Form ever follows function

PEER REVIEW

ARTICLES

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PEER-REVIEWED ARTICLES

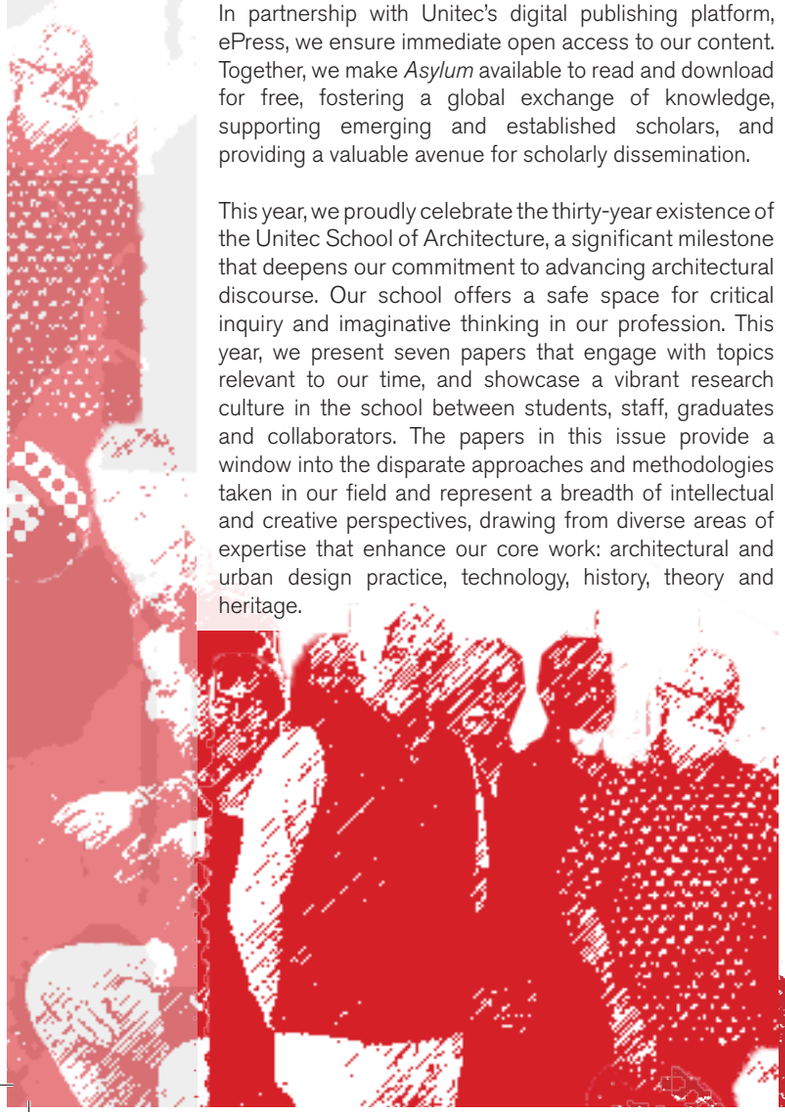
https://doi.org/10.34074/aslm.2024101

INTRODUCTION

The *Asylum* architecture–design–research journal remains committed to publishing high-quality, blind peer-reviewed academic work that reflects our sustained critical interest in the contemporary issues of our profession, and the challenges they pose to individuals and society in a global context.

In partnership with Unitec's digital publishing platform, ePress, we ensure immediate open access to our content. Together, we make *Asylum* available to read and download for free, fostering a global exchange of knowledge, supporting emerging and established scholars, and providing a valuable avenue for scholarly dissemination.

This year, we proudly celebrate the thirty-year existence of the Unitec School of Architecture, a significant milestone that deepens our commitment to advancing architectural discourse. Our school offers a safe space for critical inquiry and imaginative thinking in our profession. This year, we present seven papers that engage with topics relevant to our time, and showcase a vibrant research culture in the school between students, staff, graduates and collaborators. The papers in this issue provide a window into the disparate approaches and methodologies taken in our field and represent a breadth of intellectual and creative perspectives, drawing from diverse areas of expertise that enhance our core work: architectural and urban design practice, technology, history, theory and heritage.



Cameron Moore's paper "The Design of the Mayfair Flats" opens this issue. Moore comprehensively analyses the Mayfair Flats, a well-preserved example of 1920s apartment design in Aotearoa New Zealand, and examines its historical context and the influences of budget, materials and technology on its architecture. Moore identifies and highlights the contributions of architects William Gummer and Charles Reginald Ford to the residential apartment typology in Tāmaki Makaurau Auckland, while also relating the building to the principles that guided Gummer's work. This research deepens the understanding of the Mayfair Flats' architectural significance in Tāmaki Makaurau and with this development in the ongoing Gummer and Ford research project, Moore provides a worthy contribution to the scholarship on early-twentieth-century architecture in Aotearoa.

In "Architectural Computational Optimisation in Designing Acoustics and Seating Arrangements," Yinsu Li and Nikolay Popov focus on a computational optimisation program developed to automatically generate design solutions, and assess its impact on architectural outcomes. By investigating the design of a small-scale community auditorium and theatre facility, the study aims to enhance the understanding of optimisation processes, contributing to advancements in computational generative design. The authors effectively balance quantitative and qualitative design research, providing clear definitions and contextualising the role of computation in the overall design process.

In "Intertwining Community-Driven and Student-Built Approaches to Activate Suburban Streets, " Xinxin Wang and Yusef Patel address a perceived lack of vitality in suburban streets and consider how retrofitting methods often fall short in meeting dynamic community needs. The authors argue for and propose flexible, cost-effective solutions through a community-driven approach that includes student-built designs, aiming to transform streets into vibrant social spaces. By testing this approach in Tāmaki Makaurau with projects such as Maui's Catch and Woven Gateway, the authors demonstrate how temporary architectural interventions can activate streets and enhance community engagement in a multicultural suburb such as Avondale. This research seeks to bridge the gap between theory and practice, investigating the socio-spatial dynamics of cities to foster more inclusive urban environments.

"The Future Promise of Tau Henare Marae" by Keisha Rawiri is a transformative piece of kaupapa Māori research, and offers valuable opportunities for the future development of the Tau Henare Marae at Pipiwai in Te Tai Tokerau Northland. Rawiri integrates traditional Māori knowledge with contemporary architectural practice, employing kaupapa Māori methodologies and storytelling in architectural research to enhance the discussion of Māori architecture and cultural preservation. The study, grounded in rigorous qualitative methods such as wānanga and interviews, not only aims to revitalise a culturally significant site, but also serves as a model for future marae developments, promising a lasting impact on Te Orewai community and beyond.

"This year, we proudly celebrate the thirty-year ex
a significant milestone that deepens our commitment

In "Challenges of the Muisca Cultural Revival: Lessons from Māori Architectural Resistance," Pablo Vanegas Nieto examines the profound impact of Spanish colonisation on the Muisca Indigenous culture in Colombia, which has led to significant transformations and ongoing challenges in preserving their heritage. Despite destructive urban development and other historical injustices, the Muisca community actively seeks recognition and land rights to safeguard their identity. The author examines and discusses how Māori architectural strategies serve as powerful forms of resistance against cultural assimilation and coloniality, offering valuable insights that could inform the revitalisation of Muisca culture in Bogotá. By emphasising the role of architecture in shaping and preserving identity, the paper underscores the importance of Indigenous resilience, and the potential for architectural practices to empower communities in their efforts to strengthen their cultures.

In "Designing Alongside Māori: Theorising Experiences of Relational, Place-Based Architectural Practice in Aotearoa," Abigail Temby-Spence addresses a gap in resources for non-Indigenous architects in Aotearoa who seek to learn how to support Māori self-determination. Through qualitative interviews with practitioners recognised for their culturally sustaining practices, the study highlights the importance of a relational, place-based approach that honours Māori perspectives while allowing practitioners to maintain their own cultural identities. Temby-Spence argues that this framework not only fosters strong connections to land and people, but also encourages a reflective engagement with Aotearoa's colonial history, promoting more inclusive architectural practice.

In "Discussing Methods and Methodologies: Chinese Architectural History – Concepts and Organising Principles," Jonathan Qian Jiang and Renata Jadresin Milic analyse and discuss methods employed in the existing literature on Chinese architectural history, focusing on how its characteristics might be systematically classified to foster creativity and innovation in architecture students. By reviewing three seminal architectural history texts, the study finds that no single categorisation method can fully encompass the complexity of Chinese architecture, and highlights the challenge of concentrating in-depth knowledge into holistic overviews. The paper proposes an 'integrated system' for presenting the subject, aiming to contribute to ongoing discussions about architectural history pedagogy.

We wish to extend our sincere gratitude to our reviewers for their generous, insightful and always timely feedback, which has once again been invaluable in enhancing the quality of the papers published in this issue. Your expertise and dedication to the review process are essential to maintaining the high academic standards of our peer-reviewed papers, and we deeply appreciate the time and effort you invest in supporting our authors and the *Asylum* editorial team.

We also wish to acknowledge the Advisory Committee for their ongoing contributions and guidance. In 2024, with the dedicated support of member Maia Ratana, we successfully implemented mentoring of emerging authors for this issue of the journal. We would like to extend special thanks to Maia for her essential role in this initiative. This new process has provided emerging researchers with additional, direct support as they developed their papers, contributing to stronger outcomes and enriching the overall quality of our journal.

We invite our readers to engage with this issue and join us in celebrating our School of Architecture's thirtieth anniversary, its existing rich legacy, and the future of architectural practice and scholarship at Unitec.

DR RENATA JADRESIN MILIC
ASSOCIATE PROFESSOR

CAMERON MOORE

https://doi.org/10.34074/aslm.2024102

THE DESIGN OF THE MAYFAIR FLATS

ABSTRACT

Constructed in Parnell, Tāmaki Makaurau Auckland, in 1929, and listed as Category 2 place by the New Zealand Historic Places Trust in 1981, the Mayfair Flats are a remarkably well-preserved example of 1920s apartment design in Aotearoa New Zealand. This paper aims to comprehensively analyse the Mayfair Flats building, exploring its historical context, and how the limitations and opportunities of the budget, materials and technology inform the architectural response. The spatial organisation, layout between the private and shared spaces, the structural system, materials and architectural elements that define this character of the building can be understood by examining the architectural principles employed by the architect, William Gummer, learned during his time at London's Royal Academy of Art, and made clear by the design books he read and recommended to other professionals and students. This paper will also discuss the client's motivations and the building's construction history. This research aims to deepen our understanding of the architectural significance of the Mayfair Flats in Tāmaki Makaurau Auckland.

Keywords: Mayfair Flats, William Gummer, Gummer and Ford, Auckland architecture, New Zealand classical architecture, New Zealand traditional architecture

Figure 1. The Mayfair Flats. Photo: Cameron Moore.

INTRODUCTION

The Mayfair Flats at 75 Parnell Road in Tāmaki Makaurau Auckland were built in 1929 for a syndicate led by Arthur Cleave and Fletcher Building. The building was designed by the foremost Auckland architecture firm of the time, Gummer and Ford, and holds a Category 2 listing with Heritage New Zealand Pouhere Taonga. The building is in remarkably good condition, with few or no architectural changes being made in the last ninety years, and having escaped the addition of an external steel fire-escape staircase outside the building's entrance in 1949. The Mayfair Flats, as we know them today, was the first block of flats built as part of a larger development planned for the area.

Little has been written in architectural academic circles about the Mayfair Flats. Only Jack Smith in *No Job too Big: A History of Fletcher Construction, Volume 1: 1909–1940*[1] and Peter *Shaw in Pride of Place: A History of Fletcher Construction*[2] have mentioned them, and Linda Simmons acknowledged them in a footnote as an exception to Auckland's lack of a "real or established history of urban living or apartment typologies."[3]

BACKGROUND ON MEDIUM DENSITY HOUSING IN NEW ZEALAND

Auckland's population grew at a remarkable rate in the first part of the twentieth century, going from 57,616 in 1896 to 215,667 by 1945.[4] Stand-alone dwellings were still the predominant form of housing,[5] but by the late 1920s, streamlined, small and inexpensive apartments in centrally located blocks of flats were starting to appear, due to the lack of interior and exterior upkeep needed, modern technology (electricity and gas) and a scarcity of live-in servants.[6] According to Julia Gatley, the first purpose-built blocks of flats in New Zealand were Middle Courtville and and Rexcourt (since demolished) in Auckland, both constructed in 1914–15.[7] A few for-purpose apartment buildings were built between 1915 and 1928 and, as Gatley notes, the design and construction of these buildings garnered largely positive attention in the press of the time, indicating a favourable public response to this building type.[8]

THE SITE

The Mayfair Flats were conceived of as a multi-building, mixed-residential development in 1928 on the corner of Parnell Road and Cracroft Street in the inner-city suburb of Parnell. Four lots were leased for this purpose from the Auckland Grammar School Board.[9] The site had frontages on both Parnell Road and Cracroft Street, commanded excellent views of the Waitematā Harbour, was on the tramline that ran from Stanley Street up Parnell Rise, and was a short walk away from the newly built Auckland Railway Station (also designed by Gummer and Ford).[10] The timber-framed houses that the Mayfair Flats development replaced in 1928 were among the oldest in Auckland, occupied by military officers who fought in the New Zealand Land Wars of the 1860s.

THE CLIENTS

Arthur Cleave and Fletcher Construction, headed by James Fletcher, were the project's developers. There was a family connection between the Cleaves and the architect William Gummer; Arthur Cleave's son, Phillip, commissioned Gummer to design his house – Cotswolds in Greenlane, now a Category 1 listed heritage building – in 1913, one of Gummer's first houses when he returned to New Zealand after studying in the United Kingdom. Arthur Cleave developed British Chambers, an eight-storey building in High Street, Auckland, in 1928, also built by Fletcher Construction.[11] According to Peter Shaw, Cleave ran into financial difficulties part-way through building the first block of the Mayfair Flats, leaving the building contractor and joint developer, Fletcher Construction, as the sole client.[12] Fletcher Construction was the pre-eminent building contractor in New Zealand in the late 1920s and was an experienced flat builder, having built the Middle and Corner Courtville flats.[13] James Fletcher, the founder of Fletcher Construction, was also a personal investor for Dunedin's apartment building Majestic Mansions in 1919, giving him some insight on the selling points of the typology.[14] Fletcher Construction also embarked on various other business ventures, including brick and tile manufacturing.[15] The dominant cladding materials for the Mayfair Flats, bricks and tiles, were "lavishly specified," from Fletcher's Glenburn Fireclay & Pottery Co, presumably on James Fletcher's instruction.[16]

1. Jack Smith, *No Job too Big: A History of Fletcher Construction, Volume I: 1909–1940* (Steele Roberts, 2009).
2. Peter Shaw, *Pride of Place: A History of the Fletcher Construction Company* (Fletcher Construction, 2009).
3. Lynda Simmons, "Re-Imagining Urban Communities," *ArchitectureNow*, May 15, 2024, https://architecturenow.co.nz/articles/re-imagining-urban-communities/
4. L. Hoffman, *A Brief History of Auckland's Urban Form* (Auckland Council, 2019), https://knowledgeauckland.org.nz/media/1419/a-brief-history-of-aucklands-urban-form-2019-web.pdf
5. Hoffman, *A Brief History of Auckland's Urban Form*.
6. Philip Morrison and Ben Schrader, "Inner-City Living," *Te Ara – The Encyclopedia of New Zealand*, accessed June 20, 2024, https://teara.govt.nz/en/inner-city-living/page-2
7. Julia Gatley, "Vertical Living in the 1910s: New Zealand's First Purpose-Built Block of Flats," in *Proceedings of the Society of Architectural Historians, Australia and New Zealand 37: What If? What Next? Speculations on History's Futures*, ed. Kate Hislop and Hannah Lewi (SAHANZ, 2021), 87–99, https://www.sahanz.net/wp-content/uploads/SAHANZ-2020-FULL-PROCEEDINGS.pdf
8. Gatley, "Vertical Living in the 1910s," 96.
9. Smith, *No Job Too Big*, 130.
10. "Landscape Changes," *Auckland Star*, August 15, 1928, https://paperspast.natlib.govt.nz/newspapers/AS19280815.2.63
11. "New City Building," *Auckland Star*, September 18, 1928, https://paperspast.natlib.govt.nz/newspapers/AS19280918.2.90
12. Shaw, *Pride of Place*, 37
13. Gatley, "Vertical Living in the 1910s."
14. Gatley.
15. Smith, *No Job Too Big*.
16. Smith, 131.

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THE BRIEF

The Mayfair Flats that we know today was only the first block of four flats envisaged for the area. The architectural vision for the building is found in an article in the *Auckland Star*, where a "member of the syndicate" for the Mayfair Flats pronounced, "Parnell will become Auckland's Darlinghurst":

> In all parts of the world, there has been for some considerable time a decided trend in residential building. Instead of individual homes, great blocks of buildings subdivided into flats have been erected. In some cities whole areas are devoted to this class of building. In Sydney, for example, there are districts such as Darlinghurst where flats of every description have been built. In our opinion Parnell will be the Darlinghurst of Auckland.[17]

The four new buildings proposed make up Mayfair Flats were to "contain 20 to 30 self-contained flats which will be designed upon the most modern lines."[18] In addition to this urban directive, there was also a need for these flats to be "let at moderate rentals" with a build cost set for the first block of the Mayfair Flats at £20,000 ($2.4m in 2024 currency, according to The Reserve Bank of New Zealand's Inflation Calculator[19]), and the total build cost was set at £100,000.[20] The building was to be owned outright by the developers and rented to the residents; however, all residences are privately owned today.

This vision certainly matches the first block of flats, but the other buildings that were later built on the site don't fit into this vision. It's possible that the developers changed the brief after the first block of flats was built, perhaps as a reaction to the economic conditions caused by the Great Depression that began just after the first block was completed in 1929. The concept of a larger, multi-building, multi-stage flat complex was already tested in the Auckland market by the Courtville buildings on Parliament Street.[21] There were numerous advertisements and advertorials in the Auckland papers for the Mayfair Flats, describing them as "THE up-to-date self-contained flats of Auckland,"[22] offering views, proximity to city life, and high-end amenities including a telephone service.[23] The advertisements were directed toward a younger, professional class of people without the inclination to live the suburban lives that most of the new housing stock offered. The Mayfair Flats were desirable enough to also be used in advertisements to sell


THE SUN, AUCKLAND, SATURDAY, AUGUST 31, 1929

In the Empire's Most Palatial Hotel

—as in Auckland's Luxuriously Equipped Buildings—

WAVERLEY HOTEL
COOKS WITH GAS

MAYFAIR FLATS
COOKS WITH GAS

THE "ROYAL YORK" HOTEL, TORONTO
EXCLUSIVELY USE GAS FOR COOKING

The Simplest Meal or the Most Elaborate Dinner is Cooked Better by Gas

"CHAMPION" COOKER

Gas Has Never Failed!

GAS IS KING OF THE KITCHEN

TESTED — By the World's Eminent Scientists
TRIED — By the World's Leading Architects
PROVED — By the World's Most Famous Chefs

Though Toronto—One of the most progressive Cities in Canada—is in the shadow of Niagara Falls—

Though Auckland is near to Aragani—

AUCKLAND GAS COMPANY LIMITED

Wyndham St., Pitt St. and at Onehunga, Otahuhu, Devonport, Takapuna, St. Heliers

Figure 2. *Sun (Auckland)*, Advertisements, August 31, 1929.

bricks (as a solution to "Auckland's residential problem"),[24] plumbing, roofing tiles, hardware, bathroom tiles,[25] and gas systems (Figure 2).[26]

THE ARCHITECTS

The architecture firm Gummer and Ford was established in 1923 by William Gummer and Reginald Ford. Gummer, probably the lead designer for the Mayfair Flats, designed several notable buildings, including the Guardian Trust Building on Auckland's Queen Street (1913–17), and the now-demolished State Fire Insurance Building in Wellington (1917–19) as a partner in the Wellington architectural firm Hoggard, Prouse and Gummer.[27] Some of Gummer's notable works as a partner in Gummer and Ford include the Remuera Library (1926) – probably with Ford's architectural influence – and the Auckland Railway Station (1928), both recipients of the NZIA Gold Medal. For a thorough biography of William Gummer and Reginald Ford, see Paul Waite's *In the Beaux-Arts Tradition: William Gummer, Architect*.[28]

17. "Mayfair Flats," *Auckland Star*, August 17, 1928, https://paperspast.natlib.govt.nz/newspapers/AS19280817.2.121
18. "Mayfair Flats."
19. "Inflation Calculator," Reserve Bank of New Zealand Te Pūtea Matua, accessed August 30, 2024, https://www.rbnz.govt.nz/monetary-policy/about-monetary-policy/inflation-calculator
20. "Mayfair Flats."
21. For more information on this see Gatley, "Vertical Living in the 1910s."
22. "The Crown of Parnell," *Sun (Auckland)*, February 16, 1929, https://paperspast.natlib.govt.nz/newspapers/SUNAK19290216.2.120
23. "The Crown of Parnell."
24. Advertisements, *New Zealand Herald*, October 6, 1928, https://paperspast.natlib.govt.nz/newspapers/NZH19281006.2.164.1
25. Advertisements, *Auckland Star*, March 2, 1929, 15, https://paperspast.natlib.govt.nz/newspapers/AS19290302.2.122.1
26. Advertisements, *Sun (Auckland)*, August 31, 1929, https://paperspast.natlib.govt.nz/newspapers/SUNAK19290831.2.233.1
27. Ian J. Lochhead, "Gummer, William Henry," *Dictionary of New Zealand Biography*, first published in 1998. *Te Ara – The Encyclopedia of New Zealand*, accessed November 8, 2024, https://teara.govt.nz/en/biographies/4g24/gummer-william-henry
28. Paul Waite, *In the Beaux-Arts Tradition: William Gummer, Architect* (Hawke's Bay Cultural Trust, 2005).

DESIGN INFLUENCES

Born in 1884, William Gummer began his architectural training at sixteen under Auckland architect W. A. Holman. In 1908, at twenty-four, he travelled to London, where he would spend the next three years. Gummer enrolled in design, architectural history and structural mechanics classes organised by the London County Council, attended lectures at the Architectural Association, and was accepted into the Royal Academy of Arts in early 1909.

The Royal Academy, a prestigious institution modelled after the French École des Beaux-Arts, emphasised the importance of the plan as a manifestation of a functional programme. Students were taught to analyse sites considering social and urban functions, while adhering to formal expressions in materials and construction methods. Designs were presented with quick concept sketches and highly finished presentation drawings.[29] Architectural history was taught through typological studies that rendered classical forms as modular proportions, independent of their historical context.[30]

Gummer summarised his personal approach to design in his 1914 address to first-year students in a section he calls The Art of Reason:

> If, for example, a building is being considered, the plan should instantly show the relative importance and use of the various apartments, access to these should be of the easiest, and a true architectonic feeling obtained in the whole by allowing the nature of the site and its position with regard to the compass, the character of the materials used in the building, and the habits of the people to use it, together with the personal temperament of the designer shown in his use of mass, line, proportion, light and shade, scale, etc., to express themselves fully.[31]

In William Gummer's obituary, Reginald Ford described his design philosophy:

> He has been a keen student of classical architecture and of the later neo-classic forms. He loved classical architecture, but he was a master and not a slave of its forms, which, when he used them, he used with restraint, judgment, and taste. He never let those forms or elements dominate his design or interfere with the functional requirements of the building.[32]

ARCHITECTURAL ANALYSIS OF THE FIRST BLOCK OF THE MAYFAIR FLATS

The Mayfair Flats were probably loosely modelled after London's mansion blocks – the apartment typology that evolved in mid-nineteenth-century London. Mansion blocks covered up to an entire city block and were usually five storeys tall, with two or more apartments per floor arranged around a single staircase. The apartments had high ceilings and were designed for social occasions. The exteriors "were often swathed in a status-asserting crust of stone, brick and plaster ornament."[33] The Mayfair Flats can be analysed according to this precedent, by reading their plans, sections and elevations in light of William Gummer's own writing on architecture, along with John Vredenburgh Van Pelt's *The Essentials of Composition as Applied to Art*, published in 1902 and republished in 1913, and Nathaniel Curtis's *Architectural Composition*, first published in 1923 and republished in 1935. These books are directly traceable to Gummer (he recommended both books to students and the profession) and offer direct insight into the influences behind Gummer's thinking about architectural design.[34]

SITE PLAN

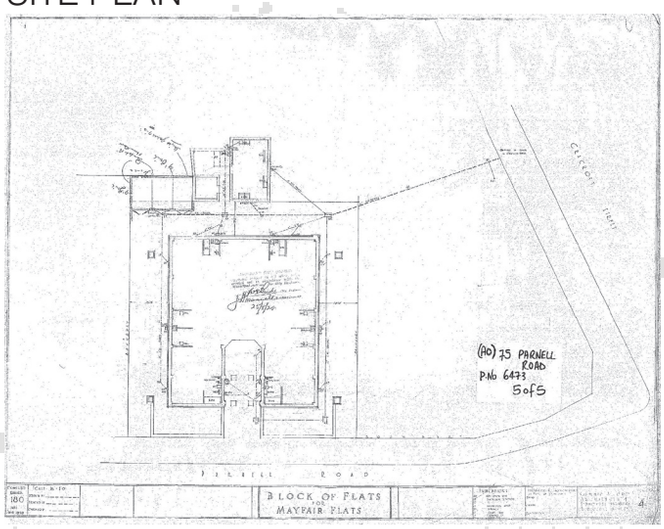

Figure 3. Site Plan for Block of Flats for Mayfair Flats, by Gummer and Ford held by the Auckland Council Archives.

29. Arthur Drexler, *The Architecture of the École des Beaux-Arts* (Museum of Modern Art, 1977).
30. W. Szambian, "Durand and the Continuity of Tradition," in *The Beaux-Arts and Nineteenth-Century French Architecture*, ed. Robin Middleton, 1st ed. (The MIT Press, 1982), 19–33.
31. William Gummer, "The Study of Architecture," *NZ Building Progress* 10, no. 9 (May 1915): 293.
32. Bruce Petry, "The Public Architecture of Gummer and Ford" (master's thesis, University of Auckland, 1992), 100.
33. "How Mansion Blocks Filled London with Stacks of Flats," *Bloomberg News*, November 20, 2023, https://www.bloomberg.com/news/features/2023-11-20/the-design-history-of-london-s-mansion-block-apartment-buildings
34. Petry, "The Public Architecture of Gummer and Ford," 9; and William Gummer, "The Threefold Application of Architectural Education," *NZIA Proceedings* (March 20, 1921): 42–48.

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The site plan indicates very definite, orthographic boundary lines in what is otherwise a tabula rasa (Figure 3). The building is offset from the boundary lines on all sides, offering what Van Pelt calls an "exterior silhouette," consistent with its place in the suburbs (as opposed to the party walls required when building in the city).[35] The approach to the building is from the street, so, as per Curtis, the façade facing the approach becomes the principal elevation, more important than the sides or rear.[36] Van Pelt instructs the designer that views are to be taken advantage of, a real attribute of this site, and emphasised by the setbacks from the boundaries on all sides.[37]

PLANS

The ground floor of the Mayfair Flats consists of two one-bedroom and two two-bedroom apartments.[38] The private areas are accessed by a central circulation space with a staircase and electric elevator. This arrangement is consistent for all five levels of the building. There are twenty apartments in total, with a plant room on the top floor in the roof space. The structure is a reinforced concrete frame with an innovative hollow tile floor and a tile roof. The building is mostly clad in brick, with stucco on bricks at the ground-floor level. The windows are timber

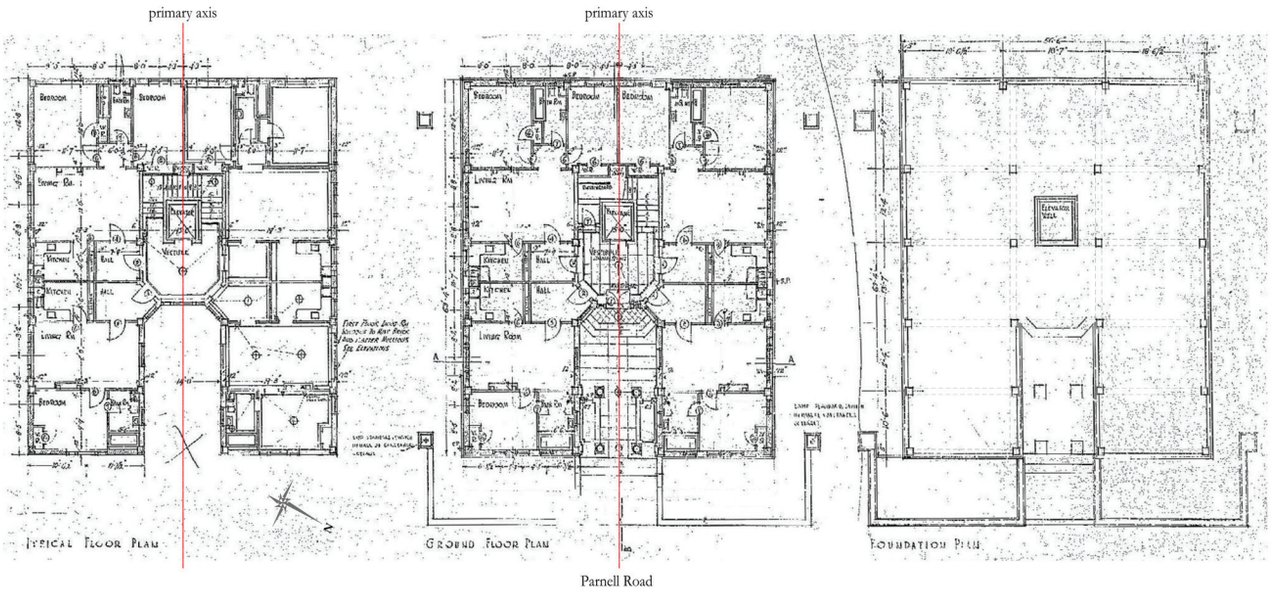

Figure 4. Floor Plans for Block of Flats for Mayfair Flats, by Gummer and Ford, held by the Auckland Council Archives.

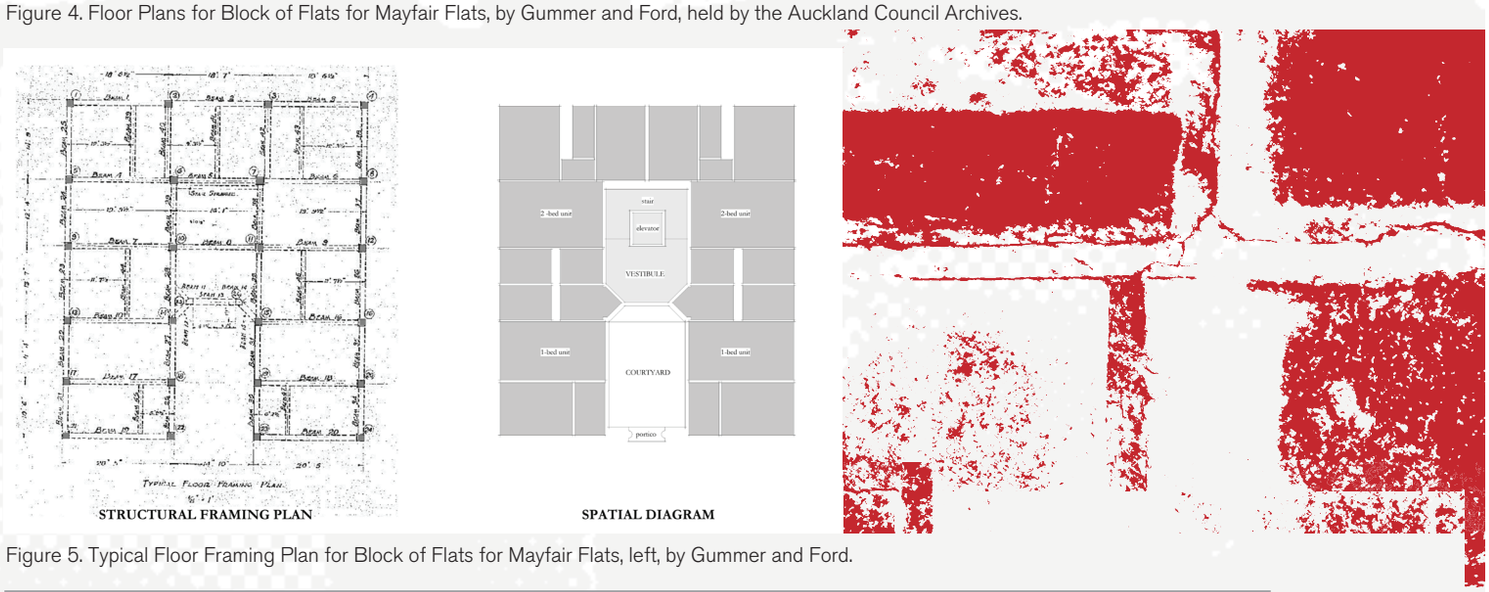

Figure 5. Typical Floor Framing Plan for Block of Flats for Mayfair Flats, left, by Gummer and Ford.

35. John Vredenburgh Van Pelt, *The Essentials of Composition as Applied to Art* (Macmillan, 1913), 188.
36. Nathaniel Cortlandt Curtis, *Architectural Composition* (J. H. Jansen, 1935), 143.
37. Van Pelt, *The Essentials of Composition as Applied to Art*, 189.
38. Probably during construction, one of the two-bedroom apartments on the ground floor was converted to a one-bedroom apartment to accommodate a mail room and external entry/exit to the rear of the site.

framed. A two-level caretaker's dwelling is also located to the rear of the flats, with a three-car garage sitting adjacent to this. The flats are accessed through a central courtyard on the ground floor. All the apartments have at least two aspects: the one-bedroom apartments face Parnell Road and the courtyard, and the two-bedroom apartments are to the rear of the building. All the units above the second level have views of either the Waitematā Harbour to the north-west or Parnell to the south-east.

PROPORTION AND COMPOSITION OF SPACES

The proportion of circulation space is about 9 percent of the total area, all achieved without hallways. The circulation areas are spacious and dignified, and according to long-time resident and architect Claire Chambers, act as bump spaces, helping facilitate communication between residents. On the first landing, the vestibule opens out to a shared balcony overlooking the courtyard. The interior spaces are regular shapes well-defined by walls, windows and thresholds. The spatial arrangement is formed by the structural grid, where the reinforced concrete beams span between approximately 3.4 and 6.2 metres (Figure 5). The only tension between the spaces and the grid is on the rear façade, where columns are moved to widen the second bedrooms and narrow the bathrooms. Curtis notes that "rectangles are the usual and preferred elementary form of the room. It makes construction simpler, it is pleasing in proportion, while rooms of this shape are easier to furnish."[39] The one-bedroom apartments are spacious at 57sqm, the two-bedrooms are 75sqm. The ceiling height on the ground floor is a stately 3.2 metres and is 2.7 metres from levels two to five.

The largest space in the plan is the courtyard, approximately 6 metres long and 4.2 metres wide, giving a proportion of 1:1.7, very close to √3:1, a ratio Andrea Palladio often used in villa design.[40] Both Curtis and Van Pelt agree that there are no exact rules for the proportion of rooms, but Curtis concedes that the golden ratio of 1:1.62 is "ideal when considered by itself, but in planning other factors of greater importance usually combine to neutralise it."[41] This proportion helps set those proportions for the rest of the spaces, starting with the vestibule, circulation spaces and the structure. The courtyard and vestibule together act as what Van Pelt calls a focal point in the plan – the most important part of the composition that all other elements refer to and, in this case, take their proportional cue from.[42] The spatial relationship between the courtyard the building's other spaces is explored in the façade analysis.

SEQUENCE OF SPACES

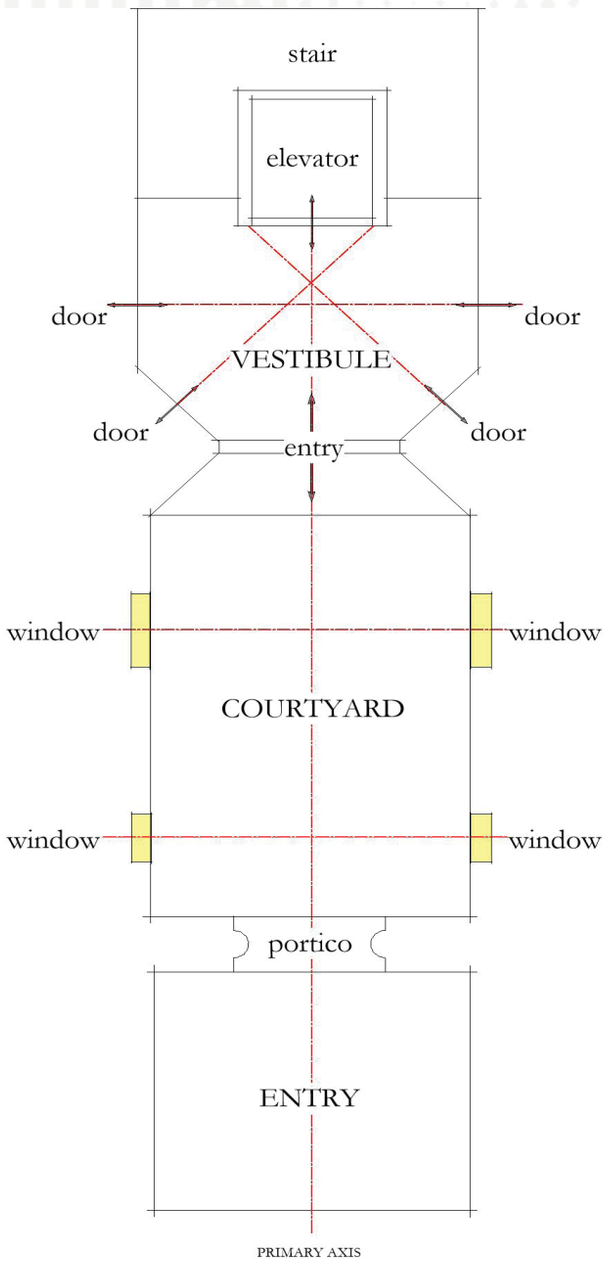

Figure 6. Sequence of shared spaces for the Mayfair Flats.

