation, by integrating the activities of two iterations of the same space. He considered space to be very important in exchanges with people and saw space as “abstract, its geometry, its lines, its walls, it’s a definition of boundaries, and in a sense it could be used for anything.” Woods objected to the concept of predetermined spaces with labels on doors that dictated how that certain space should be utilized. He expressed this through a university situation; “You go into a university building and find the classroom based on the label on the door, the room is just a box, it can be used for anything but you’re looking at a label which tells you how to behave.”

Lebbeus Woods explored the opportunities presented when structures were inserted into buildings of cartesian cubic spaces. He found the juxtaposition of space created ‘free spaces.’ Free spaces, Woods claimed, “had no meaning – they were not pre determined spaces, they had no purpose - no function, and they were difficult to occupy - you had to figure out how to be in this space.”

Individual interpretation and invention are two key concepts being taught today through architectural education and a building that grasps and materializes the pedagogy is an important aspect of this project. The future of education is slowly becoming more and more technology driven, lectures are being posted online, video conferences are held, classrooms will soon be abolished or extremely re-thought. Individual interpretation and invention are two key concepts being taught today through architectural education and a building that grasps and materializes the pedagogy is an important aspect of this project. The future of education is slowly becoming more and more technology driven, lectures are being posted online, video conferences are held, classrooms will soon be abolished or extremely re-thought and essentially ‘freespaces’ will be created. By applying Woods’ concepts of freespace to this architectural facility, a new typology is created. Educational buildings are often seen as expensive with un-utilized rooms, therefore, by creating non-programmed spaces that can be used by industry personnel, students and the community, this allows for the potential of the facility to be realised all times. The idea of non-programmed spaces within sections of the city, damaged by war or disaster, aided in new forms of knowledge through his own individual interpretation and invention.

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Figure 4.4 Lebbeus Woods Light Pavilion inside a porous section of Steven Holl’s Sliced Porosity block in Chengdu, China. The intervention is fixed into a porous hole of one tower and challenges the idea of space that is not designed to make you feel a certain way. Woods calls it an experimental space that allows people to experience a different type of space, one that has never been experienced before. “Whether it will be a pleasant or unpleasant experience; exciting or dull; uplifting or merely frightening; inspiring or depressing; worthwhile or a waste of time,” it is not predetermined by someone’s familiar experiences or expectations, because there aren’t any. The divergence from the rectilinear grid of the towers completely changes the space from static to motion inspiring people to explore. Although the function of Wood’s intervention is utilized as vertical circulation, the main purpose of the space is to expand the scope of one’s experiences.

Figure 4.5: Inside the Light Pavilion, a vertical circulation space.

83 Ibid.
Lebbeus Woods' 'imagined structures' adapt to disaster rather than trying to resist it. He does not consider the idea of destruction as negative, rather he asks, how can this create architecture? Natural disasters are unpredictable rearranging problems, which destroy built form, therefore, is there a way for architects to build for earthquakes rather than against them? How can that build up of energy be turned into architecture?

Lebbeus Woods has explored these ideas through his work on the San Francisco earthquake. He looks for creative relationships with earthquakes through the formation, construction and inhabitation of buildings. Wood expresses cities need to accept the "new, the strange, the unexpected, the upsetting, the disturbing" and engage with these conflicts at their core. Earthquakes will constantly affect Christchurch for many years to come; therefore, engaging with this issue at its core will only contribute to the richness of the city's cultural environment. New structures must not only separate but also connect. 84

Figure 4.6 San Francisco project: Inhabiting the quake, quake city by Lebbeus Woods, 1995.

Lebbeus Woods conducted a study of modern cities attacked in the Second World War and the philosophies used to re-build them. Woods found two opposing principles were used in the aftermath. The first being to restore what had been lost to its pre-war condition, and in doing so, restore normality back into the lives of people in the city. The second principle adopted was a strongly modernist approach: to demolish the damaged buildings and build something entirely new. Woods argues it is impossible to return to the 'normal'. The pre-war normal no longer exists and a new normal is needed to replace the lost one. Reconstruction needs to integrate the experiences of destruction into needed social changes, as well as architectural ones. The post war city must create the new from the damaged old. 85 Woods said "The attempts to restore the fabric of old cities to their former condition is a folly that not only denies present conditions, but impedes the emergence of an urban fabric and way of life based upon them." 86 "Transformation, transmutation, transfiguration" are Lebbeus Woods' three terms that he considers dignify the fate of architecture. Although Woods' thoughts mentioned here are based on a post war situation, these ideas are useful for the rebuild of post earthquake cities such as Christchurch.

Lebbeus Woods’ ideas of rebuilding on the existential remnants of war or disaster are articulated through his injection, scab, scar and new tissue approach. Open voids in damaged buildings allow for the opportunity of new structure to be inserted within to create new spaces within existing spaces. This forms a dialogue between what is old and new through two vastly different schemes of spatial order and thought. The scab is the first layer of reconstructing the existing building within its damaged state, protecting exposed interior spaces during the process of transformation. The scar is a deeper level of reconstruction that fuses the new and the old, reconciling, coalescing them, without compromising either one in the name of some contextual form of unity. The scar is seen as a visual reminder of the past, an aesthetic embodiment of history. “The scar is a mark of pride and of honor, both for what has been lost and what has been gained. It cannot be erased, it cannot be elevated beyond what it is, a mutant tissue, to accept the scar is to accept existence.”

Lebbeus Woods, Radial Reconstruction. 16.
Seismic technology has the potential to be explored aesthetically through architectural expression. David Farquharson tested this concept in his South Hall, University of California at Berkeley in 1873, where he believed that the new structure, to ensure safety, should be expressed to people in the form of art.\footnote{Andrew Charleson, \textit{Seismic Design for Architects: Outwitting the Quake} (Burlington: Elsevier Ltd, 2008). 251.} Earthquakes are unpredictable forces of nature that occur on very few occasions, leaving earthquake strengthening redundant most of the time.\footnote{Julieanna Preston, Mark Taylor, Andrew Charleson, \textit{Moments of Resilience} (Sydney: Archadia Press, 2002). 79.} Therefore, why not express the raw engineering spaces and let it function as ornament as well?\footnote{Building & Housing Information, “Earthquake-Prone Buildings,” http://www.dbh.govt.nz/bomd-earthquake-prone-buildings.}

Mark Taylor, Julieanna Preston and Andrew Charleson in their book \textit{Moments of Resilience} explore the contribution of structure to architecture in seismic prone regions. The book uses the 1917 Turnbull House and R House, a 1960 office building in Wellington, New Zealand, to explore how earthquake strengthening can also function aesthetically as ornament. The 1960s R House was chosen as the multi-storey building for their research and externally dressed with steel cross bracing. This bracing had a dominant and expressive impact on the existing façade, both structurally and visually, by expressing the building’s fragility, but also assuring stability.\footnote{Ibid. 19.} The Turnbull House explored seismic re-strengthening to a much smaller scale internally, integrating the tectonic with the idea of dressing.\footnote{Ibid. 84.}

