T H U Y T I E N L E P H A N

SENSE-SCAPE:

Spatial Perceptions Of The Intangible

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of Master of Architecture (Professional)

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Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor used artificial intelligence tools or generative artificial intelligence tools (with the exception of proofreading tools, such as Grammarly, used solely for language and grammar enhancement without infringing on the originality of the work unless clearly stated and referenced along with the purpose of use), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

ABSTRACT

The New Zealand Dream—once symbolized by spacious homes with pools, lawns, and villas—has shifted due to economic pressures, urbanization, and increasing housing density. As homeownership becomes more commodified, smaller, efficient homes like terraced houses and townhouses are growing in popularity. (Stock, 2024). Hailed as the future of suburbia with numerous successful adoptions from other countries (Polacek and Elliott, 2020) (Bushnell, 2024), these medium-density options appeal to younger generations, facing criticism for reducing space and sensory richness. The focus on function and minimization of scale often leads to a loss of sensory and aesthetic values, as seen in cookie-cutter homes that lack individuality and soul. (Almeida, 2023) (Orsman, 2023). Relph (2001) makes a remark on sensory to sense-of-place in the extract “Place in Geography”, referring to the latter as the “attachment to spatial locations” developed from “sensory impressions, memory and imagination.”

This research asks whether smaller spaces can retain the sensory qualities of larger ones. It explores how thoughtful design can enhance comfort and intimacy in constrained spaces, challenging the bureaucratic standards that dominate the built environment. Inspired by Pallasmaa’s (2012) The Eyes of the Skin and using a practice-based approach, the thesis investigates multisensory design through autoethnographic reflection, prototyping, and analysis.

Following a practice-based research approach, this thesis translates spatial memory into artefacts of sensory experience through a process of autoethnographic reflection, prototyping, and analysis leading to the production of artefacts in combination with various forms of analogue media, informing the scale-production of a 1:1 installations within a constrained space. The outcomes of the thesis have been informed by research on precedents and architectural theories, the study of phenomenology, sketching/mapping as well as relevant case studies on the sense of comfort, scalability and economic-centric design. The implications of the finding of this research. The findings suggest that, with careful design, smaller spaces can provide rich sensory experiences, arguing that urban density can increase without compromising well-being. In essence, size doesn’t matter as long as the space promotes a positive, lived experience.

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The increasing relevance of medium-density housing in New Zealand raises significant concerns about the architectural quality of these developments. The housing industry, already burdened by insufficient investment (Swift, 2024), high construction costs (McDonald and Gibbs, 2024), and an outdated building code (Gibson, 2024), struggles to deliver homes that progresses beyond minimum compliance. This, in turn, hinders the progressive urban growth necessary to meet modern demands. Historically, New Zealand's ratio of house to residents have stagnated (Murdoch, 2023), showing evidence the issue pertaining to housing supply is not recent.

New Zealand's urban landscape has been shaped by waves of migration since the signing of Te Tiriti o Waitangi in 1840, with population growth concentrated in cities, especially during the Post-War period through to the 1960s. (Meredith, 2015). A booming economy during this time drove urbanization (Easton, 2010), shrinking lot sizes and introducing intensified housing typologies, while greenfield development was incentivized to accommodate expanding suburbs.

However, the comfort and spatial qualities that once characterized homes have become increasingly rare in contemporary housing, replaced by designs that often lack intimacy and character that was once the making of home. In this context, the challenge lies in finding a balance between necessary density and preserving the sense of space and comfort that many associate with home.

As a start to the thesis, this chapter will introduce the background to the question, how the significance of "small" came to be, elaborating the initiation of the research, outlining the aims, objectives and scope of the research.

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THE QUESTION

How can sensory experiences reinforce expressions of comfort and intimacy in constrained spaces?

PROJECT OUTLINE

Research Agenda and Motivation

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Figure 1: The web of multi-sensory design (Source: www.vmarch.net). Received: 20 July, 2024

Historically, the sizes of spaces have been used to determine social class. Larger spaces are more sophisticated, architecturally bespoke, and enriched by interior detailing and accessories. Larger projects were more discernible and remembered for their characteristics. On the other hand, smaller spaces are “marks of labour” and are fragments of slave culture prominent in the United States and Colonial Britain. (Chattopadhyay, 2023). However, in recent times, there are thoughts on the growing significance for small spaces and how micro-spaces could enhance the built environment of the future. If well-designed, micro-spaces can address global goals established by the UN (United Nations) by promoting responsible consumption and production and foster resilient, sustainable communities.

Objects and artifacts of luxury are often grand, both in size and shape, reflecting the notion of opulance, hyper materialism and rarity. As distinctions between social classes blur, downsizing becomes more apparent with row-houses, or terrace-housing, sprawling across green-field developments and rezoned suburban sections. More often so, these projects are built for profitability, sacrificing aspects such as spatial comfort, and sensuality resulting in what is described as “shoebox houses”. The progression for future micro-spaces could seek to embody elements of elegance and comfort, giving new identity and a place within society.

AIMS AND OBJECTIVES

This research explores the intangible qualities of spatial experience, aiming to uncover how sensory perceptions shape our understanding of architecture. By studying key phenomenological texts and architectural precedents, it critiques the current design conventions for sensual comfort, comparing demographic data with advancements in technology to highlight gaps in current practices. The research further explores alternative ways of visualizing sensory data, employing analogue techniques like photography, modelling, and sketching, drawn from personal experience. Finally, through a series of design-led experiments focused on interior retrofits, renovations, and infill projects, the study investigates how comfortability can be fine-tuned and enhanced, offering new approaches to designing spaces that respond more sensitively to human needs.

The research aims to…	***This is achieved by…***
• Gain an understanding of the “intangible” aspects of space.	• Studying key texts of phenomenology and precedents
• Critique the existing design standards associated with sensual comfort.	• Examining and comparing demographics/ statistics on comfortability index vs technological advancements.
• Explore various methods of “drawing” (expression of ideas) to visualize sensory information.	• Use of analoque techniques (photography, modelling and sketching) based on personal experiences.
• Investigate through design-led research how comfortability can be fine-tuned and enhanced.	• Analyse case studies of interior retrofit, renovations and infill. Further experiments and tests are compared.

SCOPE AND LIMITATIONS

Spaces can be expressed as either positive (solid/fill) or negative (void). The scope of this research is focused on the latter, intentionally leaving spatial boundaries undefined allowing the conscious mind to develop the sense of place freely, unrestricted. The research is a sensual exploration at an interpersonal level, taking precedence of a childhood home and transcribing sensual elements into a reflection of space through memory. This abstraction is achieved through “analogue” or “hands on” methods such as physical modelling, photographic analysis, sketching, and mapping. In the housing context of New Zealand, and other developed countries, small spaces are typically described as being “uncomfortable”, “dysfunctional” and “low-class”. (McConnell, 2023) (RNZ, 2024) (Desmarais, 2024) Findings of the research may be applied to inform the development of “comfortable” design typologies to change the status quo.

A personal narrative forms the leading premise of the research, introducing the significant events which inform the starting point. The main advantage of portraying personal narratives is the access into learners’ private worlds and provide rich data (Pavlenko, 2002, 2007). Though the advantage is doubtful as it is limited in its conclusions. However, Bochner and Ellis (1996) consider that this limitation on the self is not valid, since “If culture circulates through all of us, how can autoethnography be free of connection to a world beyond the self?” (p. 24). The topic of research is heavily regarded as “intangible” and “pseudo” knowledge such as human senses, phenomenology, and personal opinions, the subjective interpretations and responses of readers may vary from that off the researcher, although the outcome of research may suggest some commonality regarding sensory experience and comfort.

CONTRIBUTIONS

Phenomenology is not a new field of research in Architecture. Publications and academic papers sourced, (Patrao, 2024), (Gibson, 2023) and (Soltani and Kirci, 2019), to list a few, are a short list of interviews, publications and studies which delve into the experience of architecture as a topic of research. Alongside architectural theorists and anthropologists like Pallasma, there is an evident importance of phenomenology which contributes to the architectural field today. The sensations and the positive effects of dwelling within spaces. In part, the intent to study phenomenology feeds into the big picture of architectural practice; Why and what are we designing, and who we are designing for; Understanding the logics of the architectural experience which allow architects to test, analyse and predict design performance based on architectural features or sensible characteristics such as materiality, touch, smell and aesthetics.

This research is influenced greatly by the objectives of “Critical Regionalism”, an architectural approach first coined by Alexander Tzonis and Liane Lefaivre in the essay ‘The Grid and the Pathway’, which gave architectural identity through regional, cultural and social ideologies but rejects the ornamental nature of postmodernism. For future case-studies, this thesis supports further research to fuel a larger movement in response, argumentatively, to the globally prevailing “shoebox” houses while reinstating cultural identities within built environments.

While the proposition of the research is not a direct response to the economic-driven typology, but as a curated spatial experience, traces the sensory patterns of present living environments. Findings of the research confirms Trigg (2012)’s notion of a sense of place as the mediator between space and memory, requiring an architectural response that promotes place-making and “lived spatiality”. A firm stance questions the feasibility of current urban planning and architectural typologies and whether the rise of dull, soulless medium-density housing is merely a trump card of a political campaign or poses a risk for future innovation of the architecture industry. This research leaves a gap in the understanding of architecture and phenomenology and while notions of multi-dimensional experiences are loosely defined, the research benefits the wider industry. The influence and correlation of the different dimensions mentioned in the research were not made clear as well as the effect of memory degradation and ageing on transcribed memory of spaces. Future research topics may involve more with the effects of ageing on “lived spatiality” and mental impairments such as dementia.

In architectural theory, phenomenology has inspired a movement towards creation of emotional, memorable and sensual spaces. The application of phenomenological principles into design as applied by Juhani Pallasmaa, Steven Holl and Peter Zumthor, has demonstrated that there is a deeper connection between sensory experience of users' and the built environment. This chapter will explore their contributions and works to highlight the applications of phenomenological ideas in contemporary architecture. Prior to the case-studies, research will delve into several themes relating to the history of comfortability in space and the progression of contemporary design.

The themes will be sectioned as follows

- Economic-Centric Design
- The Need for Scalability in Contemporary Architecture
- A "Small but Comfortable" History
- Less or More? A History of Comfort in New Zealand's Domestic Architecture
- Medium Density Typologies

Through this literature review, the limits to scalability of comfort and the phenomenology of micro-spaces will be examined to trace the dialogue between the two disciplines, uncovering the contextual and cultural influences of "lived spatiality". The categorised themes uncover the implications of utilising phenomenological principles in architectural design fostering a sense of place to enhance new and existing spaces, alongside a down-sizing trend.

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Figure 2: Villa Savoye by Le Cobusier. (Source: https://www.postcardsfromivi.com/wp-content/uploads/2016/11/villa-savoye-como-llegar.jpg). Retrieved: 20 July 2024

ECONOMIC-CENTRIC DESIGN

Architecture has long been taught as a profession of responding to the ever-changing clients' needs; Perspecta, the Yale University journal, proclaims the architect as being merely "the servant of his client" (Front Matter, 1969, p.5). Brewster Jr, the president of Yale University at the time, quotes "No architect worth his salt would accept the vox populi of as his client". The quote reflects the condescending nature within the client-architect relationship, highlighting the power imbalance and shift in superiority. Although what Brewster Jr. states is likely to be an exaggerated statement, the phrase is relevant in today's context of the industry. Designs suffer from "design purgatory" often to drive financial viability and maximise returns for the client. One could interpret this as an "economic development" threatening "the feasibility of architecture" as an art form. (Pallasmaa, 2012, p. 34). The pursuit and voicing of the client induce "the tension between concept and experience of space" Tschumi (2012, p.40) describes. This is elaborated further in Alain de Botton's "The Architecture of Happiness", exploring the effects of architecture on emotional experiences. De Botton argues the economic considerations in play are not more problematic than fulfilling architectural aesthetics above the needs to live and inhabit space. This is truly the case in the instance of Villa Savoye, whilst an inspiration and pioneer of modernist design, had brought inconvenience and "raining hell" for the client due to irreparable flaws on the leaking flat roof. (Sbriglio, 1999). De Botton states a building's architectural mediocrity is irrelevant to its structural capabilities and sensorial energy to heal and bring joy to life.

Similarly, Jeremy Till's interrogation on the disparity of representation in architectural culture versus reality in "Architecture Depends" sets a comparable notion of richness in the ordinary. Lefebre (2014) quotes in the critique of everyday life, "The earth beneath, which has a secret life and richness of its own", a message to the notion of discovery behind and within the ordinary. The difference in stance between De Botton and Till is the former presents a discussion in contingency within architectural beliefs and the contradictions from what we see to what we believe. The latter sets optimism to embrace the shambles which come with the profession and find ways to shape and control uncertainty.

Architecture is a field that is overly dependent on external factors and in most cases, economic conditions to favour profits. One of many stereotypes of the architectural industry is "the boring projects bring money; the exciting projects bring reputation.". While the likes of De Botton and Till share similar message on the negative aspects of economic driven design on the experience of spaces, architecture could also benefit from a growing economy. Among all the architectural typologies, several precedents reflect the economic drivers which shape and transform the built environment holistically.

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Figure 3: Map of Milano, Italy by Matthaus Seutter. (Source: https://fonsnili.wordpress.com/wp-content/uploads/2020/05/1182px-ca._1730_map_of_milano_by_matthaus_seutter.jpeg). Retrieved: 20 July 2024

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Figure 4: A casa di ringhiera in a picture by Paolo Monti (Milan, 1970). (Source: https://upload.wikimedia.org/wikipedia/commons/6/62/Paolo_Monti_-_Serie_fotografica_%28Milano%2C_1970%29_-_BEIC_6332569.jpg). Retrieved: 20 July 2024

In Italy, an early variant of communal housing, the Casa di Ringhiera (Guardrail houses), were prevalent in the late 19th century and was allusive to the aftereffects of the Industrial Revolution which shaped Milan's transformation as a metropolitan city at the time. After the national unification of Italy in 1861, the great reduction of exports with the emergence of its new currency had crippled the economy (Toniolo, 2013), seeing mass closures of factories in Southern Italy. (Gomellini and Toniolo, 2017). Before the Industrial Revolution, the completion of the rail network in 1880 enabled waves of mass migration to occur following a detrimental agricultural crisis particularly in Southern Italy. (ciccarelli, et al., 2021), (Del Boca and Venturini, 2002). Patterns of South to North migratory activity saw an influx into Milan, growing its industrial neighbourhoods and sectors in 1890. (Gomellini and Toniolo, 2017). The historical context which brought rise to the iconic communal typologies are documented in John Foot's "Micro-history of a house: Memory and Place in a Milanese neighbourhood, 1890-2000". Foot opens the abstract with a quoted phrase describing the timelessness of Milan, comparing the constant redevelopments of the city to the retention of ageing. G Piovene (1957) took Milan as a utilitarian city, demolishing and rebuilding to the needs of the moment. Foot provides insight into the guardrail houses, documenting and proclaiming the typical daily life taking place within the building. The architectural programme of the guardrail houses is systematic in configuration; The ground floor of a typical guardrail house as a commercial/retail shop while the two floors above are dedicated to the residential functions of a home and the top-most floor used as coal storage.