39. Curtis, *Architectural Composition*, 106.
40. Branko Mitrović and Ivana Djordjević, "Palladio's Theory of Proportions and the Second Book of the 'Quattro Libri Dell'Architettura,'" *Journal of the Society of Architectural Historians* 49, no. 3 (1990): 279–92, https://doi.org/10.2307/990519
41. Curtis, *Architectural Composition*, 106.
42. Van Pelt, *The Essentials of Composition as Applied to Art*, 191.

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The plan is symmetrical, the internal composition and sequence of the public spaces in the building is organised around the primary axis running perpendicular to Parnell Road, all as recommended by Curtis.[43] On entry, the visitor is immediately oriented on the primary axis, crossing the threshold through the entry portico, into the courtyard, and directly on axis with the entry. A rhythm is established with cross axes formed by the portico, the window placement and the entry. The elevator terminates the primary axis with the stairs efficiently wrapping around it (Figure 6). The stairs are off-axis but are visible from the entry. Both Van Pelt and Curtis warn against having common stairs on axis, with Van Pelt calling that situation "fatal in almost all occasions."[44] The primary axis arranging the shared space follows Curtis's direction: "The effect on interiors may often be more than doubled by the skilful prolongation of an axis through several rooms. Good composition always makes use of a beautiful vista terminated by some feature or view of conspicuous interest" – in this case, the elevator, a symbol of modernity that appealed to the building's target market.[45]

All the private spaces are accessed off the vestibule. The private spatial sequence starts with the entry hall. The primary axis dissolves at this scale, but strong secondary axes are formed by the alignment of doors and windows in the individual spaces (Figure 7).

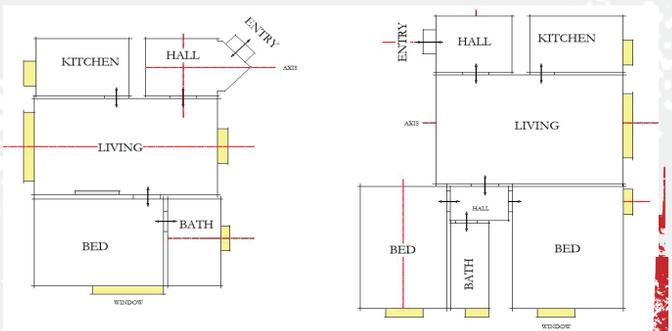

Figure 7. Spatial diagram for private spaces in the Mayfair Flats.

Figure 8. Mayfair Flats courtyard. Photo: Cameron Moore.

THE COURTYARD

Both Van Pelt and Curtis implore the use of what they both refer to as a 'court of honour' – a three-sided courtyard, open to the street on one side and formed by the building on the other three sides. Originating in France, a court of honour is usually found in much bigger public buildings, but Gummer uses it to good effect here at a scale that seems wholly original.[46] Van Pelt describes courts of honour in this way: "the charming plans of the Louis XV 'hotels' … had their courts of honour on the side toward the street, and (a most sensible arrangement we moderns might copy) delightfully arranged gardens behind, overlooked by all the reception and living rooms."[47] The benefit of this courtyard, apart from its contribution to a pleasing sequence of spaces, is that "air in the plan" is achieved by allowing light and air into the interior of the building and, in this case, allowing views from the shared circulation vestibules. The courtyard at the Mayfair Flats isn't without considerable financial sacrifice to the rentable floor-area of the building – at approximately 25 square metres per floor for at least four storeys – but this area gives residents great benefit in terms of urban character, dignity and a sense of arrival.[48]

43. Curtis, *Architectural Composition*, 75.
44. Van Pelt, *The Essentials of Composition as Applied to Art*, 193.
45. Curtis, *Architectural Composition*, 44.
46. Van Pelt, *The Essentials of Composition as Applied to Art*, 191.
47. Van Pelt, 191.
48. Van Pelt, 199.

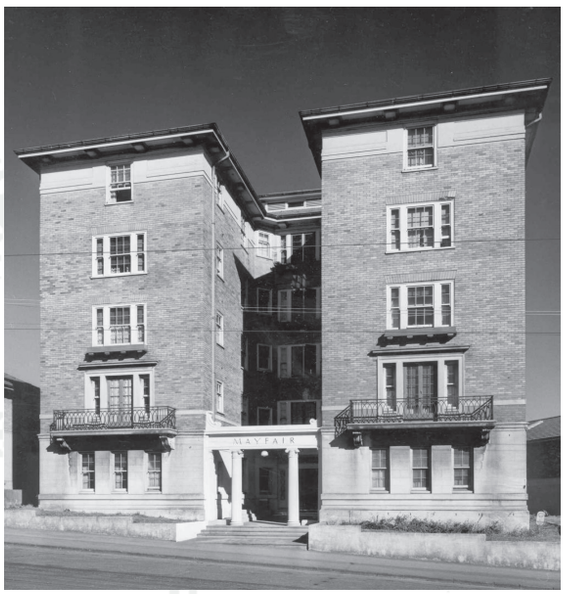

Figure 9. Fletcher Construction: Mayfair Flats, Parnell, Central Auckland, 1945. P9079/8.

THE PRIMARY FAÇADE

Curtis directly laid out the constraints of designing the façade in this way: "since the purpose of the edifice controls the arrangement of the plan, and the mode of construction controls the vertical proportions, it follows that purpose and construction also control the façade."[49] But he warns that taking this axiom too literally can result in "dry and cheerless works," and that ample latitude is still available to the designer for the expression of character. The designer should feel that "he is an artist who has very great freedom."[50] Gummer expresses this freedom through five general principles.[51]

The first principle is that the building expresses an impression of stability. This is achieved by windows placed above one another, spreading the base, diminishing the thickness of the upper walls, and the use of "resisting materials."[52] The resisting material in this case is brick and plaster. Here, Gummer does something very interesting – the *impression* of stability is given by the pyramid shape formed by the arrangement of the windows, even though this makes the building *less* stable. This visual trick is done at some cost – the views from the top windows are compromised, and the lintels below all have more weight imposed on them (Figure 10). Lastly, Gummer gives the impression that the end bays are protecting the courtyard area from apparent lateral loads by making them wider than the courtyard.

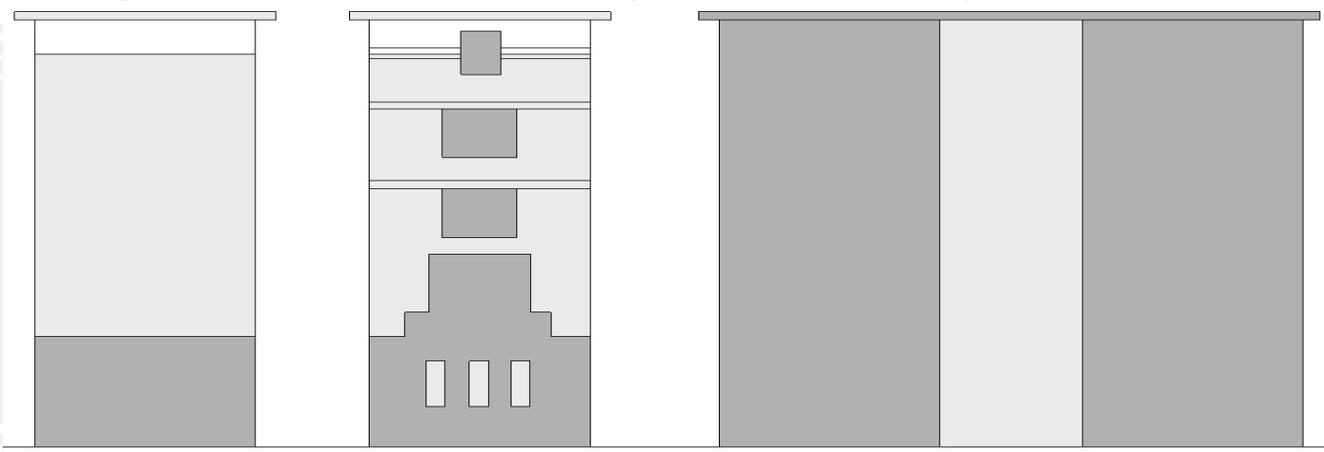

Figure 10. Impressions of Stability for Mayfair Flats.

49. Curtis, *Architectural Composition*, 117.
50. Curtis, 118.
51. Cameron Moore and Milica Mađanović, "The Design of the Dilworth Building," *Asylum* 1 (2022): 264–73, https://doi.org/10.34074/aslm.2022102
52. Curtis, *Architectural Composition*, 122.

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The second principle is a three-motive composition, a principle promoted by both Curtis[53] and Van Pelt.[54] In the Mayfair Flats, this is first expressed in the wall treatment using Louis Sullivan's three-part ordering of buildings – the base, the middle and the crown. Gummer clads the base in plaster over the bricks to establish the base, leaves the bricks for the middle, and then plasters the bricks under the soffit to form a simple crown. This also helps to give the impression of stability to the façade (Figure 10). The three-motive composition is also seen in the overall horizontal massing of the building caused by the central courtyard. The windows on the ground floor are grouped in threes, and the windows on levels two, three and four are divided into three vertical panels.

The third principle is establishing a dominant focal point in the composition.[55] The entry portico is the focal point for the primary façade. Gummer used a canonised ionic order 500mm in diameter, and 8 diameters high (3 metres). The columns sit 600mm from the end pilasters, which protrude 170mm from each wall. The columns are 1.6 metres apart for an intercolumniation of 3.2 diameters (Figure 11).[56] Curtis states that "an entry portico may have little excuse for its existence except to create an impression – to give monumental character and dignity to a façade. This use, when justified by the programme, takes precedence over purely material necessities."[57] Together with the floor levels, the portico sets the proportions and composition of the rest of the façade.

The fourth principle is overlapping compositional elements to ensure a connection between the vertical and horizontal subdivisions. The rest of the façade is visually tied into the composition of the focal point.[58] At the Mayfair Flats the proportions of the portico are carried through the rest of the façade by the scrolls that sit on the entablature and set the level of the string line that then informs the height and position of the first-floor balconies. The balcony and length of the apartment walls then set the proportion of the doors and windows above it.

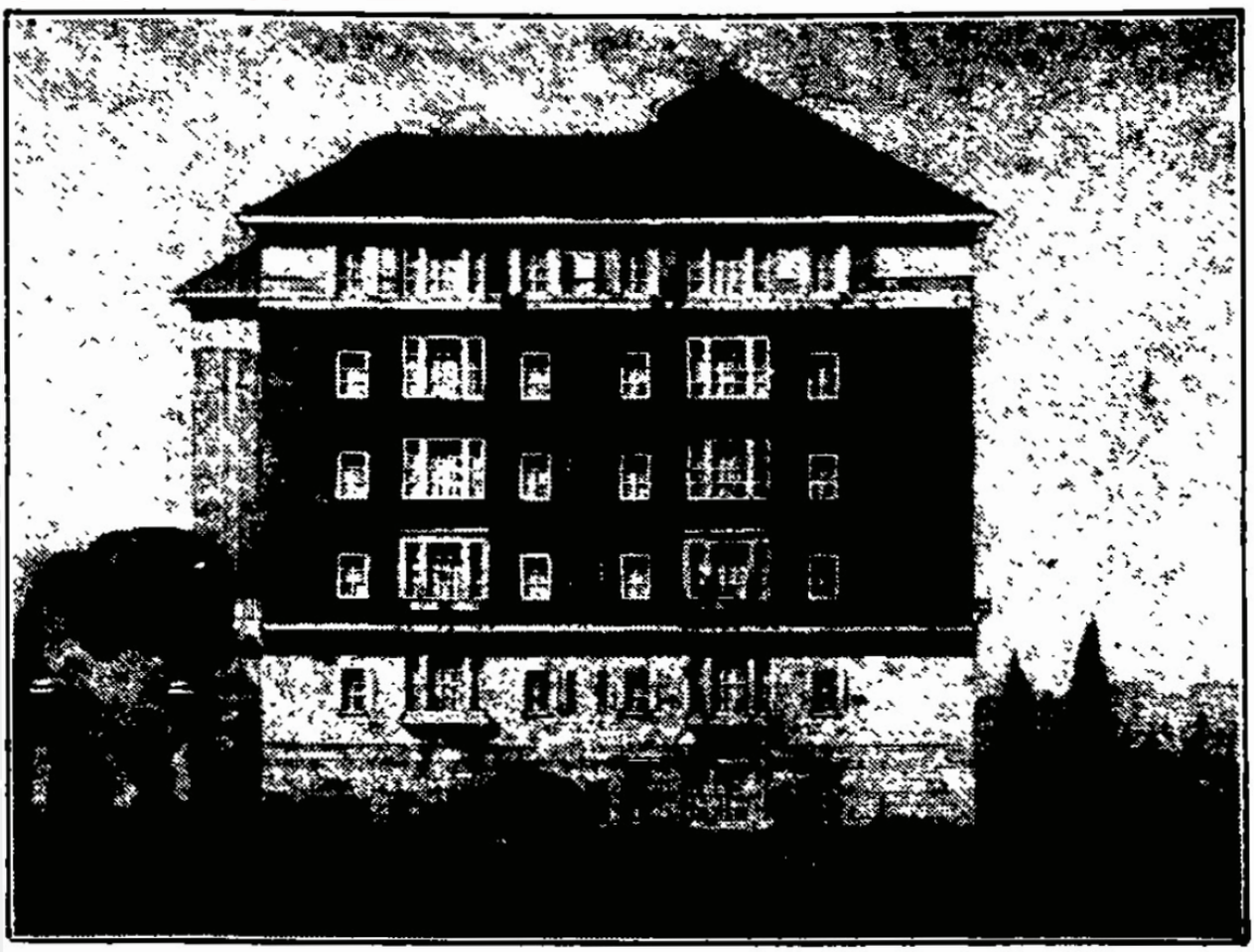
The fifth principle is achieving balance through symmetry.[59] Neither Curtis nor Van Pelt are dogmatic when it comes to symmetry, Curtis writing, "The unsymmetrical composition appears forced unless there is some evident reason for its use, such as irregularity of site or some exceptional requirement of program." Yet, if the unsymmetrical parti promises a more rational solution, then "the student should not hesitate to adopt it."[60] The primary axis forms the line of symmetry in the Mayfair Flats.

Note that the side elevation of the Mayfair Flats was considered important enough to be separately rendered and distributed for advertising/public relations. Also of interest is the building behind the façade to the left of the image suggesting a much bigger building to neighbour the first block of the Mayfair Flats than the two-storey building that was eventually built there.

Figure 11. Entry Portico for Mayfair Flats. Photo: Cameron Moore.

Figure 12. Mayfair Flats. Photo: Cameron Moore.

53. Curtis, 123.
54. Van Pelt, *The Essentials of Composition as Applied to Art*, 78.
55. Van Pelt, 41; Curtis, *Architectural Composition*, 123.
56. Robert Chitham, *The Classical Orders of Architecture*, 2nd ed. (Architectural Press, 2005).
57. Curtis, *Architectural Composition*, 69.
58. Curtis, 123.
59. Van Pelt, *The Essentials of Composition as Applied to Art*, 71.
60. Curtis, *Architectural Composition*, 144.



RESIDENTIAL FLATS IN PARNELL.—One of a group of four buildings to be erected on top of Parnell Rise, which are to be known as Mayfair Flats. The demolition of the old wooden houses on the site is now proceeding.

Figure 13. Render of Mayfair Flats, probably by Gummer and Ford, Residential Flats in Parnell. — "One of a group of four buildings to be erected on top of Parnell Rise, which are to be known as Mayfair Flats. The demolition of the old wooden homes on the site is now proceeding," *Auckland Star*, August 17, 1928.

CONSTRUCTION

Construction started on 14 August 1928, and by 20 September it set a New Zealand building record for the speed at which the five-storey reinforced-concrete structure floor was erected. James Fletcher credited the innovative hollow-tile floor construction as a reason for the rapid build.[61]

Architect and long-time resident of the Mayfair Flats, Nicholas Stevens, suggests that the deep concrete beams on the front façade contribute to the lateral stability of the building, allowing it to still meet structural building-code requirements. Charles Reginald Ford probably had some influence on structural design, having written one of the first books in English on earthquake-resistant architecture in 1926.[62]

61. "Building Record," *Auckland Star*, September 19, 1928, https://paperspast.natlib.govt.nz/newspapers/AS19280817.2.121
62. Peter Lowe, "Ford, Charles Reginald," *Dictionary of New Zealand Biography*, first published in 1998. *Te Ara – The Encyclopedia of New Zealand*, accessed July 29, 2024, https://teara.govt.nz/en/biographies/4f19/ford-charles-reginald

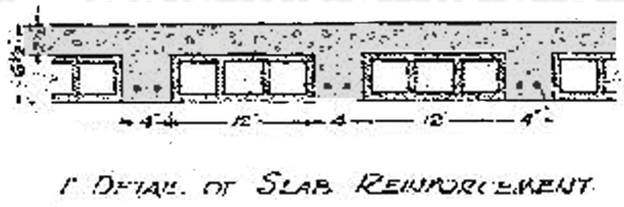


Figure 14. Detail of Hollow Tile and Slab Reinforcement, for Block of Flats for Mayfair Flats, by Gummer and Ford, held by the Auckland Council Archives.

Figure 15. "Mayfair Residential Flats on Parnell Road Under Construction." Published in the *Auckland Star*, 20 September 1928. Photographer Unknown. Auckland Libraries Heritage Collections 1285-10011. Note the very deep concrete beams at each floor level of the front elevation.

CONCLUSION

Nearly one hundred years old, the Mayfair Flats building was one of the first apartment buildings in New Zealand and is remarkably well-preserved today. It was the first building to form part of what was to be a four-block residential development as part of "Auckland's Darlinghurst," but, probably due to the downturn caused by the Great Depression, it was the only building on the site to fulfil this vision. The architect William Gummer probably used London's mansion-block model as a precedent, but with two fundamental design differences. The first was to ensure a minimum four-metre setback from the boundary on all sides, possibly to allow an opportunity for better views, more access to light and air into the apartments, and to assimilate with the suburban character of the location. The second difference was the addition of a three-sided courtyard on the street to act as an open shared space that, again, allowed more light and air into the interior, but also presented a more dignified approach into the building, likely to act as a selling

Figure 16. Mayfair Flats residents, 1978. Mayfair Flats residents on the balcony to the left of the entrance. Photo: Susanna Burton. Auckland Libraries Heritage Collections 1213P-019-37A.

point for both the building and the social way of life that apartment living offered. The reinforced-concrete structural system and brick cladding were most certainly specified by James Fletcher, the client and the contractor, and a structure–cladding combination that William Gummer had vast experience with. These two departures from precedent, and Gummer's unwavering energy for creating functional and appealing architecture, have produced a unique and much-loved building.

Unfortunately, this was the only for-purpose apartment building William Gummer designed; however, his chief draughtsman, Gordon Wilson, went on to design numerous apartment buildings as the Chief Architect of the Department of Housing Construction, winning a NZIA Gold Medal for the Dixon Street Flats in 1947.[63]

With apartment living becoming more popular in Tāmaki Makaurau Auckland, it is useful that the city's aspiring architects learn about the history of the typology, and how to design an attractive alternative to the 'Kiwi dream' of the four-walled villa with a garden and picket fence. This article is a step in that direction.

63. Julia Gatley, "Wilson, Francis Gordon," *Dictionary of New Zealand Biography*, first published in 2000. *Te Ara – The Encyclopedia of New Zealand*, accessed July 29, 2024, https://teara.govt.nz/en/biographies/5w36/wilson-francis-gordon

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https://doi.org/10.34074/aslm.2024103

ARCHITECTURAL COMPUTATIONAL OPTIMISATION IN DESIGNING ACOUSTICS AND SEATING ARRANGEMENTS

ABSTRACT

In architectural practice, it is challenging for designers to predict future spatial performance based on limited information in the early stages of design. To address this design problem, architectural design optimisation can assist the designer by projecting building performance utilising single or multiple criteria over different architectural geometric analyses in the design process.

The primary purpose of this paper is to describe how to design a computational optimisation program that can automatically generate concept design solutions, and determine its impact on the design outcome. In order to investigate the application of computational optimisation in architecture, this study involved analysis of a small-scale community performance facility as the proposed building type in the design exploration. Through this study, a deeper understanding of optimisation processes is intended to contribute to advancing architectural practice through computational generative design.

In the computational generative design process, the designer must abstract design factors to become principle elements in calculations. This paper focuses on how to use algorithmic thinking to formulate design principles, in which the computational design's benefits and limitations are also discussed. As many optimisation algorithms have been used in architectural design, this paper briefly discusses how to select appropriate algorithms. In computational optimisation, it is important to determine numeric input variables and the objectives of the output, so we review the requirements of the performance-space design to study the feasibility of a range of computational applications. This paper reflects on three experimental design-optimisation programs and studies their computational process through research and evaluation. This study recognises that, while design optimisation generates solutions based on geometric variables and optimisation goals, the outcome it suggests ought not be fundamentally different from that required in the initial design brief.

Keywords: Computational generative design, computational optimisation, performance space, acoustics, auditorium seating, automation in design

INTRODUCTION

In architectural practice, the designer is often under pressure from a limited budget and time constraints. Recent years have seen the rapid development of digital optimisation in many industries; however, too little attention has been paid to computational optimisation in Aotearoa New Zealand architectural practice.[1] Therefore, studying optimal approaches in architectural design is essential.

The term 'computation' refers to the procedure of calculation using mathematical or logical approaches to solve problems.[2] With this calculating power, the designer may save time finding rational design solutions, and design optimisation can also provide proof to support design decisions. There is a clear opportunity to use algorithmic programming in architectural design computation.

A program must be clearly defined step by step; however, architectural design intrinsically has uncertainty as a property. Therefore, it becomes challenging for a designer to find the middle ground between architectural design and computer programming in the design process. To investigate optimisation applications, this paper discusses a small-scale community theatre with around 300 seats as the proposed building type in the design exploration.

This study seeks to explain how to design a computational optimisation program that can automatically generate concept-design alternatives. The computational generative design methods are systematically reviewed against performance-space design requirements, aiming to explore architectural optimisation programs compatible with auditorium seating and acoustic design.

Three experimental optimisation programs are analysed, and the Grasshopper plugin became the preferred visual programming language to assist the optimisation of programming for this study.

1. Neil Leach, "AI and the Future of the Architectural Profession," NZIA, April 29, 2024, video, 1:47:16, https://www.youtube.com/watch?v=MhLcFp_BEJQ
2. Kostas Terzidis, *Algorithmic Architecture*, 1st ed. (Routledge, 2006), xi.

REVIEW OF COMPUTATIONAL GENERATIVE DESIGN

At the outset, this paper reviews the definitions of computational terms. Computational design is that which manages architectural design outcomes with quantitative information.[3] The term 'algorithmic' is used to refer to a computational process in which a set of rules or a specific mathematical instruction is used to solve a problem in a limited procedure.[4] The algorithm solves the problem by its calculation instructions being followed.[5] The term 'programming' refers to "configuring the computer to perform the desired function."[6] Architectural programming is generally understood to mean establishing "the research and decision-making process that defines the problem to be solved by design."[7]

Computational generative design is a field between computational design and generative design. Figure 1 shows the generative design process, the term 'generative' referring to a process run via procedural methods.[8] A generative system is one that can automatically generate design alternatives.[9] In generative design, the designer interacts with design through a generative system instead of directly controlling the design.[10] Compared to traditional design, the abstraction of architectural design principles is crucial in the generative design process to obtain elements with which such calculations can be performed.[11] The generative method saves time in producing a variety of design solutions, while the traditional method saves time in abstracting a set of design rules.

Also, generative design is different to parametric design. The term 'parametric design' refers to the method that describes design using parameters. Parametric design helps speed up manual modelling and is good at complex modelling. In comparison, generative design is good at populating design alternatives autonomously.[12] With the same input, parametric design can only return the same output. In contrast, generative design can give different outcomes with the same input variables.

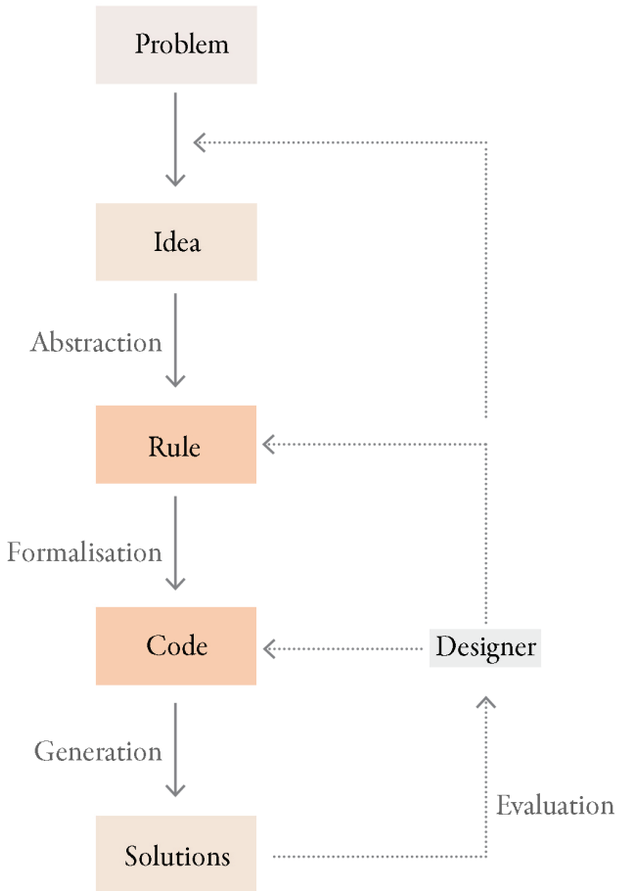

Figure 1. The generative design process.

3. Roberto Bottazzi, *Digital Architecture Beyond Computers: Fragments of a Cultural History of Computational Design* (Bloomsbury, 2018), 3–6, https://doi.org/10.5040/9781474258159
4. Terzidis, *Algorithmic Architecture*, 65.
5. Xin-She Yang, "Introduction to Algorithms," in *Nature-Inspired Optimization Algorithms* (Elsevier, 2014), 1.
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8. Grant D. Taylor, *When the Machine Made Art: The Troubled History of Computer Art*, 7th ed. (Bloomsbury, 2014), 256.
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In developing and using digital tools, human designers need to communicate with the computer in an approach the computer can comprehend. The design problem needs to be translated into a numeric problem in the computational optimisation question. To describe an architectural form, 3D digital geometrical form transformation is typically achieved using a three-coordinate system.[13]

An optimisation program should clearly define a problem, address the answer to the problem, and design the fitness function. It requires an optimisation algorithm to work with other algorithms. Black-box optimisation methods include metaheuristics, direct search methods, and model-based methods, the genetic algorithm probably being the most popular optimisation algorithm in architecture.[14] The genetic algorithm is part of a group of evolutionary algorithms that borrow from the idea of natural evolution.[15] Evolutionary algorithms are part of a group of metaheuristic method algorithms. Although the genetic algorithm has been widely used, it may not be the optimisation algorithm with the best performance nowadays. A study has shown that model-based optimisation methods perform better in finding optimal solutions than metaheuristic genetic algorithms.[16] Model-based optimisation is an innovative optimisation method related to machine learning.[17]

Nevertheless, in general, all algorithm-based computational optimisation methods can generate architectural solutions much faster than humans. Therefore, both metaheuristic genetic algorithms and model-based methods are good optimisation algorithms for architecture. A genetic algorithm was chosen for experimental programs 1 and 2 in the later detailed analysis, and a model-based method was chosen for experimental program 3 in the analysis at the end of study.

Based on the number of objectives, black-box optimisation algorithms can be categorised as single-objective or multi-objective algorithms. A multi-objective optimisation problem is distinct from a single-objective optimisation problem in that it does not necessarily have a single optimal solution that optimises all the objectives. When one objective is in the optimal value, another objective may weaken.[18] To work with this dilemma, Pareto optimal solutions are often used in multi-objective optimisation programs. These calculate non-dominant optimal solutions to judge fitness so multiple objectives can be equally optimised.[19] Given the nature of Pareto rankings, multi-objective optimisation methods can typically optimise a maximum of only four or five objectives at the same time.[20]

The Grasshopper component refers to the pre-programmed node block that executes the specific function. To program in Grasshopper, the designer only needs to be aware of each component input and output.[21] This paper employed the Galapagos component to run single-objective design optimisations and used the Opossum component for multi-objective optimisations. The Galapagos component is a single-objective solver that includes a genetic algorithm.[22] The Opossum solver provides optimisation algorithms for single and multiple objectives. The NSGA-II is a Pareto genetic algorithm with multiple objectives.[23] The RBFMOpt is a Pareto model-based multi-objective optimisation algorithm.[24] These algorithms were tested in the following design process.

13. Helmut Pottmann and Daril Bentley, *Architectural Geometry*, 1st ed. (Bentley Institute Press, 2007), 5.
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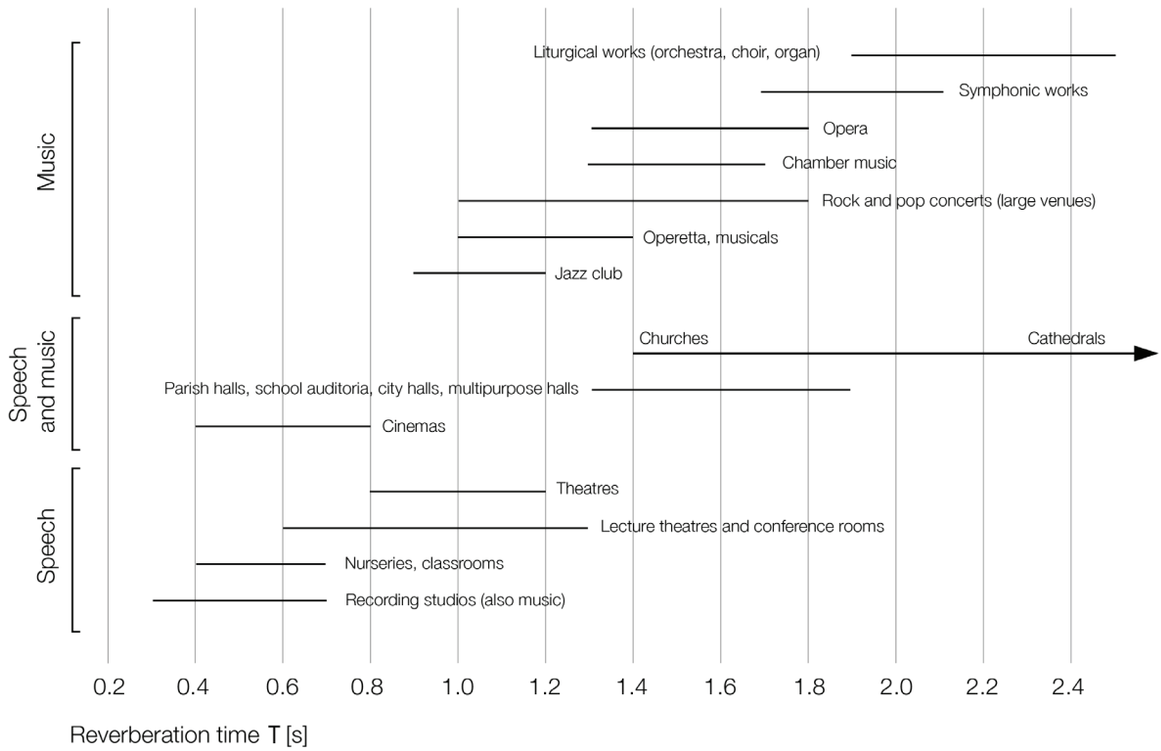


Figure 2. Reverberation time reference (diagram from Eckard Mommertz, *Acoustics and Sound Insulation: Principles, Planning, Examples*).[27]

REVIEW OF PERFORMANCE-SPACE DESIGN FACTORS

The auditorium is the heart of a theatre, and every audience member desires optimal visibility and acoustics.[25] Room acoustics are crucial for the effect of the performance. Each seat should be comfortable to sit in and convenient to access. The general layout should be organised with easy accessibility ensured for the audience.

Open-stage formats are popular in small theatres because they allow flexibility for a variety of performance types. A flexible configuration has five variations: end stage, fan shaped, thrust stage, theatre-in-the-round and traverse stage.[26] This study assumes theatrical drama shows as the primary performance type and considers musical shows as the secondary performance type.

In terms of acoustics, the room form affects the way sound travels to the listener.[28] Reverberation time is a key factor in acoustics. The term 'reverberation time' refers to the time required for a sound reflection to decay by 60 dB.[29] As shown in Figure 2, a reverberation time between 0.8 and 1.2 s is suitable for speech in the mid-frequency. A higher reverberation time tends to be ideal for musical shows but is less suitable for speech and drama. Since the audience cannot hear the performers clearly if the reverberation time is too high, reverberation time was selected as one acoustic objective for this research.[30] This paper refers to the ideal reverberation time of 0.8 to 1.6 s for this project. The mid-frequencies are commonly understood as 500 to 2000 Hz.[31] To simplify acoustic simulations, this paper chose material absorption coefficients of 1000 Hz in acoustic studies.

However, when the room reverberation time improves, other acoustic criteria may worsen, so the multi-objective optimisation approach is preferred for acoustic calculation. Apart from reverberation time, there are many primary acoustic-quality objectives, such as loudness, diffusion and clarity.[32] As early decay time often has a similar value to reverberation time, early decay time is not discussed in this research.[33]

25. Paul Marantz, "Lighting the Theatre Building," in *Building Type Basics for Performing Arts Facilities*, ed. Hugh Hardy (Wiley, 2006), 133.
26. Ian Appleton and Stefanie Fischer, "Auditoria," in *Metric Handbook: Planning and Design Data*, ed. Pamela Buxton, 5th ed. (Routledge, 2015), 14–15.
27. Eckard Mommertz, *Acoustics and Sound Insulation: Principles, Planning, Examples*, 1st ed. (Birkhäuser, 2009), 14.
28. Mommertz, *Acoustics and Sound Insulation*, 12.
29. Mommertz, 14.
30. Mommertz, 96.
31. Barron, *Auditorium Acoustics and Architectural Design*, 461.
32. Gary W. Siebein and Bertram Y. Jr Kinzey, "Recent Innovations in Acoustical Design and Research," in *Architectural Acoustics: Principles and Practice*, ed. William J. Cavanaugh et al., 2nd ed. (Wiley, 2010), 212.
33. Mike Barron, "Interpretation of Early Decay Times in Concert Auditoria," *Acta Acustica United with Acustica* 81 (1 July 1995): 320–331, https://www.researchgate.net/publication/233681112_Interpretation_of_early_Decay_Times_in_Concert_Auditoria

Typical intelligibility criteria include clarity C_{50}, clarity C_{80}, and a speech transmission index.[34] C_{50} and a speech transmission index are usually used to describe speech intelligibility. C_{80} is commonly used to describe the clarity of musical shows.[35] This paper chose C_{50} as another acoustic objective for the following optimisation programs. C_{50} values range from -3 to +9 dB, which covers most speech room situations, so the later research referred to this range as the reference for the C_{50} results.[36]

EXPERIMENTAL PROGRAM 1: SEATING ARRANGEMENT OPTIMISATION IN A SHOEBOX HALL

To understand how the optimisation solver works to address an architectural design problem, the first experimental program investigated single-objective optimisation for seating capacity. The first program discusses a theatre-in-the-round configuration to optimise the biggest seat number within a fixed rectangular hall. The seating capacity in a simplified shoebox auditorium is the only output objective of this experiment. This program assumes the hall width is 11.5 m and the hall length is 20 m, the stage width and length being variables in this program. The stage width is limited to 4–7 m, and the stage length 3–15 m. Regarding the interaction between performers and audiences, the sight lines and accessibility factors are controlled by constrained parameters, so that each seat can be accessible, and the audience should be visible to those on the stage. This program generates seats according to the dimensions of the stage width and length.

Grasshopper's Galapagos component is the optimisation solver used to evolve outputs in this program. All the geometries are constructed in Grasshopper to connect with the Galapagos component. The fitness of the Galapagos solver is set to optimise the maximum seat number in every iteration.

Figure 3 shows ten typical outputs from the optimisation progress. The goal set for this program is to stop when it gets the best result. This program proves that the optimisation solver is good at populating a large number of solutions over a short time. However, configurations with higher seat numbers do not equate to better design in the design evaluation. They may look weird in proportion. The configuration with 320 seats is selected as the best design at the end because it has good seating capacity and a functional seating arrangement.

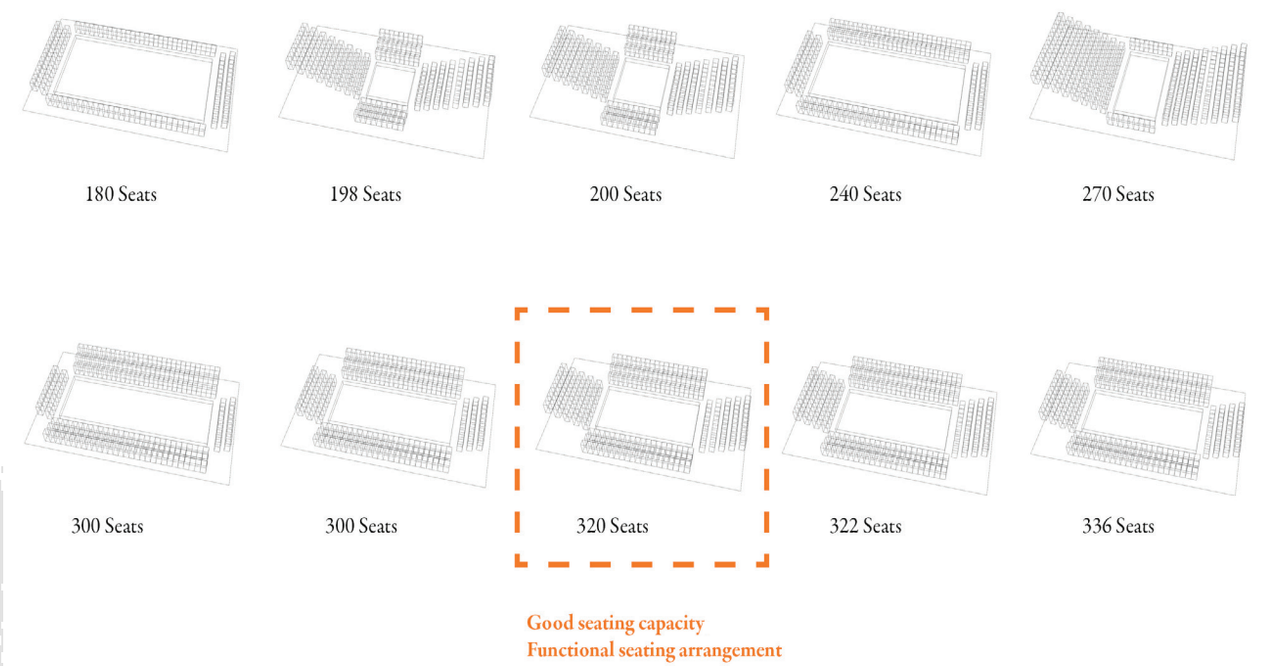


Figure 3. Ten alternatives from the first experimental optimisation program.