To meet new building code regulations buildings in Christchurch post earthquake require much stronger earthquake resisting frames than in the past. Structure in architecture provides the skeleton that supports the building elements – ‘the muscle’, which resists the lateral forces applied in an earthquake. Engineers are not primarily concerned with making their structural components visible and beautiful, but to be “efficient and only secondary artists.”\footnote{Ibid. 18.} Earthquake standards for buildings in New Zealand were introduced in 1935 following the 1931 Napier earthquake. Further developments were made in 1965 and again in 1976\footnote{Julieanna Preston, Mark Taylor, Andrew Charleson, \textit{Moments of Resilience}. 55.} resulting in all at risk buildings in Wellington requiring seismic re-strengthening or torn down in the 1980s. The structure used to strengthen those buildings was generally added in a way that did not impinge heavily on visual appearance, by concealing it within internal surfaces.\footnote{Ibid. 19.} This method preserved visual integrity of the existing buildings, aided by the assumption that the existing structure was fine. Exposing the critical dialogue of old buildings and new structure beyond the skin of the building changes exterior and interior spaces with a commutative expressive dimension, which is far richer than preserving visual integrity.\footnote{88 Julieanna Preston, Mark Taylor, Andrew Charleson, \textit{Moments of Resilience} (Sydney: Archadia Press, 2002).}

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Noriyoshi Morimura Architects designed the Television House in Osaka, Japan in 2011. The base isolation is expressed as a design element, which is generally concealed beneath the ground’s surface. Seismic isolators are designed to take the shock of the earthquake while the building above is protected from the rigorous lateral ground movement. This form of earthquake engineering is becoming more popular, especially with larger scale buildings. The television house, sits 1.5m above street level over a sunken driveway, emphasizing the isolation units.  

![Figure 5.4 Schematic of the Television House.](image)

![Figure 5.5 Street view of the Television House.](image)

The Campbell Sports Centre in New York, designed by Steven Holl, is a great example of how exposed structure contributes to the overall architectural aesthetic. The steel and concrete structure defines the spaces through its degree of exposure, and the sense of loads and forces within the building are expressed and felt through material and detail. Steven Holl voiced “Everything becomes to one point in space and how all those forces are resolved that becomes a ready-made sculpture in a way.”

5.2 PROSTHETICS IN ARCHITECTURE

Prosthetic limbs are not just extensions of the body; they are attached due to the body being deficient, or defective, in a certain area. The prosthetic, therefore, imports artificial elements that reconstruct and transform a particular part of the body by propelling it up and replacing the immobility. Prosthesis is arguably always architectural; “it is the supplement of a structure, inserted to repair a structural weakness of the host, which cannot be removed, as it cannot stand up on its own.” 98 Amputation of deficient, or defective, body parts is generally carried out before the prosthetic limb is attached. This same bodily metaphor will be adapted to the existing two building’s structures. Partial demolition of the structures may take place to allow for a new inserted prosthetic structure to support the building’s body.

Prosthetics supports the argument of this thesis with its concept of using existing structures and adding an instrument to address the fundamental deficiency, rather than removing the building or urban condition for a tabula rasa solution. 99 Prosthesis is an adaptive re-use strategy, which challenges the politics of public and private separations. 100 Prosthetic actions at the scale of the city have the capacity to establish and provoke new relationships: the most fundamental being between outside and inside. Through physical connection and the sharing of the city’s people, prosthesis enters a symbiotic relation with existing architecture. Thus prosthetic action at the urban scale can be understood as parasitic.” 101

New structure inserted into existing buildings will be required to bring them up to the new building regulations. This new structure is effectively acting as a prosthetic limb to prop up present pension, bridging the gap between the physical trauma the building has endured and the everyday. The prosthetic insertion, therefore, both signifies the trauma and the recovery. 102

98 Ibid.
99 Goodwin, Porosity. 24
100 Ibid. 6.
101 Ibid. 32.
CONCLUSIONS

From the above research and precedent studies several design strategies have emerged in achieving a school of architecture that reflects its pedagogy. It is evident that in past times earthquake structure was considered to be visually displeasing. However, when a trauma is experienced, and the loss of a limb is endured, the prosthetic attachment is not hidden, it cannot be concealed beneath the skin’s surface as that skin no longer exists. This same rule should be applied to architecture and new inserted structure should be evident to display the recovery from the trauma and the strength regained.

The R House concept by Taylor, Preston and Charlton is a good example of structurally re-strengthening an existing building while giving equal consideration to the architectural aesthetic. Conversely, the Television House exposes a typical structural element, such as base isolation, that in no way has been designed to be architectural, but becomes an architectural feature due to the infrequent exposure. These two approaches to design though revealing the bones of the building will be important for this project.

What makes Steven Holl’s Campbell Sports Centre different from other buildings that have expressive structural qualities is the architectural concept of revealing the joint. This project must not just consider exposed structure, but the way in which it is exposed and how that defines the space.

Figure 5.11 Sketch of structural joint revealed through internal wall cut-away.
6.0 THE PROJECT
6.1 FUNCTIONAL REQUIREMENTS

The investigations through the previous chapters have explored various design concepts that will all contribute to the overall design. However, this section will deal with design more holistically, taking into account the contexts, site and the educational function of the school together with the integration of the facility into the city of Christchurch.

Public areas that can be used by the Students, Industry and Community:
- Conference rooms
- Restaurant / Bar
- Library
- Exhibition Spaces
- Critique Spaces
- Atrium / Courtyard
- Café
- Architectural Office
- Bookshop
- Retail
- Info Centre

Private areas that can only be used by Industry and Students:
- Studios
- Workshop
- Administration Offices
- Seminar Rooms

Ground Floor: Café, Retail, Architectural Office, 2x Lecture Theatre, Information Centre, Book Shop, Conference Rooms, Workshop, Courtyard
First Floor: Library/Study space, Seminar rooms, Café
Second Floor: Studio / Model making / Computer areas, Critique space, Administration
Third Floor: Studio / Model making / Computer areas, Critique spaces, Administration, Restaurant/Bar
Fourth Floor: Studio / Model making / Computer areas, Critique spaces
The corner of Cambridge Terrace and Cashel Street is the chosen site for this architectural centre. This site is located within the four Avenues of Christchurch City, on the western side of Cathedral Square, along the edge of the Avon River. Earlier investigations carried out by Canterbury University to locate an architectural school on the Ilam campus, were considered unfeasible and did not meet the specific criteria for this brief. A new campus in the heart of the central city is the focus for this project, not located on or within existing buildings at the Canterbury University Ilam campus.
The site has been chosen for the following reasons:

- Existing two buildings on site that reflect trauma through the structural damage endured by the earthquake.
- Accessibility for transport coming into the city, and walking distance to the proposed bus exchange that will be situated on the corner of Litchfield and Colombo Street.
- Very close relationships with the existing Arts Centre (which was previously the Canterbury College), the Art Gallery, and the Museum, which will be frequently visited by the students during study.
- Close proximity to the proposed city library and convention centre, which will complement the facilities at the architectural school.
- Within close relationship of other educational facilities such as: the Design and Arts school, the Otago school of Medicine, Christ College, and St Michael’s Church school.
- A connection with the Avon River which is proposed to be a more vibrant integrating part of the city with cycle tracks, cafés, bars and pleasant pedestrian areas.