External balconies are shared and interconnect the adjacent rooms together forming streets and aisles lifted above the ground. The rapid growth experienced in Milan, according to Bovone (2014), was implied in the forms of "concentric rings" around the metro-centre of the city, forming the outskirt neighbourhoods which housed much of the working class. The typology is characterised by an open gallery/corridor spanning across the length of the building, shared by numerous housing units. The design typology encouraged a communal form of living, allowing tenants to see their neighbours from their flats. As extensive migration from Apulia, southern Italy traverses within Milan, the guardrail houses adapt and evolve to suit wider needs; the gradual introduction of additional services such as water, bathrooms and other facilities. (Foot, 2007). The prevalence of the guardrail houses stems from its unique, communal character. However, Ironically the solid, rustic exteriors contrast greatly with the lack of privacy behind the scenes. Saraceno documents in "La famiglia: Paradossi della costruzione del privato", the notion of "enforced intimacy" experienced within the ringhiere as neighbours witnesses the most private and intimate behaviour. Although the purpose of the enclosing walls segregates the private and public, Foot similarly describes the blurred separation between and simultaneously, under constant surveillance. To put simply, the houses are under a "disguised countryside". (Tindall, 2011). Foot's documentary on the guardrail houses presents the conflicting dualities of privacy and intimacy; exclusion and inclusion, however given the controversial conditions of living, the building features pertain to the sense of community and nostalgia that is grown fond from others.

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Figure 5: Map of Amsterdam by Frederik de Wit. (Source: https://upload.wikimedia.org/wikipedia/commons/8/85/Exact_Drawing_of_Old_and_New_Amsterdam_%28Map%29_1699-1706_by_Frederik_de_Wit.jpg). Retrieved: 20 July 2024

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Figure 6: Canal House in Amsterdam. (Source: https://static.prod.r53.tablethotels.com/media/ecs/global/magazine/story-images/20221118/Exterior.jpg). Retrieved: 20 July 2024

In Amsterdam, Netherlands, similar variant to the contemporary terrace-housing or row houses are apparent within the Canal district, holding significant architectural and cultural value. The typologies were designed to maximise space along a constrained frontage through typically narrow and deep footprint to maximise geographical advantages as a trading port. (Shorto, 2020). The influence from economic factors is analysed in Maarten Prak's "The Dutch Republic in the Seventeenth Century: The Golden Age". At the peak of the Dutch Golden Age, Prak explains the adoption of pre-mature urbanisation coupled with a loose political structure resulted in a highly commercialised culture. In addition to the strong corporate networks risen by the guilds system have established a foundation of community trust that built the backbone for capitalism to flourish within the Dutch city. (Nijman, 2020). Despite the eventual wealth disparity, the architectural qualities of the typology reflect the materialistic attitudes of the bourgeoisie (Wusten, 2020); The palatial features of the architectural facades, the design consideration for large storage spaces, the dedication of living spaces for display, and the ornate gable decorated with a utilitarian crane for the transport of goods. The Canal House typology is local archetype of Dutch Mercantile culture, symbolising entrepreneurial success and individualism. (Nijman, 2020). The features such as storage spaces, multi-functional rooms and attic space indicates the typology's symbolic relation with the aristocrats. However, what's more compelling on the enduring quality of the houses lie beneath the ground; The excessive waterways and engineering work prior to the construction of houses, the so called "Great Reclamation" (Abrahamse, Kosian, & Schmitz, 2010) to rectify land shortages for the unprecedented population growth in the early seventeenth century. (Nijman, 2020). The principles of economic-centric design are exemplified through the canal house typology, demonstrating the adaptability of space, pragmatic material choices, integration of functional and aesthetic considerations and sustainability. The study of canal houses provides insight to how designs within constrained spaces can employ economic efficiency while sustaining culturally and socially relevant contemporary contexts.

Architectural typologies are rationalised historically as utilitarian with an intended purpose behind their shape/function. Historically, typologies inhabited have been shaped by economic environments, responding to evolving challenges and opportunities presented. The guardrail houses of Italy responded to the needs of migrants while in Amsterdam, the canal houses served to house the prosperous merchant culture that turned Dutch from rags to riches. Economic-centric design and phenomenology may seem disconnected but common ground is shared among the creation of meaningful and practical spaces. The prioritisation of cost-effectiveness and efficiency drives innovation within economic constraints, enhancing human experiences. The exemplar of typologies mentioned demonstrates economic-centric design is viable as a vessel to grow sensorial experiences.

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Figure 7 (left): Students are waving their hands from the window of Mitsuki Building where the School for New Architecture and Design presided over by Kawakita in 1932, from: Kenchiku Kōgei. I see all, Vol. 2, No. 11, Nov. 1932. (Source: https://www.bauhaus-imaginista.org/articles/2331/naked-functionalism-and-the-anti-aesthetic). Retrieved: 20 July 2024

Figure 8 (right): ECOTECH Residential Multi-level Homes. (Source: https://www.ecotechcommercial.com/residential). Retrieved: 20 July 2024.

THE NEED FOR SCALABILITY IN CONTEMPORARY ARCHITECTURE

Scalability refers to the ability of an architectural solution to adapt and expand in response to changing needs, conditions and context. Among the many issues architects are facing, the environmental awareness of climate change has dramatically changed the perception of home environments. At the macro context, scalability of urban planning is concerned with the future accommodation of population growth and urbanisation trends. (Batty, 2013). The adoption for a flexible urban design provides the research with set design criteria to applied outcomes. Concerns for self-sufficiency and conservation have, according to Wilson, et al. (2023), driven much of the tiny house movement.

In the era of social media, contemporary architecture has become a symbol of identity, serving as a source of inspiration, a means of gaining attention, and a vehicle for instant gratification. The drive for creative innovation is challenged by a societal focus on virality, which has become a key success factor for new artists and influencers. (Al-Zahari et al., 2023). This shift is occurring alongside the transition into the AI era and growing fears of societal disorder (Whiting, 2024), compounded by the immense mental pressure resulting from negative criticism and heightened self-consciousness. (Popat and Tarrant, 2022). These pressures have pushed the working class into their comfort zone. Several factors contribute to this displacement. First, the age of homeownership has significantly increased. Second, the rise of development typologies such as “build-to-rent” units reflects a growing demand for affordable, long-term rental properties.

As more alternatives to homeownership emerge, there is less incentive to own a home. Additionally, today’s lifestyle has become increasingly complex. The notion that “one new gadget solves another gadget’s fault” exemplifies the growing complexity of living, which justifies the need to own the latest technology or engage in habitual hoarding, despite the decreasing space available in modern housing typologies.

To counteract the effects of spatial density described above, the principles of functionalism are applied. The term “Functionalism” in architecture is to render aesthetics through the practicality of space. (Zhao, 2021). According to Socrates, the house with an owner of a “pleasant retreat” and able to “store all belongings” is the most beautiful. Similarly, Paul Jacques Grillo reasoned the fear of pure simplicity is due to the transparency and exposure; or in other words, the lack of ornate, decorative architectural elements. Smaller “objects of desire”, “furniture” or “ornate pieces” fill the space naturally to the owner’s preference resulting in an idealistic aesthetic. One such typology is gradually emerging as a pure functionalist home, namely the Ecotech. The standardised manufacturing and engineering of the modules allows greater flexibility in design and construction while minimising the componentry throughout the logistics. The ease of prefabricated construction reduces the lengthened process of design and build, allowing mass-production and staging for the modularised typology.

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Figure 9: A ramen noodle stand in Osaka by James Mak. (Source: https://www.asianstudies.org/publications/eaa/archives/the-japanese-economy-in-us-eyes-from-model-to-lesson/). Retrieved: 20 July 2024.

A "SMALL BUT COMFORTABLE" HISTORY

The growing prevalence of smaller living environments stems from the gradual mechanisation and replacement of human labour in 19th century. (Chan, 2007). The increasing convenience surrounding urban living brought interests for advocates of small spaces like Catherine Beecher and Elsie de Wolfe. Significant events have occurred historically which marked greater relevance for micro-spaces in society. The embracing of the minimalist lifestyle (Johnson, 1994) coupled with the densification of suburban areas due to the rise in demand (Cook et al., 2023) paved a movement for micro-spaces. A prevalent case for applications of minimalist principles and adoption of microscale typologies can be seen in numerous instances of houses in Japan. Although no formally accepted movement behind the tiny homes exist in Japan the urban density, cultural mannerisms and scale of the context presents a looming climate for greater demand in space-constrained typologies. During the 1980s in Japan, the economic boom saw rapid growth in urbanization, industrialization, and technology sectors. (Sorenson, 2002). While the expansion allowed cities to prosper, it also produced problems for housing and traffic. Minimalism was perceived as a resolution to the "dominant presence of traffic, advertising, concrete jungle, and roadways". (Ostwald and Vaughan, 2016).

In addition, with the religious practices of Zen, the adopted mannerisms of hyper minimalism had influenced the urban fabric of the built environment setting the foundation for a broader movement towards minimalism in daily life. The designed typologies feature minimalist form and materiality, resulting in a sense of familiarity upon perception while evoking notions of futurism and emptiness in the spatial perception of its internal spaces.

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Figure 10: After The Ball by Ramon Casas.
(Source: https://uploads4.wikiart.org/00333/images/ramon-casas/68bc12880c76d4e30657d96ffecbbeba.jpg). Retrieved: 20 July 2024.

"Small" and "Comfortable" are two contradictory terms when phrased together. As we have become accustomed to the size and scale of spaces inhabited, any fluctuation of spatial proportions becomes sensitised, as a result leading occupants to question the sense of scale. This underlying reaction reveals comfortable living as having held connotations of size and spaciousness, while on the contrary, smaller spaces are often ridiculed by society and are historically frowned upon. (Chattopadhyay, 2023). Global issues presented by the WHO's goals are set to shift away from the discontentment of small and embrace convenience and mechanisation to meet urban living requirements. The notion of living to-scale in association with social class suppresses the wider acceptance of a spatially sensitive, transformative typology, and originates from the era of convenience and positivity in the 18th century. Giedion (1948) describes comfort as an "order and control" of the immediate surroundings through fashion of furniture, lighting, and materiality, a form of spatial aids. An era in which the aristocratic France marked a shift of the perception of a home from a display of wealth, into a sanctuary to nurture body and spirit. (DeJean, 2013). This is best reflected in the evolution of the modern sofa, transitioning from a utilitarian piece to retaining body posture and rigidity into the hallmark of the living spaces of today. (Hellman, 1999). Like furniture and clothing, architecture in detail can reveal the characteristics of the occupants. (Chan, 2007). Living small not only saves resources economically but with a profound level of depth and complexity in design, can hold an element of intrigue and contentment.

Outside of social norms, spatial comfort can be defined through sensual experience achieved in conditions where the body reposes. The air, light, sound, smell and solidity can add a relaxed sensation where the pursuit of any activity requires minimal effort. Factors which affect or control the condition can be harnessed by design strategies which are implemented to manipulate the spatial environment such as external/internal transitions, circulation, compartmentalisation and materiality. Where strategies are not optimised, the psychological and physiological effects of small spaces put the occupants in an unintended risk of health issues. A study conducted on the optimisation of the design of small spaces recognised aspects of psychological effects such as high internal heat retention, glare/reflectance, lighting, and colour comfort. (Jahan, Hossain, and Aayaz, 2024) Hence, a well-designed and spatially constrained living space should consider furniture placement, colour, materiality, and lighting. These considerations align with Chan's (2007) projection of applied strategies such as circulation, fenestration, cabinetry and finish to project the spatial limits larger than they are and unify order.

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Figure 11: St Annes at 43 Arney Road, 1986. (Source: Auckland Libraries Heritage Collections, 1052-M02-05, https://kura.aucklandlibraries.govt.nz/digital/download/collection/photos/id/159688/size/extralarge). Retrieved: 16 October, 2024

LESS OR MORE? A HISTORY OF COMFORT IN NEW ZEALAND'S DOMESTIC ARCHITECTURE

Before The Treaty of Waitangi in 1840, New Zealand was known as an extension of the commercial world of Sydney, due to its major influx of migrators, many of whom, arrived from New South Wales. (Phillips, 2013). The abundance of land coupled with the inheritance of cultural preferences of the immigrants had meant single, detached housing was prevalent at the time. James Parr (1857-1868) described the houses as "cottages" with all functions of domesticity taking place in a single space enclosed by totara-lined walls and flax/reed roofs. Although variations of the cottage took form from single rooms to four rooms, the varied sizes reflected the statuses of social classes. The introduction of the late Georgian Architecture in 1820s and 30s paved way for larger homes, namely Villas, featuring central hall, a public parlour located at the front of the house, with intimate spaces in the rear. Spatial comfort was defined in enclosed intimacy and an experiential entrance from outdoor/indoor. These preferences reflected in the common elements seen such as the ground-floor verandahs and the separation of kitchen, dining and living spaces. The Mangungu Mission House is a prime example of the style commonly associated with early settlements of New Zealand.

The 2-storey building accommodates 7 rooms within a 150m2 footprint area. (Gatley, 2014). Its rectangular footprint grants an entry lobby, a character synonymous with the style, similar with the much later-designed St Ann's in Remuera. (Figure 11).

The floor area of domestic living continued to expand through the early 20th century, most known for its growing Arts and Crafts movement led by William Morris which advocated for intricacy in craftmanship, emphasizing materiality and form. The era is marked by the rise of the Californian bungalow, named after the influences of the American film industry, and is a distinct typology reflecting the growing eccentrics of domesticity; The man of households were breadwinners leaving the wives as the housemaker. This cultural shift in domestic living is highlighted by the typology's layout, the kitchen positioned as the heart of the home. The sizes of homes enlarged with two to three bedrooms and the inclusion of washing closets, bathrooms, halls and corridors. (Schrader, 2013). Due to the larger footprints of housing, problematic issues in heat sources arise with lower ceiling heights and low-pitched roofs to compensate.

By the 1930s, state housing became more relevant to house a growing population and increase housing supply. (Schrader, 2005). The surge of state housing saw new typologies introducing a new density to the urban planning such as semi-detached houses, duplexes (Coromandel Street in Wellington) and apartments. The homes were constructed in much less extravagant materials and designed with smaller footprints compared to the standalone bungalows. In 1937, the Anscombe flats in Wellington epitomizes the culmination of Art-Deco and Modernist styles, displaying clean curvature and seamlessness accentuated by horizontal lines. Designed by Edmund Anscombe with the intent as an apartment block consisting of 4 units, the internal floor areas were generous given the yields of 3 bedrooms upon an approximate 160sqm area. The design extends from classicism, refining the utilitarian needs of the domestic lifestyle through design.

Mid-century modernism in New Zealand saw a major transformation of domesticity and architectural typologies. The emergence of the great emigre architects influenced much of New Zealand's modernism much so that in Plische's book Design and Living, the architect criticised the design of New Zealand houses, calling for open-plan living spaces that were orientated to the sun and garden. The book questions the everyday routines of domestic living, influencing modernist views to the public. Designs of homes much responded to Plishcke's views, with integrated kitchen, dining and living areas and the retention of privacy in bedrooms, bathrooms and ensuites.

The floor areas of the standalone typology did not recede much like the state housing complexes at the time, instead with the growing prevalence of the private automobile, garages had been incorporated into the house and, yet again, increasing the footprint of houses. Comparatively, the immediate aftermath of World War II saw the return of many, fuelling the demand for housing. To hasten the production of housing supply, new typologies of inner-city apartments and high-rise living had been introduced, with the likes of the Dixon Street Flats in Wellington. Considered to be an archetype of modernist apartments in New Zealand, the Dixon Street Flats saw dramatic reductions in the area given the designed intent to house single individuals. Apartment units were connected through an external circulation corridor and consisted of a single bedroom within a 40m2 footprint.

The post-war period saw the typologies of modern living transform sporadically. With a growing housing supply coupled with increasing home ownership, the influx of migration prompted designs which are dedicated to spatial efficiency and comfort. (ibid). An advertisement for modern flats in Auckland read "Every living room has almost an entire wall of windows" "leaving wide, uninterrupted areas open to light and air", "satisfying our thirst for sunshine.". (Cintra, 1936). Floor areas in standalone typologies began to increase reflecting the growing household sizes (Page, 2012). The Dorsett Street Flats, built in 1957, is amongst the most important works of domestic architecture in New Zealand. Built as a series of eight, one-bedroom flats, the flats marked an emerging trend of modest, purpose-built designs of minimal living in New Zealand, further cementing the reduction in section sizes and areas of domesticity.