34. Mommertz, *Acoustics and Sound Insulation*, 14.
35. J. S. Bradley et al., "A Just Noticeable Difference in C_{50} for Speech," *Applied Acoustics* 58, no. 2 (1 October 1999): 99–108, https://doi.org/10.1016/S0003-682X(98)00075-9
36. Bradley et al., "A Just Noticeable Difference in C_{50} for Speech."

EXPERIMENTAL PROGRAM 2: ACOUSTIC OPTIMISATION IN AN EMPTY STANDING ROOM

The second program is a multi-objective optimisation program designed to study how to connect acoustic simulation with an optimisation solver in a highly simplified shoebox auditorium.

This program chooses reverberation time and C_{50} as acoustic optimisation objectives. Table 1 shows material absorption coefficients that are used in this program. The Pachyderm Acoustics plugin is used in this program to provide acoustic simulations.

The input variables include the hall's width, depth and height. One source point and one receiver point are provided at 1.7 m above the floor. The volume of the audience is ignored in this experiment.

Location	Ceiling	Walls	Floor
Surface Material	Plasterboard Ceiling	Wood	Hardboard
Sound Absorption Coefficient (1 kHz)	0.10	0.07	0.15

Table 1. Material absorption coefficients used in second experimental optimisation program. Table by author based on M. P. Norton and D. G. Karczub, *Fundamentals of Noise and Vibration Analysis for Engineers*, 2nd ed. (Cambridge University Press, 2003), 602.

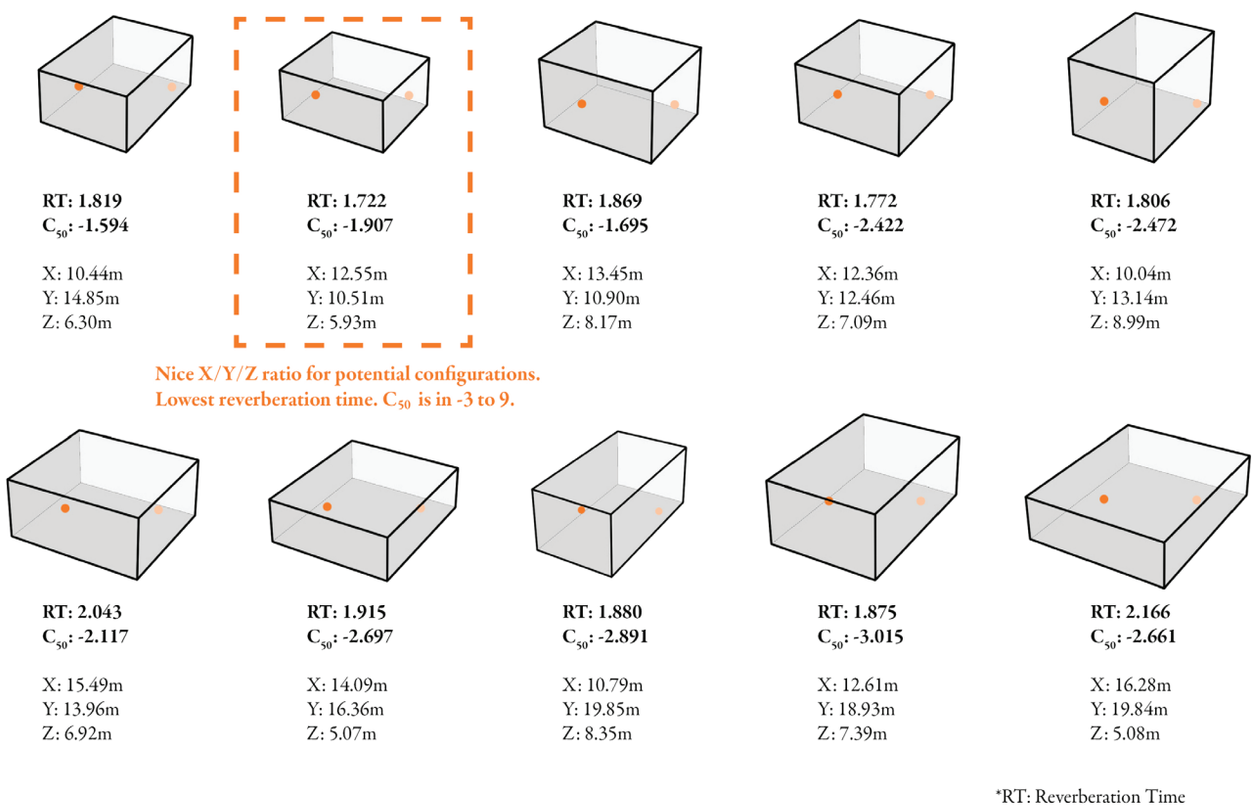
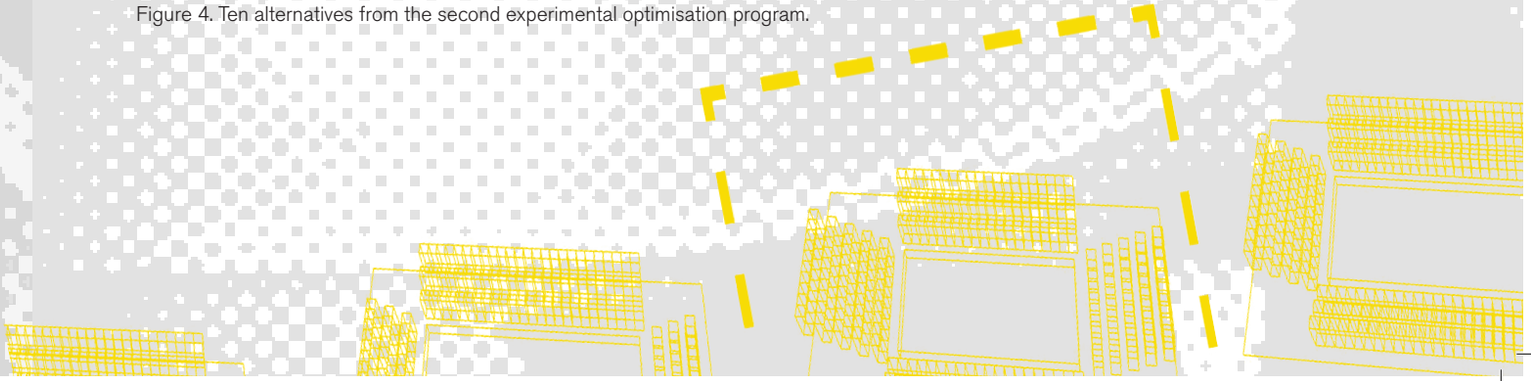


Figure 4. Ten alternatives from the second experimental optimisation program.



This optimisation program was set to find twenty solutions by NSGA-II through the Opossum solver, and ten of the solutions are presented in Figure 4. In the evaluation, the marked auditorium form becomes the best solution in this program because its reverberation time and C_{50} are the best for hearing voices clearly, and the scale of the hall is sufficient for performance.

The second program demonstrates how to populate forms by finding better acoustic properties. Although the second program is oversimplified and cannot lead to a concept reference, it provides the foundation for the third program.

EXPERIMENTAL PROGRAM 3: ACOUSTIC OPTIMISATION IN A FOLDED-PLATE HALL WITH SEATING

The third program was more complex, designed to generate folded-plate auditorium forms by optimising the acoustic reverberation time, C_{50} clarity and seat numbers. The folded-plate form has two basic control lines: one basic line is the section profile, and the second is the corrugation control line.[37] In input-variables design, these two control lines define the width and length of the hall, the count of folds and fold spacings along the width and length, and folding angles.

Location	Roof and Walls	Seats	Floor
Surface Material	Wood	Person in Upholstered Seat	Hardboard
Sound Absorption Coefficient (1 kHz)	0.07	0.45	0.15

Table 2. Sound absorption coefficients used in the third experimental program. Table by author based on M. P. Norton and D. G. Karczub, *Fundamentals of Noise and Vibration Analysis for Engineers*, 2nd ed. (Cambridge University Press, 2003), 602.

This program uses a transverse stage format for the test. Upholstered chairs are crucial in providing sound absorption in auditorium halls, so this program represents audience members with seats as two shoulder-height planes.[38] This program locates the acoustic source at the stage centre 1.7 m above the floor, and it sets the acoustic receiver position as the central audience. Table 2 shows material absorption coefficients that are used in this program.

In the Opossum solver, the RBFMOpt algorithm was applied to this experiment. The program terminated the optimisation process in this experiment when fifty iterations were reached.

From the fifty design alternatives, fourteen solutions have ideal acoustic reverberation and C_{50} performance. The fourteen solutions are indicated in Figure 5, the results showing that a folded-plate hall with a lower ceiling level tends to deliver better acoustics. However, a low auditorium-hall height can cause inconvenience in the performance space as it can limit the performance possibilities for performers, and the audience sitting in the upper area may feel uncomfortable in the narrow, low-ceilinged space. Therefore, numbers 2, 4 and 8 from the fourteen solutions calculated were selected as ideal solutions at the end of this program.

CONCLUSION

This study explored how computational generative design can be involved in a theatre concept-design process, showing how black-box optimisation algorithms work for architectural design. Three experimental programs were designed to undertake the research. The first program addressed the seating arrangement, and was designed to understand how to use a single-objective optimisation algorithm in architectural problems. The second program was a simple multi-objective acoustic optimisation program used to find relatively suitable box geometries by optimising acoustic reverberation time and C_{50} clarity. The third program was more realistic than the second program. It used a more complex model in a fully occupied situation, and through it we were able to find a better folded-plate auditorium shape by optimising acoustic reverberation time, C_{50} clarity and seating number. The third program could better lead to a robust big picture in the final design.

The results of this study indicate that computational optimisation does not necessarily generate the best design solution in and of itself. An architectural geometry with objective values satisfied does not equate to a perfect design solution; a major limitation being that the timeframe for a successful computational design is difficult to estimate. More experience and practice would be beneficial towards reducing programming barriers to optimised design solutions.

This study has a weakness in that it does not simulate multiple receiver points in the optimisation process. Only one receiver point was tested in the second and third programs, so further research could well explore acoustic optimisation with more receiver points.

Another possible area for future research would be to investigate generating a seating module to suit different configuration formats in a same auditorium hall.

37. See Hani Buri and Yves Weinand, "Origami – Folded Plate Structures, Architecture," paper presented at the 10th World Conference on Timber Engineering, Miyazaki, Japan, June 2–5, 2008, https://infoscience.epfl.ch/entities/publication/63720d6a-6260-41b2-8489-04fb1a366380
38. Krzysztof Rudno-Rudziński, "Prediction of Sound Absorption in Auditorium by Blocks of Seats of Different Shape and Size," paper presented at Forum Acusticum, Kraków, Poland, September 2014, https://www.researchgate.net/profile/Krzysztof-Rudno-Rudzinski/publication/345084288_Prediction_of_sound_absorption_in_auditorium_by_blocks

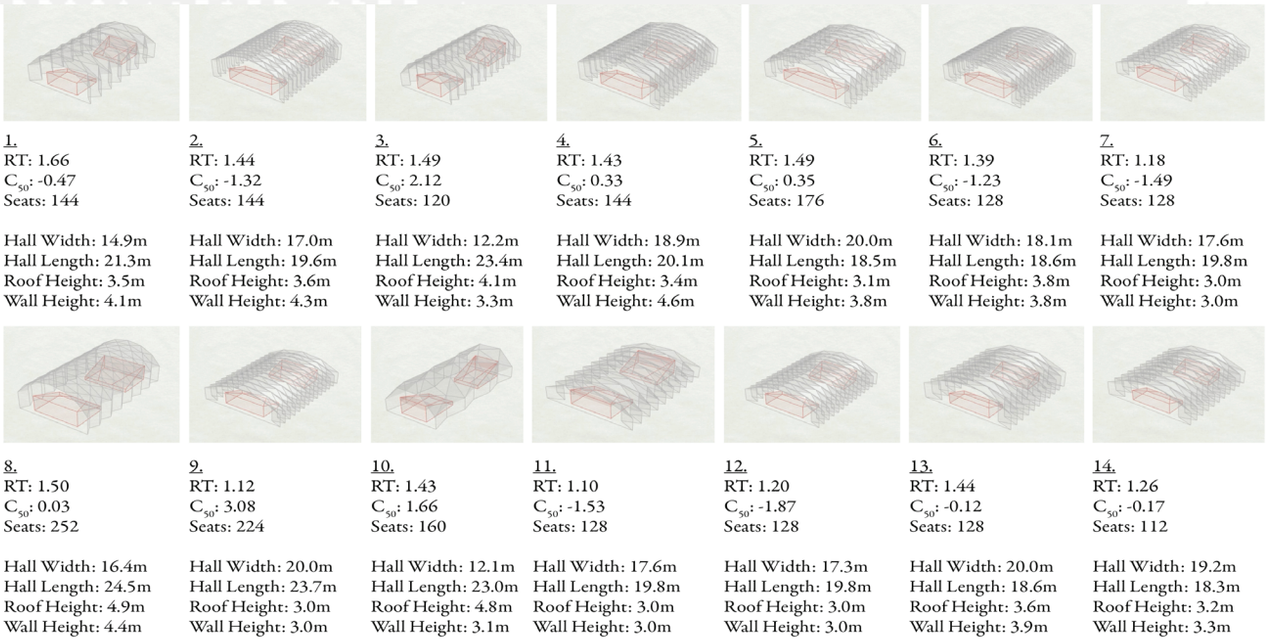
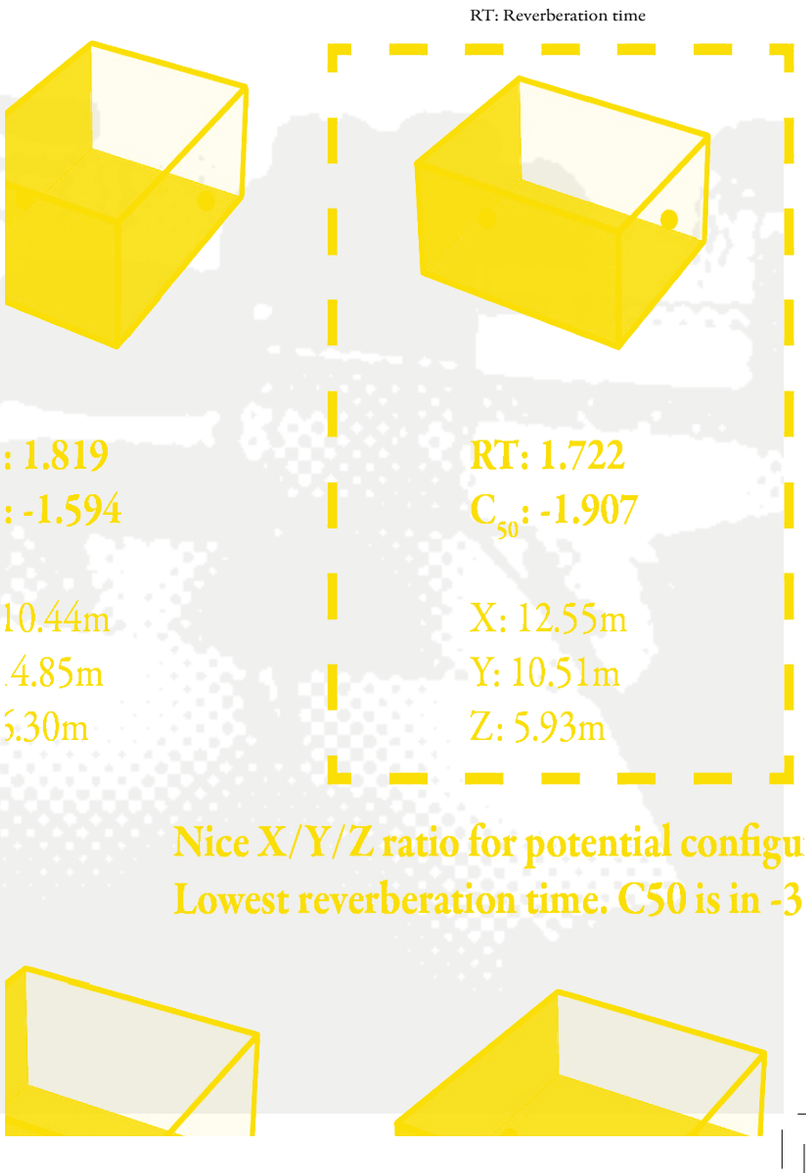


Figure 5. Fourteen alternatives from the third optimisation program.



In terms of the overall architectural design process, computational optimisation and traditional design methods each have their own advantages and disadvantages. Architectural optimisation programs can provide large-scale rational data reference in quantitative computation. However, setting up an abstract generative system takes a long time, and normally the system is very project-specific. On the contrary, the traditional design approach is very flexible, because it takes qualitative design instincts to provide design solutions. It can thus be suggested that the designer should choose the method, or combination of methods, depending on the specific project requirements. The designer may choose to use a traditional approach for the general design control while using the computational approach for more specific areas of the project.

The limited use of optimisation applications in Aotearoa New Zealand architectural practice might be a consequence of the small scale of buildings in this country. Compared to a traditional approach, a computational optimisation approach requires more investment before design solutions can be generated. Therefore, it is difficult to show that architectural optimisation achieves significant time savings and profit increases in small-scale design. If computational setup costs can be reduced in each project, Aotearoa practices may be able to obtain more opportunities to explore computational design optimisation and increase design quality. In order to gain more flexibility and adaptivity in design optimisation, further study might explore the role of generative AI in architectural optimisation approaches.

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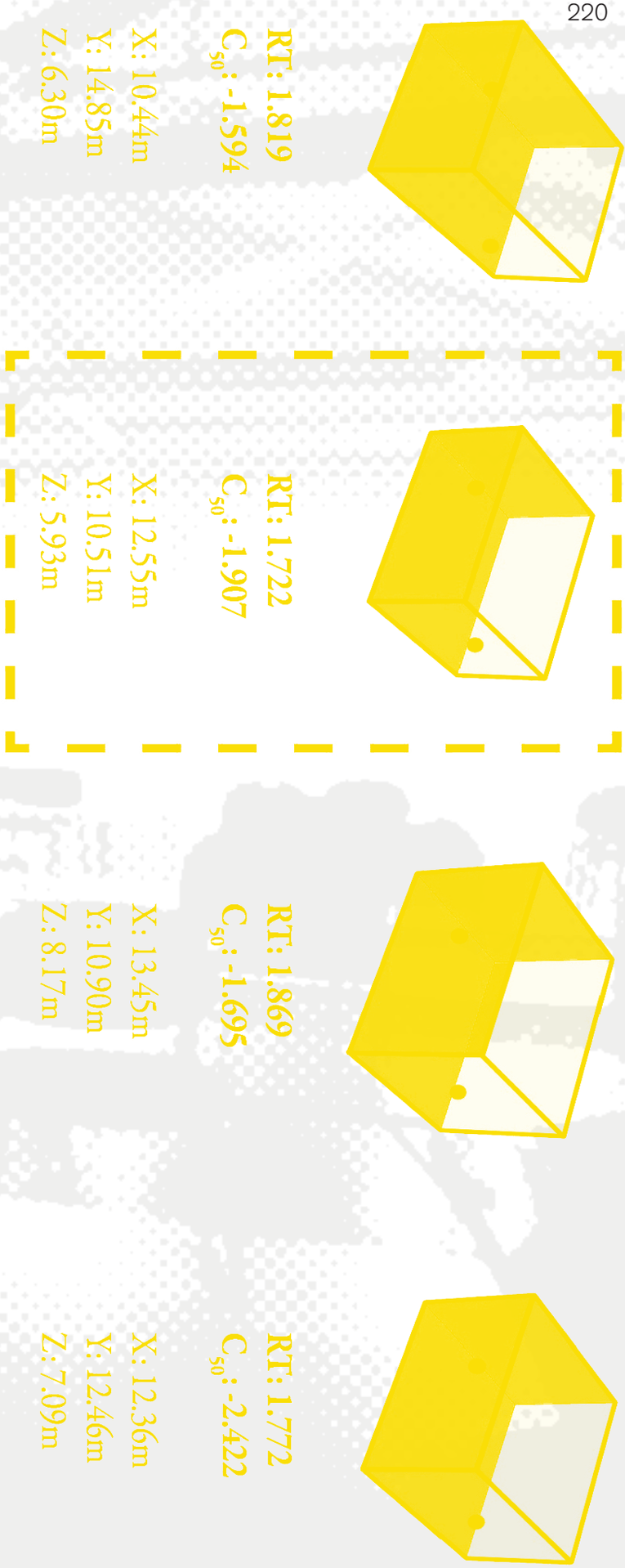

XINXIN WANG AND YUSEF PATEL

https://doi.org/10.34074/aslm.2024104

INTERTWINING COMMUNITY-DRIVEN AND STUDENT-BUILT APPROACHES TO ACTIVATE SUBURBAN STREETS

ABSTRACT

Suburban streets often lack vitality and fail to foster social interaction and community cohesion. Traditional approaches to retrofitting tend to focus on static spatial interventions, proving costly and inadequate for addressing dynamic community needs. This paper explores flexible, cost-effective solutions that can activate suburban streets and enhance cultural cohesion.

Through a brief review of street retrofitting concepts and practices, the authors investigate ways in which an inclusive approach can promote community engagement and transform streets into dynamic social spaces. This approach consists of a community-driven and student-built collaborative design, prefabrication and installation, and adaptive use by the community. Examining Tāmaki Makaurau Auckland in Aotearoa New Zealand as a context rich in cultural diversity and with a demand for vibrant public spaces, the authors tested this new approach through design interventions by Unitec architecture students in Open Streets events in Avondale, Tāmaki Makaurau Auckland.

The authors then tested this approach with two projects: Toutai-'a-Maui: Maui's Catch at the Whau Arts Festival, and the Woven Gateway at the We Are Woven Festival. The positive outcomes of these two projects demonstrate the potential of temporary architectural interventions in activating streets and fostering conversation about the streets of Avondale.

Keywords: Suburban street retrofitting, activating suburban streets, temporary intervention, architectural intervention, participatory design, Open Streets

INTRODUCTION

Historically, streets were centres of public life in many cultures.[1] Since the 1930s, driven by rapid suburban sprawl and the advance of transport technology, the streets in American suburban areas were standardised as wide-paved transport corridors dominated by motor vehicles.[2] Because these street patterns enabled large-scale suburban development, they soon spread to cities across North America, Europe, Australia and New Zealand.[3] Recently, such streets have been increasingly criticised for their lack of vitality and failure to foster social interaction and community cohesion.[4] In culturally diverse regions such as Tāmaki Makaurau Auckland, where over 165 ethnic groups reside, suburban streets hold great significance as integral elements of everyday life, shaping the design and urban life for a vibrant city.[5] Suburban street areas, which make up to 35 percent of suburban land areas, are essential for accommodating dynamic social needs and building cultural cohesion. However, most of these streets were initially designed as transport corridors to be dominated by cars, and are increasingly criticised as environmentally and socially unsustainable.

Zainab Abass and Richard Tucker conducted a study comparing three types of Australian suburbs, finding that suburban street layouts that are characterised by an abundance of trees and well-provisioned public and open spaces are strongly associated with higher levels of satisfaction.[6] Consequently, there is a pressing need for street retrofitting not only to cater to the transport needs of city dwellers but also to enhance their wellbeing, mental health and social cohesion.

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By prioritising such improvements, cities can move towards greater resilience to the impacts of current urban intensification.[7] In the suburbs of Tāmaki Makaurau Auckland, where 70 percent of the city's population lives, very few streets have been retrofitted or even studied.[8] Facing the increasing pressure of urban intensification and the growing multicultural population, there is an urgent need to retrofit existing streets to adapt to these challenges.

In response, many street retrofitting concepts have been adopted to improve Tāmaki Makaurau's streets. These retrofitting practices started from the CBD and extended to larger suburban centres, such as New Lynn, and then to smaller suburban centres, such as Onehunga, Avondale and Māngere. However, for suburban streets, where the majority of New Zealanders reside, there is still a lack of consideration.[9] Furthermore, current street retrofitting solutions are mostly permanent fixed solutions, such as adding landscaping (green infrastructure) or engineering (grey infrastructure) to the street geometry.[10] There is a lack of flexible interventions that are interactive with the community and adaptable to various functions desired by multicultural groups. Based on this observation, the authors proposed a research question: How can architectural intervention activate street space and promote cultural cohesion in communities?

This paper consists of four parts. The first examines the problems of conventional street retrofitting approaches, particularly the lack of community-engagement processes and responsiveness to the diverse cultures of the community. The second part argues that a community-driven and student-built collaborative approach is one way to activate streets and promote cultural cohesion. This new approach was tested by two student design projects for an Open Streets event in Avondale. The paper concludes with a discussion of the impact of these projects on the local community.

PROBLEMS OF CONVENTIONAL STREET-RETROFITTING APPROACHES

This section outlines recent street retrofitting practices and some of the drawbacks of the current approach. It then calls for interventions that can activate space cost-effectively and interactively. A brief literature review of international research and practices in suburban residential streets revealed many environmental and cultural issues. In response to these issues, many retrofitting solutions were explored and implemented in the projects.[11] However, from a multicultural perspective, there remain two major issues in current street retrofitting approaches: first, most of them focus on static, permanent solutions, such as the reconfiguration of the geometry of street space.[12] The drawback of these solutions is that they are time consuming and expensive to implement. Second, the users' needs are often represented by generic perceptions, and the culturally diverse nature of the community is mostly under-studied.[13] These two issues are explained below.

Problem 1: Lack of cost-effective and flexible interventions that respond to the dynamic needs of street space

Current street retrofitting solutions are mainly of two types: installing long-term permanent infrastructure or testing short-term temporary interventions. Both types are often expensive and, due to the uncertainty of social and climatic conditions, there is a need for more resilient, flexible and cost-effective interventions.

The first type usually involves adding green infrastructure, such as swales, rain gardens and native plants in the street layout, or changing part of a vehicle lane to a dedicated cycle lane and ensuring easy crossing for pedestrians.[14] Many concepts have been promoted internationally, such as Shared Streets, developed in the Netherlands, Complete Streets (Figure 1) in North America, Traffic Calming in the UK and Green Streets in Europe.[15] Some of these ideas have been adapted to the Aotearoa New Zealand context.

7. Hamish Mackie et al., "Te Ara Mua – Future Streets Suburban Street Retrofit: A Researcher–Community–Government Co-Design Process and Intervention Outcomes," *Journal of Transport and Health* 11 (2018), https://doi.org/10.1016/j.jth.2018.08.014; Sameh Shamout et al., "Understanding Resilience in the Built Environment: Going Beyond Disaster Mitigation," in *Imaginable Futures: Design Thinking, and the Scientific Method. Proceedings of the 54th International Conference of the Architectural Science Association*, ed. Ali Ghaffarianhoseini et al. (ANZAScA, 2020), https://anzasca.net/wp-content/uploads/2021/03/ASA-2020-Book-of-Proceedings-WEB-1.pdf
8. Mackie et al., "Te Ara Mua – Future Streets Suburban Street Retrofit: A Researcher–Community–Government Co-Design Process and Intervention Outcomes."
9. Mackie et al.
10. Aleksandrova et al., "Status and Future Directions for Residential Street Infrastructure Retrofit Research."
11. Auttapone Karndacharuk et al., "A Review of the Evolution of Shared (Street) Space Concepts in Urban Environments," *Transport Reviews* 34, no. 2 (2014), https://doi.org/10.1080/01441647.2014.893038; Aleksandrova et al., "Status and Future Directions for Residential Street Infrastructure Retrofit Research"; Kelly Gregg and Paul Hess, "Complete Streets at the Municipal Level: A Review of American Municipal Complete Street Policy," *International Journal of Sustainable Transportation* 13, no. 6 (2019), https://doi.org/10.1080/15568318.2018.1476995
12. Karndacharuk et al., "A Review of the Evolution of Shared (Street) Space Concepts in Urban Environments."
13. Gregg and Hess, "Complete Streets at the Municipal Level: A Review of American Municipal Complete Street Policy."
14. Aleksandrova et al., "Status and Future Directions for Residential Street Infrastructure Retrofit Research."
15. Karndacharuk et al., "A Review of the Evolution of Shared (Street) Space Concepts in Urban Environments"; Sarah P. Church, "Exploring Green Streets and Rain Gardens as Instances of Small Scale Nature and Environmental Learning Tools," *Landscape and Urban Planning* 134 (2015), https://doi.org/10.1016/j.landurbplan.2014.10.021

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One of the successful examples in Tāmaki Makaurau has been the Future Streets intervention.[16] Future Streets – Te Ara Mua is a street retrofitting project designed around Māngere Central.[17] The project aims to help people move around the neighbourhood more easily and safely by adding walkways, cycleways and scooter spaces. At the same time, it improves residents' sense of cultural identity and place. The project was initiated in 2012, developed from 2013 to 2015 through extensive community engagement and collaboration, and constructed in 2016. The project received mixed feedback due to its cost of $10 million.[18]

The second type uses temporary, moveable interventions, such as street furniture, plant boxes or colour painting to indicate functionality and active space. The timeframe for these interventions ranges from months to weeks, or even one day. For instance, the Nohonga (seat) design challenge is an exciting competition that results in creative seats that invite people to interact with the streets.[20] It has run in 2020, 2022 and 2024, and has produced a colourful, fun street intervention.[21] However, the seats are only displayed temporarily for the general public in Tāmaki Makaurau Auckland's CBD for a few weeks before moving to their permanent home at Brick Bay Sculpture Trail as an outdoor art exhibition.[22]

Problem 2: Lack of response to the diverse cultural needs of surrounding communities

In both permanent solutions and temporary interventions, there is a lack of recognition and responsiveness to the dynamic needs of multiple cultures. In terms of permanent retrofitting solutions, there is a paucity of research in the residential context, as most international studies are focused on commercial and waterfront areas.[23] Residential streets, where the majority of people reside and that are used on a daily basis are under-studied. Furthermore, very few practices address the social uses of places. In a review of the Complete Street intervention conducted by Gregg and Hess, they found that, despite the frequent use of the term 'liveability' in policies, most of these prioritise vehicle-based design solutions and transport functions; very few address place functions or social uses, or consider streets as public space.[24]

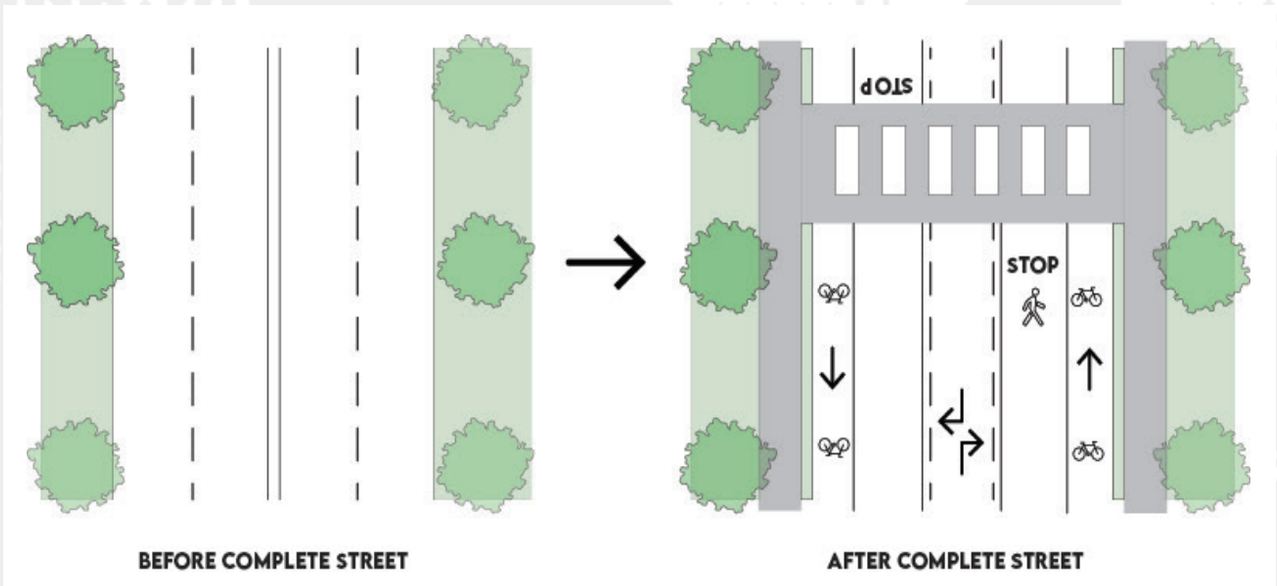

Figure 1. An example of a recent Complete Street intervention as expressed by Smart Growth America.[19]

16. "Te Ara Mua – Future Streets," Future Streets, accessed May 22, 2023, https://www.futurestreets.org.nz/
17. Mackie et al., "Te Ara Mua – Future Streets Suburban Street Retrofit: A Researcher–Community–Government Co-Design Process and Intervention Outcomes."
18. Jarred Williamson and Kymberlee Fernandes, "'It's Not Just About Cycleways': $10m Future Streets Project Defended," *Stuff*, July 13, 2017, https://www.stuff.co.nz/auckland/local-news/manukau-courier/94553566/its-not-just-about-cycleways-10m-future-streets-project-defended
19. "Complete Streets," Smart Growth America, accessed September 25, 2024, https://smartgrowthamerica.org/what-are-complete-streets/
20. "Nohonga Installation at Auckland's Britomart," *Landscape Architecture Aotearoa*, November 4, 2020, https://www.landscapearchitecture.nz/landscape-architecture-aotearoa/2020/11/2/nohonga-installation-at-aucklands-britomart
21. "Nohonga 2020," Brick Bay, 2020, https://www.brickbaysculpture.co.nz/nohonga-2020; "Nohonga 2022," Brick Bay, 2022, https://www.brickbaysculpture.co.nz/nohonga-2022
22. "Nohonga 2020," Brick Bay.
23. Aleksandrova et al., "Status and Future Directions for Residential Street Infrastructure Retrofit Research."
24. Gregg and Hess, "Complete Streets at the Municipal Level: A Review of American Municipal Complete Street Policy."

There is also an absence of accommodating time-specific activities such as community yoga or night markets. Moreover, there is a lack of context-sensitive thinking in studies that focus on residents' perceptions, most considering residents as a generic population, and little research discussing the streets' potential accommodation of diverse cultural needs.[25]

Recently, there have been increasing efforts to implement temporary interventions to promote the 'place' function of streets. For example, Park(ing) Day is an annual international event that aims to take over on-street parking as public spaces, encouraging walking and cycling in downtown areas. The event started in 2009 and was embraced by landscape architects, architects and local businesses.[26] An unfortunate aspect of Park(ing) Day events is that they mainly focus on busy CBD streets in a commercial context, with little application in a suburban setting with arguably richer social and cultural possibilities.

Another solution to activate the street is through what could be called tactical urbanism. This process involves painting or adding semi-permanent modular furniture and planter boxes to streets to redefine street space. The downside of this approach is that the public often criticises the activities as a waste of taxpayer money.[27] Small architectural interventions such as Stairway Cinema by experimental design collective Oh.No.Sumo offer intimate social spaces; however, these can be an undesirable addition to the street when social distancing is required.[28]

In response to all the challenges noted, there is a need to explore solutions that are not only innovative in design but cost effective and sensitive to social and cultural conditions – solutions that represent the community's identity, interact with public life, and are adaptable to a variety of groups with different cultural and social needs.

THE THEORETICAL AND DESIGN APPROACH PURSUED

The authors argue that an intertwined community-driven and student-built collaborative approach is the way to activate street life and promote cultural cohesion. This consists of collaboration with local residents, support from local government and agencies, on-site installation and adapting the architectural interventions to various cultural events. One such approach was developed in an architecture fabrication studio at Unitec. With support from local communities, the authors established a framework to start a conversation and promote the social use of streets. The authors view streets as a cultural tool and a public space that can unite communities and encourage social interaction. Being a multicultural city, Tāmaki Makaurau Auckland provides a unique challenge in creating street designs that work with the diverse identities of its communities.

The first framework we asked students to consider involved community conversations (Figure 2). The process allows students to present their design ideas and concepts to the community for feedback and further development. The first stage of the process is for the students to propose ideas and concepts to the community through stakeholders. Once the community approves the design, it can be fabricated and showcased at community events. The last stage is to evaluate the social impact of the project by looking at the social interactions between the project team and the stakeholders of the project. The discussions at these community events can provide valuable feedback and inspiration for future projects. Although the work is community oriented, project drivers are multifaceted, with other factors (Figure 3) such as civic funding and the teaching institution acting as drivers.

Figure 2. Conversation with community leads to a constant stream of interventions.