6.2.2 CRITERIA

Figure 6.5 The site and its relationship to existing and proposed buildings.
Oxford and Cambridge Terrace are two roads in Christchurch which run parallel to the curves of the Avon River. The Blueprint Recovery Plan proposed to remove sections of Oxford Terrace near the hospital, to create a more pedestrian environment and enhance the connection with the Avon. On the opposite side of the river, Cambridge Terrace also runs parallel, supplying access to residential properties and businesses. To supplement the university environment the business end of Cambridge Terrace will become a shared space, allowing for short term parking and active river edge frontages. Montreal and Durham Street are the two main arterial streets providing circulation to this site through a dominated one-way system. However, the Blueprint proposes to replace all one-way roads with two-way systems. The site does not sit adjacent to these main thoroughfares, keeping busy traffic at a distance from the site.

The site chosen is currently the only corner of the triangular city block that is occupied with buildings post earthquake. However, both the Age Concern and the Bradley Nuttal Building are currently un-occupied and their fate is uncertain. The decision to keep these two buildings and strip them down to their existing structure, relates back to the architectural question “Post Traumatic Architecture: How might the project for an architectural school/centre respond to recent events in Christchurch?”. These two 1980s buildings are very similar and were engineered by the same company, Alan Reay Consultants, the firm also in charge of the engineering of the CTV building, which tragically killed 115 people in the February 2011 Christchurch earthquake.
Figure 6.13 The site showing the two existing buildings, The Age Concern and Bradley Nuttal Building, as well as the empty lot which has been turned into a temporary carpark.
Warren and Mahoney’s first office and house at 65 Cambridge Terrace (1962), is located on the same city block, which is now home to the Canterbury Branch of the New Zealand Institute of Architects (NZIA). The adjoining gallery and architect’s flat, which was an extension in 1979, is also now being tenanted by Ashfield Architects. 69 Cambridge Terrace, the neighboring building which Warren and Mahoney also designed in 1989, is currently administration for the Design and Arts School. Kamo Marsh, landscape architects, are currently working from 71 Cambridge Terrace, and Contract Construction from 52 Cashel Street. This city block is home to a variety of industry related occupations; therefore, creating an architectural centre on this site would only enrich such an area.

As this architectural centre is designed to bring students, industry and the community together causing formal and informal interactions, master planning for the city blocks surrounding the site has been carried out, while also acknowledging and respecting the Christchurch Blueprint.

Possible lot spaces that were left empty after the earthquake are being suggested for Architecture, Engineering and Construction (AEC) firms, to bring more industry into a compacted area. Lane-ways have been used to break up the triangular city block, causing more of a connection between proposed buildings on and around the site, as well as further afield. A lane way has been placed from the site straight up to the Christchurch City Council, which would be a popular route taken by industry personnel. This lane way also creates a short cut to the art gallery, Art Centre and Museum.

An apartment complex is situated on the corner of Cambridge Terrace and Montreal Street to accommodate a variety of users for the architectural centre, as well as staff of the hospital and the businesses.
Figure 7.1 Sketch of exposing existing structure by cutting away floor plates.
Architecture contains a lot of embodied energy through the manufacturing of materials and the construction of the building. An injection of energy is required in the form of maintenance over the life of the building to prevent the process of decay. According to Maxwell’s second law of thermodynamics, the entropy in a system will increase (it will lose energy) unless new energy is put in.  

Potential energy is released from buildings under the gravitational forces inflicted during an earthquake when materials fall. The process of the building’s destruction also reveals the embodied energy stored within. This model (figure 7.2) is a diagrammatic illustration showing potential energy contained within the stretched elastic band. When force is applied, and the elastic is released, the potential energy is gone as it transforms into kinetic energy. By adapting Lebbeus Woods’ ideas of inserting a new structure into the existing building, the decay is halted and stability of the existing buildings is restored through the new energy of additional materials. The build up of energy within earth’s tectonic plates inflicts sudden and violent releases of energy at unpredictable times. Earthquakes will be a constant occurrence in Christchurch and New Zealand; therefore, it is important to consider how these unpredictable violent forces can contribute to the architecture, through accepting nature and not trying to deny it.


This model (figure 7.3) is a diagrammatic illustration of lebbeus Woods philosophies of change as discussed in section 4.1.3. The model explores how applied forces might inflict change, not only in the built form, but in the psychological impact on people’s lives also. In response to this energy imposed onto the built environment, an inertial force is applied. Newton’s Law of Inertia is based on the idea of a system staying at rest unless an external force disturbs it. Depending on the size of the force, the model may resume its original form, or it may remain deformed. Whatever the case, change is unavoidable, and “Time condemns us to change. We would rather not change, but we have no choice.” Therefore, we must embrace change by building with it, and not try fight against it “Architecture that does not bear the traces of conflicts that created it is dead architecture,” Woods claims.


Ibid.
7.1.3 MEDICAL METAPHOR

These models (figure 7.4, 7.5 and 7.6) are a diagrammatic illustration of Lebbeus Woods’ scab, scar and new tissue philosophies as discussed in section 4.1.4. These diagrammatic models express Woods’ medical metaphor conceptually with contrasting materials, exploring the relationship between the new structure, scab, and the lasting scar. Figure 7.4 displays the injection of the new structure re-shaping existing boundaries and bringing new life into the decaying building. This injection forms new spatial order, creating a dialogue between old and new. Figure 7.5, articulates the scab, revealing the process of healing. The ripped holes in the fabric emphasize the importance of expressing this recovery to display the evolution of the built form. And figure 7.6, expresses the lasting physical scar. Whether a building is left damaged, demolished or removed, the scar still remains even if it is not visually present.