Postmodernism in New Zealand sees the gradual preference shifting from larger homes to smaller typologies at higher densities with the modernisation of Terrace housing or row houses becoming relevant in the urban context. The increase in land values saw the decline of section sizes, reflected by the disused outdoor gardens. (Schrader, 2005). Although standalone typologies have seen inclusion of media and entertainment rooms, many saw the benefits and preferences in high density living. (ibid). The 1990s saw a rise in apartment typologies within city centres, driven by the adaptive reuse of old office and warehouse buildings.

(Gatley, 2024). This trend sparked more apartment construction in surrounding urban areas which by the early 2000s had generated a shift towards minimalist, small-scale houses that were efficient and well-planned. One such example is exemplified by the Sky Box (2001) designed by Melling Architects. Designed as a home to the architect, Gerald Melling, the Skybox is an unconventional 3-storey apartment saddled atop of the office studio within the inner-city area. (Speer, 2013).

HISTORY TIMELINE

Figure 12: The Evolution of Domestic Architecture in New Zealand

1839| Māngungu Mission House

1916|
Tauroa Homestead, Havelock North

Dixon Street Flats, Wellington
1944|

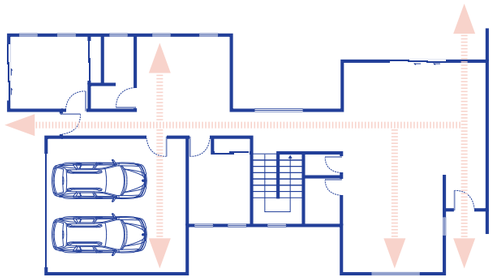
1949|
Easy Chair by Ernst Plischke

1962| 40 Rhodes St, Christchurch

Skybox, Wellington
2001|

STAND-ALONE

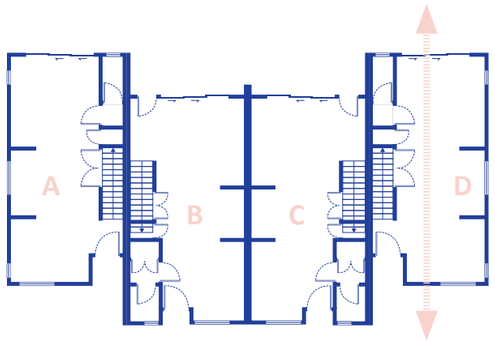
Family | 307 m² | 6 Beds | 5-6 persons



Ground floor footprint - 2 storeys

TOWNHOUSE

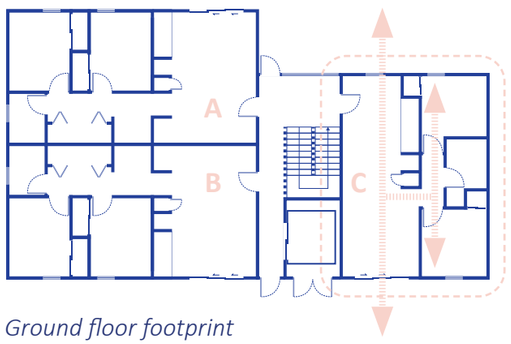
Couple | 119 m² | 2 Beds | 2-3 persons



Ground floor footprint - 2 storeys

APARTMENT

Couple | 58 m² | 2 Beds | 1-2 persons



Ground floor footprint

Figure 13: A typical floor plan layout of medium density typology in New Zealand

MEDIUM DENSITY TYPOLOGIES

New Zealand's Domestic Architecture Today

In recent years, New Zealand has seen a resurgence in various architectural typologies, particularly as urbanization and population growth drive the need for innovative housing solutions. The reintroduction of typologies synonymous with the "missing middle" phenomenon like terrace housing, compact townhouses, and standalone housing, has become increasingly relevant in the urban fabric. (Parolek, 2020).

The introduction for wider range of typologies initially reflects growing support in the needs of certain demographics. For instance, smaller attached townhouses are designed to be low-maintenance, and spread across multiple storeys, with the design intent for younger families while standalone houses with a larger footprint and single storey suggests the dwelling for older age-groups. However, in recent years, the handful of societal issues such as lack of functional infrastructure, public transport, housing supply, housing prices fuel the tendency towards living in smaller footprints across a wider range of demographics from young, middle aged and older occupants. This mixing of wider demographics across a standardised design arrangement establishes the foundation for inter-generational living, a "make up of an urban village" which "brings people together". (Marriage, 2022).

Terrace housing, characterized by a row of attached dwellings with intertenancy walls, has gained popularity as a solution to increasing housing demand in urban areas. This typology effectively utilizes limited land by providing high-density living options while promoting community interaction and a sense of belonging among residents. In cities like Tamaki Makaurau (Auckland) and Te Whanganui-a-Tara (Wellington), modern terrace houses have been designed with contemporary aesthetics, often compromising functionality and comfort. The leaky home crisis of the 1990's in New Zealand, resulted in tightening of the Building Codes and restrictions to control build quality. (New Zealand Parliament, 2012). However, the greater demand from population influx coupled with a decreasing supply of tradesman and loose inspections resulted in substandard houses being built. In the addition of recent events such as the revamping of building codes, introduction of plan changes in response to the MDRS, indicates a shift in perception of the utopian typology. Designs solutions of medium density are standardised, dismissing the positive benefits of a sensually receptive experience. Comparatively, instances such as Bernoulli Gardens and One Central have shown that achieving comfort in a medium density context to be possible. The terrace housing model also addresses affordability by offering smaller, more accessible living spaces, which are particularly beneficial for first-time homebuyers and young families.

Compact townhouses and apartments represent another innovative response to the challenges of urban living. These homes are typically designed to maximize space efficiency while maintaining a high level of comfort and functionality by utilising vertical space. Compact living often features open-plan layouts, multi-functional furniture, and hidden storage solutions to create a sense of spaciousness within smaller footprints. In New Zealand, these typologies have not been embraced nor met with wide-spread implementation as it has like Surry Hills, Melbourne (Farrelly, 2023). In New Zealand, residential buildings glorify the use of timber framing among these dense typologies due to its heavy abundance, ease of construction and earthquake resilience. (Beattie and Thurston, 2006). However, the buildings risk a lack of privacy, heat retention as well as additional material costs from fixings and components such as insulation, sound proofing, fire retardant linings, etc to enhance/ accessorise the structure.

Comparatively, the foreign counterparts of the typology are normally constructed with in-situ concrete, resulting in more soundproofing, enhanced sense of privacy and greater design modification. The design philosophy behind this typology also emphasizes outdoor living, with many incorporating private courtyards or balconies that extend the living space into the outdoors. Notable examples of the typology include the Wynyard Central East apartments and The Grounds by PeddleThorp, the former adopting a myriad of unique features such as a communal rooftop terrace and pavilion at the centre of the complex with the built form safeguarding the merits of private life.

Despite the rise of higher-density housing options, standalone homes remain as a cornerstone of New Zealand's architectural landscape. These homes offer a sense of privacy, individuality, and a connection to the land that many New Zealanders value. The drawback, however, comes from its inefficiency in land use; Standalone homes require larger land area to accommodate, often promoting urban sprawl or greenfield development as opposed to brown-field development due to the lack of incentive to build on built-land. Figure 12 compares the three prevalent typologies of New Zealand's urban fabric, analysing its occupancy capacity and its average footprint area. The sensual qualities and experience of these spaces are exhibited by thoughtful design where considerations to living is personalised and enhanced to the occupant's way of life. The build quality is more consistent and easier to manage compared to other higher-density typologies.

The reintroduction of terrace housing, compact townhouses, and standalone housing in New Zealand illustrates a dynamic response to the evolving needs of its population, paving a new era of medium density living. Their needs mainly defined as amenities (shops, entertainment), walkability (proximity to different functions) and measure of comfort (warmth, relieving, healing) all accounted to design optimisation. However, the reputation of intensified living is not well received in New Zealand, overlooked for its costs of body corporate levy, risk of hidden maintenance costs as well as the lack of quality of design and construction.

Phenomenology of space – the experience of space and the memory of space.

This thesis is an investigation of the phenomenology of space, specifically the memories and experiential nature of space, through autoethnography and creative practice. The project consists of 3 iterative phases exploring the sensory experience of space while utilising mixed-media and creative practice to investigate and express different dimensions and sensoria of space. Each phase considers and documents a particular phenomenological aspect reflecting on personal experiences in connection to the memories of an experimental space.

The proposition of the thesis is to create statement or identity for small space; transforming and enhancing spatial experiences to create meaningful spaces which are experienced positively and remembered.

METHODOLOGY
03

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PHENOMENOLOGY

The incorporation of phenomenological ideas into this research seeks to develop a better understanding of spatial perception through human sensory as opposed to physical appearance such as shape, form, size, etc. Several key concepts of phenomenology have been used in the research to better inform sophisticated details that correlate to the three phases of this thesis and whether the concepts are applicable for small, constrained spaces.

Phenomenology can be associated with a philosophical approach to dissecting the human experience and perception of space. In Bachelard (1994)'s "The Poetics of Space", Bachelard emphasises the intimacy and profound connection between human experience and inhibiting spaces. "The house shelters daydreaming... which is as integral to our being as a shell is to its mollusk". The root of this etymology is derived from Edmund Husserl's 1907 article in The Philosophical Review and later in his compilation of works, "Thing and Space – Lectures Of 1907", featuring a range of lectures that sought rationality to human consciousness and how spatiality constitutes in human experience. Husserl argues spatial perception is an "active synthesis" rather a passive reception of sensory data. The experience of the space can be expanded to several constituents; "noesis", the acts of perception, imagination and remembering; "noema", how objects are perceived; and "leib", movement and embodiment. These phenomenological components shape the "lived experience", where the interaction of the spatial objects is felt, becoming deeply personal. Husserl's notion of spatial experience as an "active synthesis" and philosophy was later expanded by Martin Heidegger, who focused on the sensory and emotional aspects of experiencing the built environment In his exert "Building dwelling thinking" from "Poetry, Language and Thought" Heidegger informs the notion of "dwelling" referring to the act of inhibiting spaces emotionally and spiritually, encompassing the use of architecture to foster a sense of place and building connection between occupants and the environment.

Phenomenology is central to this research as sensory experiences of sight, sound, touch and smell are characteristics to describe the essence of space. Terminology used within phenomenology such as "lived spatiality", "genius loci", and "sensuality" will be adopted into the research to deepen understanding of phenomenological concepts implemented into the research, ensuring accuracy of the details translated.

AUTOETHNOGRAPHY

Autoethnography is a form of academic writing which analyses or interprets the lived experience of the author, connecting the researcher to insights to a broader topic of issue. According to Adams et al. (2015), autoethnography is a qualitative research method which "uses personal experience to describe and critique cultural beliefs" (1), "Values author's relationship with others" (2), and "Heavy use of self-reflection" (3).

As the basis of the creative aspect to this research involves the dissection of my lived experience, an autoethnographic approach had been considered as best suited for the topic and field of research. The reason of using personal experience to inform the research is due to the subjective nature of the field of research where different readers may interpret ideas based on self-beliefs and opinions. Through the lens of a personal narrative, the research draws a dialogue to what Poulos (2021) would describe as an "interrogative" narrative of my memories. Several tools are used alongside autoethnography through a layered approach such as artifact analysis, context, thematic analysis, and storytelling. (Poulos, 2021). The approach to combining various tools with autoethnography connect the three phases together through a singular, continuous narrative complemented with the creative aspects of the research.

PRACTICE BASED APPROACH

The research adopts a practice-based research approach (Candy, 2000, Skains, 2018, Skains, 2024), involving the use of various analogue mediums such as modelling, sketching, photography, and documenting, along with digital imaging technologies and installation to experiment, test and simulate various spatial environments. Practice-based research is a form of investigation that involves more direct and intimate processes of designing, observing and analysing through the act of creation and the production of artefacts (Skains, 2018).

In the context of this research, the practice-based approach is progressive in scale and complexity, working from smaller modules in Phase One (Chapter 4), to production of series of artefacts in Phase Two (Chapter 5) and towards a 1:1 installation in Phase Three (Chapter 6). Figure 14 details the mindmap of the theoretical framework of the research, taking precedence from relevant philosophers and anthropologists to decipher the phemonological issues pertaining to space. As the research has uncertain hypotheses, a practice-based approach clarifies possible outcomes to the research question.