25. Kimiora Raerino et al., "Local-Indigenous Autonomy and Community Streetscape Enhancement: Learnings from Māori and Te Ara Mua – Future Streets Project," *International Journal of Environmental Research and Public Health* 18, no. 3 (2021), https://doi.org/10.3390/ijerph18030865
26. "10 Years of Park(ing) Day in the City," Heart of the City, December 20, 2018, https://www.hotcity.co.nz/latest-updates/10-years-parking-day-city-centre
27. Tom Dillane, "$192,000 to Paint Auckland, Henderson Intersection Blue Slammed as 'Shambolic' Waste of Public Funds," *The New Zealand Herald*, August 18, 2021, https://www.nzherald.co.nz/nz/192000-to-paint-auckland-henderson-intersection-blue-slammed-as-shambolic-waste-of-public-funds/56K3JM7R3Z7XSWDODIS3REVPTE/
28. Alison Furuto, "Stairway Cinema' Installation / Oh.No.Sumo," *ArchDaily*, November 13, 2024, https://www.archdaily.com/246874/stairway-cinema-installation-oh-no-sumo

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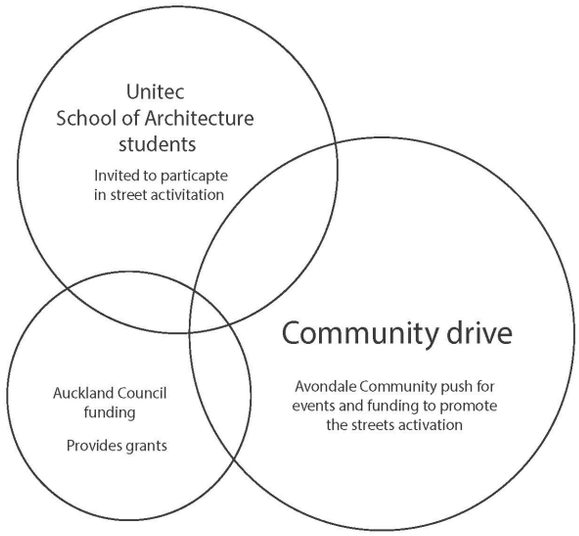


Figure 3. The projects' drivers.

THE DEVELOPMENT OF THE PARTICIPATORY APPROACH

The proposed framework was a result of ongoing collaboration with the Avondale community. Over the past decade, extensive partnership with this community has fostered numerous conversations on the disused Three Guys Supermarket site. Projects placed on this plot on Great North Road (which is typically used as a car park) aim to activate the space and inspire ideas for its potential use.

In 2014 students and their lecturers created pop-up pavilions for the Whau Arts Festival.[29] In 2019 and 2020 long-time Avondale Art Park contributor and Unitec Senior Lecturer Dr Bobby Hung partnered with Eke Panuku and Unitec's School of Architecture to develop Te Pūtahi Auaha Pavilion (Figure 4) from early 2021 to the end of 2022. This pavilion was regularly painted by graffiti artists. It was relocated to The Falls car park in Henderson, where it was featured throughout 2023 and 2024. This ongoing collaboration in Avondale has led to invitations for Unitec to generate further concepts for community-hosted festivals and events.

Figure 4. Auckland University students building a pop-up pavillion at the Whau Arts Festival, 2014 . Photo: Yusef Patel and Dermott McMeel.

THE STUDENT-BUILT DESIGN PROCESS

The programme had three overarching milestones. The first step required students to work with community stakeholders to research and formulate an intervention. The process generally required students to make prototypes using scaled prototype models and detail assemblages. The second milestone required students, academic staff and fabrication specialists to prefabricate and install the pavilion onsite. The process required architecture students, academics and other project stakeholders to work with material suppliers and specialist fabricators to detail designs and procure materials for manufacturing a built outcome. The last milestone was to understand and recognise how the built product was received by the community it serves.

Students had the opportunity to present their work to the community via representatives from Auckland Council-funded organisations at milestone meetings. Where required, the lecturers would be in direct contact with the representatives to provide general updates, request feedback and discuss the installation process. The participation approach can be best demonstrated in the following Open Streets projects.

THE STUDENTS' INTERVENTIONS TO TEST THE STUDIO APPROACH

This section introduces students' participation in an Open Streets initiative. It will first introduce the background of this initiative and how it relates to the Unitec School of Architecture. It then discusses two projects that Unitec architecture students were invited to participate in: a one-day temporary intervention – Toutai-'a -maui: Maui's Catch for the Whau Arts Festival, which became a permanent installation – and the Woven Gateway pavilion for the We Are Woven Festival and its cultural events in the Avondale community.

BACKGROUND TO THE OPEN STREETS INITIATIVE

Open Streets is a global initiative in which streets are transformed into public zones where people can walk, cycle, socialise and celebrate – transforming ideas of what kind of community engagement is possible in urban areas. The purpose of Open Streets is to open public spaces to other forms of transport beyond motorised vehicles. This demonstrates a commitment to creating a greater balance in transport options and the importance of community in developing Tāmaki Makaurau Auckland's transport infrastructure.[30]

29. Yusef Patel et al., "Te Pūtahi Auaha: Avondale Graffiti Pavilion," *Asylum* 3 (2021), https://www.unitec.ac.nz/epress/wp-content/uploads/2021/12/ASYLUM-2021_Patel-et-al.pdf
30. "Avondale Open Streets Activation Project," Auckland Transport, accessed November 13, 2024, https://at.govt.nz/projects-initiatives/past-auckland-projects-and-initiatives/avondale-open-streets-activation-project

Tāmaki Makaurau Auckland's first attempt at the Open Streets event took place in the CBD in 2015, with half of Quay Street closed for a car-free day.[31] This early experiment gave people the idea of alternative ways of using streets as public spaces. More recently, Auckland Council took action on transforming streets into vibrant public spaces with Ngā ā Tiriti Ngangahau – The Vibrant Streets Programme. A wide range of programmes have been created and implemented across the region.[32]

Funded in 2022 by Auckland Transport, Open Streets Avondale (OSA) was part of a suite of seven Vibrant Streets projects that were accepted by local boards across the city, and one of three submitted by the Whau Local Board alone.[33] One of the primary features that set this programme apart was the legitimate commitment to co-designing and co-delivering with the community. These events temporarily closed Avondale's town centre streets, enabling a car-free zone to engage in community celebration and socialisation, transforming areas into public zones to interact, walk and cycle.

The Unitec School of Architecture was invited to participate in two OSA events: the Whau Arts Festival 2023, From The Gridlock to Art-Block, on Saturday 15 April 2023, and the We Are Woven Festival on Saturday 30 September 2023. The following section will discuss students' participation in the design and build processes.

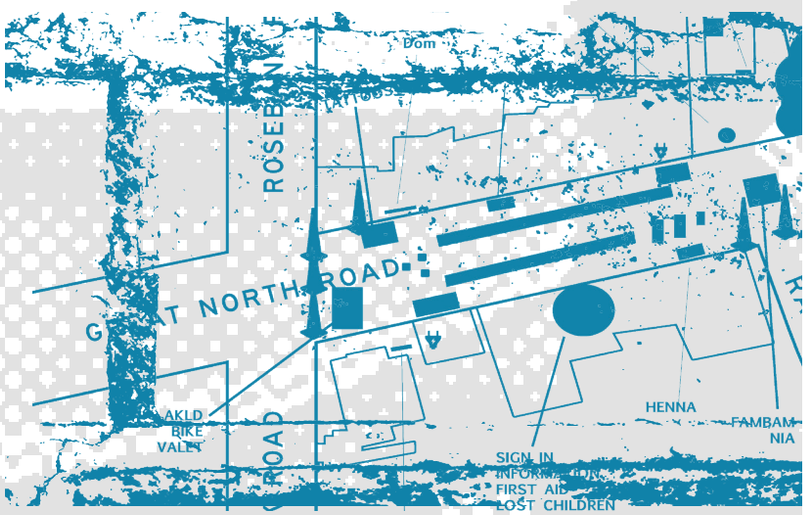
MAUI'S CATCH AT THE WHAU ARTS FESTIVAL

The project's client was the Auckland Council-funded community group Whau the People.[34] The group's mandate is to facilitate local arts festivals for the multicultural Tāmaki Makaurau Auckland suburb of Avondale. The suburb's demographics consist of people from Māori, Pacific, European and Asian communities, among many others. The brief developed between the stakeholders was for architecture students to produce an architectural intervention during the 2023 Whau Arts Festival, Taking Back, to represent the diverse ethnicities that reside in Avondale. The purpose of the event on Saturday 15 April 2023 was to create an opportunity for the local community to come together by reclaiming the main street (Figure 5) to create an immersive space for homegrown creatives to be celebrated. The festival was based on the global Open Streets initiative, where town centres can be temporarily made car-free to allow streets to be walkable social spaces for community engagement. The festival highlights that streets can be more than simply access for motorised vehicles and celebrates the commitment of a community to have a balanced transportation system that favours people's wellbeing.

Toutai-'a-Maui: Maui's Catch, is a community intervention project designed to welcome people to the Open Streets festival with the idea of celebrating the multicultural society of Avondale. The design–build process was a collaboration and is a community project where academics, students and artists desired to showcase the story and how the old navigators of the moana (ocean) saw Aotearoa New Zealand as the land of the long white cloud. These pou (posts, columns or plinths) are manifestations of Maui's discoveries or catches.

The designs of the pou are based on the net or basket used by the demi-god Maui to contain his discoveries. The design interprets the rhythms of the environment and translates them into abstract patterns. Avondale is inhabited by a wide variety of communities, yet similar cultural stories relate them to their specific environment. The artworks seek to be a story for everyone – Maui's Catch genuinely reflects the diversity of this place. All three pou (Figure 6) can be united and read as one, showing the many moments brought together over time and space. The Pacific, European and Asian communities' ideas of fishing, ocean and water are represented by the patterns on these pou.

Toutai-'a-Maui: Maui's Catch received positive reviews from the community. Following the festival, the Avondale Business Association approached the architecture students to develop the design further into a permanent street intervention. Both the students and academics have been tasked to select an appropriate site on Avondale's main street and provide an updated design to enable greater community interaction. The design needs to be worked on further to ensure it can be more than a temporary art installation. One such idea put forward by the community stakeholders was for the pou to become beacons to light up the street around local cafés and restaurants. Another idea was for the pou to line the footpath to separate walking spaces and public parking spaces. The final design will need to be approved by Auckland Council and the Avondale Community stakeholders.



31. Bike Auckland, "Open Streets 2015 – A Half Street, and a Full Day!" April 14, 2015, https://www.bikeauckland.org.nz/open-streets-2015-a-half-street-and-a-full-day/
32. "Auckland Council Launches Ngā Tiriti Ngangahau – The Vibrant Streets Programme," Our Auckland, March 15, 2022, https://ourauckland.aucklandcouncil.govt.nz/news/2022/03/auckland-council-launches-nga-tiriti-ngangahau-the-vibrant-streets-programme/
33. Jessica Rose, "Avondale Open Streets – Success," Greater Auckland, April 20, 2023, https://www.greaterauckland.org.nz/2023/04/20/avondale-open-streets-success/
34. "Whau the People," *Whau the People*, accessed October 27, 2023, https://whauthepeople.com/

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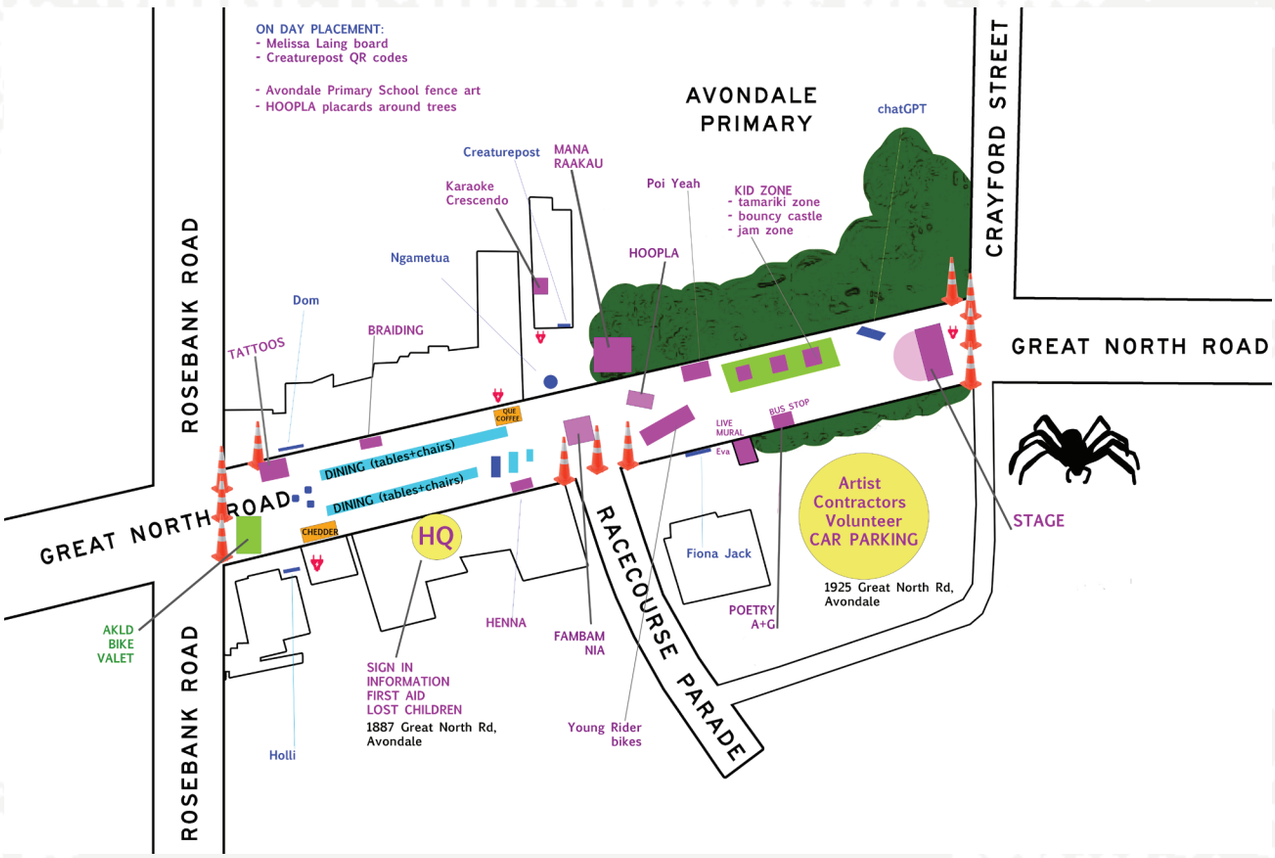

Figure 5. The main street of Avondale reclaimed with activities for the community.[35]

Figure 6. Left: The pou at dusk. Photo: Kyah Sucking. Right: The pou during the day. Photo: Yusef Patel.

35. "Whau Arts Festival 2023," Whau the People, accessed October 27, 2023, https://whauthepeople.com/whau-arts-festival-2023/

WOVEN GATEWAY AT THE WOVEN FESTIVAL

Another Open Streets project is the Woven Gateway for the We Are Woven Festival (Figure 7). The We Are Woven Festival represented the many cultural backgrounds of the Avondale community. The art of weaving has been an important part of many cultures worldwide to create strong materials and products for thousands of years. The We Are Woven Festival sought to bring the Avondale neighbourhood together, creating an opportunity to further strengthen the four main strands that bond the community together: Kai Avondale, Eastdale Hub, Storytelling and Whanaungatanga. The Woven Gateway structure created specifically for this festival enticed viewers to engage with one another under a canopy comprised of timber structures and interactive strands of fabric.

This project aimed to embed ideas of different cultures while also considering how we can efficiently utilise pre-fabrication processes and computer-aided design. Through working closely with festival organisers from the local community, Unitec architecture students created a gateway-like structure that conceptualised how the cultures intertwine to create the vibrant community of Avondale. This design concept was derived from the art of weaving, which is represented through the repetitive design of the timber panels.[36] The gateway was placed on the footpath at a T-intersection, and encouraged viewers to engage with one another under the structure, creating community engagement.

The design and making process evolved through several explorations and adjustments.[37] The initial model was designed as horizontally patterned panels and built at a smaller scale with no specific joints. However, this created problems when laser-cutting the panels, as the design lacked perpendicular angles. Inspired by Oh.No.Sumo's cupcake pavilion, the team created internal lock-and-key joints by slipping horizontal into vertical elements.[38] However, the revised model was still slack due to the large void in the panels. The team then borrowed another novel concept – 'butterfly plugs' – using circle joints to lock the angled panels three-dimensionally.[39] This structural element proved to be effective in establishing the structural integrity of the gateway. To ensure that the making and adjustment process was more effective, students made two identical gateways. As the design was mirrored, the team was able to test ideas and resolve issues quickly with either structure.[40]

The Woven Gateway structure was well received by community members during the Open Streets festival. Residents came in groups with families and friends, having chats or posting photos of happy time shared under the gateway (Figure 8). It created a vibrant social hub for various cultures to interact with one another, and provided a space that functioned beyond walking and cycling. Although the gateway was designed for the We Are Woven Festival, it could be used for a range of Avondale community events. Aspects that could have been further developed are the cultural patterns that might have been embedded within the design better by, for example, etching patterns or logos into the panels when CNC milling. Also, we could develop a base-plate design that can be made from a wider range of materials. In any case, the construction of the structure was made more streamlined through the computer-aided design process undertaken.

Figure 7. The Woven Gateway structure for the We Are Woven Festival. Photo: Yusef Patel.

36. Esha Patel, "We Are Woven Festival: Open Streets Activation Project," student assignment, Unitec, 2023.
37. Patel, "We Are Woven Festival: Open Streets Activation Project."
38. "Oh.No.Sumo., Cupcake Pavilion," Designers Institute of New Zealand Best Design Awards, 2010, https://bestawards.co.nz/spatial/exhibition-temporary-structures/ohnosumo/cupcake-pavilion/
39. Patel, "We Are Woven Festival: Open Streets Activation Project."
40. Patel.

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Figure 8. Residents interacting with the Woven Gateway. Photo: I Love Avondale.

DISCUSSION

Regrettably, the projects we undertook did not involve talking directly to the community. Feedback from visitors to the Whau Arts and We Are Woven festivals was only collected through visual observations and photographic imagery. A majority of feedback, therefore, was second-hand and anecdotal, and provided by the community organisations that hosted the events. This highlights a disconnect between the designers and the community that the projects served.

To assess the success of the projects, Table 1 compares Maui's Catch and the Woven Gateway in terms of their social impact on the community and student experience. Key indicators – community participation, street visibility, student learning and future project opportunities – are evaluated and rated in the following table. The ratings of low, medium and high reflect how well we consider each architectural intervention aligns with these social-impact themes.

When comparing the social impacts of each project, they were successful in different ways. It must be acknowledged the community organisations – Whau the People and I Love Avondale – and local-body government organisations – such as Eke Panuku and Auckland Transport – were the main drivers for the Open Streets festivals in Avondale. Maui's Catch had less community design participation but had a more significant impact on starting conversations about future community festival projects. The Woven Gateway's critical impact was primarily to create a product with the I Love Avondale community and to teach students how to realise such a project.

Working with the architectural industry is important for any successful project, as people working in the sector can provide critical design feedback and advise on the use of materials in any built project. In the case of the Open Streets projects, Abodo Wood's support was invaluable, as they sponsored the materials used to realise the project.

SOCIAL IMPACTS	MAUI'S CATCH: WHAU ARTS FESTIVAL	WOVEN GATEWAY: WOVEN FESTIVAL
Community design participation	Whau the People invited the Unitec School of Architecture to create an object for the Whau Arts Festival. The project was primarily driven by the academics and students involved. The design was a direct response to themes provided to them by Whau the People. The final design that was selected to be built embodies symbols that reflect the different cultures that reside in the Avondale community. Whau the People's engagement with the design was only to determine whether the design would be appropriate and would represent the community.	The I Love Avondale community was heavily involved in the project. There were multiple meetings between Unitec and key representatives from I Love Avondale. A number of design iterations were presented to the I Love Avondale community. Different ideas around the structure being a 'flag' of the many different ethnicities were discussed. The theme of creating a structure to represent a physical weave adorned by fabrics from different cultures was settled on through discussion.
Project visibility on the street	The structure was placed at the entrance to the Whau Art Festival. As evidenced in the images, a large number of visitors passed through and engaged with the structures. It was a popular destination to walk through the pou. At night the structures became beacon-like lanterns.	The Woven Structure was placed at the entrance to the festival. Originally, multiple structures were to be placed along the street. It was later planned that one would be placed at each end of the street. It was eventually decided that one would be placed at the festival entrance. The design was undersized and over-shadowed by the bad weather at festival time. The images show that the structure's fabric additions became a popular interactive element for visitors to touch when entering and exiting the festival. Many visitors used the structure as a photo opportunity.
Student participation and learning	Students worked on the design and detailing of the structures with their lecturers. A flat-packed plywood-component construction system was developed for the installation. Laser-cut models were made by students to test the design ready for CNC fabrication. The project served as a prototype and precedent for future building projects undertaken by the School of Architecture.	Students and their lecturers engaged with the project in a variety of ways. The first was developing a design with I Love Avondale. The second was to develop a construction-detail flat-pack assembly system to represent weaving. Laser-cut models were made to showcase the design to I Love Avondale team. The third was developing the shop drawings required to fabricate the CNC structure. This involved the students spending a lot of time developing prototypes. Lastly, the students assembled the CNC components to create the Woven Structure.
Future design–build outcomes with community	Participation in the Whau Arts Festival's Open Streets initiative has led to several significant outcomes in terms of future collaborations with the community. The success of Maui's Catch in Avondale sparked interest from other communities, leading to similar interventions. The project was noticed by I Love Avondale and led to the Woven Gateway development for the We Are Woven Festival. Eke Panuku funded similar projects in Takapuna's Waiwhahariki Anzac Square for Matariki in 2023 and 2024. The Avondale Business Association approached the school to develop Maui's Catch into a permanent fixture, and it is proposed that it will occupy two parking spaces in an Auckland Council car park. This will transform the street edge into an art showcase instead of a parking area.	The project was not pursued further than the We Are Woven Festival. The final product was gifted to Avondale Primary School at their request.
Summary of impacts	Community design participation: **LOW** Project visibility on the street: **HIGH** Student participation and learning: **MEDIUM** Future design–build outcomes with community: **HIGH**	Community design participation: **HIGH** Project visibility on the street: **MEDIUM** Student participation and learning: **HIGH** Future design–build outcomes with community: **LOW**

Table 1: Comparative study of the social impacts of the projects.

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CONCLUSIONS AND IMPLICATIONS

Conventionally designed suburban streets have not tended to foster social interaction and community cohesion. Tāmaki Makaurau Auckland's suburban streets, where over 165 ethnic groups reside, have great potential to bring multiple cultures together and to celebrate this diversity. This project and paper set out to answer a question: How can architectural intervention activate the street space and promote cultural cohesion in communities? Through review of international research on street retrofitting, and examining recent projects in Tāmaki Makaurau Auckland, the authors identified two significant gaps: the lack of architectural intervention; and the need for interactive solutions that reflect the multicultural nature of the community. To fill these gaps, the authors proposed a participatory approach to facilitate culturally centred design. The methodology consisted of a community-driven and student-built collaborative design, prefabrication and installation, and adaptive use by the community. This approach was tested in two projects in an Open Streets event in Avondale, one of the most culturally diverse suburbs in the city. Through the application of the proposed methodology, students and academics were able to experiment in two interactive architectural interventions, including a one-day intervention involving pou (or posts) bearing culturally significant patterning for the Whau community, and a woven pavilion that can be adapted for use in various cultural events.

This paper underscores the crucial role of pop-up interventions in street retrofitting projects to enhance urban community resilience, social cohesion, and positive physical and mental health. Suburban streets, which make up 35 percent of suburban land and connect individual homes, can be considered frontiers in which we can build and strengthen community resilience. By installing pop-up architectural interventions within or adjacent to street spaces, the streets were transformed from transport corridors to meaningful places that reflected the cultural and social identity of the communities. The shapes and materials of the pavilions not only offered an intimate human scale for individuals to interact with the place physically, but also acted as a pleasant social stage for individuals to gather and communicate with one another. Through collaborative design processes that genuinely reflect the desires and aspirations of the community, such interventions have the power to bring about significant transformations for people in suburban areas.

The success of these architectural interventions can act as a catalyst for future community-based street retrofits that integrate environmental interventions with cultural solutions that extend beyond physical changes. They can instil a sense of pride and ownership among community members, forging stronger connections to the surrounding environment. This participatory approach, involving various stakeholders such as community members, local authorities, students, academics and professionals, ensures that the interventions are tailored to the specific context and promote long-term sustainability beyond the neighbourhood. It has the potential to transform car-dominated streets into vibrant and resilient public spaces that are a source of pride for all cultures, and bring opportunities for community members to interact with local artists and businesses. By combining sustainable environmental practices with cultural elements, such interventions not only improve the physical infrastructure, but also strengthen social bonds within communities, fostering inclusivity and a shared sense of identity.

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ACKNOWLEDGEMENT OF AUTHORSHIP OF THE WORKS

The author of the Woven Gateway structure is Master of Architecture (Professional) student Esha Patel. She was supported by Bachelor of Architectural Studies students Kyah Suckling and Poppy Finnhouse. They were supervised by Yusef Patel.

The authors of Toutai-'a-Maui: Maui's Catch are Bachelor of Architectural Studies student Kyah Suckling and her supervisors, Yusef Patel, Sēmisi Potauaine, Peter McPherson and Dermott McMeel.

ORIGINAL RESEARCH ARTICLE

KEISHA RAWIRI

https://doi.org/10.34074/aslm.2024105

THE FUTURE PROMISE OF TAU HENARE MARAE

ABSTRACT

This article explores how traditional knowledge and the aspirations of Tau Henare Marae whānau, of Ngāti Hine iwi and Te Orewai hapū, shaped an architectural design response – a proposed master plan for future development. This plan embeds their identity within both natural and built environments. Findings are presented from a Master of Architecture (Professional) thesis employing kaupapa Māori (Māori approach) methodologies such as pūrākau (a collection of traditional oral Māori narratives), Te Aranga Principles (Māori design principles), wānanga (discussing and learning about tribal knowledge) and whānau interviews in a comprehensive qualitative analysis of Tau Henare Marae buildings and landscaping. The research revealed that integrating kaupapa Māori approaches into architectural design significantly enhances iwi (tribe) and hapū (subtribe) engagement and promotes a strong sense of identity, leading to innovative re-imaginings of the built environment. This work underscores the importance of incorporating kaupapa Māori methodologies into architectural practice, serving as a model for sustainable and culturally informed design in Aotearoa New Zealand. By translating these methodologies into practical design outcomes, this model effectively connects research, iwi, hapū and communities, offering an accessible vision for future master plan developments in collaboration with local stakeholders.

Keywords: Kaupapa Māori, Māori methodologies, qualitative research, Tau Henare Marae, Ngāti Hine, Te Orewai, architectural design, marae master plan

INTRODUCTION

This journal article presents findings derived from a Master of Architecture (Professional) thesis, "An Architectural Response to Future-Proofing Tau Henare Marae and Upholding the Mana of Ngā Tau e Toru Whare Tawhito."[1] The research was conducted using kaupapa Māori methodology, which contributed to a comprehensive qualitative analysis of the site architecturally, and of whānau needs and aspirations.

To provide context for the main discussion, a brief introduction to the origins of the thesis is provided. Following advice from a tuakana (mentor) about the importance of engaging with iwi and hapū, the author reached out to a whanaunga (family member) to offer assistance to the marae. The whanaunga, a descendant of the whānau who gifted the marae whenua (land), held extensive knowledge of its history. This collaboration formed the foundation for the proposed master plan. Their kōrero (discussion) highlighted the significance of revitalising Ngā Tau e Toru, the original wharenui (meeting house) of Tau Henare Marae, the communal gathering place for Te Orewai hapū (subtribe).[2] This structure, built in the 1890s, once served as an essential hub for Te Orewai.[3] The current condition of the whare (building) is one of significant disrepair, leaving it unused. It requires extensive restoration to bring it into a new stage of life and to enable it to once again serve the marae community. In essence, the whare is a taonga (treasure) awaiting restoration. Additionally, documenting the history of the whare creates a valuable resource for whānau, ensuring that future generations have access to important historical information.

PLACING MYSELF

Ko Motatau, ko Hikurangi, ko Manu Korihi ōku maunga. Ko Hikurangi tōku awa. Ko Ngātokimatawhaorua tōku waka. Ko Waikato-Tainui, ko Ngāti Hine i raro i te korowai o Ngāpuhi ōku iwi. Ko Te Orewai tōku hapū. Ko Te Horo, ko Tau Henare, ko Pipiwai ōku marae. Ko Ngā Tau e Toru te whare tawhito me te Kōhanga Reo. Ko Tau Henare te whare tupuna. Ko Hineamaru te tupuna. Ko Rawiri, ko Tairua te tangata. Ki te taha tōku pāpā.

Ko Ngāti Hamoa tōku iwi. Ko Faleapuna, ko Vaimoso, ōku hapū. Ko Paulo, ko Toau te tāngata. Ki te taha tōku māmā.

1. Keisha Rawiri, "An Architectural Response to Future-Proofing Tau Henare Marae and Upholding the Mana of Ngā Tau e Toru Whare Tawhito" (master's thesis, Unitec, 2022), https://hdl.handle.net/10652/6054
2. Delaraine Armstrong, "Marae Development Plan 2020," unpublished document, 2020, 5.
3. Armstrong, "Marae Development Plan 2020," 5.

I want to begin with a mihi (acknowledgement) to Tau Henare Marae whānau for their generous time, contributions and tautoko (support) during Ngā Tau e Toru wānanga tuatahi (first meeting) and whānau interviews, where discussions of aspirations and tūpuna (ancestors') knowledge was shared.

I have also been fortunate to collaborate with several transformative organisations and I extend my appreciation to the dedicated people at these places for their ongoing impactful mahi (work). Moreover, I value the mentors who guided and advised this research waka (canoe) of reconnection. Lastly, I owe a huge debt of gratitude to my aiga (family), who are my village. Ngā mihi mahana ki a koutou katoa for your support and for the privilege of sharing in your invaluable wisdom and knowledge.

EXISTING SITE

Covered in this section is a brief overview of the existing site. Figure 1 presents the location of Tau Henare Marae, nestled in a rural area within Te Tai Tokerau (Northland). The address is 3254 Pipiwai Road, Pipiwai, Te Tai Tokerau Northland.

Figure 2 shows the existing site conditions. The current programmes of the built environment include Tau Henare whare tupuna (ancestral meeting house), Ngā Tau e Toru, waharoa (main gateway), Pipiwai wharekai (dining hall), kāuta (cookhouse), sports complex, Te Horo primary school, Jesus Christ of Latter-day Saints church, and wharepaku (toilet). Noted is the current south-west facing waharoa, which primarily serves road access and experiences the windward part of the site. Consequently, this orientation results in shaded conditions for most of the day on the mahau (porch) of the wharenui, compromising manaakitanga (care of the people being welcomed on to the marae).

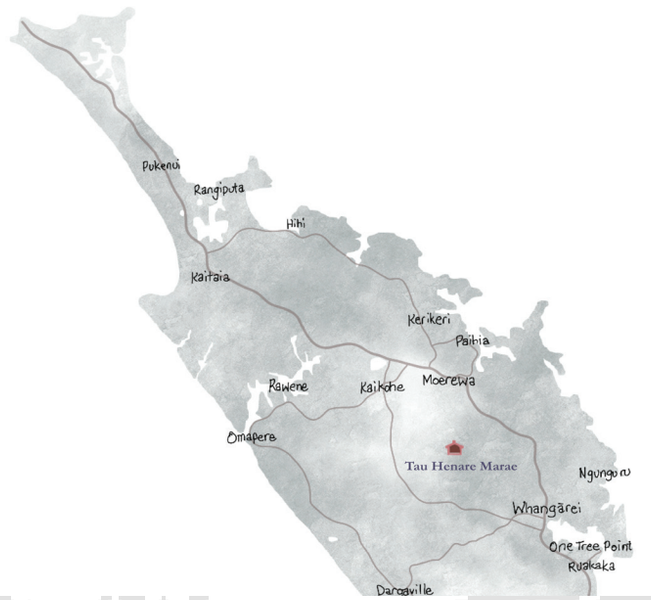


Figure 1. The location of Tau Henare Marae within Te Tai Tokerau Northland, Aotearoa New Zealand. The image also captures the main highways, as well as the surrounding town centres.

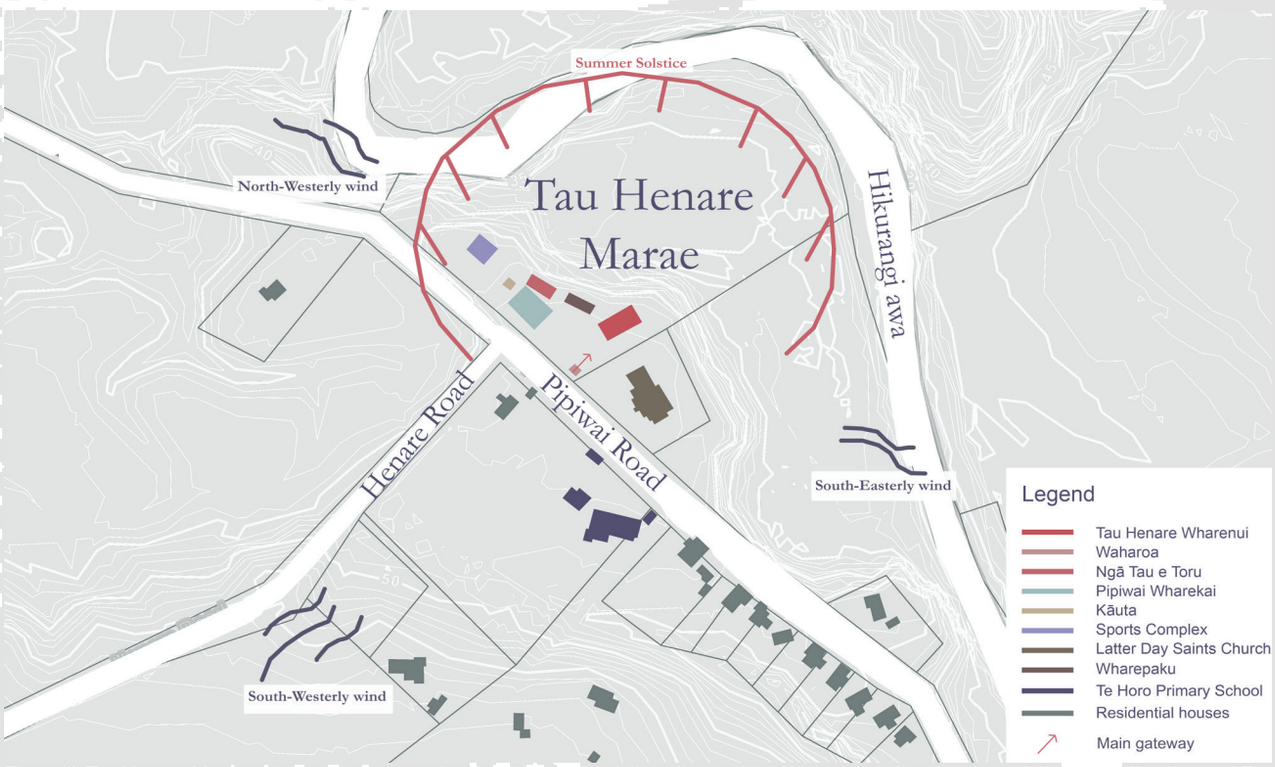


Figure 2. Tau Henare Marae, existing site, surrounding buildings and existing site conditions, identifying the summer solstice, wind direction and Tau Henare wharenui orientation.

METHODOLOGY

> Kaupapa Māori is an approach to learning, teaching, healing, researching, parenting, and caring. Mātauranga Māori is an always evolving, underlying body of Māori knowledge that can guide practice and understanding.[4] – Sir Mason Durie

Provided in this part of the article is an overview of the methodologies that underpin this research. To begin, the research conducted by Dr Jenny Lee-Morgan that centres around pūrākau (a collection of traditional oral Māori narratives) as a methodology will be discussed.[5] Dr Lee-Morgan's doctoral thesis, submitted in 2008, introduced the first serious discussions that pioneered pūrākau as a credible methodological approach.[6] Lee-Morgan introduces the "conceptual framework of te pū o te rākau (the core of the tree)" in the chapter "Pūrākau from the Inside Out: Regenerating Stories for Cultural Sustainability."[7] Lee-Morgan states that pūrākau positions research looking from the 'inside out' and begins at 'the heart'. Lee-Morgan's thesis has since served as a foundational multi-disciplinary reference for Māori (Indigenous, belonging to Aotearoa) engaging in storytelling within research contexts.

Similarly, a notable advancement in kaupapa Māori (Māori approach) design methodologies are Te Aranga Principles (Māori design principles) outlined in Figure 3.[8] Utilised by Māori and non-Māori practitioners, Te Aranga Principles are one of the more recognisable design methodologies that cater to "outcome-based principles founded on Māori cultural values."[9] The seven Te Aranga Principles, which are Mana, Whakapapa, Taiao, Mauri Tū, Mahi Toi, Tohu and Ahi Kā, offer guidance to design practitioners while at the same time improving outcomes for cultural design and the built environment.

Rau Hoskins, who is an expert in Māori architecture, was pivotal in establishing Te Aranga Principles. Hoskins emphasises that any Māori architectural project depends on consistent and close engagement with iwi and hapū.[10] Therefore, to embrace Te Aranga Principles coupled with insights from Hoskins, it was important that Tau Henare Marae whānau led their visioning by participating and contributing through wānanga (discussing and learning about tribal knowledge) and interviews.

Figure 3. Te Aranga Principles (Māori design principles).[11]

4. Mason Durie, "Kaupapa Māori: Indigenising New Zealand," in *Critical Conversations in Kaupapa Māori*, ed. Te Kawehau Hoskins and Alison Jones (Huia Publishers, 2017), 4.
5. Jenny Bol Jun Lee, "Ako: Pūrākau of Māori Teachers Work in Secondary Schools" (doctoral thesis, University of Auckland, 2008), 1,
6. Jenny Lee-Morgan, "Decolonising Māori Narratives," *MAI Review* 2, no. 3 (2009): 1, https://www.journal.mai.ac.nz/system/files/maireview/242-1618-1-PB.pdf
7. Jo-Ann Archibald et al., *Decolonizing Research: Indigenous Storywork as Methodology* (Zed Books, 2019), 151–152.
8. LandscapeAustralia Editorial Desk, "In Practice: Te Aranga Design Principles," *ArchitectureNow*, October 5, 2018, https://architecturenow.co.nz/articles/in-practice-te-aranga-design-principles/#:~:text=Te%20Aranga%20M%C4%81ori%20Design%20Principles,across%20all%20council%20built%20projects
9. LandscapeAustralia, "In Practice: Te Aranga Design Principles."
10. Rau Hoskins, "Te Aranga Māori Design Principles and the Auckland Urban Design Panel: Improving Culturally Distinctive Design Outcomes in Tāmaki Makaurau (Auckland)," *Inter-View: The Contribution of Urban Design Panels to Auckland's Urban Story*, ed. Anna Wood (Beatnik, 2014), 168.
11. Adapted from Jacqueline Paul, "Exploring Te Aranga Design Principles in Tāmaki," *National Science Challenges* (June 2017), 5, https://www.buildingbetter.nz/wp-content/uploads/2023/08/Paul_2017_exploring_te_aranga_design_principles.pdf

WĀNANGA AND WHĀNAU INTERVIEWS

In this subsection, the focus will be on the key insights derived from the kaupapa Māori qualitative modes of inquiry: whānau wānanga and interviews. The facilitation of wānanga and interviews was conducted through various channels, including presentations, large-scale printed site maps, semi-structured inquiries, and mini physical house-models, with data collected using dictaphones, photographs and notetaking.