MEDICAL METAPHOR

Lebbeus Woods has been criticized for depicting an unrealistic approach to building through his speculative science-fiction imagery. However, I feel his ideas portrayed through his drawings are very encouraging and attain great value for thinking above and beyond the square of normality. It will be these ideas applied to the context of Christchurch that guide the post earthquake architecture out of the ruins of the past and into the future of the new. Woods’ ideas of not discarding or creating entirely new knowledge through his new inceptions is fundamentally what post-traumatic architecture is about. This development from past to present is essentially what Christchurch has been robbed of in most of the central city. Woods’ concept of ‘freespace’ as discussed in section 4.1.1 is faultless for a school of architecture as there should be no labels on doors telling you how to behave in that space. Each space should be highly flexible, allowing students to create their own typological programme. His other main concept of building with earthquakes will also be explored, as this approach will heavily contrast the industry’s approach to re-building. However, this concept will be applied in a nonfictional sense.
7.2 FORMAL DESIGN STUDIES - STRUCTURAL EXPRESSIONISM

7.2.1 EXPRESSION OF THE BONES

The Christchurch earthquake has resulted in people becoming more aware of their built environment producing many discussions on structural stability. Buildings that sustained the earthquake and do not require demolition will require seismic strengthening. The potential lies in exposing this new inserted structure to emphasise strength reassurance. By exposing not only the new structure but also the old in its post earthquake state, it adds a visual connection to the past. So much of Christchurch has lost this opportunity as a result of demolished buildings. Therefore, if the opportunity is there to keep the existing structure, this should be expressed. Not only expressed inside the building's fabric, but also outside, causing a discussion as people walk past. Relating a memory. Rossie says “a new addition to an existing structure evokes a transcendent memory of the original building type, a memory which works to strengthen the presence of the building in the mind of the viewer and in the surrounding urban fabric.”

This design exploration seen in figure 7.7 looks at expressing the existing precast concrete structure by cutting away existing floor plates. This existing structure is a direct link to the theory of Critical Preservation - renovating existing architecture to display the historical qualities as well as integrating modern design. Through removing floor plates, double and triple height spaces are created with exposed, raw concrete structures cutting through space creating a dialogue between old and new.

Figure 7.7 Model expressing structure through floor plates cut-away.

7.2.2 EXPRESSION OF THE PROSTHETIC

In Beyond the Cube, J. Francisco Gabriel discusses the potentials of polyhedrals in architecture. He describes “Polyhedrals are jointed, three dimensional, straightline abstractions of the structure of tree branches – the limbs within which the capabilities of human hand and eye coordination evolved and are thus instinctively attuned. They convey a feeling of strength, and, indeed the triangulated geometry of many polyhedrals gives them an inherent structural rigidity. They convey a presence – a sculptural sense of unified containment beyond the overly familiar square and rectangular world of grids.”

These models seen in figure 7.8 explore the attachment/insertion of a polyhedral structural prosthetic to an existing building: A Lebbeus Woods inspired concept of radical reconstruction which, through triangular space frames, provides structural support to the existing structure. It has the qualities of a parasite, where an experimental space is created in a typical open plan office building. Floor plates have been cut away with light wells created and structure piercing through floors. The structure adopts Lebbeus Woods’ ‘scar/scar and new tissue’ approach to rebuilding post natural disaster. The scale of this structural prosthetic may be too aggressive for the context of Christchurch, post earthquake and a less intimidating approach will need to be explored.

Figure 7.8 Model of Lebbeus Woods Radical Reconstruction ideas.

The cube is a closed region of space that does not leave much for exploration. They generally slot well into the urban city fabric, but they do very little in creating a connection between street and building due to the un-porous edge.

Contemporary architecture is bringing about a fascination with form and space. The domination of the right angle and all unchallengeable geometries are being contested.

Buildings can be designed in any shape and size, but instead commonly result in cubes and prisms. Whether they are flattened, or elongated, buildings are conceived as an assemblage of cubic forms.

This design exploration (figure 7.10) looks at new conceptions of space created through re-constraining the cube. The strong edges defined by a cube reject the concept of porosity, therefore, only creating visual connectivity through an internal courtyard/atrium, which is effectively creating an internalized building. These drawings are focused on the external negative space as opposed to the solid confines of the object. They express the negative created through the reconstruction of the cube, emphasizing the potential of visual connectivity.

In the past architecture schools have been seen as inwardly focused and very internal spaces. This project will look at how to express the organs of the facility on the outside as well as the inside, creating a building that slots into the urban grain of Christchurch, avoiding an individual, unapproachable building.

Figure 7.9 Deconstructing the cube to reveal porous edges.

Figure 7.10 Conceptual modeling / sketching of deconstructing the cube.

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111 Ibid. vi.
7.3.2 BOUNDARIES IN ARCHITECTURE

A diagrammatic section (figure 7.11) of where a building meets a public street has been illustrated here to explore how the concept of porosity can be integrated along the external boundary and blur the relationship between public and private. Architectural schools are commonly designed around a central courtyard, or atrium, to generate a transparent and interactive internal environment. However, externally, this concept tends to ignore the surroundings and portray an arrogance that comes across as intimidating and unapproachable for the public. Universities are extremely interactive environments, with students coming and going continuously. Therefore, integrating such a facility into the urban city fabric can only enhance the immediate area.

The first section illustrates a very harsh, flat, external building surface, which disconnects any relationship from the public realm to the interior of the building. The series of sections shows how a gradual development of a porous edge and permeable spaces can allow an ease of transition between the two. The last section depicts an environment that neither defines public or private space, allowing people to feel they are within the building without being totally inside, removing all boundaries.

Figure 7.11 Conceptual diagrams of a building’s relationship to a streetscape.
This exploration examines the context of the site in relation to the surrounding urban fabric.

An urban analysis of the lot spaces along the Avon River edge was explored. The scale of this site in relation to the existing buildings on this city block is significantly larger. Therefore, the challenge of this project lies in achieving a building that contributes to the river edge, addressing urban design principles of active street frontages and fragmented building mass.

The boundary of the site is shown here which was previously made up of four lot spaces. Due to Cambridge Terrace becoming a shared space, the building has the potential to cantilever over the boundary to create a greater connection with the Avon River. Two existing buildings remain on this site post earthquake, with the surrounding space currently being used for car parking. Establishing a connection between these two buildings and the new insertion will be key to this project.

Pedestrian circulation around the site has been explored. Popular destinations that would be travelled to and from on a daily basis include Cathedral Square, Art Gallery, Museum, Bus Exchange, Cashel Street Mall and the City Council. By treating the circulation as penetrations the building mass can become broken down.
7.4.2 EXPLORATION 2. - PUBLIC REALM

As this facility is designed to bring the students, industry and community together, it is essential that the project focuses on embedding this architectural centre into the surrounding urban grain of the city through the concept of a public realm. The negative space defined through the boundaries of the two existing buildings effectively had already created a space for a public realm. This space was then explored to be the short cut through the site to the Avon River. Due to the shape and size of the site, it was essential to break down the buildings to remove the risk of creating an obtrusive blob on a prominent site.