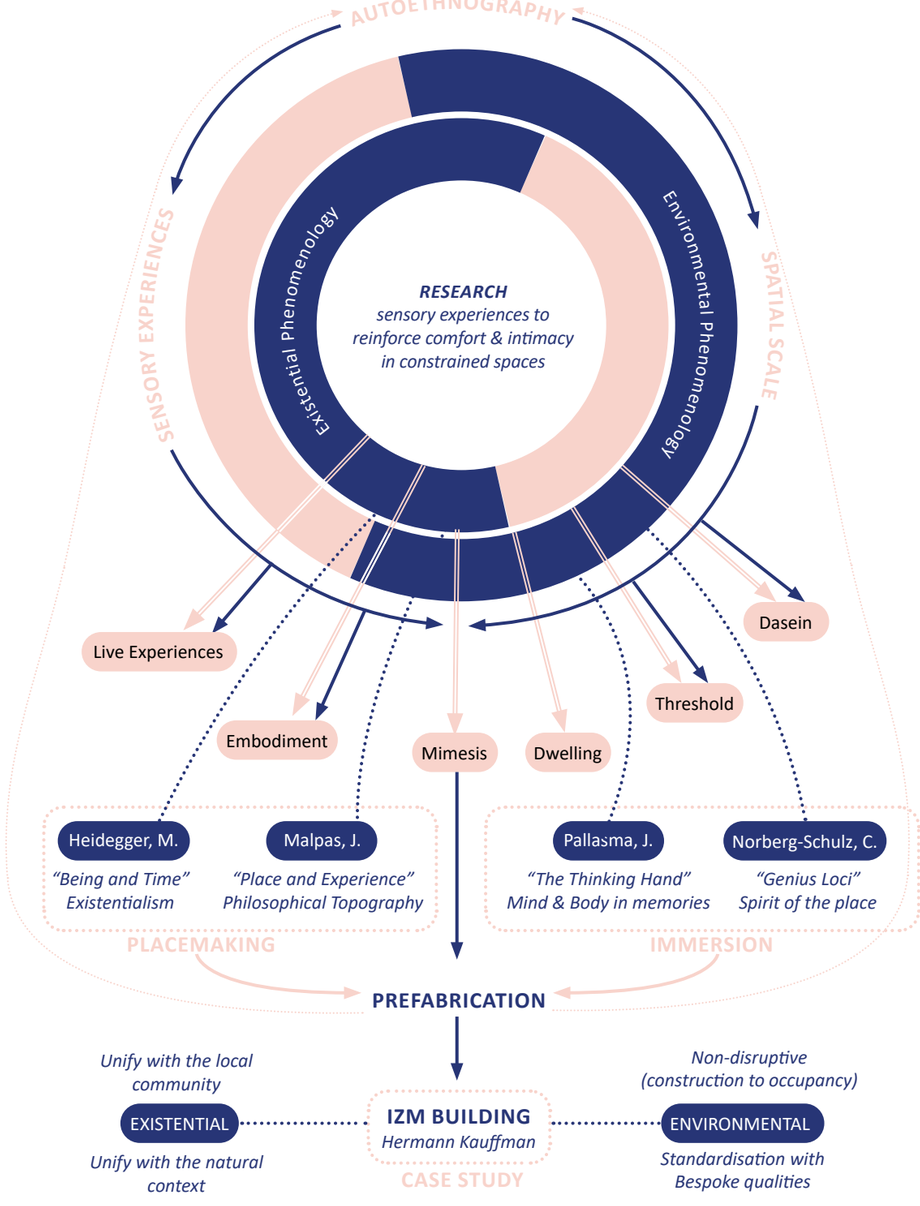
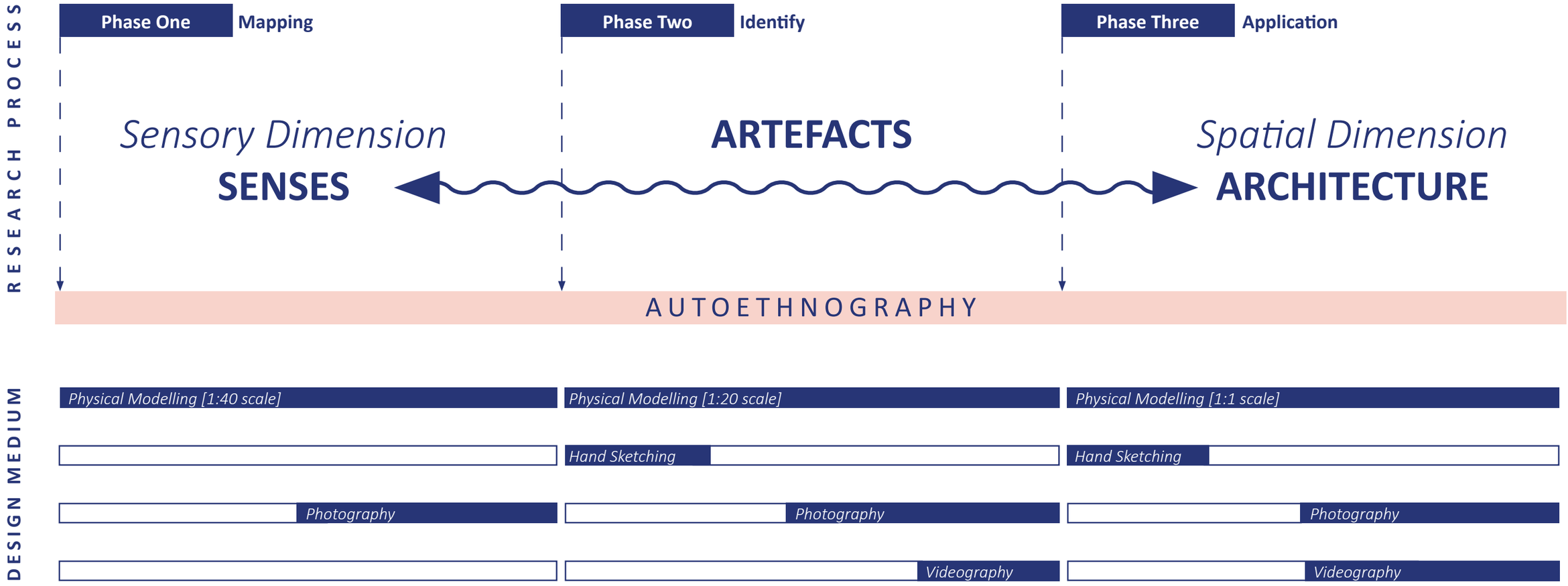


Figure 14: Research Theoretical Framework Diagram

RESEARCH DESIGN

The correlation and progression of each phase are mapped in the diagram below, illustrating the narrative connecting sensory information and spatial logic. The type of media used within each phase correspond to the gradual progression from an intangible world to real life.



PHASE ONE

Phase One (Chapter 4) explores what is termed the “multi-sensory dimensions” of architecture (Mane and Hullar, 2024). Senses are intangible to the naked eye, however, with the profound interplay between architectural spaces and human sensory experience suggests different senses are activated upon spatial characteristics. The different user-experiences of each sensory dimension can be found in Mane and Hullar (2024)’s journal article and will be the basis for phase 1. Developing the study further, the expressions of each sensory will be recorded through practice-based approach.

The objectives of this phase or the research are to grasp and express each of the primary senses (touch, sight, taste, hearing, smell) in movement within a volumetric space. This experimental phase drew from an autographic process of translating photos and memories of my grandparents’ home, taking presumption of “sketching” as mapping or creative process bringing new artifacts into being, drawing the wider context into a sense-scape, following a personal narrative introducing the contextual background of the environment and the implications that were inflicted on the studied space. (Goldschmidt, 1991). Upon further interrogation of memories, various spatial descriptions characterise the sensory dimensions, analysing and translating sensory information into spatial volumes to form the physical boundaries of the contained space, deconstructing the “lived spatiality” through sketching and model-making.

It is stated by Rasmussen (1964), the best way to understand architecture is experience it. Though in argument, the chosen space studied is a personally lived space throughout my childhood, a “lived spatiality” as Heidegger (1971) describes which carry significant details a first-hand observation may not. The process of analysing, sketching and building is undertaken to examine the different expressions of sensory dimensions without the use of digital means to retain authenticity of experience.

PHASE TWO

Phase Two (Chapter 5) is the intermediary between sensory dimensions and actuality, exploring the transition between space and sensory. In this phase, series of “artefacts” will be produced to communicate and activate senses ie; Sounds/noise, Feel/touch, Color/visual, Scent/smell. The artefacts are modelled as physical objects, using the sensory analysis from Phase One as a base, to compose in a profound manner that allows the audience to interact, transmit sensory and re-interpret their impression of the space.

The objective of this phase to reverse-engineer the sensorial framework of the built environment by devising through first principles, i.e.; “what element creates sound?”, “Which part of this building enhances or activates certain senses? “And then imbuing the sensations of the experience into artefacts. The purpose of the artefacts/physical models is to interpret different sensory patterns of my “lived experience” through interactivity; touch, kinetics, and scent. Interactivity with the artefacts as a source for spatial memory, for instance, the location of objects in my memory, the direction of the door swing, and the number of steps on the staircase. Similar analogy can be found in Healy and Alves (2010)’ article on spatial memory, where actions or “cues” are read by animals as a wayfinding guide for different places and sites. Here, the dimension of the artefacts telepathically transports the reader into my spatial memory. The process of designing the artefacts Descriptive phrases such as “the sound of the rolling cage door clanging as it rewinds above the door head”, or “the wind collides aggressively onto the windowpane” were written and recorded from memory before being translated into a series of scale-models. e carefully considered artefacts, individually, are monographs of the phenomenology of the space while, when read in conjunction together, are physical manifestations of my memory of the space; “How I remember [the space] and What I remember about [the space].”

PHASE THREE

Phase Three (Chapter 6) is the process of revelation and proposition of the thesis. A carefully considered open-plan space is selected and documented for a spatial installation to take place. The space then uses intentionally placed furniture, objects and decorative elements to curate the spatial experience and control sensory intensity. The intent of the installation is to communicate imagery and memories of the space to the audience- “inhabitants” of the space.

The objective of this phase is to enhance an existing space that is perceived as spatially restricted, dull, passive, and generic, by utilising sensory transmitters or artefacts as a type of “agency” to design and build a meaningful experience. The type of medium used in this phase transitions from analogue techniques (Phase One and Phase Two) eventually into digital methods such as CAD, 3d-printing, and lasercutting to reflect the auto-ethnographic background of the research as a journey of revelation that ties back to a real context.

DESIGN METHODS

The use of analogue media throughout the research is intended to engage the reader through an authentic experience, to relive the “lived spatiality”. The research approach is influenced by Debord (2021)’s critique on the consumerism of media describing images as a distortion of reality which create artificial environments that mislead human perception and distancing people from authentic experiences. As digital media are artificial by nature (Paul, 2023) and sensory experiences are often intangible, the research utilises analogue media such as photography and physical modelling to capture the essence of subjects and preserve the imperfections that builds an authentic representation of a lived spatiality. Numerous studies have challenged Debord’s critique, exploring the impact and applications of digital media on placemaking. However, the studies involve the creation or use of imaginative spaces and digital platforms rather than actuality. Moinuddin (2023), examined the functions or cues to “digital placemaking’ across smartphones. A conference Paper by Hameed and Perkis (2018) evaluated the immersiveness of spatial experiences.

DOCUMENTATION + REFLECTION

The methodologies employed in this research have been carefully selected and applied to ensure the personal narrative is progressive across all three phases while maintaining an authentic experience. By integrating autoethnography through to a practice-based approach, this study leverages the strengths of each to provide a comprehensive investigation of phenomenology. The combination of analogue (photography, model-making, sketching) and digital techniques (3d-printing, 3D-modelling, machining) has allowed for a multifaceted understanding of the representation of intangible elements such as sensory and spatial perception. This ensures the findings are validated. The narrative of the research adds a layer of engagement with the reader, enabling the identification of nuanced insights and emergent themes through storytelling. As we transition to the subsequent phases, the groundwork laid here will support a thorough and insightful exploration of the results, contributing to the broader discourse in phenomenological studies.

Alexander Pope (2018), an 18th-century poet, famously urged us to “consult the genius of place in all.” This phrase, widely quoted and rooted in the concept of “Genius Loci,” calls upon the spirit of place to emphasize the importance of landscapes and environmental processes. (Jackson, 2011). Similarly, Norberg-Schulz (1980) described places as “distinctive” spaces, arguing that architecture’s role extends beyond designing buildings. For Norberg-Schulz (1980), architects must help people “dwell poetically,” fostering a deeper sense of belonging to a place.

As urbanization and economic pressures drive standardization and efficiency, the unique spirit of locations is often overlooked or disregarded. The question posed is a pressing one—have we, as architects, forgotten the true purpose of design? Perhaps the words of Pope were rhetorical, announcing to the profession - The goal is to restore a genuine sense of place to contemporary designs—reawakening the connection between people, the built environment, and the land they inhabit. By doing so, architecture can move beyond the superficial and create spaces that are not only functional but also imbued with meaning, history, and a sense of belonging.

This chapter revisits the idea of Genius Loci to highlight a critical issue: the loss of connection to place. By bringing forth analogue techniques to visualise sensory, the phenomenology of my grandparent’s home is uncovered, revealing the personal memory and biographic narrative of the architectural experience.

SENSES IN MEMORY

04

PHASE ONE

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Figure 15: Biệt thự Nguyễn Văn Hảo (Nguyen Van Hao Villa) by Elle. (Source: https://mtg.1cdn.vn/2017/03/21/images-motthegioi-vn-8443_kientruc1.jpg). Retrieved: 16 October 2024.

CONTEXT

The Place of Memories

This chapter brings forth the phenomenology of my grandparent's home through personal memory and biographic narrative, uncovering the composition of the architectural experience and visualising the sensory through analogue techniques.

The setting was a modest early 20th century tenement in district four of Saigon, Vietnam. Its significance stemmed from personal attachment and the historical connections that lie within the space. The building perceived as the common shophouse typology widespread across Southeast Asia, were constructed as 3-story concrete structures arranged along single aspect frontages of long plotted sections. (Doling, 2015). The tall, thin buildings are usually adorned with decorative arches and columns supporting the overhangs above to create a sheltered porch/entry at the ground level. Built as primarily residential use on upper floors, the typologies evolved transitioning from one-storey to higher densities amidst growing merchant culture. (Janssen and Keulen, 2015). In this instance, the tenement had hosted various functions such as restaurant, pharmacy, home. (Figure 18). In reference to appendix A1-A3, the district planning committee of Ho Chi Minh City had requested urban planning road changes to district four as part of its urban renewal proposals, requiring new roads and intersections to be constructed, widely transforming the urban fabric.

Conflicting sections and plots were ceded to the committee as public assets but the owners (my grandparents) of the tenement had refused to relocate as it served the public long as a locally known restaurant and pharmacy. As a result, the tenement had been partially demolished stripping the structure of its functionality, depicted in Figure 17.

A sensory analysis was conducted, influenced heavily by my ethnic background which traces back to the outskirts of Saigon, where the sensory qualities of the landscape remain vivid, harmonizing with the built environment. The sensory patterns of the environment created a synchronized flow of physical movement, visual periphery, smells, and sounds. These self produced "sketches" to inform my childhood memories of the space can be observed in appendix B. To examine and retell the sensorial environment of the house, an auto-ethnographic narrative was written to unfold the attachment and significance of its past.

"In the early hours of dawn, sounds of footsteps and roaring cold engines are heard from afar, signalling an industrial call to the start of the day. Within the confines of a constricted white apartment, gleaming hues of fiery yellow penetrate the interiors of the room and above my face disrupting my long, solemn slumber. After the usual morning routine, my mother thoroughly transcribes the itinerary of the day as though she is delivering a "State of the Union". No word short and no planned hours long. With muscle memories activated, I grasped the words "grandparents' home" and immediately unravelled the whole day's plan.

After one short trip traversing paved concrete roads and bridges, we arrived at a long wide tenement house along a bustling street. A functionalist shophouse, the green-tinted tenement is decorated with a monolithic façade dressed in a series of deliberate architraves. Below the fronting canopy, a camphor-laurel tree obscures the frontage glistening the path of entry and daylight into the interior. (Figure 16). Tucked beneath the mature tree, a localised species, the "dragon chicken", guards the doorway to my grandparents' home. As I walk towards the entry to greet my grandparents, I am not only mentally confronted by the sheer assertiveness and size of the chicken but sensually induced by the smell of medicinal herbs and dry medication from within the building. The sound of the metal cage slider rattles furiously as its opened to one side before being contrasted by a soft, reserved greeting that always fills your heart.

A shiver runs down my spine as I take a step onto the cold, hard concrete floor, with all the memories of the original home flooding my mind. I remember the unfaithful day that radically transformed the building but most importantly the lives of my grandparents. The space was deeper, bigger and more elaborate; the cabinet is a reminder of its past as a pharmacy. The transfiguration externally is reflected by the adaptive reuse of its internal amenity from retail use as a pharmacy into fully residential use within a 3 storey, 40sqm footprint. Although dramatic changes to the structure and footprint of the building took place, notions of the past exist, and the experience of space remains unscathed."