Undertaken between 10am and 3pm on 7 July 2022, wānanga tuatahi occurred at Tau Henare Marae inside the whare tupuna. The themes that emerged through thematic analysis of wānanga material comprised Ngā Tau e Toru history, sites of significance, cultural narratives, tikanga (custom), kawa (protocol), ngahere (forest), materials and future aspirations. The whānau who contributed varied in age, experience and knowledge, which afforded dynamic information and a greater understanding of the cultural and historical knowledge about the iwi, hapū and marae (central gathering place for Māori).

Over approximately two months, four interviews were also undertaken with whānau from Tau Henare Marae between 1 June 2022 and 20 July 2022. Several broad themes emerged through thematic analysis of the interview material, including history, pūrākau, Ngā Tau e Toru , tikanga, kawa, lived experiences, whare orientation and future aspirations. The interviewees represented diverse ages, lived experiences and knowledge, further enhancing the dynamic information gathered at wānanga tuatahi.

Fundamental to understanding and interpreting whānau aspirations for Tau Henare Marae and Ngā Tau e Toru were the kaupapa Māori methodologies of Te Aranga Principles and pūrākau. Approaching wānanga tuatahi and interviews with the knowledge of these methodologies meant the future master plan was culturally informed and nourished by whānau. Through further thematic analysis, six dominant themes were revealed.

FINAL SIX THEMES

The final six themes that guided the design and development process for this project are facts, history, inspiration, pūrākau, aspiration and design. These themes surfaced from the second round of thematic analysis regarding the gathered whānau wānanga and interview material, and became essential in understanding their aspirations and future dreams. Figure 4 showcases one of the themes – pūrākau – through a keyword mind-map.

Through a third and final round of thematic analysis, these themes were refined and likened to fundamental traditions such as the tuna (eel) and hōiho (horse) narratives. These two tohutohu (guides) drove the development of the built-environment design.

Figure 4. Keyword mind-map of pūrākau, which is one of the six final themes that developed as a result of Tau Henare Marae whānau wānanga and interviews.

KEISHA RAWIRI

TUNA AND HŌIHO (EEL AND HORSE)

Explored in this section are specific pūrākau that significantly influenced the spatial planning of the future master plan. Through wānanga and interviews with whānau, two prominent pūrākau, the tuna and the hōiho, came into view as guiding narratives.

Tuna is a respected kaitiaki (guardian) of the awa (river)[12] and of value as taonga (treasure) for Māori.[13] Tuna hold particular cultural and social significance for Te Orewai hapū. To provide insight, the hapū traditions recount a time when the tamariki (children) of Hape were out catching tuna in Opahi, and as a result, created a stir in the wai (water). Another tradition depicts "ko ngā Hape ore tuna," which means the descendants of Hape tickling the underbelly of a tuna to catch it.[15] A third tradition alludes to a time in Matawaia when the abundance of tuna caused the rippling of waves. As such, 'Te Orewai' refers to the dynamic and ever-changing waters, akin to a constant motion like that of a washing machine.[16]

Moving on to the hapū marae grounds historically known as Te Horo, three pūrākau have been uncovered. The first tradition talks about a time in the past when a very fast horse travelled from Waimamaku to Te Horo Marae and beat all the other horses.[17] Another tradition reverses the roles, with a man named Horo who passed all the horses, becoming known as "the man faster than a horse."[18] A third tradition recounts a massive boulder that was kicked from the top of a maunga (mountain), coming down so fast that it was called 'te horo', describing the speed of its descent towards Tau Henare Marae.[19]

Figure 5 shows how the centrality of integrating these traditions into the future master plan is understood. Illustrated is the convergence of a tuna and a hōiho silhouette, symbolically meeting at the silhouette of Ngāti Hine tupuna Hineamaru overseeing the whenua+ (land, ground). This depiction signifies the intersection of the narratives and their spatial significance that informed the future master plan and programmes. The image also highlights Tau Henare Marae meeting the belly of the tuna and spine of the hōiho, presenting another symbolic meeting of the two tohutohu. These enduring traditions not only enrich the cultural landscape but also honour the significance of the knowledge passed down.

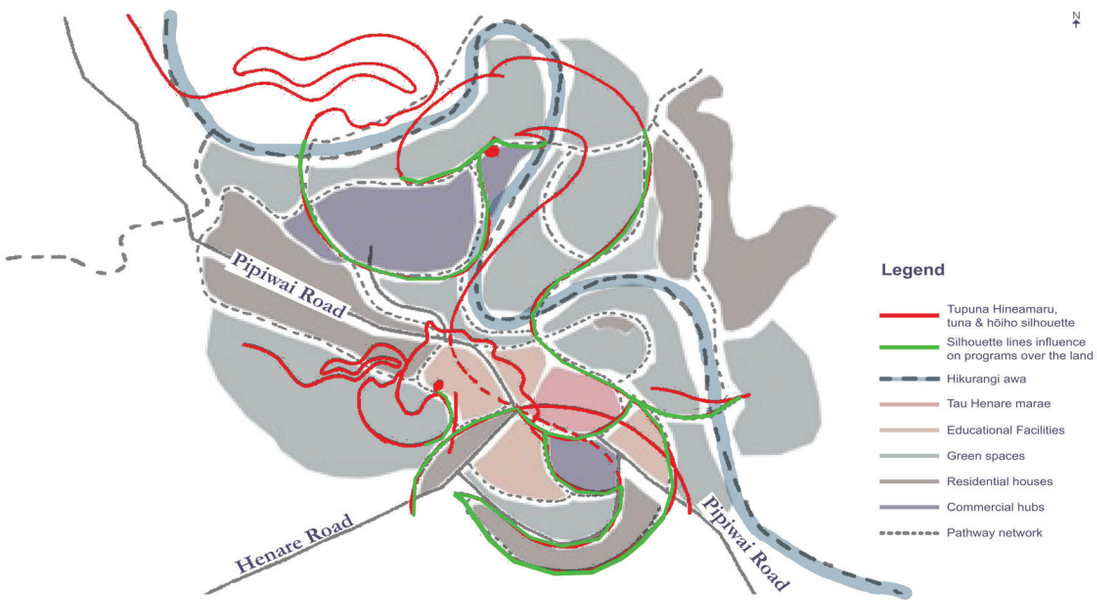


Figure 5. The proposed future master plan for Tau Henare Marae incorporates the silhouettes of the tuna and hōiho, symbolically meeting the silhouette of Ngāti Hine tupuna Hineamaru, laid over the whenua and integrated into the pathway network. These silhouettes significantly influenced the layout of programmes across the whenua.

12. Department of Conservation Te Papa Atawhai, "Tuna – ā Tātou Taonga: Tuna Are Not Only Historically Important to Māori, They Are Our Taonga Today, But Pressure on Some Species Is Resulting in Their Decline," accessed September 5, 2022, https://www.doc.govt.nz/nature/native-animals/freshwater-fish/eels/tuna-a-tatou-taonga/
13. Tui Shortland, *Taumarere, the River of Chiefs – Taumarere, Te Awa o Nga Rangatira* (Ngā Tirairaka o Ngāti Hine, 2012), 30, https://www.epa.govt.nz/assets/FileAPI/hsno-ar/APP201365/3aa4b7fee4/APP201365-SUBMISSION102614-Nga-Tirairaka-o-Ngati-Hine.pdf
14. Shortland, "Taumarere, the River of Chiefs," 24.
15. Haami Tohu, one-to-one whānau interview (second recording), July 20, 2022.
16. Tohu, one-to-one whānau interview (second recording).
17. Tohu, one-to-one whānau interview (third recording), July 20, 2022.
18. Tohu, one-to-one whānau interview (third recording).
19. Tohu.

FUTURE MASTER PLAN

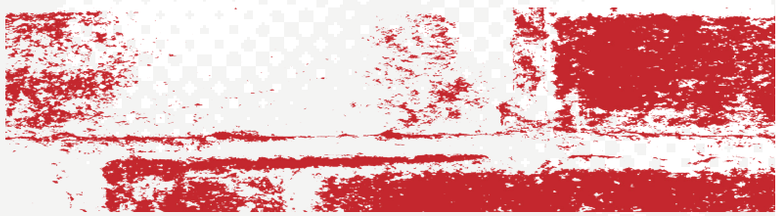
Armed with critical whānau insights and careful consideration of how these concepts influence the design elements and built environment, Figure 6 presents the site plan of future opportunities for Ngā Tau e Toru and Tau Henare Marae. Shaped using the six themes, the site plan includes a papakāinga (a place for Māori living together communally on ancestral land) aimed at facilitating whanau return to the kāinga (settlement, village).[20] Education also emerged as a priority for whānau, with a desire to improve accessibility to historical archives at the marae. This aspiration seeks to create a space where whānau can engage in learning together, supported by facilities that include a whare taonga (historical archives building), kōhanga reo (pre-school), kura kaupapa (primary and/or secondary school) and whare wānanga (tertiary institute).

Figure 6. Future master plan: Proposed site plan and layout of programmes over the whenua.

Another important design consideration involves the pathway network. These pathways across the whenua, also influenced by the silhouettes of the tuna, hōiho and tupuna Hineamaru, serve as vital connections by knitting together various amenities. Joined through this network are the Hikurangi awa (river), waka landing, kaitiaki hub, papakāinga, bridges, Tau Henare Marae, boat docking, hauora (health) hub, kura kaupapa, whare wānanga, commercial hubs, residential whare (houses), mahinga kai (place where food is gathered), māra kai (food garden) and horse paddock. Furthermore, the pathways accommodate diverse modes of transportation for manuhiri (visitors) and hau kāinga, such as hōiho, e-bikes, e-scooters and e-carts, combining travel methods that can share the same environment.

As mentioned earlier in the brief overview of the current site conditions, the existing mahau is south-west facing and therefore shaded for most of the day, being primarily oriented towards the road. The proposed marae has been reoriented to face north, enabling it to capture the north sunlight to provide a warm and welcoming mahau and optimising the leeward side of the site. This repositioning prioritises the Hikurangi awa as the primary manuhiri arrival point by waka, shifting away from the road as the main gateway. Additionally, the new spatial layout of programmes creates more whenua (land) for the proposed marae, made possible by a slight modification to the existing Pipiwai Road near the marae. (In saying this, vehicular access to the marae continues on the west side, from Pipiwai Road.) The proposed master plan embodies the values of kaitiakitanga (guardianship), kotahitanga (unity) and manaakitanga.

Building on this, as showcased in Figure 7, is a ground-floor plan of the proposed marae, zooming in on its distinct programmes. The main programmes of the marae include the waharoa, ātea (sacred ground in front of the meeting house), wharenui, whare taonga, wharekai, kāhanga reo, wharepaku, kāuta, hāngī (earth oven) pit and a central ātea manaaki (focal outdoor open space of the marae). Important to this layout is the fully covered walkway extending sheltered access to all marae buildings. This feature has influenced the design of the central ātea manaaki, as the buildings need to be in close proximity to one another for accessible and sheltered transitions.



20. "Wānanga Tuatahi – Ko Ngā Tau e Toru and Tau Henare Marae," wānanga conducted at Tau Henare Whare Tupuna, Pipiwai, July 7, 2022.

KEISHA RAWIRI

Figure 7. Future promise of Tau Henare Marae: ground-floor plan and layout of programmes.

In honouring the ingoa (name) of Ngā Tau e Toru, it is suggested that it be gifted to one of three proposed buildings: the wharenui, whare taonga or kāhanga reo. Each of these whare reflects aspects of the original wharenui's significance, preserving its history.

Strengthening the future vision of Tau Henare Marae is the activation of the Hikurangi awa. Seen in Figure 8, this concept honours the traditional practice of waka navigation along the awa, which has influenced the design of the nearby kaitiaki hub.[21] Acting as a multipurpose gathering place for manuhiri and hau kāinga (local people of the marae), the kaitiaki hub greets manuhiri arriving by waka along the awa. This proposed design features natural vegetation alongside the awa and paving to haul waka, complementing the kaitiaki hub's various activities, including preparation of kai, kai (food) arriving by waka, tuna drying lines, and children playing and breathing life into the space. This scene captures the interconnectedness of the various activities and people taking advantage of the Hikurangi awa arrival point.

Represented in Figure 9 is the kaitiaki hub's southern outlook, illustrating hau kāinga cultivating the māra kai, while diverse modes of transportation, including hōiho, e-bikes, e-scooters and e-carts, facilitate movement within the area. This scene further emphasises the important role the kaitiaki hub plays as a built form that breathes life into the surrounding natural environment.

One exciting takeaway is the future opportunity that lies with embracing and advancing sustainable and traditional modes of transportation, such as waka navigation and commuting by hōiho.

As manuhiri navigate through the kaitiaki hub, a pathway guides them towards the waharoa of Tau Henare Marae. Presented in Figure 10 is a viewpoint from the centre of the waharoa that frames the three main whare. The perspective offers viewers an immersive experience of manuhiri awaiting a pōwhiri (welcoming ceremony) to cross the threshold of the tapu (sacred, under atua protection) marae ātea. While manuhiri wait, the waharoa provides them with shelter from the various weather conditions. Expanding on the three main whare, their distinctive red-ochre roofs echo the existing marae roof colour, while red is also part of the Ngāti Hine logo palette. In addition to red, the iwi colours include green and yellow. These hues have also been incorporated into the design of the wharekai's front façade. Meanwhile, the front façades of the three main whare display the iwi patterns, celebrating Ngāti Hine identity.

Captured in the illustration is the prominence of the three whare, recognising their mana (prestige): the wharenui welcomes manuhiri, the whare taonga is a gathering place to share in mātauranga (knowledge, wisdom), and the wharekai is a communal space to share in kai. The shared roof-pitch between the wharenui and whare taonga symbolises their equal mana and the mauri (vital essence) of Ngā Tau e Toru.

21. Waitangi Tribunal, "Te Orewai Values Assessment for the Stoney Creek Archaeological Authority, Tau Henare Marae Komiti, Pipiwai, 2011," in *Wai 1040 Combined Record of Inquiry for Te Paparahi o Te Raki, Part 1*, https://www.waitangitribunal.govt.nz/assets/DOCUMENTS/1040-ROI-index-1July2019.pdf

Figure 8. The view of the Hikurangi awa and waka landing depicting manuhiri arriving by waka, tuna drying lines and children playing in front of the kaitiaki hub.

Figure 9. The view of the kaitiaki hub's southern outlook, looking towards the māra kai and Tau Henare Marae's waharoa.

The transition from a tapu (sacred) to a noa (common) space is restored when manuhiri walk beneath the wharenui pare (door lintel). The wharenui feeds mātauranga, wānanga and tikanga, and marks the formal completion of the pōwhiri (welcoming ceremony) process. To further facilitate the return to a noa state, manuhiri and hau kāinga transition to the wharekai to share kai.

The final image in this section showcases the central ātea manaaki. This interactive space is shaped by the fully covered walkway, which extends sheltered access to all the marae buildings that need to be within close proximity (see Figure 8). The proposed ātea manaaki features a circulating pond of wai, a vital element for the hapū, along with stepping stones and fruit trees such as lemons, peaches and oranges (see Figure 11). The innovative central focal point also serves as an additional outdoor gathering space for marae activities.

Figure 10. The view when standing in the centre of the waharoa awaiting to be welcomed on to Tau Henare Marae ātea. Prominent are the three main whare: the wharenui in the centre, whare taonga to the right, and wharekai to the left.

Figure 11. The view of the ātea manaaki looking towards the whare taonga in the centre, wharenui to the right and kōhanga reo to the left.

One other design consideration visible in this image is the vertical exterior timber boards of the wharenui's south façade, distinct from the horizontal boards of the other buildings. This design element emphasises its role as the primary welcoming area onto the marae.

CONCLUSION

This study highlights key findings while also illustrating various constraints and opportunities. The insights are constrained by the specific contexts and demographics of whānau involved, potentially affecting the broader application of the outcomes. Additionally, the focus on a single location may limit the applicability of these findings to other marae settings, where varying geographical and socioeconomic factors influence outcomes.

Inspired by tradition and the future aspirations of Tau Henare Marae whānau, this master plan has developed several innovative architectural responses. These include shaping the ātea manaaki, re-prioritising traditional modes of transportation such as waka and hōiho, and reorienting the proposed marae to face north and optimise the site conditions. Additionally, the master plan prioritises the Hikurangi awa and arrival by waka as the main entry point,

rather than the road, and fosters the convergence of animals, humans and technology along the same pathway network. Furthermore, pūrākau significantly influenced the spatial layout of programmes over the whenua.

The integration of cultural heritage and knowledge, together with traditional values of tapu, noa and mana, seeks to pay respect to the kaupapa Māori methodologies of pūrākau, Te Aranga Principles, wānanga and whānau interviews employed. While embracing modern design features, the final design was ultimately guided by the intention to uphold the mana of Ngā Tau e Toru and present a vision to whānau for the future promise of Tau Henare Marae.

Moreover, the findings possess significant potential applications, particularly in informing future design and development strategies for marae and papakāinga. By incorporating assessments of flood plains and local demographics into the narratives, the research can lead to enhanced, culturally responsive and innovative architectural solutions.

Looking ahead, extending this study beyond its original scope could enhance its impact. Future research could involve comprehensive evaluations of local flood plains and demographic shifts. It could also consider different geographical locations when master planning and designing marae and papakāinga developments. Papakāinga often require timber-piled foundations, due to environmental and geographical conditions. Understanding all these factors can enhance financial, geotechnical, civil and structural planning, aligning with community aspirations and loan requirements for marae and papakāinga developments.

By exploring these avenues, this study could improve the discourse on sustainable social housing solutions, contribute to the ongoing development of Māori architecture, and address long-standing challenges such as housing inequality, urbanisation and the need for culturally responsive design.

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https://doi.org/10.34074/aslm.2024106

CHALLENGES OF THE MUISCA CULTURAL REVIVAL

Lessons From Māori Architectural Resistance

ABSTRACT

Colombia's Muisca Indigenous culture, once flourishing in the Bogotá region, has undergone significant transformation due to Spanish colonisation in the sixteenth century, which led to the displacement of Muisca traditions and their merging with Spanish traditions over centuries. Despite these changes, the Muisca community maintains a distinct cultural presence on Bogotá's outskirts, particularly in Bosa municipality, now known as El Porvenir. The Muisca community has pursued further recognition and land rights to safeguard their heritage. However, they have faced challenges from urban development and historical injustices, highlighting the need for strategic architectural interventions to preserve their identity.

This article explores how architectural practices could empower Indigenous communities through an analysis of historical, cultural and social contexts, identifying Māori architectural strategies that act as a form of resistance to prevent assimilation by the Western culture. The goal is to gather insights from Māori architectural experience that could be applicable to the revitalisation of Muisca culture in Bogotá, Colombia. Cultural, historical and social contexts will be analysed, focusing on the role of architecture in shaping and preserving identity.

Keywords: Muisca culture, Colombia, Māori architecture, Indigenous architecture, decolonisation, resistance

INTRODUCTION

I am from Fusagasugá, Colombia, a city once part of the Muisca territories. I embarked on a journey to Aotearoa New Zealand, seeking deeper insights into the incredible evolution of Māori architectural experience and discovering how their architecture can be a powerful tool for cultural resilience and identity preservation. Thanks to Unitec staff members, I learned a respectful approach to Māori knowledge, being guided to understand how establishing a solid connection between architectural design and cultural values has successfully integrated Māori heritage into Aotearoa's urban and rural landscapes, ensuring continuity and relevance.

To further contextualise how architecture influences cultural preservation, it is essential to examine Colombia's Muisca culture and the impact of colonisation on its architectural practices. The colonisation of the territory now known as Colombia by the Spanish Empire during the sixteenth century altered its people's society, politics and culture, and therefore their architectural expression.[1] Among the Indigenous cultures impacted by this process was that of the Muisca, who inhabited the territory's heart in the area now known as Bogotá, the country's capital.[2]

Figure 1. What we know nowadays as Colombia in South America. Modified image based on a map from *BBC News Mundo*.[3]

1. Carl Henrik Langebaek Rueda, "La Élite no Siempre Piensa lo Mismo," in *Muiscas, Representaciones, Cartografías y Etnopolíticas de La Memoria*, 21st ed., edited by Ana María Londoño (Pontificia Universidad Javeriana, 2005), 181–196.
2. Miguel Alberto Pérez García, "La Organización de los Muiscas a la Llegada de los Españoles," *Revista de Derecho* 20 (March 29, 2017): 479–498, https://dialnet.unirioja.es/servlet/articulo?codigo=6097037
3. "Como Fue el Imperio Español y por Qué Colapsó," *BBC News Mundo*, October 13, 2024, 0:15, https://www.youtube.com/watch?v=3x32Th64OQ4&t=14s&ab_channel=BBCNewsMundo

Figure 2. Muisca territories during the sixteenth century. Modified image based on Falchetti's 1973 map.[4]

Spanish colonisation led to the displacement of the Muisca settlements, which were gradually replaced by colonial towns.[5] Over 500 years, Spanish and Muisca cultures have gradually merged, mixing with, overlapping and even replacing Muisca traditions and identities. Despite the assimilative process, the Muisca culture persists on the outskirts of Bogotá, far removed from the city's core.[6]

Given this context, it has become imperative for Muisca to establish an architectural and urban presence. It could be possible for this community to use architectural strategies to safeguard their cultural identity from the expansion of urban developments.[8] Therefore, the Muisca community assumes high priority in urbanism and architecture.[9] Drawing inspiration from examples of cultural preservation overseas to benefit Muiscas, this initiative is based on examining case studies in architectural academic research.[10]

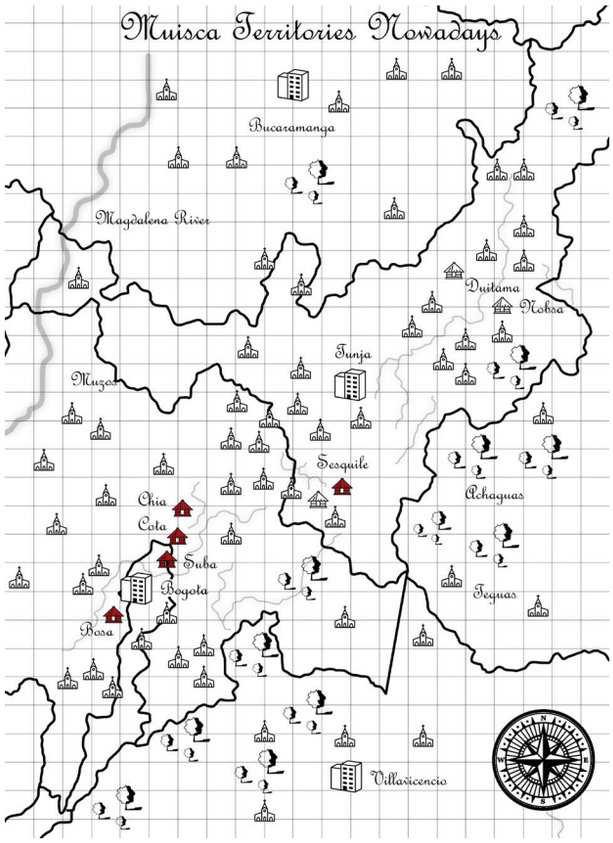

Figure 3. Actual Muisca territories that are recognised as Cabildo. Modified image based on a map from Geoportal IGAC, 2012.[7]

This article explores how architecture could become a tool for the Muisca community to preserve their heritage and resist cultural assimilation, after respectfully studying the valuable lessons learned from Māori architectural practice in Aotearoa New Zealand.

4. Ana María Falchetti, "El Territorio de los Muiscas a la Llegada de Los Españoles," in *Cuadernos de Antropología*, edited by Clemencia Plazas de Nieto (Universidad de los Andes, Bogotá, 1973), 1–65.
5. Marcela Quiroga Zuluaga, "El Proceso de Reducciones Entre los Pueblos Muiscas de Santafé Durante los Siglos XVI y XVII," *Historia Critica* 52 (2014): 179–203, https://doi.org/10.7440/histcrit52.2014.08
6. Paula Andrea Díaz Ramirez et al., "Saberes Propios, Resistencia y Procesos de Recuperación de Memoria Histórica en la Comunidad Muisca de la Ciudad de Bogotá," *Novum* 2 (May 31, 2019): 86–100, https://revistas.unal.edu.co/index.php/novum/article/view/78813/71398
7. "Mapa Oficial Físico Político 2012," Geoportal IGAC, accessed November 7, 2024, https://geoportal.igac.gov.co/contenido/mapas-nacionales
8. William Gamboa Rodriguez and Lina Rocío Viasús Figueredo, "Cosmovisión de la Comunidad Indígena Muisca de Bosa con el Territorio y Su Relación con el Ordenamiento Territorial de Bogotá" (Bachelor's thesis, UDCA, Bogotà, 2015), 129, https://repository.udca.edu.co/handle/11158/414
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THE MUISCA COMMUNITY IN BOSA

Colombia has recognised five Muisca communities: in Sesquilé, Chía, Cota, Suba and Bosa.[11] This article will focus on the Bosa community due to its unique historical and cultural significance within the Muisca heritage, and because it has been part of recent debate in Colombian urbanism and architecture.[12]

The earliest documented records of the Muisca community in Bosa date back to the sixteenth century, when the colonial administration provided lands to host an Indigenous reserve for Muisca.[13] This allowed them to have a sort of autonomy during the subsequent two centuries. However, following the country's independence from the Spanish empire in 1810, the republican government began a campaign to suppress the Indigenous identity and sculpt a homogenous national distinctiveness. In 1853, under the presidency of José María Obando, authorities reclassified these lands as rural territories,[14] significantly impacting land ownership rights.[15]

Muisca people still struggle to get political recognition from the national government. In 1999, they were recognised as a Cabildo.[16] In Colombia, a Cabildo is a political organisation for Indigenous groups, which empowers them to represent Indigenous authority to the national government.[17] However, this status does not allow them to exercise power over any land, whether private or public property. Consequently, since 2007 the community has pursued recognition for an Indigenous reserve.[18] This designation would offer substantial authority over their lands.[19] Furthermore, it could be a significant step towards reclaiming their ancestral rights and sovereignty.

THE MUISCA WORLDVIEW

Gamboa Rodriguez and Viasús Figueredo have studied the Muisca worldview, in which the Tchiminigagua defines their way of life, involving nine fundamental principles.[20] Language plays a pivotal role in cultural preservation, with efforts underway to revive the Chibcha language. Territory holds profound significance, as the connection between humans, their bodies and spirits is deeply rooted in the land, where sustenance is derived from what grows underneath. 'Siembro' means the path to abundance through cultivation; it includes the sacred plants that facilitate connection with ancestral laws and are used in traditional medicinal practices.[21]

For Indigenous communities, stories often serve as a tool for educating new generations; whereas rituals provide structure to life's order. At the core of the Muisca worldview lies The Origin's Law, which emerges from the authority of both father and mother, guiding human conception. This law is linked to the Spiral, which divides into four cardinal directions, symbolising wind, fire, water and earth, thus ordering the nine principles within a cosmology. Moreover, ceremonial houses are the physical representation of their culture.

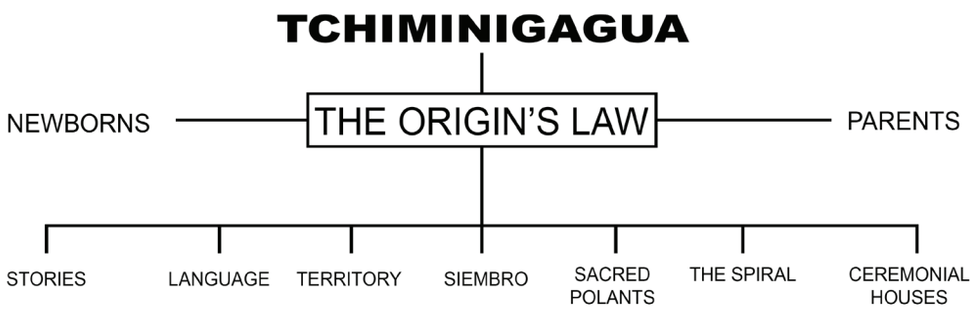

Figure 4. A self-elaborated graphic explaining the Muisca worldview and the nine principles that compose the Tchiminigagua.

11. Gamboa Rodriguez and Viasús Figueredo, *Cosmovisión de la Comunidad Indígena Muisca de Bosa con el Territorio y Su Relación con el Ordenamiento Territorial de Bogotá*, 129.
12. Santiago Martínez Medina, Richard Casallas Rodríguez and María Nelsy Chiguasuque, "Fortalecimiento de la Medicina Tradicional en el Cabildo Indígena Muisca de Bosa, Una Experiencia Intercultural Exitosa," *Investigaciones en Seguridad Social y Salud* 9 (2004): 99–122, https://eruditus.sfo2.digitaloceanspaces.com/cabildo-muisca-bosa/Fortalecimiento_de_la_Medicina_Tradicion.pdf
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20. Gamboa Rodriguez and Viasús Figueredo, *Cosmovisión de la Comunidad Indígena Muisca de Bosa con el Territorio y Su Relación con el Ordenamiento Territorial de Bogotá*, 129.
21. Andrés Felipe Amaris-Álvarez et al., "Medicina en Comunidad y Memoria Biocultural en el Pueblo Muisca de Sesquilé, Cundinamarca, Colombia," *Revista Etnobiología* 19, no. 2 (March 2021): 14–29.

MUISCA ARCHITECTURE

With this understanding of the Muisca worldview, we can now explore how their architecture historically reflected these principles. Ceremonial houses are sacred in Muisca culture, serving as venues for communal rituals. In 1987 researchers Inés Casilimas and María López delved into historical accounts left by Spanish monks who chronicled the Spanish colonisation of the Muisca civilisation.[22] According to these testimonies, Muisca architectural structures exhibited distinctive features. Circular in design, these buildings displayed conical thatched roofs crafted from wood supported by robust pillars. These ceremonial structures were partially subterranean, intentionally concealed from casual observers. To access the interior, pedestrians navigated labyrinthine pathways, ultimately arriving at the heart of the temple. Within these hidden sanctuaries, Muisca leaders safeguarded precious gold treasures, an embodiment of their spiritual and cultural wealth.

Besides the testimonies, there is nothing remaining of original Muisca buildings today. There have been, however, anthropological studies of excavations that revealed the ancestral foundations of certain settlements, such as El Carmen, Nueva Esperanza and El Tunjo, all in Bogotá's surrounding areas.[23]

THE MUISCA RESISTANCE

The Muisca community has faced significant threats from modern urbanisation and historical injustices. However, they have shown impressive cultural resilience: in 2017, the Colombian Constitutional Court established the Auto 266 statute, recognising the Muisca culture as one of Colombia's most threatened communities due to the proximity of its settlements to significant urban developments.[24] Inevitably, this urbanisation has led to an alienation of their values.[25]

Given the rapid urbanisation process and the increasing population surrounding the Muisca community in Bosa, non-Indigenous individuals often find it challenging to acknowledge the presence of Indigenous communities.[26] Republicans perpetuated a disrespectful perception of Indigenous cultures within the country, no longer considering them essential after the war of independence.[27] This disregard is evident in the republican documents from the nineteenth century,

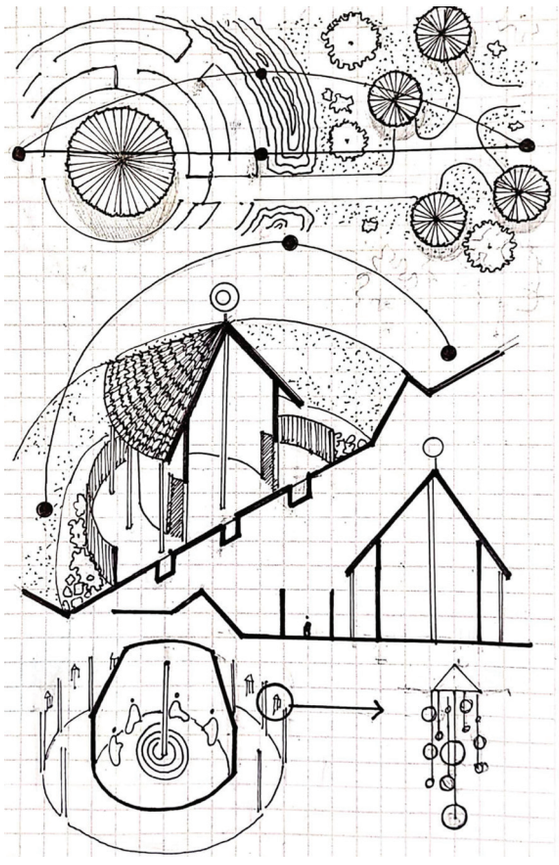

Figure 5. How the Muisca temple used to look back in the sixteenth century. Modified image based on Casilimas Rojas and María López Ávila's work.

which labelled Indigenous people 'savages'.[28] Subsequently, government policies were implemented to dispossess Indigenous communities of their lands, transforming them into haciendas for economic exploitation.[29]

In Colombia, a law that promotes urban planning strategies is known as the Plan de Ordenamiento Territorial.[30] Based on this law, the City Council decreed Muisca ancestral lands as urban areas, further complicating their struggle for cultural preservation and land rights.[31] Furthermore, these planning tools are structured within government-defined stages that only last twelve years, divided into three periods of four years each — a fundamental contradiction for the Indigenous people, whose viewpoint on planning is that it extends through lifetimes.[32]

21. Andrés Felipe Amaris-Álvarez et al., "Medicina en Comunidad y Memoria Biocultural en el Pueblo Muisca de Sesquilé, Cundinamarca, Colombia," *Revista Etnobiologia* 19, no. 2 (March 2021): 14-29.
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26. Oscar Julián Cuesta Moreno, "Pueblo Muisca de Bosa: Lucha, Identidad y Comunalización Urbana," *Revista Kavilando* 13, no. 1 (2021): 20–28.
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28. Díaz Ramirez et al., "Saberes Propios, Resistencia y Procesos de Recuperación de Memoria Histórica en la Comunidad Muisca de la Ciudad de Bogotá."
29. Blanca María Peralta et al., "Revisión Histórica de la Educación en el Territorio Muisca de Bosa, por Entre sus Memorias Cotidianas," 130–154.
30. Presidencia de la República, *Ley 1454 de 2011* (Presidencia de la República, July 28, 2011).
31. Oscar Julián Cuesta Moreno, "Pueblo Muisca de Bosa: Lucha, Identidad y Comunalización Urbana," *Revista Kavilando* 13, no. 1 (2021): 20–28, http://portal.amelica.org/ameli/journal/377/3772803002/
32. Díaz Ramirez et al., "Saberes Propios, Resistencia y Procesos de Recuperación de Memoria Histórica en la Comunidad Muisca de la Ciudad de Bogotá."

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In the face of threats to their sacred lands,[33] the Muisca community in Bosa has reached some agreements with the City Council,[34] but not all their concerns have been addressed,[35] particularly regarding high-density housing projects that risk eroding Muisca culture through cultural assimilation.[36]

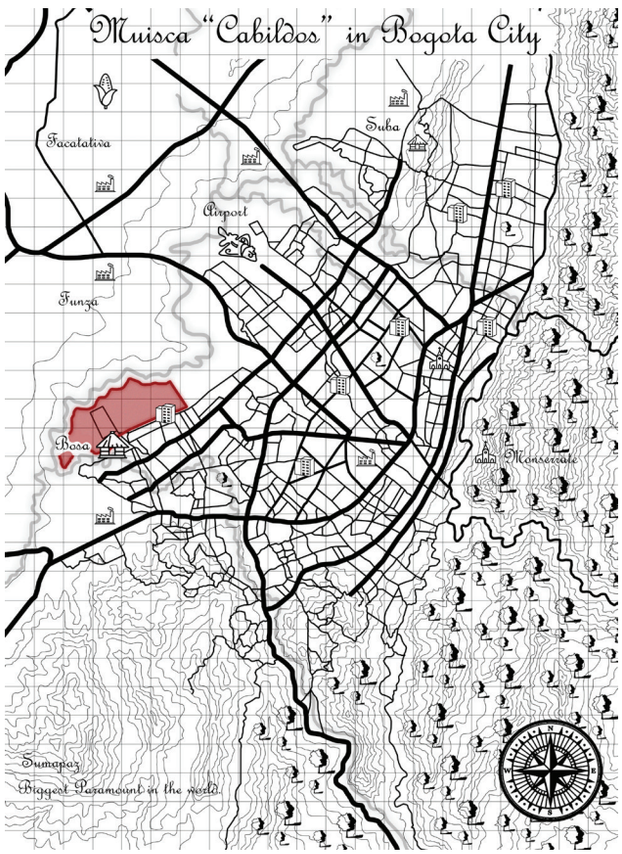

Figure 6. Bogotá city and the Bosa municipality (now known as El Porvenir). This is where the Muisca Cabildo is located. Modified image based on Jiménez et al.'s work in *DTS: Formulación de la Modificación del Plan Parcial El Edén – El Descanso*, 2023.