Half of the site has been cleared due to demolition from the February earthquakes. Therefore an exploration was undertaken for the possibility of creating a third building alongside the existing two. This third building was explored to be defined by the boundary of the public realm. However, as seen through the sketches, the shape and position of this third building was becoming arbitrary and in no way respecting the history of the site. The concept of having three buildings also risked being disconnected through programme. The challenge was to construct various building masses on ground floor that are divided by circulation, while also creating a greater programmematic connection on the above floor levels.
The theory Post Traumatic Architecture addresses the future of the built environment in respect to the past. Therefore it is essential for the design of this project to reflect this. The two existing 1980s buildings on the site were constructed under similar principles with a typical 4 by 4 column and beam structural grid system, varying only slightly in size. Due to the Age Concern Building being constructed off Cashel Street, and the Bradley Nuttal Building being constructed on Cambridge Terrace (a 45 degree angle to Cashel Street), the structural gridlines contrast with one another, creating an interesting intersection.

This exploration focuses on constructing the form of the building through the two contrasting structural gridlines of the two existing buildings.

1. By extending the structural gridlines over the course of the site, points of reference were created at overlapping moments (figure 7.20). The two existing buildings were stripped down to their existing structure (figure 7.21).

2. Beams were extended out from the existing structures along these structural grids and columns were placed at new points of reference. This conceptual approach to design broke down the site spatially (figure 7.22).

3. Voids of space were then extended out from existing space frames to create three-dimensionality on the site. These spatial voids revealed the potential of circulation between different buildings (figure 7.23).

Critique:
Through critique, positive feedback was given on using these existing gridlines to construct a new building. It was also mentioned that one thing the earthquake has allowed for is messing with the grid. Re-alignments of the grids and the opening up of connections is very thought provoking as this previously would never of happened because the sites would never of become unreleased.
Christchurch City was constructed on a typical grid layout with buildings also respecting this order and regularity. However, with so much of Christchurch being left as a blank canvas, it seems thoughtless to construct the city for the future using the rules of the past. The urban city blocks will remain, but the layout of built form on these sites should somewhat reflect the change and progression taking place beneath the surface. The tectonic plates, for example, will be constantly changing and being displaced through earthquakes for years to come. Lebbeus Woods explored the space of displacement through his analysis of the San Francisco earthquake. He studied the measure of displacement through architecture and how this suggests a transitory architecture of either movement or construction.

This exploration looked at displacement – “The amount by which a thing is moved from its normal position,” in an architectural context. Displacement through architecture has the potential to reflect change, while not totally disregarding the past.

1. Initial concepts of displacing floor plates by moving nodes became far too literal for this project and did not provide a prominent contrast to the existing urban grain, as the buildings just became irregular. The new built form on this site needed to contrast with the existing buildings in the surrounding context, but not just through arbitrary design.

Figure 7.24 Train tracks displaced during Christchurch earthquake.

Figure 7.25 Displacing the structural grid.

Figure 7.26 Displacement of the floor slabs.
Therefore to achieve the concept of displacement in the urban grain, the existing gridlines investigated through exploration 3 were analyzed again for the placement of new buildings on this site. The gridlines created angular formations that opposed the existing X/Y-axis of the city. By overlaying circulation paths investigated through exploration 1 on top of the structural gridlines on the site, a fractured tectonic ground floor plan was constructed which effectively was displaced from the existing urban grain of the city (see figure 7.29 and 7.30).

Figure 7.27 Circulation paths constructed through the gridlines.

Figure 7.28 The city block with the structural gridlines and initial circulation exploration.

Figure 7.29 Circulation paths overlaid onto gridlines to construct buildings.

Figure 7.30 Overlaying the circulation paths onto the structural grids to create the fractured tectonics.
These fractured tectonic masses were then placed on the site with the three dimensional gridlines lines (the beams) that was carried out in exploration 3 (see figure 7.32).

The forms were then extruded into towers and merged with the extrusions from the existing buildings’ space frames as also seen in exploration 3 (see figure 7.33). This, therefore, gave a good indication of architectural volume on site, but, as mentioned earlier, still risked disconnection through the various towers. As the programme is a school of architecture the integration through the building is essential. Therefore the floor levels above must be constructed in a way to integrate the programme from one mass to another. However, the combination of mass and circulation did create a porous building which allows for a greater connection with the public realm.
As the building mass on the ground floor was created through circulation paths it seemed logical to adopt the same concept for the remaining floors. The challenge was to extend the public realm up from ground level into the first floor so this is usually where the disconnection lays between the school and the community.

The buildings that lined each street frontage were used to create a public ramp leading up to the first floor (see figure 7.36 and 7.37). This, therefore, allowed the visual connection between public and the studio environment, which is generally not expressed.

Critique:

Both ramps depict an ease of circulation from the existing public realm into the first floor of the building. However, both of these ramps start from the opposite direction of where the main foot traffic will be coming from which seems unpractical. Therefore due to this, and the accessibility regulations, the Cambridge Terrace ramp was removed and replaced with a large public stair that faced towards the city.

Figure 7.34 Ramps merging with the public realm.

Figure 7.35 Constructing the accessible ramps.

Figure 7.36 Public ramp Cambridge Terrace frontage.

Figure 7.37 Public ramp on Cashel Street frontage.
The interesting nature of the two existing buildings was the slight variation in floor levels. Due to the Bradley Nuttal Building being slightly larger, the ceiling height on ground floor was approximately 500mm above the Age Concern building. This, therefore, allowed the new floor levels to vary between the two as well as the use of ramps from one building to another. See figures 7.38, 7.39 and 7.40.

Figure 7.38 Plan showing ramps between buildings.

Figure 7.39 Ramps between Age Concern Building (Left), and new building (right). Cashel Street frontage.

Figure 7.40 Ramps between Bradley Nuttal Building (Left), and the Age Concern Building (right). Cambridge Terrace frontage.
Like the massing on ground floor, the other floors were too, constructed by using the existing structural grid lines. The circulation between each mass followed the angles created through the gridlines and ramped between the different sections of the building. The width of the circulation space is considerably larger than a typical corridor, which allows the programmed space to be blurred, creating no defined boundaries. Each floor was constructed around a connectivity triangular centre which was the outside courtyard/public realm. This triangular centre allows visual connectivity from anywhere within the building over a variety of different floor levels. It creates an internal and external transparency between the students and the public.

The ground floor of this facility is designed to be public orientated, to allow the connection between the community and the school to grow. Therefore the programme on groundfloor will facilitate a variety of users with things such as a cafe, information centre, book shop, architectural office, workshop, retail etc. The lecture theatres have also been placed on ground floor to allow for ease of way finding for the public.

Displacing the external edges of a floor level from the existing gridlines was explored below, however the cleaness of the form was lost, and tight angular corners were created which is wasted space programmatically. Therefore when offsetting the floor level above, the same angulars were used to keep regularity and order.

Figure 7.41  Ground floor.
Figure 7.42  First floor.
Figure 7.43  Second floor.
Figure 7.44  Basement.
Figure 7.45  Ground floor.
Figure 7.46  Second floor – Exploring the concept of displacement.
Christchurch is a very flat city and over the past two years the ground plane has become very active. Therefore, it seems essential to consider the ground as a considerable design element when constructing a new building in an earthquake-prone region.