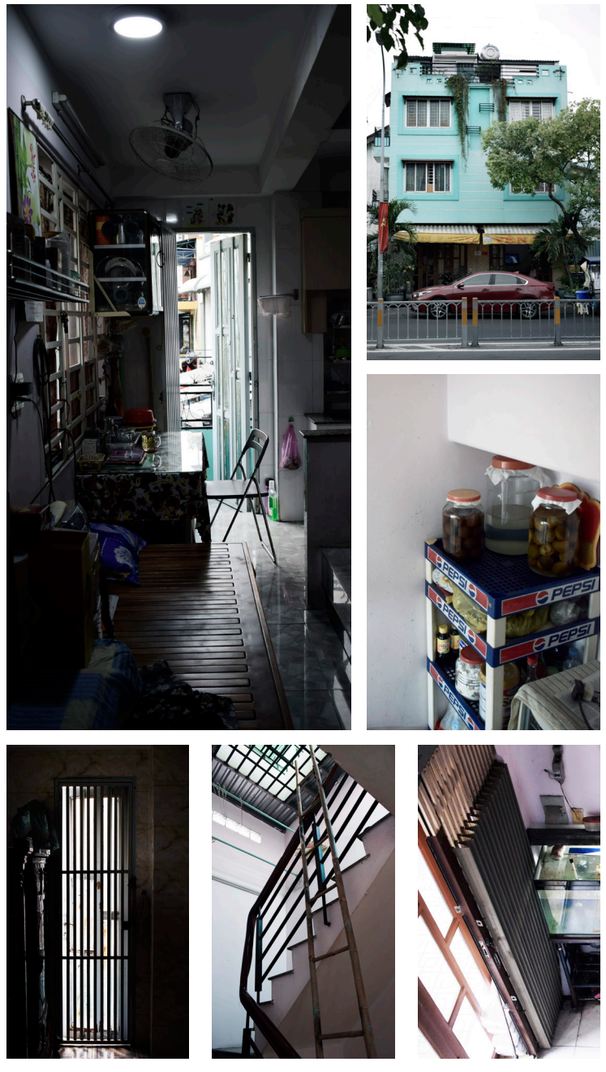

Figure 16: Moments captured of grandparents' home in Saigon, Vietnam

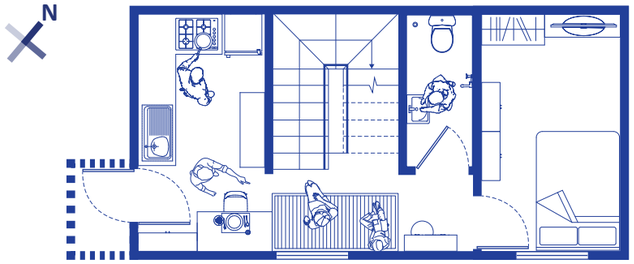

Figure 17: Grandparent's house new floor plan after urban redevelopemnt (First Floor Plan)

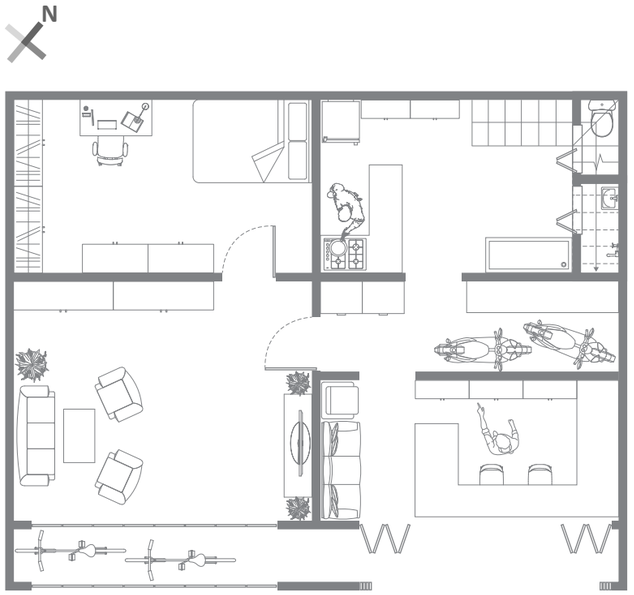

Figure 18: Grandparent's house old floor plan before urban redevelopment (Ground Floor Plan)

MEMORY AND INTIMACY

In the essence of the memory, the intimacy of the space or making of the sense of place doesn't come from sensory but rather the experiential nature of living and bonding relationships in childhood, much akin to Feld and Basso's definition to sense of place as "experiential" and "expressive". (Feld and Basso, 1996).

To understand the phenomenology, the space of my grandparent's home is reimagined in layers in my memory, each layer representing an individual sense of the spatial atmosphere and source of navigation; Luminance, Sound, Touch, Scent and Air. The layers of the space have been reconstructed from photographs (Figure 16) to digital recreations, to retain accuracy of its visual details. In isolation, the layers are perceived as "negative spaces" or voids, partitioned by invisible boundaries containing them.

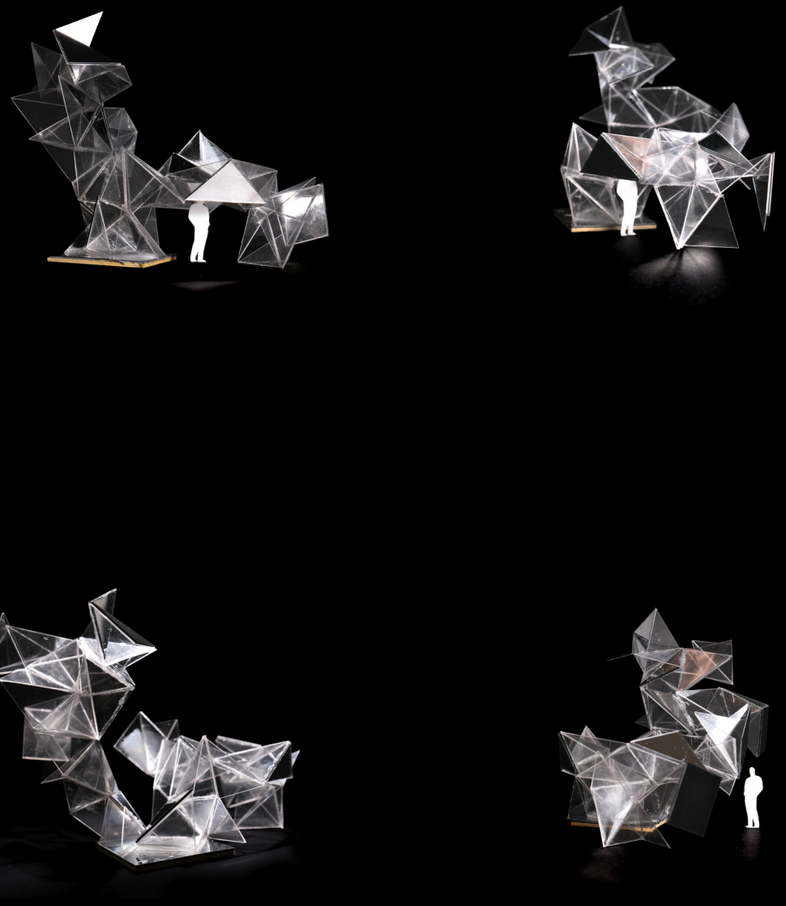

Figure 19: Mapping of light reflection and shadow inside the space

NAVIGATION OF LUMINANCE

Sense of Sight

Despite the humble aura of the exterior and the unfortunate past of the building, the glimmers of light shining through the framed openings of the façade cast an authentic scene onto the interior setting. Strong highlights and deep shadows induced at sharp angles accentuate the materiality of the space. Reflectivity is sharpened while soft, dull textures complement darker shadows.

"As I step into my grandparent's home, the world outside fade into thin air; cooler, dimmer and almost intimate. The soft-lit interior filtered through small, gridded windows and aged wooden slats. Though not harsh but a warm embrace, casting deep shadows stretching across the worn tiled flooring. The gentleness of the afternoon sun seeps into the interior, catching the flecks of dust suspending in the air creating a muted glow hovering between the past and present. Overhead, a single recessed downlight shines a faint amber below. The timelessness uncanny as though the interior is caught between the past Saigon and the creeping modernity outside. The shadows cling to the corners, giving the small space a sense of depth and mystery, as if every nook holds a forgotten memory. Light bounces off the in-situ cast walls, highlighting the subtle cracks and imperfections whispering the stories of time and wear. Atmospheric yet almost cinematic – A kind of lighting hinting to pause, breathe the moment and absorb the still, quiet charm of space. It's not only the light; The mood, history and presence wrap the air around me, and I am subjected powerlessly at will by nature."

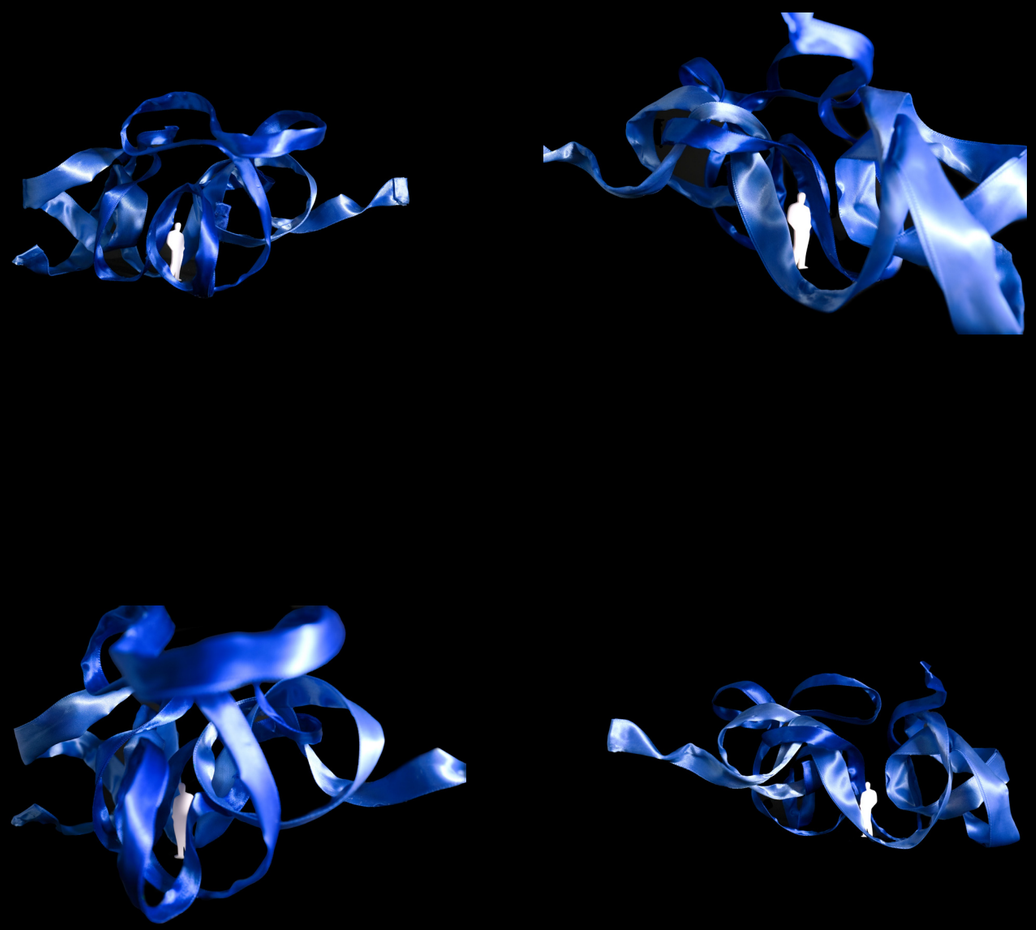

Figure 20: Mapping of scents floating inside the space

NAVIGATION OF SCENT

Sense of Smell

Similarly, a ribbon is shrouded in darkness seemingly bound and contained within an invisible volume. The twists and turns resemble the intricate movements between rooms and surfaces. The small reflective nodes as the presence of revealing moments. The endless lengths of the ribbon convey the notion of source (transmission) and audience (receiver). As you traverse through the space, the ribbon widens, rotates, and dance in the air.

"Upon entering the house, the moist, monsoon air of the immediate surrounding is left in stillness. The smells of damp moisture from fabrics and textiles, mixed with the natural sweat odour is a scent familiar and accustomed to. At the first step through the door, I find myself on what used to be the front counter of my grandparents' pharmacy, is now adapted into a living space. The smell of herbs, pills and tiger balm overpowering the damp moisture, forms a welcoming presence to the spirit of the home. Walking through the narrow corridor, I am guided by the scents of saltiness and fermentation lingering from the pickling jars stacked on towered crates just by the stairwell. The mannerisms and persona of preserving food and extending shelf life is transfigured into spatial sensations around the house. With each step leading to a stronger smell of metallic rust, I hold the paint-chipped balusters with my cold, moist hands, pulling myself closer to the storey above. Allas, atop of the stair landing, I am greeted by the scents of mixed spices and herbs.

The air gradually transitioning from a briny, bitter scent to a soft, warm lingering sweetness as if my granmother's cooking and savoury treats were present in the room; Turmeric, Vietnamese Cinnamon, Cardamom, Bay leaves and Five-spice. The combination of ingredients brewing creates a unified scene, the gathering of family, spirit and food. Behind the polished timber door panels stands a large, tall wooden cabinet, its shelves laden with plates and cutlery passed down through generations. As the drawers are opened, a faint nostalgic aroma is set free, releasing the air of the bygone eras into the present."

Figure 21: Mapping of the wind and breeze blowing through the space

NAVIGATION OF AIR

Sense of Touch

The atmosphere – mood and sensorial qualities of space, speaks a lot for its presence, occupancy and history. This is similarly true with my grandparent's home as the sensation of well-being felt strongly unique and interpersonal.

"At the street front of the tenement, a layer of humidity clings to my skin, thick and unrelenting, almost as if the air is pressing down on me. I felt a blend of chaos and calm wrapping around me, a paradox of the city pulses; alive with energy but heavily fatigued from movement. The outdoors, in plein air, felt oddly restricted and enclosed; the honking and drowning of engine noises playing an endless battle with the neighbouring vendors pleading for customers. Within the building, I am transported to a different world. The thick humidity fading away as I cross the threshold. I take a large sigh of relief emptying my lungs as though I've surfaced from underwater, mentally recovering from the frenetic energy of city life. The walls seem to absorb the noise from outside, detoxing the undertones into a distant hum. In an instant the vivacity correlated with the frantic sprawl diminishes; my nerves unwinding as though time has stopped. As I ascend to the upper floor, my body begins to respond to the surrounding space. My muscles, tense and coiled, loosen. The weight on my shoulders lifted and I feel sensually vulnerable, open to the quiet, stillness of the room. The presence of the kitchen with its subtle hum of life, its wooden countertops worn smooth with use, grounds me.

The arrangement of the interior finishes simple, clean and thoughtful puts me at ease and the single aspect openings draw in an ideal amount of light softening the edges of the room and illuminating in a natural, unforced manner. It is as though the space is designed to soothe, healing all shortcomings of the day and offering a refuge from the outside world. The warmth and comfort are tangible in atmosphere. The warmth and comfort eluding to the sense of belonging is reciprocated. I am recognised by the space as much as it recognises me. I instinctively compared the home to a therapeutic retreat from life as much as a return down memory lane. The atmosphere of the home is reflected in its architecture. Simple and nostalgic on the outside yet profound in its interior and details. A nuanced feeling of space and ambience; every detail intentional; every corner designed comfortably and peacefully."

Figure 22: Mapping of different materials on different objects within the space

NAVIGATION OF TACTILITY

Sense of Touch

The home is perceived as sensually rich and worthy as any other larger home. The reasons outside of the scope of this research, there is a deep history to the home, a past sense of belonging and stories that are left behind waiting to be told. Partially demolished and adapted to a constricting environment, the remaining structure stands to uphold its true spirit and original character. Although the home was twice or thrice as large, the internal culture is not affected by external politics. “What we see is what we remember” of the space. (Beattie, 2019). Tactility is the connection of the past and present, bringing the stories untold into reality.

“The sight of the bright green plastered exterior interrupts my step as I cross the road through a flock of mopeds drifting around my presence. I could sense the roughness of the textured masonry blocks as my eyes skim corner to corner of the façade details. Skin tingling, hair-raising goosebumps. Approaching closer, I felt a cool shock as the unfolded canopy shades my body from the moist heat. A small breeze grazes past behind me as mopeds and cars drive through the narrow road. The metal sliding cage door felt worn, exposed to years and years of dust and air, degrading with each use. It’s rough paint shedding like the skin of a snake, uncovering the rust of bare metal underneath and deteriorating with every touch. Yet, I felt another cold shock after stepping into my grandparent’s home; The cold ceramic tiled flooring felt comforting yet natural. My toes sunk into the gaps above the grout, find place and positioning with every step.