THE ROLE OF ARCHITECTURE IN SETTLER COLONISATION AND DECOLONISATION

Looking beyond the Muisca experience, we can identify global patterns of colonisation and resistance, particularly through

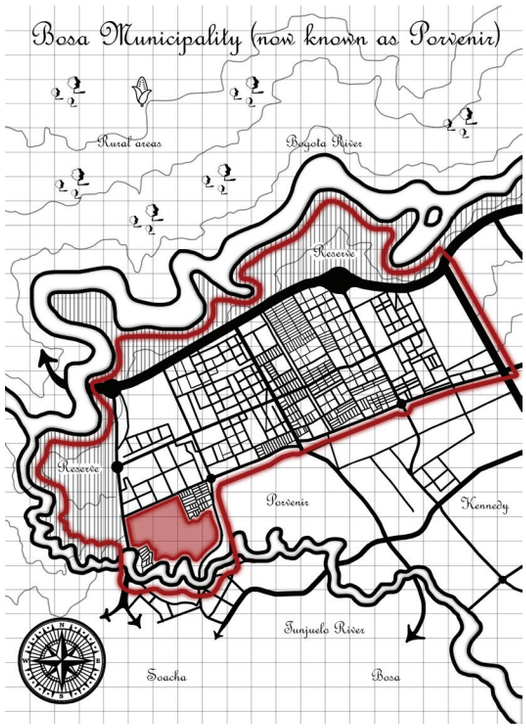

Figure 7. The Bosa municipality (now known as El Porvenir) and El Edén – El Descanso Urban Plan (in red). This urban plan will directly affect the Muisca sacred territories, threatening their culture. Modified image based on Jiménez et al.'s work in *DTS: Formulación de la Modificación del Plan Parcial El Edén – El Descanso*, 2023.

architecture across the globe. Many cultures have faced a fate akin to that experienced by the Muisca people; the process of settler colonisation has resulted in the gradual disappearance of Indigenous cultures. European powers propagated this model during the colonisation of the Americas and Oceania and Indigenous settlements were systematically dismantled or gradually replaced by towns and cities designed under a 'Western' worldview. Simultaneously, local traditions were discarded.[37] In our contemporary context, a concerted effort exists to decolonise, challenge, replace, dismantle and transgress previous structures and hierarchies related to spaces, power and knowledge within global architectural and urban paradigms.[38]

33. Alcaldía Mayor de Bogotá, *Decreto No. 521 de 2023: Por Medio del Cuál se Adopta la Modificación del Plan Parcial de Desarrollo El Edén – El Descanso Ubicado en la Localidad de Bosa, Expedido Mediante el Decreto Distrital 521 de 2006, y se Dictan Otras Disposiciones* (Secretaría Distrital de Bogotá, November 9, 2023).
34. Paula Rodríguez, "Este es el Proyecto Que Deja Listo Claudia López para Hacer una Ciudadela Indígena en Bosa, en el Sur de Bogotá," *Infobae*, November 10, 2023, https://www.infobae.com/colombia/2023/11/10/este-es-el-proyecto-que-deja-listo-claudia-lopez-para-hacer-una-ciudadela-indigena-en-bosa-en-el-sur-de-bogota/
35. Planeación Bogotá, "Jornada de Socialización de la Propuesta de Modificación del Plan Parcial 'Edén – El Descanso', Bosa," 3:58, https://www.youtube.com/watch?v=UmZmwjFvPnw
36. Michael Hibbard, "Indigenous Planning: From Forced Assimilation to Self-Determination," *Journal of Planning Literature* 37, no. 1 (2022): 17–27, https://www.researchgate.net/publication/353495294_Indigenous_Planning_From_Forced_Assimilation_to_Self-determination
37. Lorenzo Veracini, "Settler Colonialism and Decolonisation," *Borderlands* 6, no. 2: (2006) 1–11, https://ro.uow.edu.au/lhapapers/1337/
38. Yat Ming Loo, "Towards a Decolonisation of Architecture," *Journal of Architecture* 22, no. 4 (2017): 631–638, https://doi.org/10.1080/13602365.2017.1338412

SEARCHING FOR SUCCESSFUL CASES OF DECOLONISATION IN ARCHITECTURE ACROSS THE GLOBE

To seek inspiration for decolonising architecture in Colombia, examining examples from Indigenous cultures in other parts of the world is valuable. Indigenous architecture serves as a powerful lens through which we examine the impact of colonisation. To navigate this complex terrain, our focus is on the Americas and Oceania as areas that experienced European settler colonisation.[39]

It is not the intention of this research to directly compare Indigenous cultures. Instead, the scope is to identify examples that can inform our understanding of architectural models that resonate with the Muisca community in Bosa.

The International Labour Organization's report sheds light on the economic challenges Indigenous communities face in Latin America. Economic challenges among these groups surpass those of other Indigenous populations globally, according to the 2020 report.[40] These economic disparities pose significant barriers to developing Indigenous architecture in this region, impacting those peoples' technical and artistic expression within urban contexts.

Due to these challenges, we look to Aotearoa New Zealand, where the Māori people have cultivated a remarkable architectural tradition, that of the marae. This cluster of buildings embodies Māori culture, spirituality and social cohesion; its design reflects intricate connections to land, ancestors and community. By delving into the role of the marae within Māori society, we hope to extract valuable lessons applicable to the Muisca context.

MĀORI ARCHITECTURE AS AN ACT OF RESISTANCE

European explorers who arrived in Aotearoa New Zealand in the eighteenth century considered Indigenous architecture as folk art; they also believed it was improper for Māori to use Western techniques and tools to develop their artistic expressions.[41] Māori have continued to use traditional tools to preserve their culture and its architectural expression as a form of resistance for over 200 years, making this country a relevant architectural point of reference.[42]

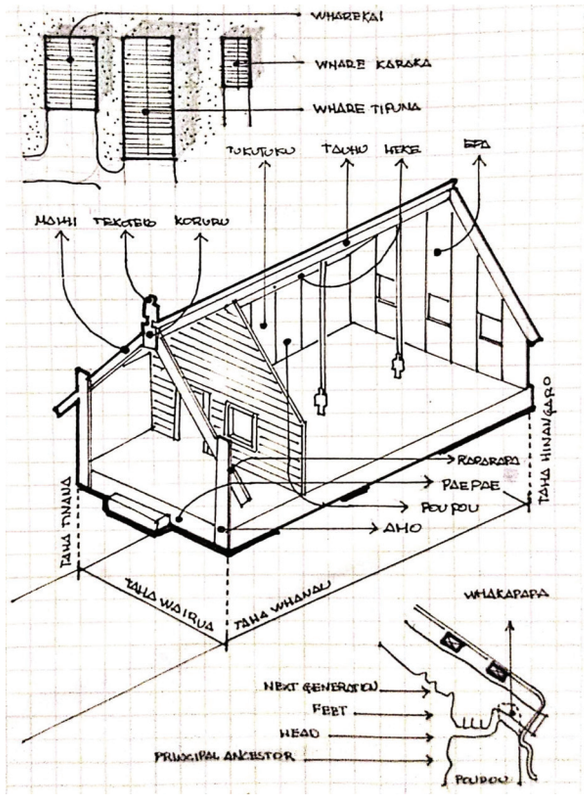

Figure 8. Parts of the wharenui. Modified image based on Deidre Brown and Jeremy Treadwell's work in "Māori Architecture" in ***Vernacular Architecture Atlas for Living Throughout the World***, 2019, 275–7.

MĀORI ARCHITECTURAL STRATEGIES: PRESERVING CULTURAL IDENTITY THROUGH DESIGN

One pivotal historical moment that profoundly influenced the trajectory of Māori architecture was the establishment of the Māori School of Arts and Crafts in 1926 under the visionary leadership of Tā Apirana Ngata. This institution sparked a cultural revival, catalysed by the completion of its inaugural marae project, Te Poho-o-Rāwiri. As the success of this endeavour reverberated, it inspired a wave of architects and builders across Aotearoa New Zealand to engage in marae construction.

However, the beginning of World War II disrupted these creative endeavours. Despite the challenges, Ngata tenaciously guided the continuity of the School of Māori Arts and Crafts in Rotorua,[43] which continues to this day.

39. Veracini, "Settler Colonialism and Decolonisation."
40. Rishabh Kumar Dhir et al., *Implementing the ILO Indigenous and Tribal Peoples Convention No. 169: Towards an Inclusive, Sustainable and Just Future* (International Labour Organization, February 3, 2020), https://www.ilo.org/publications/implementing-ilo-indigenous-and-tribal-peoples-convention-no-169-towards
41. Bill McKay and Antonia Walmsley, "Māori Time: Notions of Space, Time and Building Form in the South Pacific," *Idea Journal* 4, no. 1 (2004b): 85–95, https://doi.org/10.37113/ideaj.vi0.236
42. Maia Ratana, "Māori Architecture: A Response to Colonisation," *Asylum* 2 (2021): 128–33, https://www.unitec.ac.nz/epress/wp-content/uploads/2021/12/ASYLUM-2021_Maia-Ratana.pdf
43. Deidre Brown, "Pacific Spaces: Translations and Transmutations," in *Pacific Spaces: Translations and Transmutations*, ed. Anna Christina Engels-Schwarzpaul, Lana Lopesi and Albert Refiti (Berghahn Books, 2022), 11–20; Deidre Brown, "The Architecture of the School of Māori Arts and Crafts," *The Journal of the Polynesian Society* 108, no. 3 (1999): 241–276, http://www.jstor.org/stable/20706872; Deidre Brown and Jeremy Treadwell, "Māori Architecture," in *Vernacular Architecture Atlas for Living Throughout the World*, ed. Keonaona Peterson et al. (Birkhäuser Basel, 2019), 272–277.

Over subsequent decades, the foundation for a cultural renaissance in Māori design and construction was established. Notable Tāmaki Makarau Auckland examples include Te Puea Memorial Marae and Makaurau Marae, where the evolution of these architectural practices remains evident. Marae buildings have been crucial for Māori in reclaiming part of the space lost through colonisation, and have been keystones in maintaining cohesive connections among people and to place.[44]

The profound connection between the people of Te Puea Memorial Marae and Makaurau Marae and their ancestral lands – and rich and intricate histories[45] – provides invaluable insights for the Muisca community, who also have strong connections with the land, as they have inhabited their territory for over 500 years.

Fast-forward to 2012, and Te Aranga Principles emerged as a dynamic tool adopted by Auckland Council. These principles are Mana, Whakapapa, Taiao, Mauri Tū, Mahi Toi, Tohu and Ahi Kā, which are rooted in Māori local knowledge and Indigenous wisdom, and based on the six Māori values of Rangatiratanga, Manaakitanga, Wairuatanga, Kotahitanga, Whanaungatanga and Mātauranga. Major architectural projects such as Te Oro art centre in Glen Innes and Commercial Bay shopping precinct in the Auckland CBD have reaped the benefits of this discourse, which, far from being perfect, is in constant development.[46]

In analysing insights from Māori architectural experience, I do not intend to copy Māori strategies. Instead, I seek to collect lessons learned and ideas that may illuminate potential pathways to highlight the Muisca culture.[47] By doing so, we empower their insertion and active participation in Bogotá's architectural and urban context, reclaiming the space colonisation and cultural assimilation have taken away from them over five centuries.

To clarify the historical context, while the Muisca and Māori histories are distinct, the two cultures share important similarities regarding their colonial experiences and struggles for cultural preservation. According to Ioannidis et al., before European colonisation, the Polynesian communities had contact with Indigenous groups in what is now known as Colombia.[48]

In addition, the Indigenous people from both countries were dispossessed from their land in the name of urban development, by British colonisers in the case of Māori[49] and Spanish conquistadores in the case of the Muisca.[50] It is essential to highlight the difference in both historical contexts, however: colonisation of New Zealand occurred during the nineteenth century;[51] in the case of the Muisca, the colonisation of their lands occurred between 1536 CE and 1810 CE, when Colombia gained independence from the Spanish empire.[52]

ACTION STEPS FOR THE MUISCA COMMUNITY

Physical buildings play a vital role in developing rituals and expressing cultural identity. These structures also allow communities to demonstrate their presence in a territory. The Māori School of Arts and Crafts has been crucial for Māori education and cultural identity, and Muisca buildings must also embody their values and worldview.

Drawing inspiration from Te Aranga Principles, we can honour ancestral lands by integrating Muisca perspectives into urban design regulations. However, despite the City Council's efforts over the past six years to establish cultural centres across the city,[53] the Bosa municipality (now known as El Porvenir), home to the Muisca community, has yet to witness the realisation of any projects.[54]

An example is the El Edén – El Descanso Urban Plan, developed by the City Council, which has been a point of disagreement between the Muisca community and the government over the last decade. Fortunately, both parties have now agreed to construct the House of the Sun and the Moon,[55] a cultural centre inspired by Muisca heritage. However, this opportunity depends on continued dialogue and the government's commitment to addressing Muisca concerns.

44. Casakin and Kreitler, "El Significado de los Referentes en la Enseñanza del Diseño."
45. Jenny Lee-Morgan et al., "Marae Ora Kāinga Ora: Indigenous Health and Wellbeing Solutions via Time-Honoured Indigenous Spaces," *Genealogy* 5, no. 4 (2024): 1–18, https://doi.org/10.3390/genealogy5040099
46. Auckland Council, "Te Aranga Principles," *Auckland Design Manual*, accessed May 21, 2024, https://www.aucklanddesignmanual.co.nz/en/places-and-spaces/m_ori-design/te-aranga-principles.html
47. Casakin and Kreitler, "El Significado de los Referentes en la Enseñanza del Diseño."
48. Alexander G. Ioannidis et al., "Native American Gene Flow into Polynesia Predating Easter Island Settlement," *Nature* 583, no. 7817 (2020): 572–577, https://doi.org/10.1038/s41586-020-2487-2
49. McKay and Walmsley, "Māori Time: Notions of Space, Time and Building Form in the South Pacific."
50. Langebaek Rueda, "La Élite no Siempre Piensa lo Mismo."
51. McKay and Walmsley, "Māori Time: Notions of Space, Time and Building Form in the South Pacific."
52. Roger Pita Pico, "Indígenas en Armas y Su Participación en las Guerras de Independencia de Colombia, 1810–1825," *El Taller de Historia* 14, no. 1 (2022): 121–152, https://doi.org/10.32997/2382-4794-vol.14-num.1-2022-4020
53. Paula Rodríguez, "Este es el Proyecto que Deja Listo Claudia López para Hacer una Ciudadela Indígena en Bosa, en el Sur de Bogotá," *Infobae* (November 10, 2023), https://www.infobae.com/colombia/2023/11/10/este-es-el-proyecto-que-deja-listo-claudia-lopez-para-hacer-una-ciudadela-indigena-en-bosa-en-el-sur-de-bogota/
54. Jhon Cerón, "Así Serán los Nuevos Centros de Felicidad de Bogotá," *El Tiempo*, November 26, 2018, https://www.eltiempo.com/bogota/asi-seran-los-nuevos-centros-de-felicidad-de-bogota-298204
55. Jiménez et al., *DTS: Formulación de la Modificación del Plan Parcial El Edén – El Descanso*.

Figure 9. The El Eden–El Descanso Urban Plan, in red, is the site chosen to build The House of the Sun and the Moon. Modified image based on work in Alcaldía Mayor de Bogotá, Decreto No. 521 de 2023, 2023.

In Colombia, a cultural centre has a similar impact on communities as the marae do for Māori. These centres serve diverse purposes and activities tailored to the needs of the surrounding neighbourhoods.[56] For the Muisca, aspects like metalwork and Indigenous rituals take centre stage.

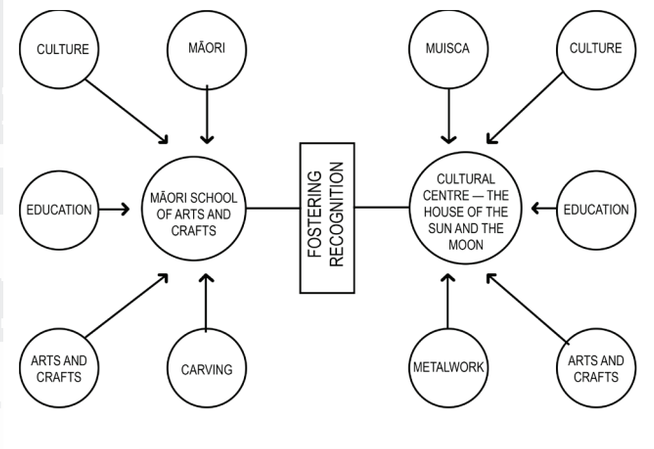

Figure 11. Significance of traditional arts and crafts education for Muisca and Māori cultures.

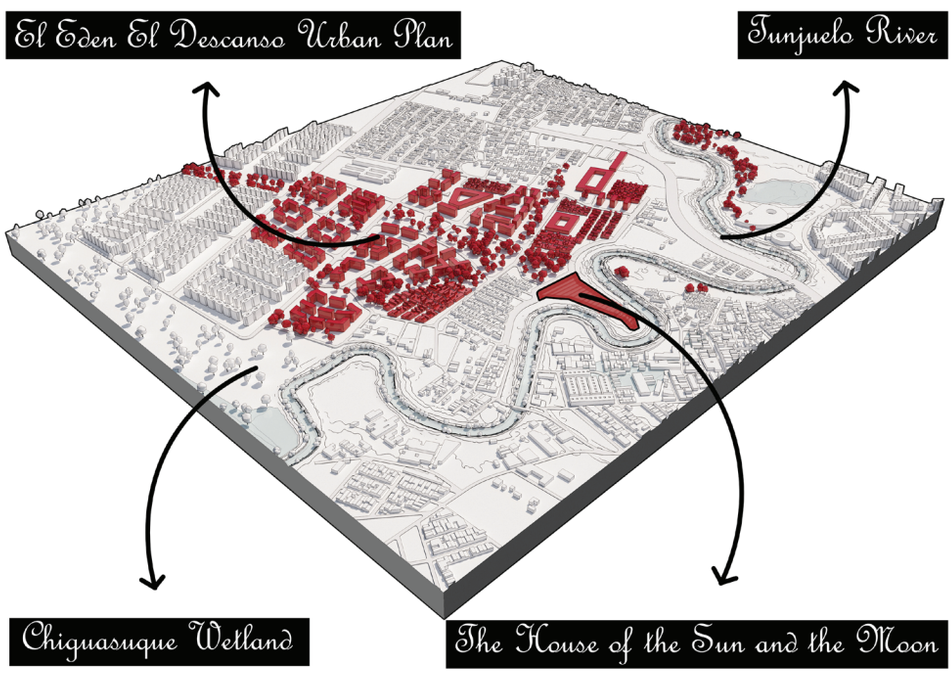

Figure 10. The El Eden – El Descanso Urban Plan, in red, is the site chosen to build The House of the Sun and the Moon.

56. Jennifer S. Holmes and Sheila Amin Gutiérrez de Piñeres, "Medellín's Biblioteca España: Progress in Unlikely Places," *Stability* 3, no. 1 (2014): 1–13, https://stabilityjournal.org/articles/10.5334/sta.cz

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As we reflect on these findings, architectural solutions must honour cultural traditions and modern needs in a decolonised approach. Establishing a cultural centre inspired by the Muisca worldview holds immense potential. Traditions can find a safe harbour within these tangible spaces, and cultural practices can flourish. By drawing on a framework such as Te Aranga Principles, but adapting it specifically to Muisca perspectives in Colombia, this initiative could empower the Muisca community to resist cultural assimilation. These architectural elements would serve as cornerstones for cultural revival.

Key aspects of Muisca's worldview could be translated into architectural decisions to function as principles of design for future projects. This paper suggests organising these principles into four thematic cardinal points based on the essential elements of Fire, Wind, Water and Earth. In Muisca traditions, elders' experiences (The Origin's Law) are told through the language and carried by the wind. Stories of the past form the foundation of their worldview and, continuously evolving and fluxing like water, are celebrated through rituals. These rituals are performed within ceremonial houses, often circumscribed in a spiral where fire is preserved at the heart of the structure. Earth's direct connection to the territory is vital, as it provides sustenance through siembro (cultivation) and sacred plants for medicinal purposes, ensuring the community's wellbeing.

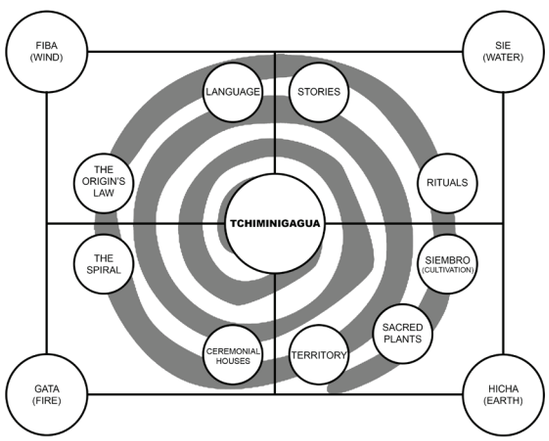

Figure 12. An initial approach to group the Muisca design principles. Modified image based on Gamboa Rodriguez et al.'s work in *Cosmovisión de la Comunidad Indígena Muisca de Bosa con el Territorio y Su Relación con el Ordenamiento Territorial de Bogotá*, 2015.

CONCLUSION

This paper lays the groundwork for designing the future House of the Sun and the Moon cultural centre, offering an initial approach to the project. Inspiration could be drawn from historical Muisca architectural practices, such as underground or partially submerged structures reminiscent of ancient ceremonial houses. Blending the building with the landscape, incorporating communal spaces for rituals, craftwork and agriculture, and using sustainable, locally sourced materials, could foster a living connection to Muisca heritage.

This collaborative approach, in which architects work closely with the community, mirrors the success of Māori architectural practices in Aotearoa. However, this paper is merely a starting point for future work. Further research could offer a more comprehensive understanding of the Muisca worldview, potentially integrating insights from other disciplines alongside architecture. Additionally, it is important not to fear modernity – traditions can be preserved through contemporary materials and innovative design decisions. This paper aims to serve as a guide while remaining true to the humble spirit of the Muisca tradition.

In the dance between architecture and cultural resilience, the Māori and Muisca communities imagine a future where our built environment reflects physical structures and the indomitable spirit of those who inhabit it. As we continue to learn from these rich traditions, may our architectural endeavours echo the heartbeat of heritage, weaving narratives that resist time and honour the land beneath our feet – gracias, Fié nzhinga. Thank you for embarking on this enlightening journey with me.

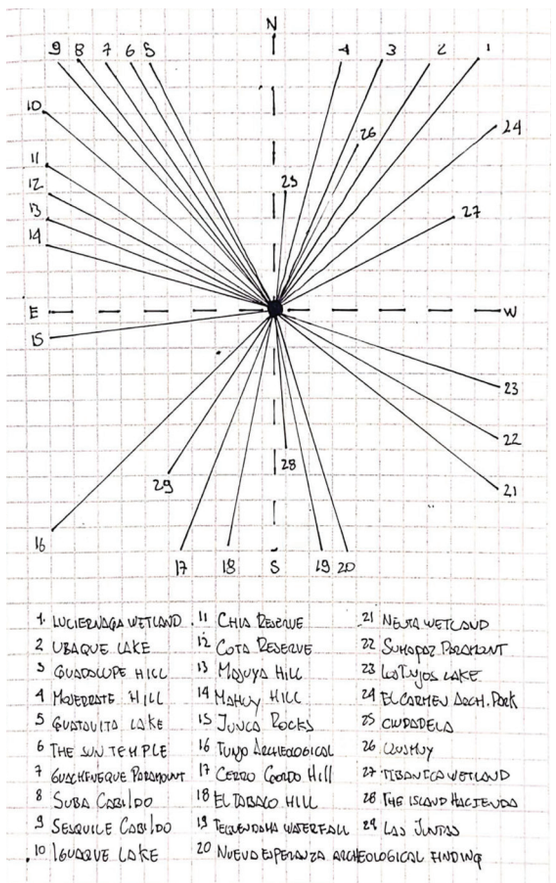

Figure 13. Sacred places for Muisca. Modified image based on Nayibe et al.'s work in *Suna Pedagógica Muisca*, 2023, 17.

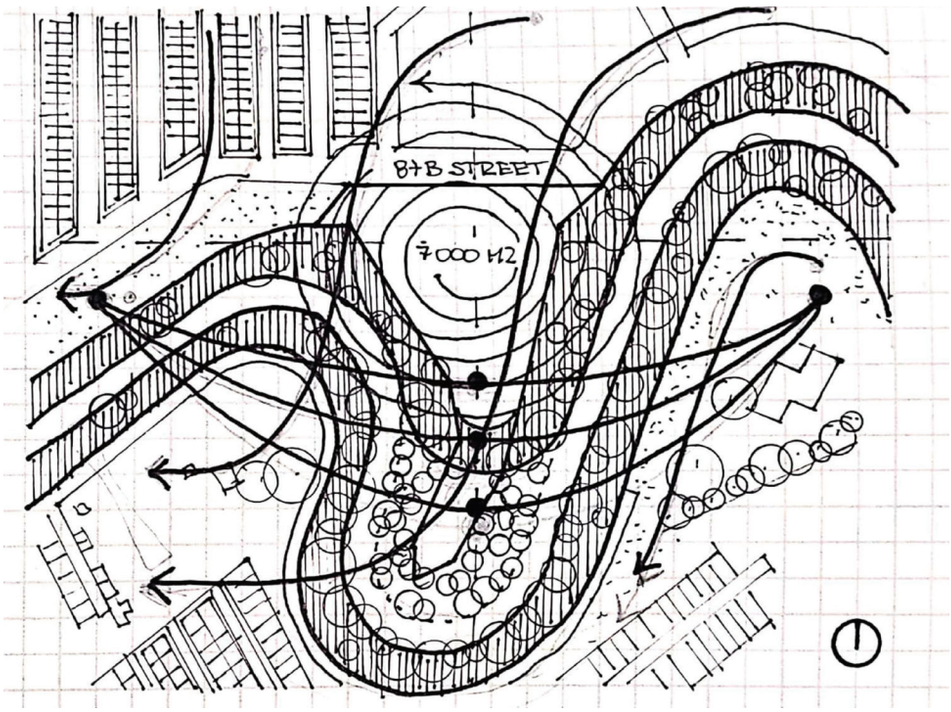

Figure 14. The overlapping layers of the the site's natural conditions, such as the wind, the river and the sun's path, combined with the spiral, the four cardinal points and sacred places for the Muisca community.

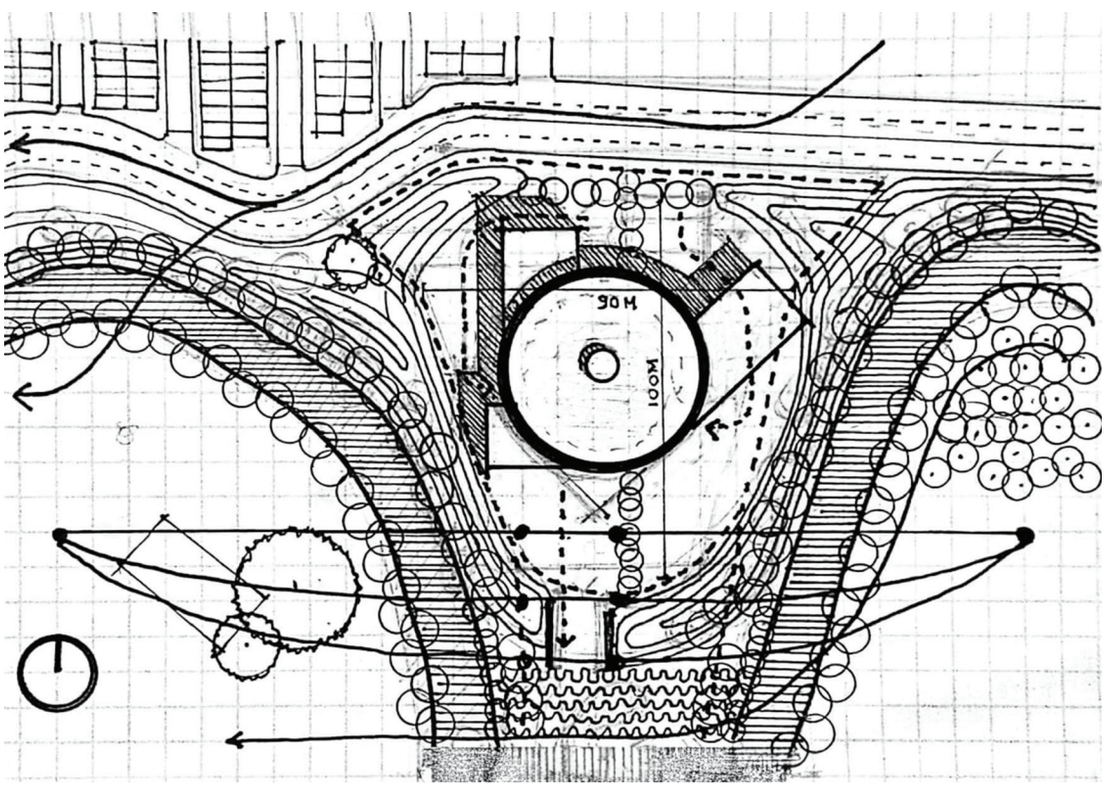

Figure 15. A very basic approach to the footprint of the Muisca House of the Sun and the Moon, showing the results of the effort to decolonise the way architecture could be approached from the Muisca worldview.

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https://doi.org/10.34074/aslm.2024107

DESIGNING ALONGSIDE MĀORI

Theorising Experiences of Relational, Place-Based Architectural Practice in Aotearoa

ABSTRACT

The research project "Designing Alongside Māori: New Possibilities in Practising Architecture as Tangata Tiriti" grew out of an observation of the lack of literature available for non-Indigenous architectural practitioners and students wanting to support Māori tino rangatiratanga (self-determination) in Aotearoa New Zealand.[1] Qualitative interviews were sought with non-Indigenous architectural practitioners identified by Māori architectural practitioners as having culturally sustaining architectural practice.

A thematic analysis of these interviews explored the relational, place-based approach that allowed practitioners to remain in their own cultural traditions while centring Māori ways of being, behaving and perceiving the world. This deeply relational approach to people and place strengthened interviewees' identities as tangata tiriti (people of the Treaty) in collective relationship with tangata whenua (people of the land), and through this, relationship with the whenua (land) itself. These relationships and connections to place are strong enough for interviewees to be able to face Aotearoa's colonial settler history, harm caused by mainstream architectural practice, and to persevere even though they know they will make mistakes as they seek to practise architecture in culturally sustaining ways.

Interview themes are placed within the context of more established tangata tiriti literature developed in other professions in Aotearoa, and in the context of relational, place-based approaches underpinning non-Indigenous decolonial literature in other countries with dominant White-settler populations. In place of an abstracted morality of culturally competent design practice, a relational, emplaced, culturally sustaining architectural practice is put forward with an emphasis on developing healthy relationships.

Keywords: tangata tiriti, architectural practice, architecture, decolonisation, settler colonialism

INTRODUCTION

In Aotearoa (known in the colonial world as New Zealand), a quiet transformation of Western architectural practice has been taking place. The research project "Designing Alongside Māori: New Possibilities in Practising Architecture as Tangata Tiriti" was driven from my experience of architecture school, perceiving that as a Pākehā student, applying kaupapa Māori frameworks such as Te Aranga Design Principles required an additional sensitivity and acknowledgement that I was working with another people's knowledge.[2] However, exposure to Palawa and Plangermaireener architect and academic Sarah Lynn Rees's concept of 'closing the non-Indigenous gap' reinforced the need for non-Indigenous people to take responsibility in developing culturally sustaining methodologies.[3] While Tauiwi (non-Māori) and Pākehā (White colonial settler descendants) have responded to kaupapa Māori methodology in the fields of education, health and law, there has not been a corresponding development of tangata tiriti-based culturally sustaining methodologies or literature within the field of architecture.

I also knew non-Māori architectural practitioners working in Māori contexts, and who were spoken of highly by Māori architectural practitioners. It became apparent that capturing the experiences of such non-Māori practitioners would be essential to formulate a rudimentary theory of culturally sustaining architectural practice. Qualitative interviews were employed to piece together a culturally responsive methodology for tangata tiriti architectural practice.

A total of eight practitioners were interviewed, with the number of Pākehā participants limited to half this number, for a more culturally diverse tangata tiriti voice. Interview

1. Abigail Temby-Spence, "Designing Alongside Māori: New Possibilities in Practising Architecture as Tangata Tiriti" (master's thesis, Unitec | Te Pūkenga, 2023), https://hdl.handle.net/10652/6220
2. Jade Kake and Jacqueline Paul, "Developing Indigenous Design Principles – Lessons from Aotearoa," in *Our Voices II: The De-Colonial Project*, ed. Rebecca Kiddle, luugigyoo patrick stewart and Kevin O'Brien, 1st ed. (Oro Editions, 2021), 224. This set of seven principles gives tangible outcomes when designing from core Māori cultural values. They are intended as a starting point for conversation, and more cultural values may be identified as integral to a specific project. These cultural values are also place based, so other sets of principles are used in different parts of the country, for example, the Tainui Design Guide in Waikato.
3. Sarah Lynn Rees, "Closing the Non-Indigenous Gap," in *Indigeneity and Architecture*, ed. Rebecca Kiddle, luugigyoo patrick stewart and Kevin O'Brien, 1st ed. (Oro Editions, 2022), 176–181.

participants were also of different generations and at different stages in their careers, ranging from architectural graduates to company directors and academics. These practitioners were identified through whanaungatanga (a network of existing relationships) as having demonstrated competency and humility in their relationships with tangata whenua and approach to mātauranga Māori, or Māori knowledge.

This research found that these architectural practitioners were adapting their behaviour, language and worldview to better reflect that of their Māori friends and colleagues. Crucially, while these practitioners were building their practice on foundations that respected mātauranga Māori, they took care not to claim Māori culture as their own. They also assessed their practice in its effectiveness in supporting Māori tino rangatiratanga (self-determination) and aspirations, employing knowledge and practices from their own cultural and intellectual traditions to do so.

The interviewees' responses emphasised a shared identity as tangata tiriti (people of the Treaty) in collective relationship with tangata whenua (people of the land), and through this, relationship with the whenua (land) itself. This relational, place-specific identity is predicated on a belief that colonisation benefitted successive generations of settlers while causing intergenerational harm to Māori people's physical, emotional, spiritual, cultural, political and economic wellbeing, shaping the lives of Māori and settlers today.[4] The collective tangata tiriti identity includes a present-day responsibility to care for all parties in the tangata tiriti–tangata whenua relationship, and architectural practice is seen as one way achieve this care.[5]

To give this form of professional practice a platform and a voice, interview responses were analysed using intersectional theory. Intersectionality highlights the overlapping power dynamics at play in settler societies, both in architectural practice (the field of research) and in the way accounts of these experiences are understood and communicated (the research process).[6] The application of intersectional theory was conducted in the context of a supervisory relationship between myself and kaupapa Māori researcher and lecturer Maia Ratana (Te Arawa, Ngā Rauru, Ngāti Raukawa). This relationship was essential for ensuring the research topic and process honoured tino rangatiratanga.

KEY TERMS

Knowledge of the collective relationships and overlapping power dynamics present in Aotearoa New Zealand is essential to understanding how these are elided in mainstream architectural practice, and integral to interviewees' culturally sustaining architectural practices. A brief glossary is provided for clarity:

Māori: The Indigenous people of Aotearoa. (Moriori are a smaller, second Indigenous people in Aotearoa who have not been considered in this research due to a lack of existing relationships with Moriori people.) Before the arrival of colonial settlers, Māori people did not use the term 'Māori' to describe themselves, and instead identified primarily and acted politically by hapū (kinship group).[7]

Tangata whenua: 'Tangata' means people, while 'whenua' translates both as land and a placenta. Tangata whenua means not just 'people of the land' but 'people born from the land', with a connection so deep the land is their ancestor.[8]

Te ao Māori: The Māori world, where interactions between people and the natural world are shaped by Māori cultural values.

White New Zealander: A person of British or European descent who may or may not identify as Pākehā. 'White' refers to British and European ways of living, which are presented as racially neutral despite over a century of systematic attempts to assimilate other cultural groups into this dominant culture.[9]

Tauiwi: Someone who is not Māori. Due to the prevalence of systemic racism, Tauiwi of colour are referred to as Tauiwi to distinguish them from White New Zealanders, the primary benefactors of systemic racism in Aotearoa.[10]

Pākehā: The Māori name for White descendants of early colonial settlers, this name has been adopted by a number of White New Zealanders as a place-based identity.

Te ao Pākehā: Spaces where White values and norms are imposed on people from other cultures. Euphemisms for White values and norms include 'standard practice' or 'mainstream'.[11]

Tangata tiriti: Literally 'the people of the Treaty', an inclusive term for all who are not Māori and see themselves in a collective relationship with tangata whenua, the people of the land. With this relationship come political responsibilities to uphold Māori people, culture and self-determination.

4. See Paul Tapsell's chapter 'Equity' in Paul Tapsell, *Kāinga: Tangata, Whenua, Taonga = People, Land, Belonging* (Bridget Williams Books, 2021), 99–117.
5. Uzma Z. Rizvi, "Decolonization as Care," in *Slow Reader: A Resource for Design Thinking and Practice*, ed. Ana Paula Pais et al. (Valiz, 2016), 85–95.
6. Intersectional theory is widely attributed to African-American civil rights advocate and law professor Kimberlé Crenshaw. For a useful summary of how intersectional theory challenges Western architectural practice and education, see Barlett School of Architecture, "International Lecture Series Autumn 2020: Intersectional Architecture, 7 October 2020," October 30, 2020, video, 1:31:02, https://vimeo.com/473449124
7. Ranginui Walker, *Ka Whawhai Tonu Matou: Struggle Without End*, rev. ed. (Penguin, 2004), 64.
8. Hana Burgess and Te Kahuratai Painting, "Onamata, Anamata: A Whakapapa Perspective of Māori Futurisms," in *Whose Futures?*, ed. Anna-Maria Murtola and Shannon Walsh (Economic and Social Research Aotearoa, 2020), 211–212.
9. Walker, *Ka Whawhai Tonu Matou*, 146–148, 151–152, 172, 198–199.
10. Mengzhu Fu and Mahdis Azarmandi, "To Centre Constitutional Transformation for Asian 'Tangata Tiriti'," *Te Tangi a te Ruru* (blog), February 4, 2023, https://tetangiateruru.org/2023/02/04/to-centre-constitutional-transformation-for-asian-tangata-tiriti/
11. Ngāti Raukawa and Ngāti Porou barrister and solicitor Ani Mikaere connects a refusal to consider perspectives that sit outside one's worldview with limiting creative possibility. At a professional conference she observed that "the feature that marked many of the Pākehā contributions to the discussion was a staggering lack of imagination and profound resistance to change. A surprisingly common refrain was 'if it ain't broke, don't fix it' – in other words, there is nothing currently wrong with our constitution so there is no need to tamper with it. Pākehā continued to echo this refrain (or the related notion that while it wasn't yet broken, it was better to maintain it than to wait until it broke before tending to it) no matter how many times they heard Māori insist that it was broken and that it required urgent attention." Annabel Mikaere, "Racism in Contemporary Aotearoa: A Pākehā Problem," in *Colonising Myths – Māori Realities: He Rukuruku Whakaaro* (Huia Publishers and Te Wānanga o Raukawa, 2011), 88.