1. This model in Figure 7.47 illustrates how a simple flat surface can be manipulated to create three new floor levels: the existing ground level, cutting into the ground, and also raising the ground level. By introducing ground changes to a flat site a sense of complexity is created, enabling greater design possibilities.

2. This drawing in Figure 7.48 explores how cutting into the ground can expose the base isolation of the Age Concern Building, similar principles to what has been achieved in the Television House in Japan as referenced in Chapter 5. However, this image shows a recession into the ground of a full storey height, which disconnects the space horizontally through the necessity of balustrades. The idea of creating an underground space was due to the lecture theatres being sunken into the ground, enabling a connection through. Although, due to the length of the route, a 5m floor to ceiling height would have been required. This, therefore, was considered impractical due to access and ground conditions in Christchurch.
The full floor height recession into the ground has been replaced with a sunken courtyard with a slight depression of 1.4m. This, therefore, will allow the base isolation to be visually expressive. This courtyard faces north, with the building to the west of the courtyard sliced appropriately to let late afternoon sun in. Stairs have been used to create a type of plaza seating area. This environment can be utilized for architectural presentations, public talks, exhibitions, stalls, consuming food, etc. The openness creates a blur between the boundaries of public/private space - an integral part of this design.

As the Age Concern Building has been addressed in its relationship to the ground, it seemed suitable to explore how the Bradley Nuttal Building may also align with similar characteristics. The ground floor of this building has two lecture theatres, which are visually connected to both the pedestrian street along the Avon, and the internal circulation inside the school. By excavating the ground beneath and a few metres either side of the lecture theatres, the manipulation of the surface gives the illusion of floating. Bridges across this significant depression in ground allow access into the lecture theatres.
The Avon River is currently being developed in Christchurch to become a more integrated part of the inner city. Walkways, active building frontages, and landscaped gardens will support in creating an attractive environment for city goers. Therefore a strong connection with the Avon is essential to further integrate this architectural centre into the public realm.

Both sections seen here in 7.54 and 7.55 explore the cantilever to provide a greater relationship with the Avon River through exceeding the boundary of the site, while also giving the perception of being nestled in the treetops. The structure required to support the cantilever also further breaks down the boundary created through architecture as discussed in section 7.3.2. This cantilever breaks up the disconnection Cambridge Terrace currently has with the river, and further supports the shared space concept. Figure 7.55 presents a more diagrammatic section of the same principles, however also emphasizes the importance of the Cambridge Terrace entrance to the site, as well as the various ground floor changes as discussed in exploration 7. A direct link from the Avon River into a public courtyard space within the architectural centre will create a strong public environment, which this project strives to achieve.
Ductile materials and connections are the most preferred structural techniques of seismic resisting structure. Ductility is the measure of the horizontal displacement a material endures while being overstressed. When a non-ductile material such as concrete is stretched to its full elastic capacity it snaps and can result in building collapse. A ductile material such as steel deforms plastically when its full elastic capacity is reached. The primary advantage of ductile members is their ability to form ‘structural fuses’. A structural fuse is the area within a structural system designed to absorb or dissipate energy during rigorous earthquake forces through steel yielding. The energy absorbed through this structural fuse does not cause it to break, just stretch elastically while also retaining its strength. By absorbing the force of the earthquake the fuse prevents damage from occurring elsewhere in the structural system, thereby pinpointing the part of the building to yield, which can easily be removed, and replaced.

To what level does structure give the potential to enrich an architectural school through its degree of exposure?

Figure 7.56 Structural fuse diagrams.

103 Andrew Charleson, Seismic Design for Architects, Outwitting the Quake (Burlington: Elsevier Ltd, 2008), 24.
115 Ibid. 23.
114 Ibid. 41.
115 Ibid. 24.
Analysis:

Designing a structural fuse requires a lot of knowledge and precision by structural engineers to carry out calculations. Therefore, accuracy is not the objective here, but instead to use the concept of a structural fuse to generate an architectural intervention with rich, expressive qualities, creating a dynamic, didactic space of similar intent.
Translating the concept of a structural fuse into an architectural intervention is a typical Lebbeus Woods move. Woods was never confined by building codes for his provocative works, as they were all experimentations of fiction that never left the drawing board. By adapting Lebbeus Woods’ principal of insertion of a new structure into existing buildings this concept, becomes the prosthetic.

This concept develops on from the formal design study of ‘expression of the prosthetic’ in section 7.2.2. It reflects a combination of ideas taken from Lebbeus Woods’ Light Pavilion (referenced in chapter 4), prosthetics in architecture and the concept of structural fuses. Smaller installations in porous sections through the existing buildings, instead of radically taking over the façade, are of greater value for this project. Having a series of prosthetic insertions through open voids will ‘radically transform existing structure using parasitic forms of a symbiotic nature. The building becomes a body in need of prosthesis. The parasitic action, which attatches itself to both inside and outside, creates the possibility of programmatic shifts and infiltration from other buildings and other public spaces.’

These structural insertions, planted into the voids of the existing structures, connect to the existing precast concrete column and beams to form an architectural structural fuse. The idea of this intervention failing in an earthquake, similar to the concept of a structural fuse, allows an entirely new structure to be designed for this space through collaboration between architects and engineers. This concept is a way of using Lebbeus Woods’ philosophies of buildings evolving over time and reflecting change. That experimental space will continuously be changing if significant earthquakes occur, creating a positive space out of a terrible event.

When discussing this concept with a structural engineer, it was confirmed the concept of this ‘prosthetic’ worked both structurally and architecturally. Due to the eccentric shear walls of this building, in an earthquake, the west end of the building would stay rigid while the east end would have a lot more flex, causing structure to twist and yield, sustaining significant damage. Therefore the insertion of this new structure into the void of the existing building provides a more evenly distributed structural resistance across the whole building during an earthquake. A circulation ramp extrudes into the shear wall, requiring holes cut out in order to pass through. Initially I thought this was not structurally viable, however when discussed with the structural engineer, they confirmed the holes cut from the eccentric shear wall, loose the rigidity, allowing more flex and less damage. The angular structure on the outside of this building was initially designed as the prosthetic, but does not contribute to the structural support of the building in anyway. This is an area that needs to be explored more as at the moment appear as ornament and arbitrary.

This exploration followed on from the developments made in exploration 9 through model making. I looked at ways in which the exterior facade of this building could reflect the layers of the past by continuously reflecting age. This model in figure 7.63 was a concept that allowed the facade to express change over time by allowing vines to grow up the edges, expressing growth and renewal of life. Although this concept had merit, and the forms created through the model were rich, I thought it distracted the attention away from the finer detail of resolution already achieved from this theory.