And the touch of polished, hardwood tables and furniture bring a balance of visual weight against the fullness of brutalist concrete containing them. The home, shallow and constrained ironically felt rational and content. I felt a spirit of functionalism as I immediately turned facing a neat pile of unused, discarded furniture and homeware; Metal, plastic, textiles, bamboo, cardboard, paper. Materials and objects which were machined, refined, processed and manufactured. Within the strictly linear tenement holds richness and syntheticism to the visual and tactile sensoria. I walked up the stairs to the floor above uncovering my grandparent’s undeterred devotion to functionalism; Metal shelving fixed above one another, overlapping the curtains against the window transoms; Small wooden storage cubes all stacked in place on a single lounging bench; Pots and Pans hanging off makeshift racks; Lone objects and equipment neatly tucked away in every nook. Seeing the orderly clutter emerging, I am left to wonder if it had been the building which surrendered to urbanisation rather than my grandparents themselves.”

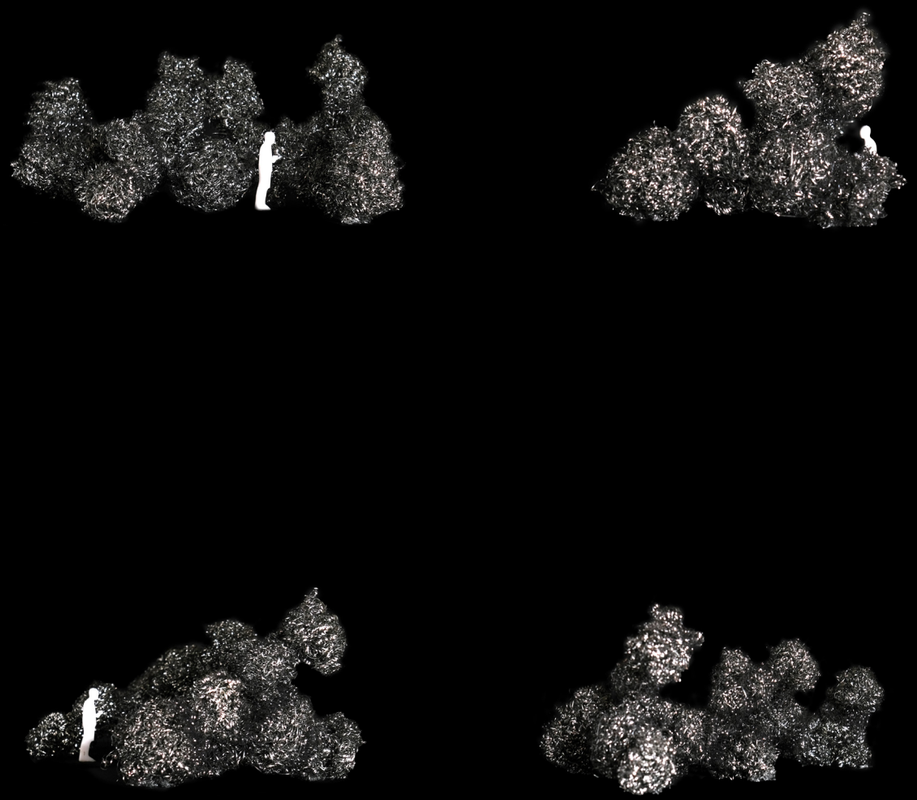

Figure 23: Mapping of noise distribution inside the space and extend to the external environment

NAVIGATION OF SOUND

Sense of Hearing

The aural qualities of the home are uniquely tied with the experience of revelation and visual ambience. In addition, the constrained spatiality amplifies the feeling of suspense, invoking curiosity to construct a sequence within the experience. The visual of sound is radial, tidy and muffled like the metallic kitchen scrubs. The closer to the source of sound, the more concentrated while at farther distances, the sound dissipates to thin air. Much akin to sound functioning as a communication source, sound can be interpreted as a wayfinding tool, similarly with echolocation as with bats and dolphins. The sounds we, physical, natural and metaphysical beings produce, sends a signal to others nearby, picturing an unconceived notion of the context without physically living the space itself.

"With a turn of a key, the sound of grinding metal screeches against my eardrums, the worn, tattered door unbudging at every movement. I tightened the grip of my holding hand with every passing second, the sound intensifying as the metal gears press exhaustingly. Unexpectedly, a sudden CLICK abruptly settles the metal cage sliders as it rattles and clang, opening at full length at a push aside. The sounds reverberate within the space, presenting a delayed echo of the ruckus. Stepping inside, I notice the distinct murmurs and the fuzz of an old, satellite television playing continuously, unattended. The outside sounds begin to muffle, void of white noise and acoustic rhythms. Reflecting off the concrete in-situ walls, I feel the energy of sounds absorbed and transferring into soft, mute vibrations. Stable, controlled, enclosed and protected.

Knowing the sounds travelling within the tight space is trapped within the walls makes me feel safe; there is a sense of safety within this home. Throwing on my bright pink, oversized, indoor slippers I hurryingly jolted towards the stairs with an unrestrained flow of excitement. My excitement is as loud as the sound my slippers make as it stomps against the cold, ceramic tiles. I couldn't bear the thought of not seeing my grandparents after a long, hard week of studying and finishing homework. A refreshing moment to cherish. The concrete treads were tall and narrow, firm but hollow. Step after step, the vibration of my brisk pace exudes soundwaves into the stairs with every step passing through the tall, black metallic balusters. Left… Right… Left… Right, each step certain and confident until the final tread enters my periphery. This one's uneven, higher than the rest, breaking the pattern as I paused momentarily to process my last step. Afront, a small metal gate stands separating the intimate mid-floors from the lower floor containing the rumpus. I screamed "chao ba! chao ong!". Shaking the metal gate vigorously as I emptied my lungs, the sound of footsteps begins to creep, louder and louder. Opening the gate, I hear a short, comforting response welcoming me as I step closer for a warm embrace. To my immediate right, the sound of a metal-legged chair taps the tiled floors pushed aside as a tall, skinny figure takes a firm stance forward. Behind the figure's silhouette, the bright glaring outdoors penetrates the interior. Coming closer, I notice the revealing details of the figure's face to be my granddad's. A surge of happiness erupts as a longer embrace of comfort awaits."

REFLECTION

Phase One Reflection | What's Next?

These passages reflect deeply on the intimate connection between architecture, memory, and sensory experience, blending phenomenological with biographical narrative. The essence of my grandparents' home, contextualized within the broader history of urban change in Saigon, and homing in on the sensory details that define my personal memories of the space. The writing navigates multiple layers—sound, scent, tactility, and air—each serving as a conduit to the past, and ultimately highlighting the idea that architecture is not merely a physical construct but a vessel for lived experience and emotional resonance.

The sensory patterns while separated for this analysis are not isolated details, but interwoven into the spatial environment, transforming simple movements and observations into meaningful encounters. The depiction of the home's modest but rich sensorial landscape transcends its material limitations, emphasizing how the structure remains a source of personal history, family heritage, and resilience despite the physical changes it has undergone. The evocative description of light, for example, acts as both a literal and metaphorical representation of the house's enduring spirit—capturing how light can be a bridge between the past and present, suggesting that even as spaces change, their emotional essence persists.

In this exploration, the text illustrates how intimate memories become tangible through the smallest details—a creaking door, a lingering scent, the feel of cool ceramic tiles—all coming together to form a complete, lived-in experience; Spatially, the very thoughts of warmth and comfort become a vision. These details offer foundational understanding on the intangible aspects of space, objectively depicted through analogue methods. Further progression of this phenomenon will be explored in later Phases.

Upon dissecting the lived spatiality of a space as conducted in Phase One (Chapter 4), the mapping and analysis of sensoria indicates internal and external influences effecting the spatial experience.

This chapter further investigates the origins and creation of sensory insights through the production of artifacts—scaled models of notable sensory experiences, as things that inhabit this lived environment to replicate the lived spatiality. The artefacts when perceived individually, take form as nuanced pieces of furniture, still-lives or architectural elements. As models, they manifest the experience of a space and are multi-facetted; individually interactive or reinterpreted together.

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ARTEFACTS OF SENSORY

05

PHASE TWO

Figure 24: Stairs Balustrade (top), Hinged Door (middle) and Overhead Opening (bottom)

ARTEFACTS OF SIGHT

Lighting and Shadow

Light and shadow are fundamental in creating spatial dynamics. The interplay between light and dark adds depth and dimension to a room. Decorative elements like cornices and door trims, it modifies the lighting by softening the edges or enhancing the contrasts that define shadows. Another element that influences the visual experience is materiality, through the use or the application of various textures (such as gloss, matte, or metallic) and colour temperatures (warm or cool). Together, these factors work to create a distinctive atmosphere, shaping how we perceive and interact with a space.

In continuity with the lived spatiality remembered and examined in Phase One (Chapter 4) the inhabited space, transformed in its physical dimensions; narrowed and shrunk, silently collects the remnants of our lives into an intricate tapestry of memories and belongings. The act of dwelling is interpreted as the life contained within space. Without the touch of life, space is devoid of meaning and warmth. The objects described are structural and architectural elements which induces an unfaded memory of the lighting experience.

*"As I glanced around the corner toward the stairwell, I noticed golden rays of light streaming in from the outside, casting shimmering patterns through **the black metal balusters**. The rhythmic play of light on the wall resembled a beautifully painted mural."*

*"Next to the kitchen cabinetry, a tall, narrow opening is concealed by the furnishings. At first, I thought it was a window, but upon closer inspection, I found that a small intricate pivot handle opens **the swing door** that leads out to the balcony."*

*"At the topmost floor, **an overhead opening** stands above me as though sheltering and protecting me from the weather. Glass blocks carved smaller holes, patterned and stacked on the overlight."*

Figure 25: Drawers (top), Storage Crates (bottom)

ARTEFACTS OF SMELL

Layers of Scent

Scent profoundly influences our spatial experience, particularly in constrained spaces where every sensory detail is amplified. As shown in Phase One, the tightness of space accentuates the presence of specific smells, creating a sense of warmth and comfort to make the space feel more inviting and personal. The olfactory environment interacts with other sensory elements, such as light and texture, to create a multi-layered experience that influences our mood and perception. In essence, scent can either enhance the intimacy of a confined space or highlight its limitations, revealing the powerful connection between smell and spatial perception. The objects described are furnishings and pieces of still-life displaced by the act of dwelling, which act as visual cues to stimulate the olfactory sense.

*"In front of the bedframe, I saw what appeared to be a set of closed, heavy **drawers**. My curiosity grew stronger, and I stepped closer, reaching out to touch the side of the cabinet with my bare hands. The smooth, glossy wood grains shimmered under my fingertips. I grasped the drawer handle and pulled, feeling a slight resistance before it finally gave way. Like waves of air, the scents of lemongrass and lavender washed over me, filling the space with a refreshing, calming aroma. It felt as if I had opened a portal to a serene retreat, where the chaos of the outside world faded away."*

*"Beside my favourite fish tank, **stacked crates** fill the empty steps of the stairs. The crates felt oddly familiar, yet too neat, as if they hadn't been disturbed in years. I stepped closer, running my fingers along the crates before a swift, retreating scent wafted from the boxes. A mix of sourness, savoury notes, and bitterness filled my nostrils, prompting me to hold my breath to avoid feeling nauseous."*

Figure 26: Curtains (top), Breeze Blocks (bottom)

ARTEFACTS OF ZEPHYR

Air and Ventilation

The influence of airflow on the spatial experience of constrained spaces is significant, as the subtlety of atmospheric movements can dramatically alter the impression of space. A gentle breeze can invigorate a confined environment, fostering a sense of openness and connection to the exterior. This airflow not only moderates temperature but also carries scents and sounds, enriching the sensory experience and evoking emotional responses tied to the natural world. Additionally, the tactile sensation of moving air creates intimacy and enhances awareness of one's presence within the space.

*"Fronting the window is a **thin mesh curtain**. Almost like a cloak, it drapes down to cover the entire opening behind it. With the window open, a strong wind rushed in, lifting the curtain and revealing the urban landscape beyond. Sunlight poured in, illuminating the swaying trees and colourful flowers, creating a lively dance of shadows on the floor. The fresh air filled the room, mingling with the scent of nature, inviting me to step closer and embrace the view."*

*"As I walked to the topmost floor, the whistle sounds of the building grew louder. After surveying the modest space, I couldn't help but admire the intricate patterns created by the carved blockwork on the stacked **breezeblocks**. Each pattern distinct and seemed to tell a story, intertwined by geometric shapes and organic motifs, drawing attention. The interplay of light and shadow added depth, making the craftsmanship come alive and transforming the void-space into a work of art."*

Figure 27: Pivot Gate (top), Bench (middle) and Stairs (bottom)

ARTEFACTS OF TOUCH

Tactility and Feeling

Touch and tactility significantly shape the spatial experience of constrained environments, influencing both physical interaction and emotional perception. The textures of surfaces—ranging from soft fabrics to rough materials—create an intimate relationship between occupants and their surroundings. For instance, warm textures can evoke feelings of safety, while stark surfaces may convey detachment.

The arrangement of tactile elements affects how individuals navigate and engage with small spaces; This is best supported by Alva Noe's (2004) words in "Action in Perception, "Think of a blind person tip-tapping his or her way around a cluttered space, perceiving that space by touch, not all at once, but through time, by skilful probing and movement. This is, or at least ought to be, our paradigm of what perceiving is.". The different textures disrupt monotony and encourage what Noe describes as an "active, exploratory process". According to Heller and Gentaz (2013), the sense of touch is aided by the vision which conversely with a lack of one of the former, constitutes to sensory deprivation and disorientation. Therefore, the interplay between touch and spatial design is crucial for fostering emotional resonance and a sense of belonging, underscoring the importance of tactile engagement in confined spaces. The objects described are furnishings and architectural elements stimulating sense of tactility to portray childhood nostalgia.