While useful tools for establishing who is Indigenous and who is not, and how Whiteness affects or might be invisible to those involved, the terms 'Tauiwi' and 'Pākehā' risk obfuscating the many cultural traditions encompassed within these overarching terms. For this reason, it is considered best practice in tangata tiriti ally work to refer to Māori people by their hapū, and to add cultural specifiers to Tauiwi and Pākehā where these are known (e.g., Tauiwi of Thai descent or Pākehā of Welsh descent).[12] This practice honours the rich cultural heritage of people in Aotearoa New Zealand and challenges mainstream practice that does not name settler cultures, thereby presenting non-Māori as normative.

METHODOLOGY

The small amount of published material available to Tauiwi and Pākehā wanting to support tino rangatiratanga in architectural practice exposes two knowledge gaps. The first is concrete design practices architectural practitioners can adopt to design as tangata tiriti, and the second is the way accounts of these experiences are understood and communicated.

Interview responses were analysed using intersectional theory to understand the overlapping power dynamics at play in settler societies, both in architectural practice and in the ways different groups of people communicate and interpret these dynamics according to overlapping identities. Crucially, the application of intersectional theory by a Pākehā researcher was initially conducted in the context of my supervisory relationship with kaupapa Māori researcher and lecturer Maia Ratana. Themes were then placed within the context of other professions in Aotearoa New Zealand with more established tangata tiriti literature, and in the context of relational, place-based approaches found in non-Indigenous decolonial literature in other countries with dominant White settler populations.

American archaeologist Uzma Rizvi concludes that because praxis is embodied, it is not possible to "step outside" these bodies, and, further, that "if the body that is creating systems of knowledge employs intersectional praxis – the episteme itself knows the diversity of possible bodies it must account for rather than just assuming one norm."[13] Interpretations of interviewees' responses, and the siting of these interpretations within Aotearoa New Zealand's colonial history, were subjected to rigorous discussion and continual reflection on how the researcher's positionality may obscure or distort this process and influence the shaping of broader themes drawn from the research. The relationship between myself and Ratana was essential for ensuring the research topic, process and presentation honoured tino rangatiratanga.

Distinguished Professor Graham Smith (Ngāti Porou, Ngāti Tahu, Ngāti Apa, Ngāti Kahungunu) uses the phrase 'ringa raupā' (literally, toughened or blistered hands) to insist any theorising must be "linked to tangible outcomes that are transformative."[14] Associate Professor Hinekura Smith (Te Rarawa, Ngāpuhi) builds on Graham Smith's work, validating theorising from experiences (rather than practising from theory) as appropriate in emerging fields of knowledge in te ao Māori, where knowledge is understood as developing within deeply relational practice.[15] Hinekura Smith's methodology esteems the experiences of people-in-relationships as a rich source of learning, and places theory in service to describing these experiences.

This highlights a tension in developing culturally responsive tangata tiriti methodologies. Relationships with Māori people are essential to ensure theories uphold tino rangatiratanga, yet not all Tauiwi and Pākehā architectural practitioners have relationships from which they can draw learnings. Given the disproportionate burden already on Māori architectural practitioners, it is preferrable that Tauiwi and Pākehā architectural practitioners with existing Māori relationships share their learnings with members of the wider profession. These relationships are a privilege, not a resource to be consumed merely for Tauiwi and Pākehā benefit.[16]

Multicultural education academic and research director Django Paris (Jamaica, Anglo-American) has critiqued the abstract tendency of 'culturally competent' methodologies, and a focus on intent rather than outcomes in 'culturally responsive' methodologies. In their place Paris proposes 'culturally sustaining' methodologies to insist this work must uplift the cultures of those the researcher/practitioner is in relation with, and what is considered 'sustaining' is defined by members of that culture.[17] This means listening to and 'sitting with' critique of practices we have assumed are culturally sustaining (or at least culturally neutral), when in fact these practices cause harm and require adjustment to keep relationships well. Culturally sustaining practices align with tino rangatiratanga (self-determination), where Māori practitioners define for themselves what character and behaviour they require from tangata tiriti partners.[18]

Non-Indigenous architectural research that places the tangata whenua–tangata tiriti relationship within the context of settler colonialism is under-researched, even though a small number of tangata tiriti have been working with Māori colleagues and clients in architectural practice for some time. To capture these experiences, Ratana and I asked Māori architectural practitioners within our relational networks to identify Tauiwi and Pākehā architectural practitioners. This follows whanaungatanga

12. Observed by the author in conversations with Tauiwi and Pākehā Te Tiriti educators and activists.
13. Rizvi, "Decolonization as Care," 87.
14. Graham Hingangaroa Smith, "Kaupapa Māori Theory: Indigenous Transforming of Education," in *Critical Conversations in Kaupapa Māori*, ed. Te Kawehau Hoskins and Alison Jones (Huia Publishers, 2017), 79.
15. Hinekura Smith, "Whatuora: Theorising a Kaupapa Māori Arts-Based Methodology," *MAI Journal* 10, no. 2 (2021): 193, https://www.journal.mai.ac.nz/content/whatuora-theorising-kaupapa-māori-arts-based-methodology
16. Avril Bell, *Becoming Tangata Tiriti: Working with Māori, Honouring the Treaty* (Auckland University Press, 2024), 82.
17. Django Paris, "Culturally Sustaining Pedagogy: A Needed Change in Stance, Terminology, and Practice," *Educational Researcher* 41, no. 3 (2012): 95, https://doi.org/10.3102/0013189X12441244
18. Linda Tuhiwai Smith, *Decolonizing Methodologies: Research and Indigenous Peoples*, 9th imp. (Zed Books, 2006), 173.

as a value, where relationships, and the way one conducts oneself within them, are prized more highly than the project itself.[19]

Once participants were identified, hour-long qualitative interviews were held with these architectural practitioners, whose roles ranged from directors to architectural graduates in traditional architectural practice, cross-disciplinary work and academia. While more tangata tiriti were identified, eight were interviewed to fit within the research project timeline. Additionally, Pākehā participants were limited to half this number, for a broader tangata tiriti voice.[20] Indicative questions were approved by the ethics committee, and allowed me to adapt to each interviewee's specific context. These questions focused on their motivation to participate in the Māori world, and how this participation shaped their worldview and architectural practice. Emphasis was placed on factors that influenced their relationships with tangata whenua, and practices that attended to these relationships.

Interviews were conducted in person and online, and the recordings transcribed. The data was analysed using author and clinical therapist Jodi Aronson's pragmatic approach to thematic analysis.[21] The first step of thematic analysis is to "identify all data that relate to the already classified patterns," which in architectural practice could be beliefs, practices or kinds of experiences.[22] The second step is "to combine and catalogue related patterns into sub-themes" by paying particular care to language, naming, relational descriptors and agency expressed by the interview participant.[23] The researcher pieces together themes like a quilt-maker, "bringing together components or fragments of ideas or experiences" to create a coherent whole.[24]

The essay "Onamata, Anamata: A Whakapapa Perspective of Māori Futurisms," by kaupapa Māori researcher and creative Hana Burgess (Ngāpuhi, Te Roroa, Te Ātihaunui a Pāpārangi, Ngāti Tūwharetoa) and science academic Te Kahuratai Painting (Ngāti Manu, Te Popoto, Ngāpuhi), describes a relational and place-based worldview where human agency is conceived in the context of relationships reaching into the past and future.[25] Working from this perspective, the themes that are pieced together are considered in relation to Aotearoa New Zealand's colonial past, and hopes for relationships with genuine power-sharing in Aotearoa's future.

The third step is to support the argument for the chosen themes by holding them up against the literature.[26] A review of the limited literature from a non-Indigenous position available within the architectural profession includes industry publications and webinar recordings. The final step of thematic analysis is to stitch the literature and interview findings together so "the story that the interviewer constructs is one that stands with merit."[27] The following results and discussion stitch the experiences of interviewees together with comparative literature found in the fields of education, sociology, sociolinguistics, law and health to construct a picture of an alternative architectural practice.

LITERATURE REVIEW

Pākehā academic Bill McKay's "Māori Architecture: Transforming Western Notions of Architecture" is not specifically about how Tauiwi and Pākehā architectural practitioners can design well alongside Māori practitioners; however, McKay observes that "an understanding of Māori architecture can lead to a questioning of Western values," and claims "Indigenous architecture has something to teach the West." McKay argues:

> An examination of Māori architecture and the buildings of the South Pacific should not aim to take and incorporate Māori architecture and art into the body of Western knowledge or conventional notions of architecture. Rather this architecture can influence and transform Western ideas of architecture, time, space and our methodology, open up the possibilities of new architectural form and enrich our understanding of how one can live in the world of the South Pacific.[28]

McKay sees the creative potential in designing out of adopted Māori values, and that willingness to design differently is a natural extension of learning to see with a Māori worldview. Instead of assimilating our observations of Māori architecture into the Western architectural canon, the Western canon is broken open and expanded to make space for new ways of living as people in the Pacific. Assumptions of universality in architectural practice are replaced by an acknowledgement of place.

19. Burgess and Painting, "Onamata, Anamata."
20. While the Māori term 'Tauiwi' refers to all people without Māori ancestry, the subset 'Pākehā' is separated out to better understand the responsibilities of this dominant cultural group.
21. Jodi Aronson, "A Pragmatic View of Thematic Analysis," *The Qualitative Report* 2, no. 1 (1 April 1995): 1–3, https://doi.org/10.46743/2160-3715/1995.2069
22. Aronson, "A Pragmatic View of Thematic Analysis," 1.
23. Aronson, 2.
24. M. M. Leininger, "Ethnography and Ethnonursing: Models and Modes of Qualitative Data Analysis," in *Qualitative Research Methods in Nursing*, ed. M. M. Leininger (Grune and Stratton, 1985), 60, quoted in Aronson, 2.
25. Burgess and Painting, "Onamata, Anamata."
26. Aronson, "A Pragmatic View of Thematic Analysis," 2.
27. Aronson, 2.
28. Bill McKay, "Māori Architecture: Transforming Western Notions of Architecture," *Fabrications* 14, nos. 1 and 2 (2004): 1, https://doi.org/10.1080/10331867.2004.10525189

The dominance of White values and Western worldview is critiqued in Aotearoa New Zealand by Ratana, who believes Māori architectural practice has been, and can continue to be, both a "safekeeping of historical stories and whakapapa" and "an architectural statement opposing colonialism."[29] In a webinar recording between architectural practitioners Whare Timu (Ngāti Kahungunu, Te Arawa, Ngāti Tūwharetoa) and Elisapeta Heta (Ngātiwai, Ngāpuhi, Waikato-Tainui, Sāmoa, Tokelau), a list is given to prompt architectural practitioners to reflect on their architectural practice. This includes "developing capacity around us," and "honouring history beyond the colonial notion and canon of time and what is considered valid."[30] As no distinction is made between Indigenous and non-Indigenous practitioners it is inferred that both parties participate in this work. Heta emphasises the existing unequal workload currently placed on Māori practitioners:

> Understanding that this time of transitioning to genuine understanding, respect and cultural shift is demanding of Indigenous members within the profession – double labour, emotional, spiritual, mental, cultural, physical.[31]

Heta's language adds a relational component to this place-based work, and the forms of labour listed carry intertwined relational place and time-based understandings.

In Australia, Rees describes her experience of mainstream architectural education and practice as firmly grounded in White values and a Western worldview that sought to define her indigeneity for her, an experience shared by Meriam and Kaurareg architect Kevin O'Brien.[32] O'Brien recounts how an influential White architect felt comfortable promoting themselves as an expert in Indigenous design, and the acceptance of this in the wider non-Indigenous architectural profession:

> There's an architect who … became associated with, I guess, being a bit of an expert in all things Aboriginal. I thought that was a curious thing. It'd be like a male architect becoming an expert in female architecture. It seemed a bit odd. But it did make me think about what I may have to offer, as a kind of counter.[33]

O'Brien also experienced non-Indigenous clients defining Indigenous architectural expression and terminating a contract when he refused to capitulate to their idea of Indigenous design:

> They wanted an entry pavilion. I knew full well what they actually wanted, and I said to them "I can't do sticks and stones." So they got … a very high tech thing, and they decided I wasn't the right person.[34]

While *Our Voices: Indigeneity and Architecture* was written for an Indigenous architectural audience, one chapter is particularly accessible for non-Indigenous architectural practitioners. Rees's "Closing the [Non-Indigenous] Gap" inverts the Indigenous deficit implied in the term 'closing the gap' to being a deficit that sits with non-Indigenous people, which she believes has implications for "the way we practice and teach architecture." Rees then asks, "how do we empower our non-Indigenous colleagues in order that all architects can operate meaning fully in this space?"[36]

Rees largely describes this gap-closing work as being generally considered a task for Indigenous people, although language like 'empower' suggests Rees sees this imbalance of labour as temporary. Eliminating this unfair distribution of work requires non-Indigenous people to see this work as their responsibility, and be prepared to experience discomfort as they participate in it.[37] In her Australian context, Rees also notes hesitation to acknowledge colonial history as a key difference between her "Australian and international" colleagues:

> My international colleagues expressed no fears or apprehensions as they had none of the political or social baggage associated with growing up in Australia. They did however express a curiosity and frustration at the lack of conversation and literature they had encountered so far.
>
> This disparity of fear and apprehension was again evidenced when asked how they would approach working with an Indigenous client or stakeholder group. The Australians' predominant response was again a feeling a loss of where to start and how to communicate, whereas the international response was predominantly, "I would approach it like any other project," and take the time to learn and consult with a variety of people that do possess this knowledge and especially those who will use the space.[38]

It is unclear whether 'international' refers to colleagues working overseas or who had moved to Australia after training as architects, and no distinction is made between settlers who are White and those who are not. Rees concludes her chapter with the long list of topics non-Indigenous architectural practitioners need to learn to "mak[e] up for what their education system lacked," which ranged from

29. Maia Ratana, "Māori Architecture: A Response to Colonisation," *Asylum* 2 (2021): 129, https://www.unitec.ac.nz/epress/wp-content/uploads/2021/12/ASYLUM-2021_Maia-Ratana.pdf
30. Elisapeta Heta and Whare Timu, *Te Kawenata o Rata*, Te Kāhui Whaihanga New Zealand Institute of Architects, Webinar Series, June 23, 2023, video, 52:40, https://vimeo.com/838797416/a0f449b595
31. Heta and Timu, *Te Kawenata o Rata*.
32. State Library of Queensland, "Game Changers with Kevin O'Brien," November 12, 2023, video, 1:15:33, https://www.youtube.com/watch?v=v9F8tquU1HE
33. State Library of Queensland, "Game Changers with Kevin O'Brien."
34. State Library of Queensland.
35. Rees, "Closing the Non-Indigenous Gap," 176.
36. Rees, 176.
37. Heta and Timu, *Te Kawenata o Rata*.
38. Rees, "Closing the Non-Indigenous Gap," 180.

Australia's colonial history to recognising the multiplicity of Indigenous peoples and cultures within Australia.[39] And here Rees places some of this work with non-Indigenous architectural practitioners:

> Their education requires self-driven initiative, collaboration with Indigenous designers, attending conferences that present keynote Indigenous speakers, reading books such as this one or utilizing resources such as the International Indigenous Design Charter.[40]

In July 2023 Indigenous architects and built-environment professionals collaborated on a magazine feature called "What Can Non-Indigenous Designers Do?," outlining what they would like to see from the non-Indigenous community, from reflecting on their positionality, learning to practice in a way that honours relationships above design projects, and understanding architectural practice as existing within systems that prioritised White values.[41]

After reflecting on Rees's phrase 'closing the non-Indigenous gap', I wrote "Hoa Mahi: Speaking Worlds in Being" during a guided research elective paper and ongoing dialogue with Ratana. This essay situated this 'non-Indigenous gap' in Aotearoa, and placed the responsibility of addressing this knowledge deficit squarely on Tauiwi and Pākehā architectural practitioners:

> We are responsible for educating each other in our architecture schools and practices. It is not up to Māori to teach us what practising architecture as tangata tiriti looks like. As Pākehā, I realise I need to hone an additional skill: how to navigate being a Treaty partner without framing other Tauiwi as somehow lesser members in the relationship.[42]

Distinguishing between settlers who are White and who are not recognises that this re-education does not occur in a racially neutral context. Being comfortable talking about the racial bias behind architectural practices is necessary for assessing and transforming that practice to one that is culturally sustaining.[43]

Education Professor Alison Jones observes two mindsets among Tauiwi and Pākehā. In the 'saviour' mindset, architectural practitioners view themselves as 'helping' Māori practitioners, abdicating responsibility while feeling "benevolent for donating time or resources."[44] This "results in more diverse conference speakers, but it does not require the the transformation of Tauiwi architectural practice."[45] The 'exploiter' mindset views Māori people and te ao Māori "as a resource for our research, design projects or firms," and to be consumed to boost the design capability and brand of architectural firms.[46] Both are rejected in favour of a relational approach that creates greater possibility for creativity:

> We assume we lack essential knowledge and prepare to question everything, from forms and use to spatial relationships. It requires working closely with the community/client and releases us from the pressure of always needing to appear the 'expert'. Design is one of the few professions where approaching projects as a perpetual learner is considered a strength.[47]

This echoes Rees's international colleagues, for whom 'not knowing' is perceived as an opportunity to explore creativity possibilities.

RESULTS AND DISCUSSION

DRAWN TO TE AO MĀORI

Interviewees first became aware of the possibility of participating in te ao Māori in varying ways. Some were welcomed by Māori cultural groups as new migrants at primary and secondary school,[48] and witnessed Māori friends reject aspects of a British-based architectural curriculum to protect their Māori identity at architecture school.[49] Some were moved by the teaching of certain lecturers and design tutors, who were often (but not always) Māori, to explore a genuine connection with te ao Māori.[50] Tauiwi interviewees formed an additional connection through "beneficial adjacencies," aware that supporting tino rangatiratanga resisted systemic racism that also affected them.[51] Some were drawn to te ao Māori after seeing how it aligned with environmental protection, and enjoyed working on their first project with Māori clients, despite feeling culturally unprepared.[52]

39. Rees, 180.
40. Rees, 180. The International Indigenous Design Charter, like Te Aranga Design Principles, lays out goals of Indigenous-led design projects and concrete practices to achieve this work. Unlike Te Aranga Design Principles, and perhaps because it is intended for a broad international audience, the charter does not outline Indigenous cultural values from any Indigenous cultural group. This unmooring of concrete design practices from cultural values leaves the document at risk of being perceived as a list of performance outcomes and adherence to this based on an abstracted morality. See Russell Kennedy et al., *International Indigenous Design Charter* (Deakin University, 2018), https://www.theicod.org/storage/app/media/resources/International_IDC_book_small_web.pdf
41. Danièle Hromek, "Dossier: What Can Non-Indigenous Designers Do?," *Architecture Australia* 112, no. 4 (July 2023): 43–61.
42. Abigail Temby-Spence, "Hoa Mahi: Speaking New Worlds into Being," in *12 Stories: Writing about Architecture*, *Volume 7* (Te Kāhui Whaihanga New Zealand Institute of Architects, 2022), 26.
43. Temby-Spence, "Hoa Mahi," 24.
44. Temby-Spence, 24.
45. Temby-Spence, 24.
46. Temby-Spence, 24–25. I am indebted here to Alison Jones's insight that behind the request to be taught is often the darker, implicit, "let me mine you for your discoveries." See Alison Jones, *This Pākehā Life: An Unsettled Memoir* (Bridget Williams Books, 2020), 197.
47. Temby-Spence, 26.
48. Participants B, E.
49. Participants A, B, E, G.
50. Participants A, B, D, E, G.
51. Participants B, D, G, H.
52. Participants C, F.

Interviewees noted that in te ao Māori people wanted to know them beyond their professional role "to know them better as a person"[53] and everyone was expected to "bring more of themselves, and then you encounter the whole person."[54] An embodied, emplaced relationship with Māori honours the unique connections to the people, places, deities and more-than-human world whose lives, actions and ideas have made us who we are today. Ironically, adopting Māori cultural values encouraged tangata tiriti to connect more deeply to their own own cultures. Interviewees related how engagement with te ao Māori encouraged us all to "know where you're from, be proud of where you're from," and that strengthening connections to one's ancestry and culture is met in te ao Māori with respect.[55]

Whakapapa, connection, is at the heart of te ao Māori, the Māori world. Burgess and Painting assert, "Whakapapa weaves all of existence together into an ever-expanding web of intimate relationships, forming the basis of Māori ways of being, knowing and doing."[56] And this web includes tangata tiriti. In learning Māori ways of being, knowing and doing, tangata tiriti learn how to relate well to people within and outside their cultural and intellectual traditions, and how to relate well to the more-than-human world. These connections stretch back into the past and reach into the future, ever expanding and dynamic, like a murmuration of birds (Figure 1).

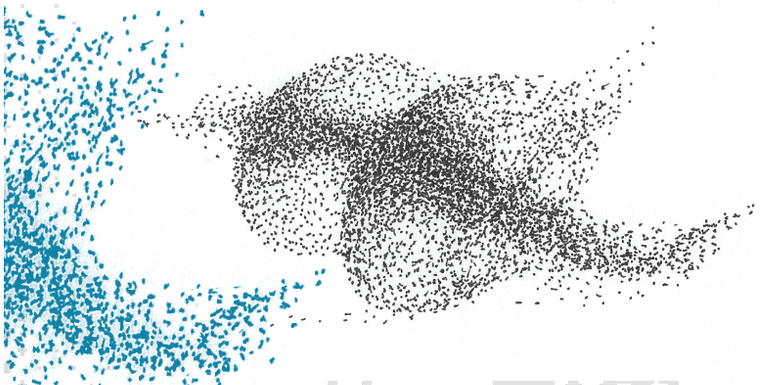


Figure 1. Whakapapa imagined as a murmuration of birds.

Mana is a cultural value that describes the quality of these connections. There is no direct English translation for mana, which fills each relationship in this dynamic, interconnected web. Jenny Lee-Morgan, director of kaupapa Māori research centre Pūrangakura, begins with manaakitanga to understand mana:

> Manaakitanga is, in essence, the affirmation and enhancing of mana through the processes and practices that we undertake in the care and nurturing of others; the respect and generosity that we show others; and the reciprocity that is embedded within that practice.[57]

While mana is directly related to Māori origin narratives (and therefore not applicable to those who are not Māori), people from all cultural origins are invited to participate in relationships shaped by manaakitanga.[58] Upholding the honour and dignity of all people turns the architectural practitioner's eyes beyond the traditional fee-paying clients of our profession to all in need of our architectural skill. Interviewees spoke of working for services-in-kind, using relationships with people within government agencies to, for example, agitate for larger, culturally appropriate social housing, and a desire to shape the built environment to address systemic injustice.[59]

FINDING POINTS OF CULTURAL CONNECTION IN ARCHITECTURAL PRACTICE

As interviewees engaged with te ao Māori, they found the honouring of whakapapa extended to cultural practices and ways of relating that had been supressed or seen as less desirable in architectural practices where Pākehā norms predominate. One Tauiwi architect had moved to Aotearoa and used architectural practices shaped by Western values in all projects for over a decade, regardless of whether their clients were tangata whenua or tangata tiriti. They described the slow realisation that a Māori-informed approach was not only appropriate in Aotearoa, but simultaneously affirmed aspects of their own cultural identity:

> I felt this kind of comfort, sitting around these meetings with Māori. It's the concept of time, the concept of kōrerorero, the backwards and forwards of people's ideas and whakaaro. Something made sense to me, something familiar: this was something that I hadn't seen for a long time. I had been practising architecture in New Zealand in the Pākehā world only. [60]

For this practitioner, architectural practice "in the Pākehā world" necessitated abandoning their own cultural ways of relating, while architectural practice in the Māori world restored these relational ways.

53. Participant A.
54. Participant F.
55. Participant E.
56. Burgess and Painting, "Onamata, Anamata," 208.
57. Leonie Pihama, "Mana Atua, Mana Tangata, Mana Wahine," in *Mana Wahine Reader: A Collection of Writings, 1999–2019, Volume 2*, ed. Leonie Pihama et al. (Te Tākupu, Te Wānanga O Raukawa, 2022), 192.
58. Conversation with Maia Ratana and Irene Farnham (Ngāti Awa, Ngāi Tūhoe), October 16, 2024.
59. Participants B, C, E, F.
60. Participant H. Kōrerorero is to talk or converse, and whakaaro is to think, plan or make decisions together.

International examples appear to replicate this experience. Scottish Gael sociolinguist Paul Meighan-Chiblow uses the phrase 'emplaced ethical relations' to describe relating well as a non-Indigenous person working with Indigenous communities in Turtle Island (North America).[61] His approach incorporates something akin to whakapapa as he practices out of dùthchas, an ancient Scottish Gaelic way of relating as people deeply connected to land and responsible for its wellbeing.[62] For tangata tiriti who no longer have ancestral cultural knowledge, reclaiming this may offer a way of connecting relationally and in place with te ao Māori.

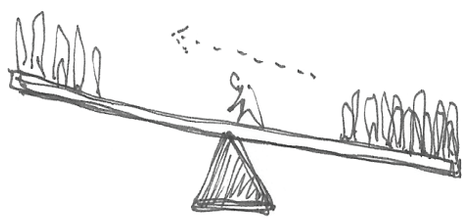
LEARNING TO SEE FROM A MĀORI PERSPECTIVE

In each account is the passing of time. The Tauiwi architect spoke of "making sense" of feelings of comforting familiarity in a 'series of meetings', not in a single moment; likewise, interviewees' relationships with Māori friends and lecturers took place over a semester or an entire degree programme. Gram-Hanssen, Schafenacker and Bentz list four aspects "embodying 'right relations': listening deeply, practicing self-reflexivity, creating space, and being in action."[63] Each of these embodied responses takes time, as listening deeply and self-reflexivity are a cyclical process "to uncover blind spots, question assumptions and allow oneself to be affected, even transformed."[64] As the listener allows themselves to be transformed, their new perspective makes it easier to accept the experiences of those that do not sit within their worldview, and this acceptance prompts further transformation.

Interviewees' language fits within this understanding. They see their practice within "a highly relational space"[65] where there is a "continual development of relationships."[66] They believe they have changed because their learning was not just exposure to "an idea, it's actually a human interaction."[67] Interviewees spoke of "allowing myself to be affected"[68] and the need to be "willing to unlearn"[69] Western practices, acknowledging the "anxiety and fear"[70] when "you have to feel your way"[71] and may "feel intimidated in their space."[72] Transformation occurred when interviewees participated in Māori spaces. Interviewees insisted "you need to authentically spend time with Māori, in the Māori spaces,"[73] and that "I've learned, just by being around te ao Māori."[74] Sitting with their discomfort means, over time, "there's a whole lot of [Māori] things that have become normalised for me."[75] Interviewees adopted Māori kawa (protocols) to guide them, as these offered "structural ways of dealing with human interaction"[76] and were designed for "cultural exchange … whether that's between iwi or [between] different peoples, different cultures."[77]

In te ao Māori, humans and the more-than-human world relate as whānau (family). As humans have existed for less time on this earth, humanity is the younger sibling who learns from the natural world how to keep it in balance.[78] This balance can also be called 'being in good relation', which is how Burgess and Painting translate whanaungatanga: when everything in existence is in a relationship with everything else, it is possible for those relationships to be good, even as they require work to keep them in balance.[79]

In a Western worldview it is possible to be deeply concerned with ecological imbalance without considering systemic power imbalance between settler and Indigenous populations. In te ao Māori, ecological, cultural and political balance is intertwined.[80] Interview participants recognised many Pākehā architectural practices caused imbalance, and they needed to learn new ways of being, thinking and seeing to work with Māori to restore balance (Figure 2).



Te ao Māori places humans within non-human world and esteems people for their ability to maintain ecological, cultural, social and political balance.

Western valuing of (certain) humans over others and over non-human world has caused severe ecological, cultural, social and political imbalance.

Figure 2. Tangata tiriti join the work to restore balance.

61. Paul J. Meighan, "Dùthchas, a Scottish Gaelic Methodology to Guide Self-Decolonization and Conceptualize a Kincentric and Relational Approach to Community-Led Research," *International Journal of Qualitative Methods* 21 (January 2022): 10, https://doi.org/10.1177/16094069221142451
62. Meighan, "Dùthchas," 4–6.
63. Irmelin Gram-Hansse et al., "Decolonizing Transformations Through 'Right Relations'," *Sustainability Science* 17, no. 2 (March 2022): 673–685, https://doi.org/10.1007/s11625-021-00960-9
64. Gram-Hanssen et al., "Decolonizing Transformations Through 'Right Relations'," 679.
65. Participant F.
66. Participant C.
67. Participant F.
68. Participant F.
69. Participant H.
70. Participant F.
71. Participant C.
72. Participant E.
73. Participant H.
74. Participant E.
75. Participant C.
76. Participant F.
77. Participant E.
78. Burgess and Painting, "Onamata, Anamata," 211.
79. Burgess and Painting, 210.
80. For a sense of how all three intertwine in architectural practice, see Kake and Paul, "Developing Indigenous Design Principles – Lessons from Aotearoa," 220–227.

ACCEPTING THAT WESTERN ARCHITECTURAL PRACTICE IS NOT RACIALLY NEUTRAL

Interviewees saw the "normal structures"[81] of mainstream architectural practice as "perpetuating colonialism,"[82] which hindered "Māori and their reclaiming of their culture in Aotearoa."[83] Rejecting the myth that mainstream architectural practice is racially neutral allowed interviewees to overcome "not feeling like you know enough to take that first step," as the alternative is "your inaction is causing further harm."[84] Interviewees experienced resistance among architectural practitioners who did not want to acknowledge "harm and pain in the past,"[85] and experienced the "defensive and closed mindedness of people if you talk about anything like racism and white supremacy and decolonisation."[86]

Although interviewees noticed attitudes towards genuine engagement with te ao Māori have "changed a lot in the last five years," they still observed a tendency towards the "abstraction" of concepts instead of an embodiment of these concepts within relationship. This led to architectural practitioners being "quite performative,"[87] particularly if they saw engagement with te ao Māori as "a trend" that can "benefit you from a transactional point of view."[88]

This led to practices that made architectural practitioners culturally destructive: outsourcing responsibility for educating oneself to a cultural advisor (and omitting the advisor's contribution when accepting awards),[89] demonstrating a "lack of respect" by deprioritising te reo Māori pronunciation,[90] and assuming Pākehā time-constraints and design processes were appropriate when employed in Māori contexts, when they were interpreted as disrespectful[91] or intimidating.[92] One noted, "it's usually Māori that get sidelined" as projects progress, and "the first thing that falls off is those important relationships."[93] The language and body language of participants reflected a sense of shame in the lack of reciprocity among Tauiwi and Pākehā architectural practitioners.

Non-Indigenous linguists Shoshama Dreyfus and Anne Hellwig studied non-Indigenous people's land acknowledgments in Australia and found a clear speech distinction between those who viewed colonial history abstractly, and those who understood this history as having a material impact on people in the present.[94] Those who viewed settler colonialism as abstract were likely to offer land acknowledgements in a "perfunctory manner," and used the past tense and passive voice.[95] In contrast, non-Indigenous people who acknowledged the on-going theft of Indigenous land and systemic attempts to assimilate First Nations and Torres Strait Islanders into White Australian culture used the present and active tense. They were also more likely to speak on behalf of their cultural group by using 'we', and used much more particular language to connect colonialism to the specific context in which they were making the acknowledgement.[96]

Interviewees avoided abstraction by ensuring that their practice is worked out in the context of relationships, and in the geographical, cultural and political context of place. Being emplaced requires acknowledging that land theft by the Crown severed not just cultural and spiritual wealth, but devastated the economic wealth of hapū, removing the possibility of building intergenerational wealth while settlers built intergenerational wealth on the foundation of this stolen land.[97] A Pākehā interviewee recognised that "some of my family history goes back to early colonisers of Aotearoa … you have to acknowledge that to move forward."[98] A Tauiwi interviewee viewed Indigenous experiences through the lens of place to distinguish between the experience of their cultural group and Māori people's experience: "We have had colonial forces shape the tracking of our current existence, but in terms of Aotearoa, I think that's an important distinction for me to make, we haven't experienced the loss of our lands here."[99]

A third interviewee, with extensive knowledge of te Tiriti o Waitangi and Aotearoa's colonial history, clearly rejected the idea of obligation-based practice: "The notion of doing this as a Treaty obligation has never occurred to me … To me it's about respect, personal relationships. Building those connections."[100] The language of interviewees acknowledged material harm and a desire to restore what has been destroyed.[101] This was consistent, regardless of whether the interviewee had directly benefited from intergenerational wealth gained from stolen land, or had simply been complicit in systems that continue to benefit White New Zealanders over other racial groups.

81. Participant F.
82. Participant D.
83. Participant H.
84. Participant A.
85. Participant A.
86. Participant H.
87. Participant D.
88. Participant H.
89. Participant G.
90. Participant C.
91. Participants B, C, E, G.
92. Participant E.
93. Participant B.
94. Shoshana Dreyfus and Anne F. J. Hellwig, "Meaningful Rituals: A Linguistic Analysis of Acknowledgements of Country," *Journal of Australian Studies* 47, no. 3 (July 3, 2023): 590–610, https://doi.org/10.1080/14443058.2023.2236618
95. Dreyfus and Hellwig, "Meaningful Rituals," 594.
96. Dreyfus and Hellwig, 597, 606–610.
97. Tapsell, *Kāinga: Tangata, Whenua, Taonga = People, Land, Belonging*, 73.
98. Participant A.
99. Participant D.
100. Participant E.
101. Participants A, B, D, E, F, H, G.

STEPPING UP AND STEPPING BACK

Interviewees saw their allyship as two-fold, working to support Māori aspirations, and educating themselves and fellow architectural practitioners in culturally sustaining practice.

They recognised that Māori bore the brunt of resisting culturally destructive practices in the architectural profession, and understood allyship as being the person "willing to get into trouble with you – or for you."[102]

They agreed that "it's not on Māori to be teaching us anymore,"[103] and that "we need to be educating ourselves"[104] on "how to do things collectively"[105] and about "privileges and how privileges embed bias."[106] Deepening the architectural profession's understanding of Aotearoa's colonial history and its present-day ramifications is an essential part of this.[107] One interviewee mused, "Imagine if Aotearoa's history had been taught for the last thirty to forty years … how we may all see ourselves culturally, and what our attitudes to tangata whenua would be like."[108]

Interviewees noted "there's quite a lot of ego in architecture," and that culturally sustaining practice required architectural practitioners to "step back a little, and listen"[109] to ensure "we're not imposing into anyone's space, and that everything we're doing is mutually beneficial."[110] Several interviewees spoke of waiting to speak until they had heard from everyone else, to create space for others to volunteer cultural knowledge,[111] and that they were trusted because they demonstrated "respect, humility and [I] don't pretend to know the answer."[112] They believed their culturally sustaining practice was "all about partnership,"[113] where their role was to allow "people to harness those [design] skills."[114]

Sociologist Avril Bell (Pākehā) uses the language 'stepping up and stepping back' to describe how tangata tiriti gauge whether listening or acting is more appropriate in each situation, and suggests that listening while being open to being changed by what is heard takes considerable physical energy.[115] What appears outwardly passive is inwardly a form of acting on oneself.

LAYERS LOCATING KNOWLEDGE IN TIME AND SPACE

Interview participants saw knowledge existing across time and anchored to place and space. That is, they understood that mana whenua are holding the most extensive knowledge through living in connection with their whenua over a great period of time. Even if an individual's knowledge had been severed through colonial violence, this did not render the collective knowledge irrelevant, but was an imbalance that needed to be put right. Participants' views mirrored those of Burgess and Painting:

> Being in good relation occurs in place. Those who have mana whenua [status] have deep, intergenerational relationships with these areas, practised and refined over generations. Mana whenua know best how to be in good relation in any given area.[116]

Participants understood the question 'No hea koe? Where are you from?' is not asked to define who belongs and who does not, but to discern the strength of these connections, and honour those who hold the deepest knowledge about a particular area. Mana whenua have laid foundational knowledge in Aotearoa, and other peoples may lay their knowledges over the top. Even if these later layers offer vital insight, they may neither subsume Indigenous knowledge (by distorting it to fit different cultural aims), nor appropriate it (act as if this knowledge is now theirs), override or erase it. This way of seeing knowledge could be thought of as strata (Figure 3), where later layers do not affect, destabilise, erase or alter deeper layers.

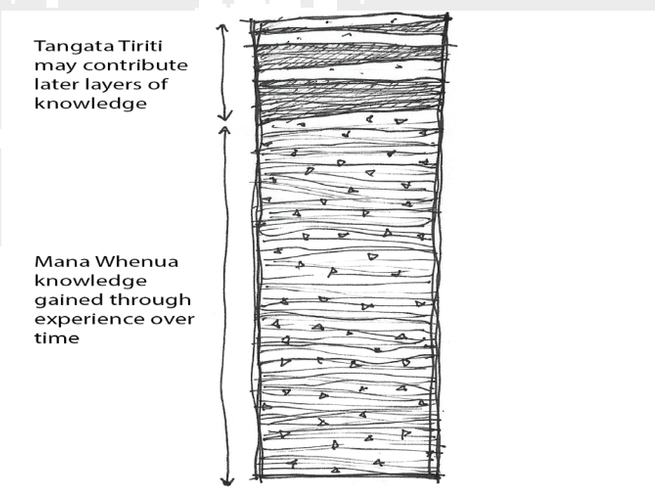


Figure 3. Knowledge as strata.

102. Participant D.
103. Participant F.
104. Participant G.
105. Participant F.
106. Participant D.
107. Participants A, B, D, E, F, H, G.
108. Participant H.
109. Participant C.
110. Participant B.
111. Participants A, B, E.
112. Participant E.
113. Participant G.
114. Participant E.
115. Bell, *Becoming Tangata Tiriti*, 95.
116. Burgess and Painting, "Onamata, Anamata," 212.