The model seen in figure 7.64 reflects Lebbeus Woods’ philosophies of building with earthquakes. This facade system is designed to move and change through the forces applied during an earthquake and would, therefore, never continuously be the same. However, for this concept to work independently from the main structural system created many issues as well as the unpredicted direction of an earthquake force. This concept was considered un-realistic and other ways needed to be explored to reflect age and story.

Both these concepts have been explored and rejected as they do not mould together well with the existing developments.
Educational facilities are constantly being challenged by technology upgrades, resulting in educational spaces becoming less utilized. Being able to watch lectures in the comfort of one’s home is one of the many responses to this change. Therefore, it is essential to consider the development and changes a university will undergo over the next 50 years. The lengthy debate over a school of architecture versus apprenticeship may influence the future of architectural education. This design offers the flexibility to re-arrange every year dependent on enrolment numbers. When there is a significant decrease in numbers, there becomes unutilized space, which can, therefore, be let out to other businesses, industry related or not. This, therefore, ensures a continual income for the architectural school, despite student fluctuations. Over time, if architectural education becomes obsolete, this facility can be still functional.

As this facility is designed for future flexibility, floor plans will not be limited to and designed for a specific programme, but be suggestive to what could take place in particular areas for the functionality of a school of architecture. Partition walls can be installed for future developments, but for the purpose of this programme the architecture not only connects that space but divides it as well.

What this facility allows for is an architectural practice to occupy a certain space within this building while overseeing a project. The interaction of professionals and students would create an interesting dynamic by enriching the studio environment, as well as allowing the professionals to be completely exposed to fresh ideas that are not constrained by the complete knowledge of regulations. Enrolments in architectural education can fluctuate over the years, especially through the transition from Bachelor into Masters study (Third into Fourth year). A lot of students at this point decide to have a break from studying and gain some experience. However, financially, this can be detrimental to a school of architecture. The flexibility of floor plans this design offers, allows for the students to be re-arranged every year dependent on enrollment numbers. When there is a significant decrease in numbers, there becomes unutilized space, which can, therefore, be let out to other businesses, industry related or not. This, therefore, ensures a continual income for the architectural school, despite student fluctuations. Over time, if architectural education becomes obsolete, this facility can be still functional.
Circulation spaces become very important when designing flexible environments that facilitate interaction among different year levels and user groups. Functionality can often be seen to ignore the importance of communication and create a series of isolated classrooms preventing interaction and causing segregation. Architecture, however, due to the visual nature of the programme, is highly dissimilar to other university degrees and the interaction among different year levels is important.

This exploration examines the possibilities of integrating student work more into the function of the circulation space, where design critiques, exhibitions and presentations are constantly on display. More often than not design critiques are done in studio rooms, causing an intimidating environment for other year levels to watch.

This diagram shows a typical circulation space in offices and educational buildings where the corridor is completely isolated from rooms, with doors creating a firm boundary between programmed and un-programmed space.

These two diagrams explore how a typical circulation corridor can be more integrated into the building’s functional spaces by creating pockets of programme. This concept allows for critiques of final presentations to be on public display in an informal setting, creating blurring the distinction between what is programme and what is circulation.
Through research it was found that the planning of architectural schools is quite dispersed, with studios, workshops, libraries and computer labs generally isolated from one another. These bubble diagrams show thoughts on spaces that should be interconnected. A studio environment has over the years changed considerably from once being the room where drawing occurred, to now being a combination of drawing, modeling, and computer modeling.

A section of these areas was then constructed, helping to correlate areas on the vertical as well as the horizontal. The first section (7.69) shows some programmes going down into the basement. However, as mentioned in exploration 7, the decision to go underground was abolished. The two lecture theatres are separated on different levels, which only allows the one on the ground floor to be utilized by the public. It seems more logical to have two 90 seat lecture theatres next to each other on the ground floor with a flexible internal wall that can be disassembled when 180 seats are required for a community event or an architectural talk. The library and computer labs were shown as the same space in section one. However, in section two (figure 7.70) computer labs are integrated into studio spaces, along with model making areas.

The facility has been designed for flexibility, allowing these spaces to effectively go anywhere. However, as mentioned earlier, the spaces required by a school of architecture have been suggested for the day to day running of the school.
These diagrams in figure 7.71 illustrate the connection between first and third year, and second and fourth year, with communal critique spaces, model-making areas, and computer suites located in between. Voids between first and second, and third and fourth are also there to maintain that connection. This style of planning allows a first year student to wander through a third year studio while not feeling intrusive as the boundary between circulation and studio is a fine line.

Ground Floor

The majority of the ground floor of this architectural centre is publicly utilised. Facilities include: a café on the corner, attracting both internal and external users, two 30 seat lecture theatres which can be made into one large 180 seat lecture theatre and an architectural office. There are also study rooms, which will have some conference rooms inside allowing meetings for industry personnel, etc.

The workshop is situated at the back of the building to prevent noise feeding out into the courtyard. There is a model making area on all studio floors with small workshop equipment. However this workshop on the ground floor contains all the large machinery. The courtyard has been purposely left open, allowing the public to use this space as a public realm and not feel intimidated by walking ‘into a building’. This courtyard gets sun all year around providing a nice, external, sheltered environment.

First Floor

The first floor of this centre is designed to have some public oriented facilities with the café extending up at the corner and study spaces that consist of some conference rooms for external users. The library is also situated on this floor, which will be available for both industry personnel and students. The concept of the library here challenges the typical, strict concept of a library, which is generally seen within educational facilities. The space is completely flexible, allowing bookshelves to be placed anywhere and moved around regularly. The future of libraries is uncertain, as many books can be read on computers these days. Therefore, this space is designed to allow for future change and be used in other ways. It also creates a space which can be used for exhibitions.
Second, Third, and Fourth Floors

The second, third and fourth floors are more private facilities, consisting of studio spaces with administration offices and some seminar rooms. The studios are all open plan, but divided by the angular shaped walls. Each floor consists of two year levels, except for the fourth floor where it is only fifth year. The space in between the studios is the critique, computer and model-making areas for both studio groups, causing an integration of year levels, which is generally lacking in schools of architecture. Administration offices are situated away from the studio space, but still connected on the same floor, which again is not generally seen in schools these days. A bar/restaurant is situated on the third floor, which overlooks the city and is nestled into the trees of the Avon River catching the eye of passersby, causing them to explore how to get to that space, which brings the public up and into this facility.
Figure 7.79 shows the relationship of the courtyard to the public realm and the architectural centre. The courtyard is shaped by the buildings and faces north, allowing a large percentage of sun to fill the space not only daily, but all year round. This design challenges the ‘courtyard type’ as discussed by Jack L. Nasar, Wolfgang F. E. Priser, Thomas Fisher in Designing for Designers, that traditionally created an ‘inwardly focused’ school of architecture, disconnected from the public.
Figure 7.80 shows an exterior view from the corner of Cashel Street and Cambridge Terrace with the old and new structure exposed to the street. However, the new structure which can also be seen modeled in exploration 9 is too overpowering, taking away the focus from the building that has endured the trauma. However what I do like about these steel members is the contrast created through a structural member in tension (the new) and the existing precast concrete column and beam structure (the old). The cladding - corten steel was chosen due to its weathering qualities to express the age of the building over time.
Figure 7.81 and 7.83 show the two street elevations. The new structure in tension as discussed in figure 7.80 was designed to distort the grid in elevation which through critique was conversed as a valuable move due to Christchurch streets elevation being so flat and horizontal. However although this concept has merit, it needs more resolution to enable main attention on celebrating the exposure of the existing buildings.