*"At the top of the stairs leading to the living spaces of my grandparents' home stands a **pivot gate**, its dark metal frame exuding a sense of strength and permanence. As it swings open, I hear a slight creak accompanying the motion, revealing the space beyond. The cold touch of the metal is stark and jarring upon arrival, a reminder of the threshold between outside and inside. Yet, as one passes through and begins to leave, the gate feels warmer, almost inviting."*

*"The long **wooden bench**, weathered and aged is the symbolic throne of my grandmother, a storage shelf and a lounging seat positioned facing the gate, waiting for my next visit. Its hard surface, imbued with countless stories and memories, provides a cozy warmth that invites lingering moments. Yet, the bench's design encourages an uptight sitting position, reminding occupants to sit upright and attentive, as if it were a gentle nudge toward formality amid the comfort it offers."*

*"**The precast concrete stairs** ascend with an air of modernity, their smooth polished surface reflecting light in a subtle sheen. Each cold footstep resonates sharply, echoing the starkness of the material as it guides one upward. The last step, notably higher than the others, presents a gentle challenge as a reminder of the elevation gained."*

Figure 28: Aluminium Folding Door (top), Metal Chair (bottom)

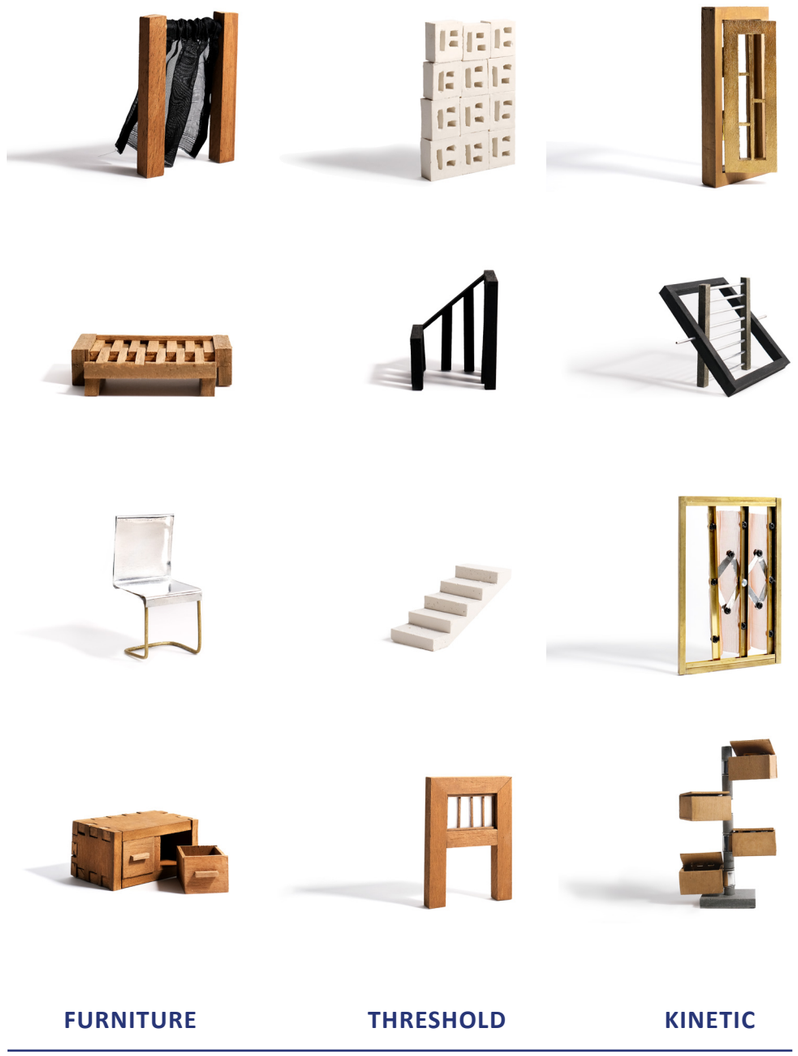
ARTEFACTS OF HEARING

Materiality and Movement

Sound profoundly influences the spatial experience of constrained environments, shaping the perception and interaction with the surrounding. In small spaces, auditory elements—whether the soft rustle of fabric, the echo of footsteps, or the distant murmur of conversation—can create a sense of intimacy or confinement. The acoustics of a room can amplify or diminish these sounds, affecting the emotional atmosphere; for example, a space that absorbs sound may feel cozy and inviting, while one that echoes can create a sense of isolation. Additionally, the presence of white noise, such as music or natural sounds, alters the illusion of space, making it feel larger or more dynamic. This is reflected in Raman's (2023) depiction of soundscapes as an "emotional rollercoaster" where the audibility and transmission of sound "stimulates the nervous system, effecting emotions and physical wellbeing". Thus, the interplay of sound in constrained spaces is crucial, as it not only shapes our immediate sensory experience but also influences our emotional engagement and sense of comfort within the environment.

*"The sound of screeching metal echoed around me as I felt the gust of wind rush past. With a firm grip, I slid open **the industrial sliding door**, the metal groaning in response. As it opened wider, I was greeted by a rush of fresh air and the vibrant sounds of the outside world. The landscape unfolded before me, a mix of urban energy and natural beauty, inviting me to step through and explore what lay beyond."*

*"I stood outside, observing the bustling movements of the world around me. In front of me, **a metal chair** suddenly creaked as it tapped lightly against the tiled floor, caught in the gentle breeze. Its rhythmic sound seemed to blend with the distant chatter of passersby and the rustling of leaves. I felt a sense of connection to the energy surrounding me, as if the chair was beckoning me to take a seat and immerse myself in the scene unfolding before my eyes."*



Furniture (from top to bottom): Curtain - Bench - Metal Chair - Drawers
Threshold (from top to bottom): Breeze Block - Stairs Balustrade - Stairs - Overhead Opening
Kinetic (from top to bottom): Hinged Door - Pivot Gate - Aluminium Folding Door - Storage Crates

Figure 29: Series of artefacts in different performance catergories

KEY CHARACTERISTICS

The artifacts were drawn, designed and crafted meticulously as scale models (Refer to Appendix C1-C6) to embody the concept of lived spatiality in a tangible form, each serving as a representation of the nuanced interactions within the examined space. To distinguish the different interactions involved in the memories of the lived experience, the models are categorized into three distinct classes: “Furniture”, “Threshold”, and “Kinetic”.

Furniture

The “Furniture” category focuses on static pieces of still-life or utilitarian objects that enhances comfort, inviting tactile engagement and fostering a sense of place. The inherent qualities of furniture—such as texture, shape, and scale—play a pivotal role in shaping human interaction and connection.

Threshold

The “Threshold” models emphasize the transitional spaces that connect different areas, serving as pivotal junctures that connect disparate areas. These models engage users by drawing attention to the sensory experiences associated with movement through space, such as changes in light, sound, and air flow. The act of crossing a threshold becomes a moment of heightened awareness, reinforcing the psychological and emotional implications of spatial transitions.

Kinetic

Comparatively, the “Kinetic” category encapsulates the essence of movement and interaction, encouraging users to engage dynamically with their surroundings. These models exemplify how physical activity within a space can stimulate various sensory systems, enhancing the overall experience of the environment. By incorporating elements responding to user actions, such as movable components or adaptable configurations, these models exemplify the interplay between human agency and spatial design.

Together, these models emulate the experienced memory, a rich tapestry of experiences illustrating how different forms of interactivity can activate and enrich our perception of space.

REFLECTION

Phase Two Reflection | What's Next?

A myriad of literature elicits the sense of vision as the dominant sense; From Jonathan Turner (2002), to Wade and Swanston (2013) and Cook's (2020) "Postcinematic Vision". Thomas Fuller's (1817) adage, "seeing is believing" cements the definition and perception of space in its physical dimensions, shaping our impression of the world around us. When an object appears small from a certain perspective, the eyes are trusted, and it is accepted as small. This reliance on vision often overshadows the contributions of other senses, as truth is instinctively sought through sight. (Bloch, 2008). However, in retrospect, many details and memorable aspects of experience are shaped more by non-visual sensories much of which Bowring (2006) states is derived from the olfactory sense of smell. The use of these artifacts brings the abstract concept of lived spatiality into a tangible dimension, emphasizing the importance of elements such as light, scent, air touch and sound in the sensorial composition of an experience. By dissecting these sensories separately and together, light is shed on the emotional response to space suggesting architecture is about "feeling" as much as it is functionality.

The compilation of models offers a way to interact with the remembered moments through physical touch and on how different aspects of space interact with the body over time. This approach deepens understanding of the significance of comfort, tactility, psychology and participation in sensory awareness, reinforcing the notion of space as a fluid, dependent on subtle shifts in sensory perception. While aesthetics can inspire curiosity and fascination, a deeper curation of space lies in crafting a holistic sensory experience. This experience encourages interaction, evoke emotions, and respond to the needs of occupants, fostering a deep connection with the built environment. Ultimately, the beauty of a space relies not only on its visual appeal but also on the immersive quality of the lived experience.

By prioritising a multi-sensory approach, manifesting experiences into the tangible objects create greater opportunities to enhance comfort and intimacy. This revelation validates Preciado's (2016) expressions of an empty house, where the "uncomfortable" can be "pleasurable" and emptiness is without comfort. Further progression into the research continues to explore the notion of sensory experiences as a spatial agency, blending analogue and digital medias to bridge the intangible with the tangible.

While Phase One deconstructs the sensory making of a lived spatiality and Phase Two manifests sensory experiences into tangible objects, Phase Three delves into the applications of design. In conjunction with materiality, lighting, scent, touch and form, the relationship between sensory perception and spatial experience is induced, optimising space as multi-dimensional, immersive and interactive. Analysing and mapping the senses in Phase One revealed the patterns and use of a remembered space, highlighting its potential significance and considerations in its design. The research identified that external and contextual influences on the building directly impacts interior space by its functionality, such as placement of furniture and the way the space is used, while the exterior retains qualities of the past, expressing permanence with less notable nuances to everyday life. The harnessing and integration of light, sound, scent, touch and airflow into the design process transforms a functional environment into a meaningful place of connection and enriched engagement revealing a deeper intimate connection through sensory experience. Through the research, initial intentions of portraying intangible elements through analogue techniques transcend into a journey of revelation, understanding the finer details of memory and the progressive adaptions of space in time. Practically with greater consideration paid to other sensories, the presence of being is attuned, resulting in spaces that responds to the occupants' impressions of space and their way of living, as well as meeting its typical function as a vessel to contain and live within.

This chapter explores how the nuanced understanding of sensory engagement—uncovered through the analysis of lived spatiality—can be employed to enhance the overall experience of a space. Through careful manipulation of sensory elements, design can create environments that not only serve practical purposes but evoke emotions, memories, meaning and deeper connections with the surroundings. By leveraging the interplay of these sensory inputs, this chapter instils sensoria, choreographing a unique spatial experience into a pre-existing space through a series of interventions to invigorate and enhance the sense-of-place.

EMBODIED ATMOSPHERE

06

PHASE THREE

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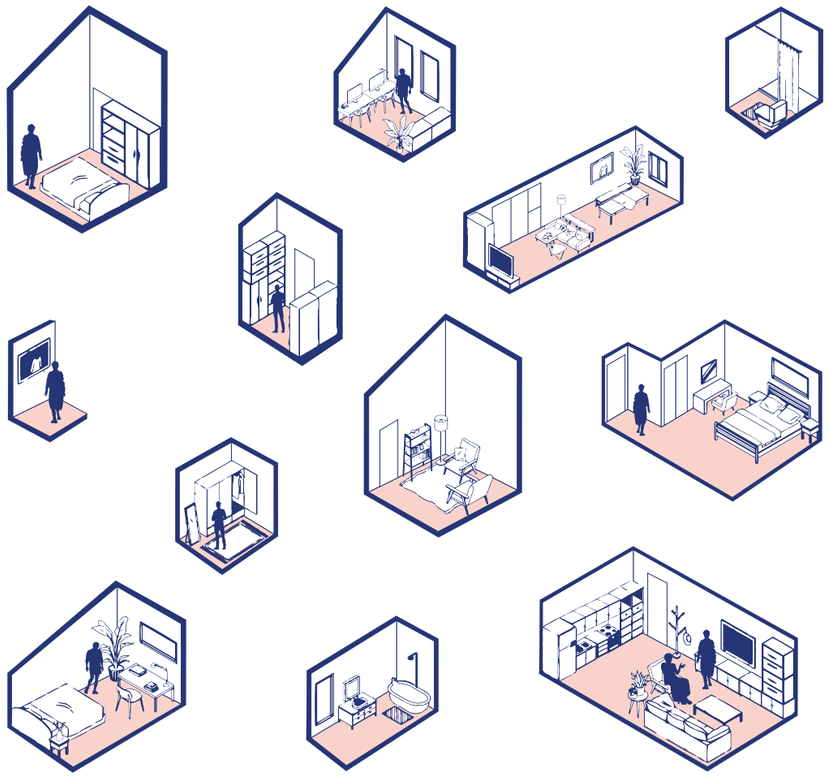


Figure 30: Typical Compact Housing Zones

COMPACT HOUSING

The Place of Residence

In Chapter 2, the discussions around medium density typologies of present-day New Zealand presented a challenge to enhance sensory qualities at higher densities. The research discusses the evolution of typologies as directly influenced by political, social and environmental factors and is a response to economic changes. While newer typologies introduced into the local context (terraced housing, walk-up/mid-rise apartments) function the same as its derivatives (cottages and bungalows), it constitutes a degrading spatial experience when compared; As such, “party” walls are shared, reducing areas for receiving daylight; average spacing and depth of buildings shrinking, increasing sound transmission between buildings. These changes impact on the mental health and wellbeing of the occupants. (Kennedy et al., 2015).

Amidst a new turning point in the urbanisation of New Zealand, the need for an approach to retain the sensory qualities pertaining to the notion of home is justified. To incentivise wider adoption of intensified living, townhouses and apartments need to be rethought based on enhancing spatial experiences rather than conforming to minimum design standards. A couple strategies have been devised with the latter being explored in this reseaarch; (1) Loosen planning regulations to provide design flexibility to internal spaces and (2) Adopt sensory-inducing interior accessories. The second strategy is an adaptive solution giving inhabitants greater control over their space.

In the following stages of my research, insights from Phases One and Two (Chapter 4 and 5), exploring the relationship between sensory perception and spatial experience, were applied to a real, 1:1 compact space, taking place in the Verto Apartment complex in Stonefields, designed by Warren and Mahoney in 2016. This stage includes a detailed analysis of the space in terms of the previously identified sensory phenomena, further exploring how these phenomena manifest in a contemporary living environment. A scale model of the apartment unit was made (Appendix D1) to form the basis of the analysis and assisted in the production of experimental collages developed to visualize the sensory phenomena. The process mirrors the articulation of the remembered sensory experience of my grandmother’s house, using objects to evoke and express sensory memories. The collages aimed to capture and translate the intangible qualities of sensory perception into a tangible architectural context.

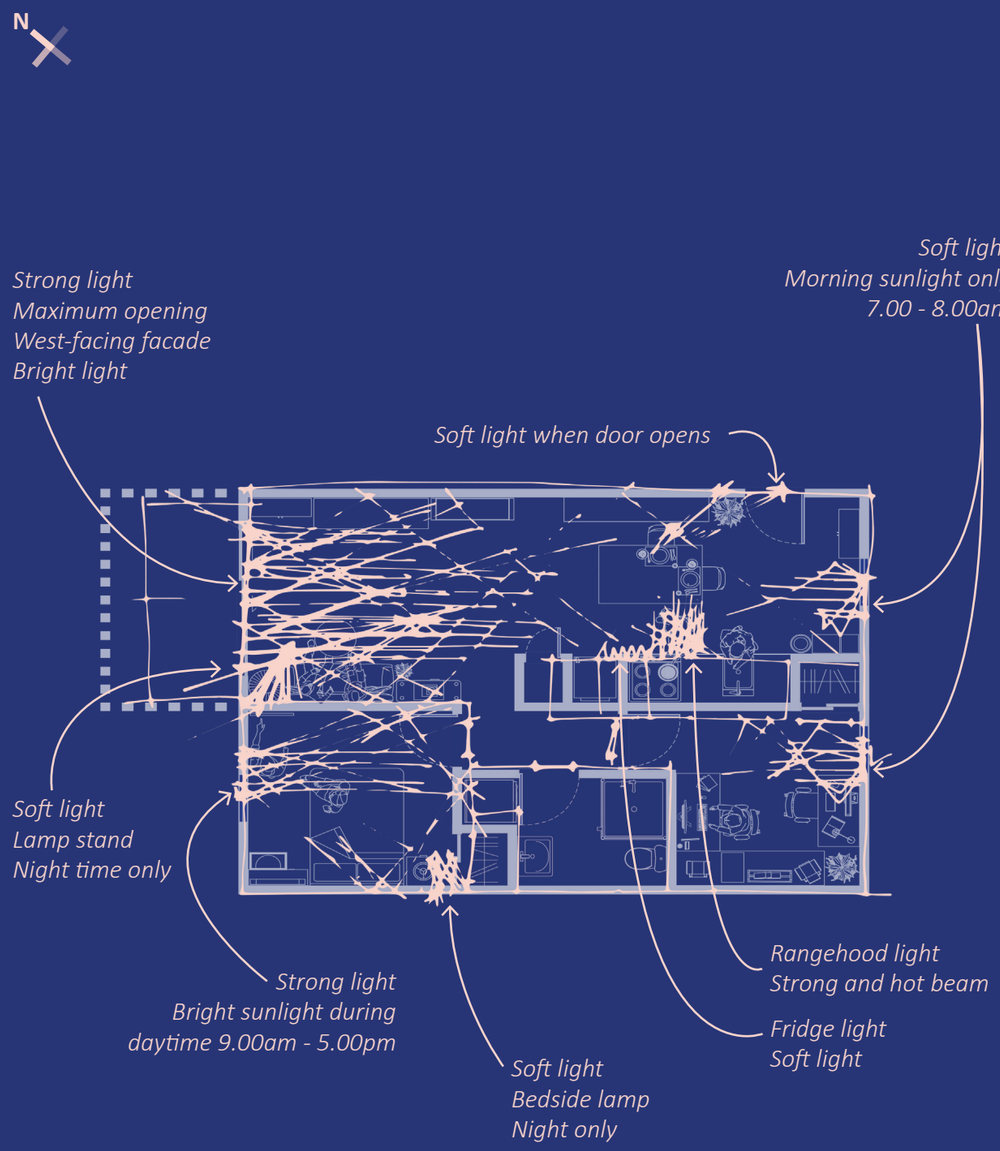


Figure 31: Analysis on light reflection paths, bright and dark zone in space

EXPLORING ILLUMINATION

Sense of Sight

While lighting enhances the spatial environment by highlighting focal points, the placement of objects and furniture emphasises movement through diffusion and distortion of light, guiding direction through compositions of light and shadow. In the context of constrained spaces such as apartments or other tight environments, the tendency of design accentuates the ceiling height to maximise use of space as well as heightening the eye-level to psychologically allude to sense of enlargement. However, social and cultural aspects effect the occupancy and use of a space. For instance, tenancy rights, standards and contract laws restrict the use of space such as wall-hung posters, framed art, and pictures to lessen liability of property damages. (The Tenancy Practise Services, 2024). As a result, apartment layouts typically have lower eye-level of focus, evoking a sense of grounded stability.