Reorienting architectural practice does not equate to rejecting all mainstream design practices.[117] Instead, each practice is evaluated for its efficacy in affirming tino rangatiratanga, and uplifting tangata whenua and tangata tiriti alike.[118]

Valuing whakapapa extends to celebrating the lineage of architectural practices and theories that are culturally sustaining. In a conversation with Pākehā architectural practitioner Maurits Kelderman (the Netherlands), he shared how, as an architectural student alongside Rau Hoskins (Ngāti Hau, Ngāpuhi), they were introduced to the concept of co-design by the English architect and lecturer Tony Ward, who in turn learned this design practice in California.[119] While Hoskins and subsequent Māori architectural practitioners continue to refine co-design practice, whakapapa honours the people and places connected with how it came to be taught and incorporated into Aotearoa architectural practice.

In the same way, interviewees believed the whakapapa of Māori consultants' and clients' knowledge and practices deserved to be recognised. Omitting acknowledgement of Māori consultants' contributions when accepting awards was considered disrespectful and dishonest, as "we've done the design and presentation work, but the knowledge belongs to them."[121]

EMBODIED AND EMPLACED: STITCHING ONESELF INTO TIME AND SPACE

Interviewees proposed a relational, place-based architectural practice and called this a "genuine, more embodied response," and a "wellbeing oriented" approach to "power sharing."[122] They believed "keeping relationships well," with the goal of investing in each other and journeying together, was more applicable in embodied practice than an abstracted "morality around labour," which "creates a climate of anxiety around right or wrong."[123]

Interviewees described their architectural practice as both facilitatory and like quilting, piecing fragments of cultural, architectural and environmental knowledge together so each knowledge remains identifiable, with its own distinct whakapapa, while contributing to a cohesive whole that is embodied and emplaced: "I feel our job is to give expression to those things [of cultural significance]," regardless of whether they are "recognised or not – they're there in the fabric of the building."[124] Centring relationships with people and place motivated interviewees to experiment with their architectural practices, knowing "it won't be perfect, but it is like beachhead."[125] Practices develop over time, involving building and refining what has come before: "You're nervous the first time, you overreach in certain places or you get things wrong, but in the next revision … the subtleties come in as the details develop."[126]

To place this process of 'feeling your way' in time as well as place, Burgess and Painting explain that the temporal concept of 'the present' is not part of Māori reality, with "no direct translation of the present in te reo Māori."[127] They continue:

> We comprehend the present as that fleeting moment where the past and future meet. By meeting, the past and future interact. At this point of interaction, whakapapa is laid down … Time is not linear, and the 'present' is not the centre of existence, there is no centre. In laying down whakapapa, we are not standing on top of our whakapapa, we are immersed in it … Each and every thing in existence is a fleeting embodiment of the meeting of past and future generations, in what Moana Jackson describes as a 'series of never ending beginnings.'[128]

From this perspective, the present is a series of moments where we choose which practices and values to reflect into the future: which values to uphold, reject or adopt, and which practices to maintain, learn or cease. Architectural practice is shaped by our agency, as we sort through our values and practices to decide what to stitch together to form this, our practice.

The scrap-quilt is more applicable as a metaphor than woven fabric for the conceptualisation of culturally sustainable practice, where the inter-weaving of warp and weft could be mistaken for blending. One interviewee insisted that the architectural profession reject the "blending of worldviews," as blending ignores unequal power-relations and does not honour the rich legacies behind the "contradictions" and "variations" within te ao Māori worldviews and the many worldviews of tangata tiriti.[129] The challenge is how to "consciously create this third space where there's understanding that not all perspectives will merge, beautifully and cleanly."[130] As non-Indigenous architectural practitioners bring their relational, place-based practice to support Māori aspirations, one interviewee noted, "you are stitching the two together, and I think that's where the skill lies."[131]

This commitment mirrors work in other fields where protecting the distinct cultural identities of people on both sides of the tangata whenua–tangata tiriti relationship

117. Smith, "Kaupapa Māori Theory: Indigenous Transforming of Education," 93.
118. Smith, 93–94.
119. Maurits Kelderman, conversation with the author, July 4, 2023.
120. Participant G.
121. Participant A.
122. Participant D.
123. Participant D.
124. Participant F.
125. Participant C.
126. Participant C.
127. Burgess and Painting, "Onamata, Anamata," 218.
128. Burgess and Painting, 218–9.
129. Participant A.
130. Participant A.
131. Participant E.

acknowledges how "the hyphen both joins and separates."[132] Just as hapū come together without losing their distinct identities, differences between tangata whenua and tangata tiriti are to be acknowledged, celebrated and protected, as are differences within tangata tiriti.[133] This is the beauty of kotahitanga: working together with unity of purpose, without any expectation that different parties share the same cultural traditions, methodologies or practices.

The inclusive nature of whakapapa makes space for culturally sustaining practice among the diverse cultural and intellectual traditions of tangata tiriti. Variation among traditions offers different points of connection, and the possibility of rich and varied architectural expression in this process of creating-in-relation (Figure 4). By viewing ourselves as a place where the past and future collide and interact, we work with agency towards a built environment shaped by Māori cultural values and at home in Te Moana-nui-a-Kiwa, the Pacific.

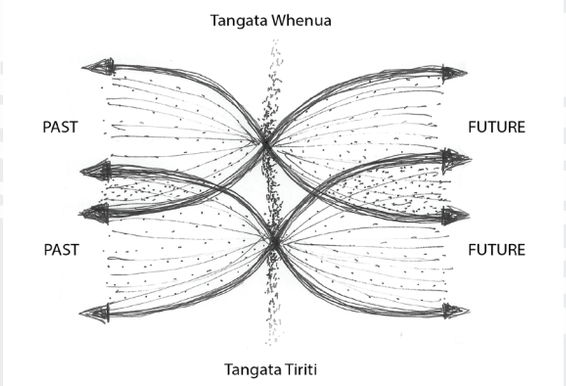


Figure 4. A culturally responsive methodology in which tangata tiriti adopt Māori ways of relating in their architectural practice alongside tangata whenua.

CONCLUSION

The research found that it is possible to appreciate and apply Māori cultural values as Tauiwi and Pākehā architectural professionals, and in doing so find one's own cultural identity affirmed as people-in-relation to Māori. Interviewees recounted that as their relationships with Māori people deepened, and they allowed themselves to be shaped by their growing understanding of mātauranga Māori, their sense of connection and responsibility to Aotearoa New Zealand grew. This glimpse into culturally sustaining, relational, place-based architectural practice offers an alternative way of working for architectural practitioners prepared to acknowledge the ongoing material harm caused by Aotearoa New Zealand's colonisation. It is a vibrant alternative to mainstream architectural practice and its tick-box approach to cultural competencies.

Several significant limitations affected this research. The first is the anonymous nature of the interviews as a condition of the research ethics approval. This meant that it was not possible to explore how interviewees' culturally sustaining practice impacted their built work, as this would have made it possible to identify them. The second is the time and space constraints that limited the ability to explore the connections between tangata tiriti allyship here and non-Indigenous decolonial practice internationally, or the potential to reconnect design practice with supressed cultural knowledge such as the Scottish Gaelic concept of dùthchas or disused construction methods. All three areas would benefit from further research. In the meantime, this research is offered to future researchers as material to refine and extend.

What may be perceived as a third limitation is the way in which the methodology used to gather, analyse and arrange this research into themes is not distinct from the relationships acknowledged in this research, and as such remains subjective. In kaupapa Māori research this is considered inevitable and desirable, as researchers do not work in abstracted isolation from their research communities, and knowledge is pursued primarily for what it contributes to people. Theories and methodologies are developed and tested in the context of relationships and serve the work of blister-inducing transformational change. I believe this subjectivity is equally appropriate in tangata tiriti research.

Finally, this research explores the possibility of designing alongside Māori, Aotearoa New Zealand's largest Indigenous group. In terms of future work indicated, relationships with Moriori people also deserve considered attention.

132. Bell, *Becoming Tangata Tiriti*, 85.
133. Te Kawehau Hoskins and Alison Jones, "Indigenous Inclusion and Indigenising the University," *New Zealand Journal of Educational Studies* 57, no. 2 (December 2022): 305–320, https://doi.org/10.1007/s40841-022-00264-1

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https://doi.org/10.34074/aslm.2024108

DISCUSSING METHODS AND METHODOLOGIES

Chinese Architectural History – Concepts and Organising Principles

ABSTRACT

This paper aims to analyse the methods used in the existing literature on architectural history that introduce the characteristics of Chinese architecture. The investigation sought to address the research question: How might the characteristics of Chinese architecture be methodically classified and systematically organised to encourage creativity and innovation for architecture students? Following a preliminary argument, three seminal architectural history books formed the core foundation of this study. One significant finding from the review is that no single method of categorisation can comprehensively illustrate the entire history of Chinese architecture. All systems of classification present a process and effort to balance the need for in-depth knowledge and the demand for a holistic overview. The paper proposes an 'integrated system' to systematise and present the subject to architecture students as a possible answer to the question posed in this study. This paper hopes to contribute to the current and ongoing local and international debate on the pedagogy of architectural history.

Keywords: Architectural history, methodologies, Chinese architectural history, architectural characteristics, systems of classification

INTRODUCTION

In 1995 the *Journal of Architectural Education* published Hans Morgenthaler's article "Chronology Versus System: Unleashing the Creative Potential of Architectural History."[1] At the heart of Morgenthaler's article is a proposition aimed at transforming the pedagogy of architectural history. The article argues that relying solely on the chronological organisation of history in architecture education is inadequate. Instead, it recommends using 'systems theory' as a framework for architectural history teaching. This approach aims to better integrate architectural history into the architecture curriculum by considering the role of historical time in generating change and leveraging students' intuitive capabilities. Morgenthaler effectively underscores his argument by initiating a concise analysis of how three textbooks by prominent authors differently analyse the Palazzo del Te, designed by Giulio Romano in Mantova between 1526 and 1534.[2] Through this case study, Morgenthaler sheds light on the inherent limitations of architectural history education.[3] The subject and findings of this article prompt ongoing reflection on how architectural history is taught and remains relevant for architectural history teaching today.

This paper aims to revisit the methods used for the analysis of the existing literature discussed in Morgenthaler's article and apply them to our study of the architectural history of China. By analysing existing published literature, highlighting 'systems theory' (or perspectives) to explore historical shifts, and considering possible pedagogical approaches to teaching it, central to this investigation is the research question: How might the characteristics of Chinese architecture be methodically classified and systematically organised, to encourage creativity and innovation? By breaking free from a rigid chronology, we sought to explore alternative narratives, unexpected connections and novel interpretations to lead us to new insights and unique perspectives on Chinese architectural history.

To do this, we chose to look at the methodologies of architectural history in *A Global History of Architecture* by Francis Ching et al.,[4] *World Architecture: A Cross-Cultural History* by Richard Ingersoll and Spiro Kostof,[5] and *A History of Chinese Architecture by*

1. Hans Morgenthaler, "Chronology Versus System: Unleashing the Creative Potential of Architectural History," *Journal of Architectural Education* 4, vol. 48 (May 1995): 218–226, https://doi.org/10.1080/10464883.1995.10734645
2. Morgenthaler, "Chronology Versus System," 218–219. Morgenthaler compared and contrasted the analysis of Palazzo del Te presented in existing seminal architectural history textbooks: Spiro Kostof, *A History of Architecture: Settings and Rituals* (Oxford University Press, 1985); Marvin Trachtenberg and Isabelle Hyman, *Architecture: From Prehistory to Postmodernism* (Prentice Hall, 1986); and Leland Roth, *Understanding Architecture: Its Elements, History, and Meaning* (Routledge, 1993).
3. Morgenthaler, 225–226. Morgenthaler critiques the three books, seeing them as "reports instead of information geared toward generating innovative understanding. The focus on the design solution is missing."
4. Francis D. K. Ching et al., *A Global History of Architecture* (Wiley, 2017).
5. Richard Ingersoll and Spiro Kostof, *World Architecture: A Cross-Cultural History* (Oxford University Press, 2013).

Sichang Liang.[6] All three seminal books share a commitment to a comprehensive historical perspective, offering insights into architectural developments across different eras and cultures. They confidently use visual material – photographs and drawings – to support their narratives and analyses of architectural forms and structures. However, while *A Global History of Architecture* and *World Architecture: A Cross-Cultural History* offer a more global overview and framework for interpreting architectural history, Liang's book delves deeply into the Chinese context, examining local architectural practices and their historical significance. It focuses specifically on the development of structural systems in China and the evolution of its architectural types from the pre-Buddhist period to the early twentieth century.[7]

The content of the three books was analysed to examine the specific methodologies and frameworks discussed within the texts themselves. While dissecting their methodologies, this study will offer a fourth – an 'integrated system' as a possible solution to answer the question posed in this paper.

1. THE 'TIME-CUT' SYSTEM

A Global History of Architecture by Ching et al. is one of the books widely used to introduce architecture from a historiographic perspective. The authors acknowledge that their objective is to foster students' comprehension of how architectural production is invariably influenced by temporal and geographical characteristics.[8] To achieve this, the book consistently combines global maps and time period in each chapter, including when discussing the history of Chinese architecture. By doing this, the authors avoid a narrow view of architectural development.[9]

Like the chronological approach of most survey books on architectural history, *A Global History of Architecture* examines historical developments through a sequence of time-period events, maintaining a consistent method of exploration. Yet, upon closer examination, it became evident that the authors deployed 'time-cut' as the key format in the system of classification, allowing for exploratory interpretation, whereby the categories are arranged in a subtractive pattern based on the building scale. Summarised in Figure 1, the system of classification begins on a global scale, where each historical moment is illustrated through world maps, and ends with a detailed architectural solution.[10] The chapter on the Tang Dynasty serves as an example: it commences with a global map showcasing simultaneous achievements in other parts of the world. Subsequently, an extended map of China highlights key buildings, further represented according to their scales, starting from the Eurasian trade routes then progressing to the urban plan of Chang'an City. Finally, the focus narrows to the site plan of Nanchan Temple, culminating in sectional drawings of the dougong bracket system.[11]

Broadly speaking, constructing a chronological sequence of history is a common approach. However, the preface of *A Global History of Architecture* highlights that grouping by subculture can suit individual historical narratives, allowing study to be arranged geographically or by other means.[12] It is acknowledged that, while Chinese architecture is reported in eleven groups in this study, each

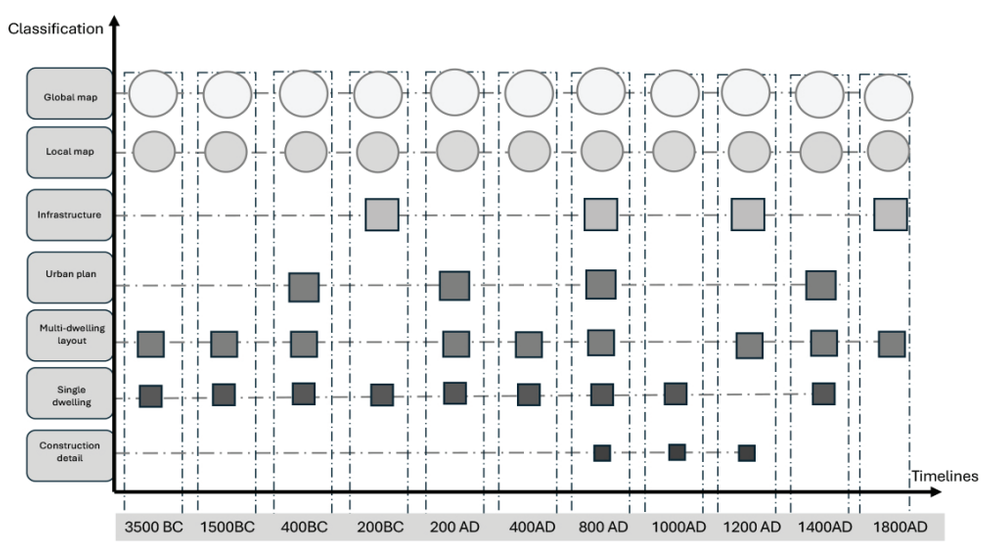

Figure 1. A diagram of the 'time-cut' system presented in *A Global History of Architecture*.

6. Sicheng Liang, *A History of Chinese Architecture* (Sheng Huo, Du Shu, Xin Zhi San Lian Shu Dian, 2011).
7. Liang, *A History of Chinese Architecture*, 8.
8. Ching et al., *A Global History of Architecture*, 11.
9. Ching et al., 14.
10. Ching et al., 15.
11. Ching et al., 229.
12. Ching et al.,14.

time-cut comprehensively introduces the characteristics of Chinese architecture over time. The authors aimed for in-depth information in each time-cut and to use a consistent methodology across this global history.

Similarly to Morgenthaler's critical perspective that history is not an archive of information,[13] *A Global History of Architecture* emphasises the importance for readers to begin to see architecture as a type of contextual product.[14] However, the quality of their analytical system relies heavily on the architectural samples listed in a subtractive pattern of scale in each time-cut. A question for debate is whether architecture is suited to categorisation by a single aspect, such as architectural scale. A close review revealed that the time-cut system also uses a cross-disciplinary system of classification. As such, having only a global map in each historical time-cut remains insufficient to challenge the typical periodisation and synthesis methods of studying architectural developments. Although the time-cut system observes architectural development as a combined result of time and location, it still can be seen as a restrictive, linear time-based system of organising historical examples to understand the characteristics of architecture.

2. THE TEXT-BOX SYSTEM

In contrast, in the book *World Architecture: A Cross-Cultural History*, Ingersoll and Kostof argue that physicality, utility and expressing emotions are the key aspects of the historical-review framework.[15] In this book, the authors point out that, across time and location, societies have always produced work that has qualities that transcend the need for shelter, function and connection to expression, therefore each time-chapter must stand on its own as narrative.[16] Compared with Ching et al.'s text, Ingersoll and Kostof's places a stronger emphasis on cross-cultural exchanges and the impact of different civilisations on architectural elements, styles and techniques.

Summarising the system of classification from *World Architecture* in Figure 2, it is obvious that the authors arrange Chinese architectural history into progressively shorter time blocks, likely within two hundred years. Each time group is extrapolated from landscape conditions and climates, like the time-cut system. However, to support the reader, the authors introduce a series of text boxes that provide case studies on thematic issues, namely religion and philosophy, society and culture, and construction and technology.[17] If we take the chapter on ancient China, for example, three text boxes address simultaneous developments in history, offering information about Confucianism's influence on the order of access, Chinese pyramids and their layout, and a further review of modular building techniques in history. [18]

One interesting finding is that *World Architecture* by Ingersoll and Kostof contributes an alternative system of classification that applies an overall narrative to arrange architectural content for readers. Another discovery was that the text-box system and Vitruvius's definition of architecture share a common underlying value.[19] Although there is no finding in Ingersoll and Kostof's book directly acknowledging Vitruvius's theory, it is undoubted that Vitruvius's architectural theory system of the

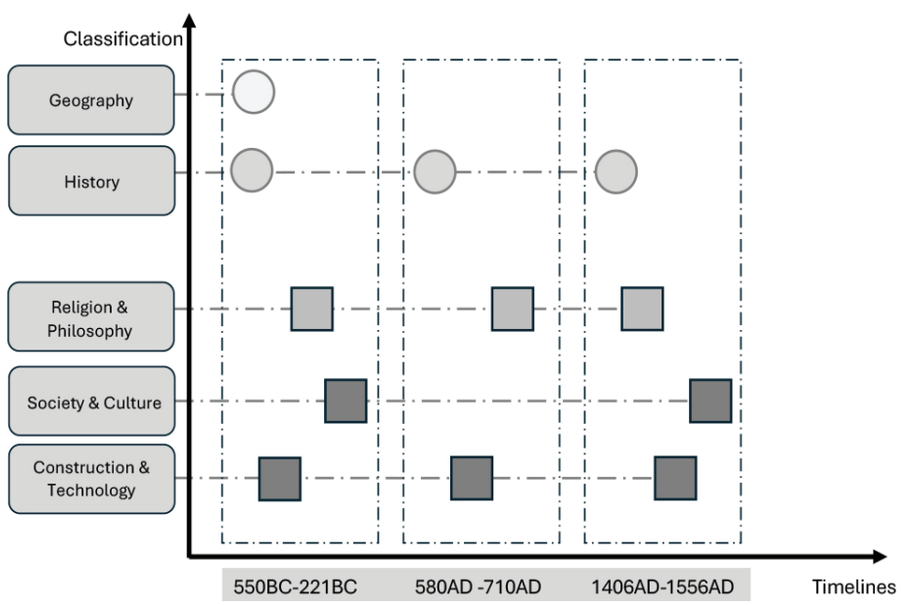

Figure 2. A diagram of the text-box system presented in *World Architecture: A Cross-Cultural History*.

13. Morgenthaler, "Chronology Versus System," 218–226.
14. Ching et al., *A Global History of Architecture*, 12.
15. Ingersoll and Kostof, *World Architecture*, 10.
16. Ingersoll and Kostof, 10.
17. Ingersoll and Kostof, 11.
18. Ingersoll and Kostof, 175.
19. Vitruvius, *Vitruvius: Ten Books on Architecture*, edited by I. D. Rowland and T. N. Howe (Cambridge University Press, 1999), 20.

postulates 'firmitas', 'utilitas' and 'venustas' have profoundly influenced this approach. It can be concluded that, in *World Architecture*, the three classification groups – Religion and Philosophy, Society and Culture, and Construction and Technology – can be paired with Vitruvius's three postulates. The first case study on religious and philosophical themes includes an example of a Chinese temple layout and its formal expression. The second case study, which regards society and culture, discusses functionality related to urbanisation in China. Consistent with Vitruvius's framework, the third chapter focuses on construction technology and durability.[20]

While the time-cut system is challenged by the periodisation and synthesis method of organisation, the text-box system also faces difficulties in accurately grouping all architectural examples within a single narrative. One example of a system challenge can be found in the chapter on Chinese domestic space in history. To emphasise the manifestation of social value, the siheyuan, or courtyard house, is included in the chapter on the Han Dynasty, even though it was built 1,000 years later.[21] Such a finding shows the extent to which a large time-gap system can break a rigid chronology and involve architectural content overlay. Referring to Morgenthaler's critique, the text-box system gears information towards an innovative understanding of architectural history.[22] It is, however, rather unsatisfactory that 4,000 years of Chinese building history are only reported three times in the entire *World Architecture* volume.

3. THE THREEFOLD SYSTEM

Most studies in the field of Chinese architectural history have only focused on secondary-source research. Such approaches, however, often overlook the losses caused by language translation and fail to examine primary evidence. This research selected *A History of Chinese Architecture*, completed by author Sicheng Liang in 1944 and first published in 1964, because it involves a research method combining native interpretation of ancient documentation and in-person site evaluation.[23]

The saying 'seeing is believing' summarises the framework and Liang's approach, as a distinguished Chinese historian.[24] The author's methodology recognises a wealth of documentation and detailed records as the starting point of research, and places utmost importance on existing evidence, using on-site evaluation and records to form the theoretical foundation.[25] Consequently, the primary insights have been instrumental in understanding the methodology of *A History of Chinese Architecture*.[26]

Much of the research up to now has focused on descriptively classifying various architectures. As presented in Figure 3, Liang's book *A History of Chinese Architecture* is organised in a threefold system of (1) literature review, (2) actual evidence, and (3) system of classification. It should be particularly noted that at the classification level, the system as a whole is not only organised based on various scales but also demonstrates the evolution of relationships between individual typologies. The author uses the compositional approach to analyse and examine the evolution of architectural elements over time, including examples ranging from singular residential

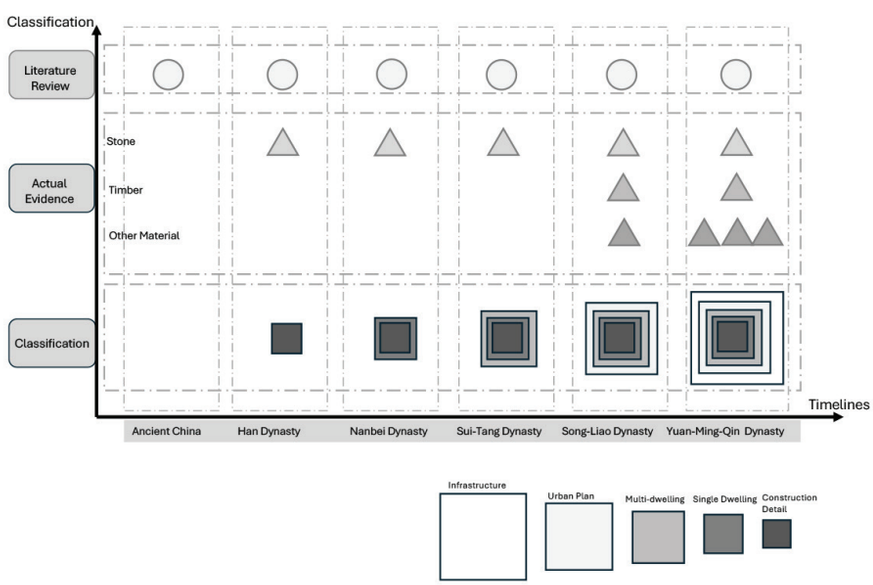

Figure 3. A diagram of the threefold system presented in *A History of Chinese Architecture*.

20. Ingersoll and Kostof, *World Architecture*, 240.
21. Ingersoll and Kostof, 181.
22. Morgenthaler, "Chronology Versus System," 218–226.
23. Dunzhen Liu, "Liu Dunzhen Quan Ji" ["The Complete Collected Work of Liu Dunzhen"] in *Zhongguo Jianzhu Can Kao Tu* [*A Pictorial History of Chinese Architecture*] (Zhongguo Jianzhu Chu Ban She, 2007), 91.
24. Liang, *A History of Chinese Architecture*, 7.
25. Liang, 8.
26. Liang, 8.

complexes and buildings to comprehensive urban layouts, and extending to societal infrastructures. This threefold system leverages reader re-evaluation that is essential to the interpretation of Chinese architectural history.[27]

In comparison with the prior methodological findings, the threefold system supports Liang's research to summarise Chinese architecture as an abstract process evolving over time.[28] Contrary to expectation, this methodology did not encounter significant difficulty in classifying architectural typologies while it focused on the role of historical changes as a means of narrative. For example, in the third fold of classification, it is hard to imagine how separated typologies such as wooden pagodas and domestic dwellings can be classified together, but the value of discussing the relationship between these two architectural typologies under the topic of urban development is clear.

Considering that the author lived in an era of war and rapidly rising political demand for national consciousness, it is possible that through the threefold system the characteristics of Chinese architecture are summarised in a perspective of 'appearance' through the lens of a Chinese historian's patriotism.[29] However, Guo and Yang pointed out that such an approach inevitably leads to a tendency to define architecture by style, which weakens the purpose of an objective classification.[30]

4. THE 'INTEGRATED SYSTEM' USED TO STUDY CHINESE ARCHITECTURAL HISTORY

The research indicates that each of the three foundational texts on architectural history employs a distinct classification system. Ching et al.'s methodology rigorously classifies architecture based on characteristics in a time-cut format. Acknowledging the significance of environmental and cultural factors, Ingersoll and Kostof integrated case studies to refine their categorisation process, resonating with Vitruvius's principles of architecture. It is likely that Liang, by highlighting the national characteristics of Chinese architecture through the methodological connection of evidence, emphasises the evolutionary value of architecture in history.

Drawing on the findings from the three aforementioned seminal books, and reflecting on Morgenthaler's proposal on learning architectural history as "a variety of design solutions," this research proposes the possibility of an 'integrated system' to categorise the characteristics of Chinese architecture when presented to architecture students in a general survey course in architectural history in Unitec's ARCH5311 Critical Studies 1 course.[31] The organisation of the teaching material, summed up in Figure 4, is an attempt to provide another possible answer to the question of how to methodically

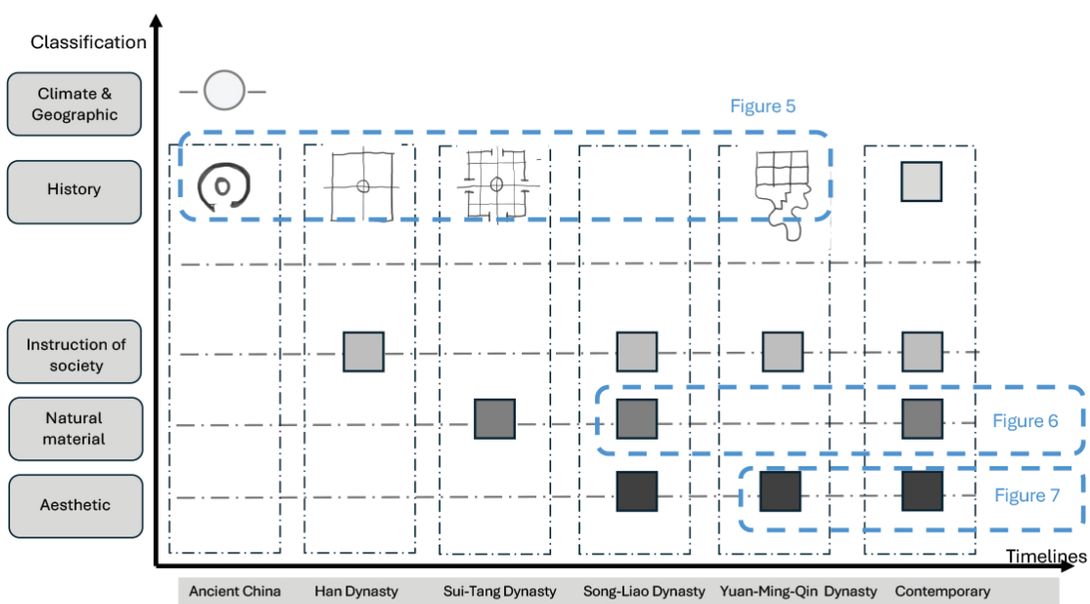

Figure 4. A diagram of the 'integrated system' for presenting architectural characteristics of traditional Chinese architecture in Unitec's ARCH5311 Critical Studies 1 course.

27. Liang, 18–36.
28. Mian Guo and Shen Yang, "The Triple Dimension of Chinese Architectural History Studies: Three Clues to Early Categorization (1940s–1960s)," *Journal of Architectural History* 2, no. 2 (2021): 95–103, https://doi.org/10.12329/20969368.2021.02011
29. Sicheng Liang, *The Characteristics of Chinese Architecture* (Zhongguo Jianzhu Chu Ban She, 2001), 179–184.
30. Guo and Yang, "The Triple Dimension of Chinese Architectural History Studies," 95.
31. Morgenthaler, "Chronology Versus System," 225.

classify and systematically organise a cross-cultural architectural history to encourage creativity and innovation:

1. Six time groups are established chronologically, based on the five historical time-group phases of Liang's work, with the addition of a contemporary time group to encourage design dialogue and connect the past with the present.

2. Five classification groups are used to introduce the characteristics of Chinese architecture, starting with an overview of climate and geography to address the unique conditions in China as a whole.

3. The history of architecture in China is presented as a narrative by selecting one typology for each time group and summarising as a diagram (Figure 5), from pre-history-era pit houses to Han Dynasty courthouses, then the Chang'an city plan in the Tang Dynasty, followed by a private scholar's garden in the Ming/Qin period. The approach is intended to abstract the evolution of Chinese architecture under the concept of linear time. Through the series of diagrams, historical knowledge becomes relevant to the discussion of building technologies and changes to architecture over time.

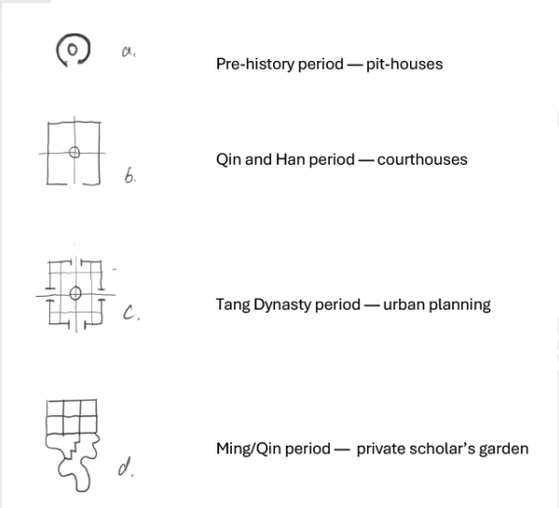

Figure 5. Diagram of the 'History of Architecture in China as a Narrative', presenting characteristics of traditional Chinese architecture in Unitec's ARCH5311 Critical Studies 1 course.

4. Classification is supported by three sections involving case studies on thematic issues: (1) instruction of society; (2) natural building materials; and (3) aesthetics. The basic logic of such organisation is paired with the *utilitas–firmitas–venustas* triad, the classification having a profound connection to Vitruvius's theory as well as to the longitudinal study across various cultures.

The 'integrated system' (Figure 4) outlines three critical dimensions in classifying Chinese architecture in history: vertical co-ordinates are the architectural characteristics; horizontal co-ordinates present the underlying logic describing architectural changes over time; and contemporary connections are the third dimension, which is interspersed between traditional and current architecture to provide an additional dimension to the understanding of Chinese architecture in history. Figure 5 presents a diagram titled 'History of Architecture in China as a Narrative'. This diagram illustrates the architectural features and the historical changes that have shaped them over time.

An example in Figure 6 explains the possible connection between architecture of the eleventh-century Song Dynasty and a student project today. On one side, a Liang drawing depicts the dougong, a timber technology that evolved over time. In comparison, a contemporary design shows the use of the dougong in developing massing models for a design studio project in the Tāmaki Makaurau Auckland CBD. This comparative experience aims to enhance the understanding of the characteristics of Chinese architecture in history and its ability to influence the application of technology today, and to encourage creativity and innovation.

Figure 6. The dougong, as a natural timber technology, influences contemporary design. Left: Evolution of the Chinese order – dougong, from Sicheng Liang et al., *A Pictorial History of Chinese Architecture*, 1st ed. (Sheng Huo, Du Shu, Xin Zhi San Lian Shu Dian, 2011). Right: Massing model for a design project at 20 Princes Street, Auckland CBD, 2022 (supervisors: Jeremy Smith and Chris Barton; photo: Jonathan Jiang).

Examples in Figure 7 further illustrate the contemporary connection in demonstrating the traditional aesthetic influence from the Ming Dynasty to today's practice. It considers a fifteenth-century landscape scroll painting by Dong Qichang against a comparative case study of Chaoyang Park Plaza by MAD Architects. Over hundreds of years, traditional high art connects to modern skyscrapers through a shared design language.

As evidenced in the previous analysis of three seminal books on architectural history, the connections between contemporary design and architectural history have often been missing in the system of classification. This study highlights that understanding this connection is critical. It underscores that today's architectural design response is often largely based on (and significantly rooted in) the values and principles of traditional architecture.

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Figure 7. Chinese traditional aesthetics influence contemporary design. Left: Dong Qichang, *Five Sacred Hills* (1616– 19), ink on paper. Right: MAD Architects, Chaoyang Park Plaza, Beijing, China, 2017. Photo: Jonathan Jiang.

CONCLUSION

This paper aimed to analyse and reconsider the methods used in the existing literature that introduces the characteristics of Chinese architecture through history. The investigation sought to address the research question: How might the characteristics of Chinese architecture be methodically classified and systematically organised, to encourage creativity and innovation?'

Following a preliminary argument, three seminal architectural history books – *A Global History of Architecture* by Francis Ching et al., *World Architecture: A Cross-Cultural History* by Richard Ingersoll and Spiro Kostof, and *A History of Chinese Architecture* by Sicheng Liang – formed the core foundation of this study. One significant finding from the literature review is that no single method of categorisation can comprehensively illustrate the entire history of Chinese architecture. All systems of classification present a process and effort to balance the need for in-depth knowledge and the demand for a holistic overview.

The paper proposes the idea of an integrated method to systematise and present the subject. The theoretical implication of this combined method is to focus on the positive correlations between historical moments and the architectural characteristics of Chinese architecture. This study's specific contribution is the four original diagrams (Figures 1, 2, 3 and 4). Diagrams presented in Figures 1–3 aim to summarise and present the systems of classification used in the three seminal architectural history books. The diagram in Figure 4 shows how characteristics of traditional Chinese architecture have been presented in Unitec's ARCH5311 Critical Studies 1 course, and highlights the interplay between time factors and architectural characteristics.

The analysis of literature has expanded the understanding of 'systems theory' as a framework for presenting, learning and teaching architectural history in ARCH5311. The methods used to systematise and present Chinese architecture in history may be applied to study other regions worldwide. Given that the course design is limited to a preliminary global architectural history introduction, it was not possible to address all areas of the integrated system in Figure 4 comprehensively. Considerably more work is needed to ensure architectural history is perceived as a series of solutions to architectural design problems and contextual challenges, rather than thematic products. Additionally, providing more information on traditional Chinese culture and incorporating cross-disciplinary art practices would enhance the quality of information and provide a wider perspective in learning about the subject.

Another limitation of this study is the selection of the three books used for comparison. The first two books are general histories of architecture, in which Chinese architecture is represented as one of the main topics. The third book is entirely dedicated to Chinese architecture. This difference certainly affects the comparability of the texts, as the third book provides a more in-depth perspective on Chinese architecture compared to the broader scope of the first two. This disparity could lead to an imbalance in the analysis and potentially skew the results and interpretations of the comparative study. However, the selection of these three books was made as it provides a comprehensive overview of both general architectural history and specific insights into Chinese architecture. The first two books help contextualise Chinese architecture within the global architectural narrative. These books are also widely recognised seminal textbooks for architectural history courses in schools of architecture across the world. The third book was selected to offer a detailed examination of Chinese architecture, enriching the comparative analysis with depth and specificity. While this approach may be seen as a limitation in terms of comparability, it allows for a richer, more subtle understanding of the subject matter.

Future research can and should address this limitation by: (a) emphasising this difference more clearly; (b) including a greater number of seminal general survey books on the topic; and (c) grouping the selected books into those that address the general development of architecture and those specifically related to Chinese architecture.

This paper presents one attempt and possible way to systematise and present the subject of architectural history to students, and hopes to contribute to the ongoing international debate on the pedagogy of architectural history.

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