Figure 7.82 shows a section cut through the site and the Avon River. Through critique it was discussed as going underground being a strong idea, however I have moved away from that concept due to not knowing the full ground conditions, being so close to the Avon River. Therefore this concept explores excavating the ground below and around the edges of the lecture theatres to express a sort of floating quality. Critique of this idea was positive and suggested to let the water come in and feed its way through the site - ‘very romantic gesture, very calming’. In an event of an earthquake this excavating is designed to fill with liquefaction to express the quality of building with earthquakes and allowing nature to integrate with the architecture.

The yellow shows the vertical voids through the building and the orange a straight horizontal circulation path through the different spaces. This section makes clear that more vertical integration within the building needs to be explored.
8.0 CONCLUSION
architectural intervention that respected and ‘responded’ to not only the history of the site but the recent earthquakes. Initial approaches to this resulted in arbitrary design and did not in anyway respect the history of the site. However, further exploration of the existing two buildings posed the concept of constructing the new building out of the existing two structural gridlines. This reflected not only a logical response to a site effected by trauma, but also created a new dialogue within the urban grain of Christchurch through the displaced building footprint, removing the concept of replication – to re-build the city to the same rules of the past.

This thesis became closely oriented towards medical metaphors, bringing to the conclusion that a city effectively operates as a body and, over time, scabs will occur, scars will remain, prosthetics may need inserting and post-traumatic stress may result. However, the subsequent response to these developments of the city is crucial for the experiences gained. Therefore, the question of whether to deny or reconcile with the traumatic event now becomes obvious that denial was a manifestation of the past, and the future must acknowledge what has been lost and what has been gained in order to construct a new future. As John Ruskin said a ‘crutch’ is better than a ‘lost limb’.

There have been many approaches to re-building cities post war or natural disaster, Eugene-Emmanuel Viollet le Duc argued for Restoration while, John Ruskin and William Morris argued for preservation. While these two contrasting views dominated the Nineteenth and Twentieth Centuries, I adopted a new term – critical preservation for this project in order to construct a design response through Post Traumatic Architecture. Viollet le Duc’s concept of restoration does not address the changes which the site has sustained, and rehabilitating the site by acknowledging the tragedy is essential for the development of Christchurch city. Therefore this theory aligned closer with John Ruskin’s philosophies of preservation, due to the expression of the evolution of the building over time.

The design outcome of this research project set out to answer the architectural question: “Post Traumatic Architecture: How might the project for an architectural school/centre respond to the recent earthquakes in Christchurch?”, through applying the theory critical preservation. This theory developed out of the research of Post Traumatic Architecture and provided a solid foundation to construct an intellectual architectural response. The connection with the past was essential for this project, as most of Christchurch city has been left stripped of historical memories. Restoring the existing two structurally damaged 1980s buildings and exposing the structure created a connection to the past and reinforced the memory of what once was there. But the challenge lay in the new contemporary architectural intervention that respected and ‘responded’ to not only the history of the site but the recent earthquakes. Initial approaches to this resulted in arbitrary design and did not in anyway respect the history of the site. However, further exploration of the existing two buildings posed the concept of constructing the new building out of the existing two structural gridlines. This reflected not only a logical response to a site effected by trauma, but also created a new dialogue within the urban grain of Christchurch through the displaced building footprint, removing the concept of replication – to re-build the city to the same rules of the past.

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The challenge in response to the programme was to create an integrated school of architecture that facilitated multi-disciplinary practice and created a more integrated connection with the industry and community. The existing three schools of architecture in New Zealand are somewhat removed from the industry and community and it seemed illogical to design a facility that operated to the same principles of the past as the future of architectural education is constantly being disputed. Research shows architectural schools have relatively high levels of internal integration. However, externally the connection between the community and the school is lost. This has been addressed through the concept of transparency and privacy to ingrain the school into the surrounding context through the notion of a public realm. Internally, integration between different year levels is generally found through atriums. However, I feel that large, central atriums are the main problem, creating inwardly focused schools and do not always achieve the high level of communication between users as they are intended to do. Therefore, this project has set out to achieve an internal environment that fuses interaction between not only different year levels, but also different users. This I feel has been achieved through the construction of the floor plates. They reflect a new way of thinking about spatial planning within a school of architecture by creating completely open floor plans to achieve a high level of flexibility, which is essential for future developments in this area. The concept of allowing an architectural firm to occupy a space within this school, in essentially the same space as a studio, creates an entirely new dynamic to what is currently yet to be explored. The growing gap between professional practice and education is a concern that needs to be addressed and I feel this design is a step in the right direction. However, this is an area of study which needs further investigation into how this thought-provoking interchange could work.

8.1 CRITICAL APPRAISAL OF THE THEORY

8.2 CRITICAL APPRAISAL OF THE PROGRAMME
BIBLIOGRAPHY


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Fig 7.69 Sectional programme analysis with basement concept. - Author
Fig 7.70 Sectional programme analysis 2, with slight ground depression for courtyard. - Author
Fig 7.71 Studio year level spatial relationships. - Author
Fig 7.72 Ground floor. - Author
Fig 7.73 First floor. - Author
Fig 7.74 Second floor. - Author
Fig 7.75 Third floor. - Author
Fig 7.76 Fourth floor. - Author
Fig 7.77 Model expressing overall form with circulation paths between different sections of the building. - Author
Fig 7.78 Initial courtyard sketches. - Author
Fig 7.79 Courtyard render. - Author
Fig 7.80 Exterior Render. - Author
Fig 7.81 Cambridge Terrace elevation. - Author
Fig 7.82 Section of connection with Avon River. - Author
Fig 7.83 Cashel Street elevation. - Author

11.0APPENDIX A

FURTHER CONCEPTUAL MODELS
APPENDIX B

FINAL PRESENTATION DRAWINGS

1. Location and floor plans

2. Prosthetic insertion - Architectural structural fuse

3. Sectional perspective through internal atrium
4. Transparency to public realm
5. Internal level changes
6. Existing old concrete frames
7. Integrating public realm internally
8. The building's relationship to the ground - Details

9. External perspective

10. Cashel Street elevation

11. Longitudinal section
12. Final examination pin-up and models

13. Final models