Figure 31 illustrates the lighting dynamics within a unit of the Verto Apartment complex. focusing on how light influences spatial functions and usage. Observations show that afternoon and dawn lighting primarily illuminate the lounge and living areas, while morning light is directed toward the kitchen. Although the spatial design responds to the natural context, its functionality is not fully optimized. The main living area is often underutilized due to excessive mid-day light, which causes glare and unwanted reflections on the walls, requiring frequent adjustments of blinds during transitional periods. Additionally, the North-South orientation of the unit results in the rear bedroom, located behind the kitchen, receiving no daylight and being repurposed as an office instead.

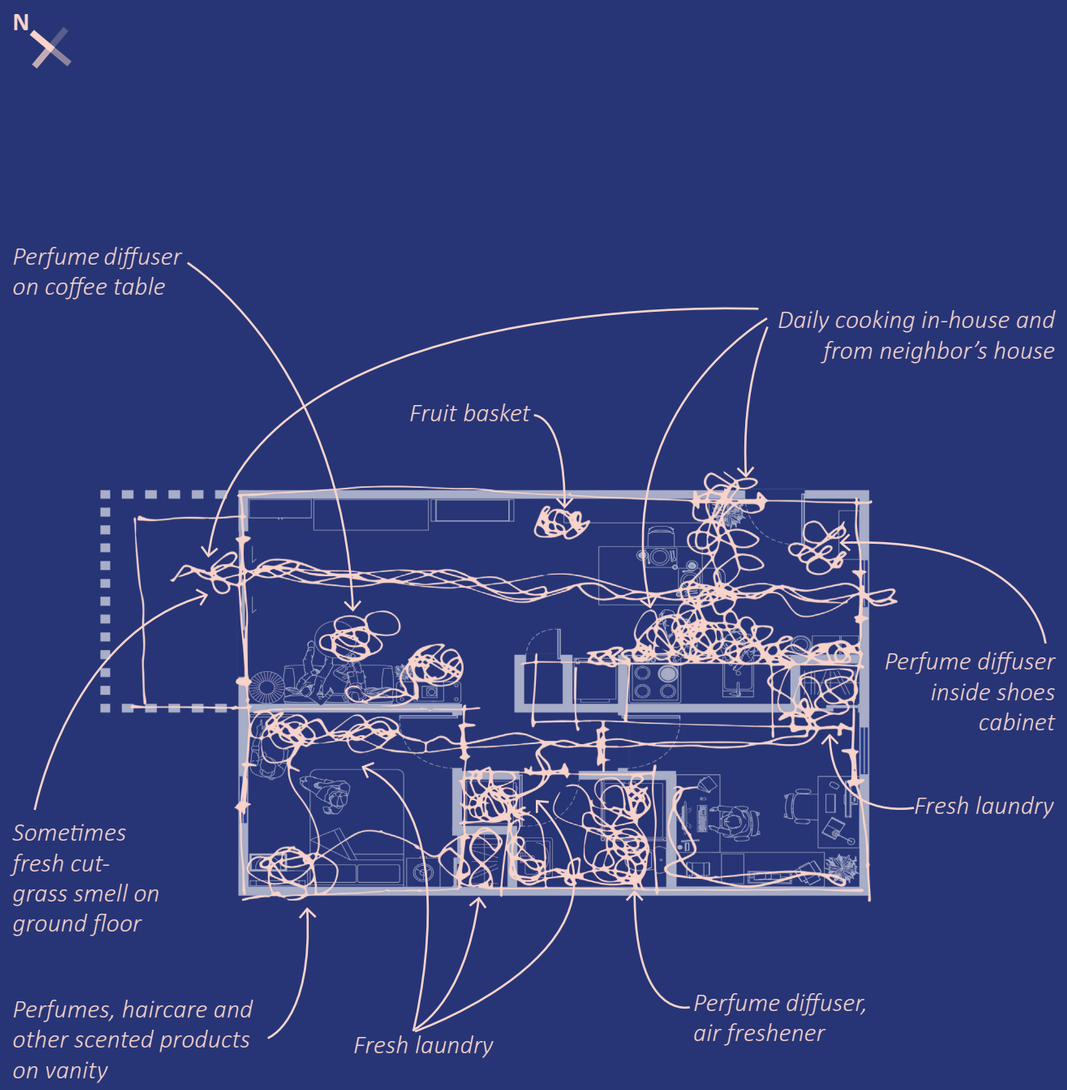


Figure 32: Analysis of how scents move through space

EXPLORING SCENT

Sense of Smell

The olfactory sense plays a significant role in defining a space's identity, reflecting its history, age, and patterns of occupancy. A single scent can reveal how a space is used, how long it has been unused, and which areas are most or least occupied. Scents add a layer of intimacy, blending with the air to shape the sensory atmosphere. In larger spaces, fragrances tend to be localized to specific areas, but in more confined environments like apartments, smells are highly transmissive, reacting to movement and transitions between spaces, permeating the entire environment.

Figure 32 illustrates the distribution of fragrances within the same apartment unit. Observations indicate that the kitchen is the dominant source of scent, while areas exposed to daylight tend to amplify the smell of damp linen and carpet. Although bathroom odours are present, the ventilation system and the bathroom's placement, enclosed by adjacent spaces, help to minimize the spread of those fragrances.

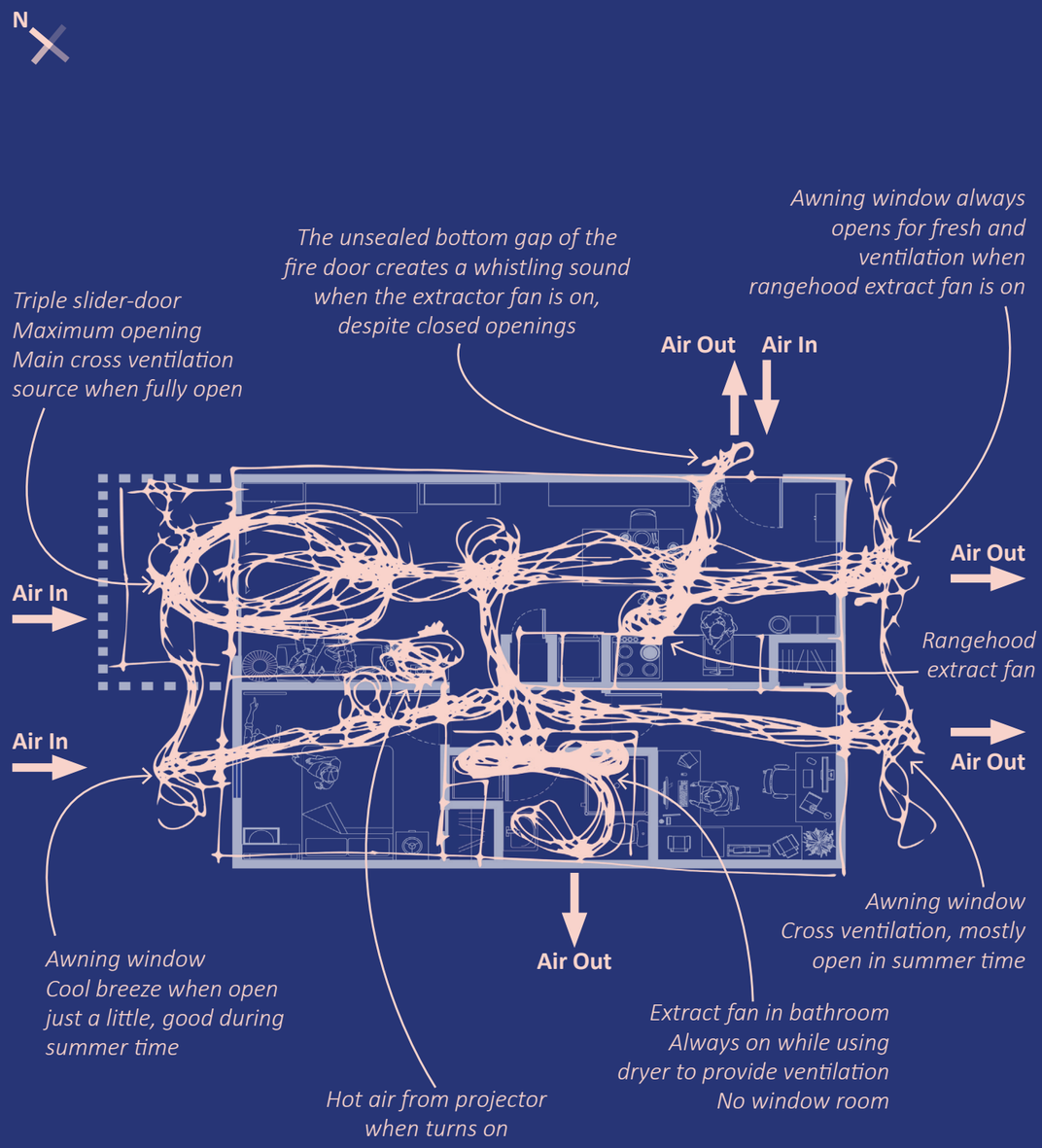


Figure 33: Analysis of breeze-flow through space

EXPLORING ZEPHYR

Sense of Touch

In constrained environments, the effects of airflow, or zephyr, are more immediate and pronounced compared to larger spaces. The subtle movement of air can dramatically influence the perception of space, often making smaller environments feel more dynamic or even more open. A gentle breeze can create a refreshing sensation, offering a sense of relief in tight quarters, while stagnant air may heighten feelings of confinement or discomfort. Air circulation in these spaces is more noticeable because every change in temperature or pressure is felt acutely, and the airflow is typically constrained by the boundaries of the room.

Figure 33 illustrates the airflow within the apartment unit. The balcony, featuring hollow metal louvred panels on one side, functions as a daylight filter, blocking excessive sun during mid-day while allowing ventilation through the air gaps. These openings enhance airflow into the living space by directing outside air inward. The apartment's dual-aspect layout promotes cross-ventilation, enabling natural air circulation between opposite sides of the unit. In contrast, internal areas such as the dining room and bathrooms rely more on artificial ventilation systems, while other spaces benefit from natural wind flow.

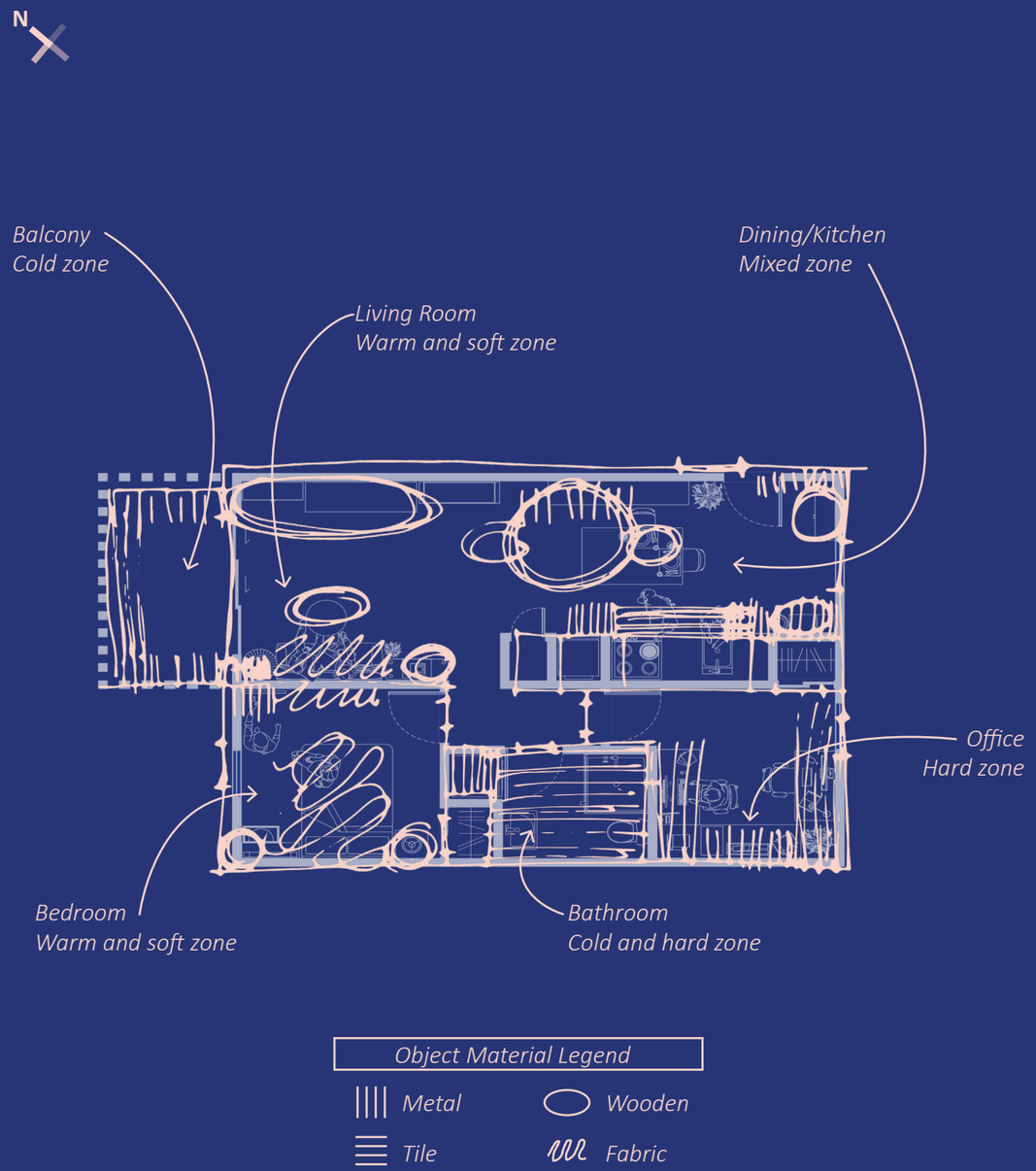


Figure 34: Analysis of furniture materiality and texture

EXPLORING TACTILITY

Sense of Touch

In a constrained apartment, the arrangement of tactile elements greatly impacts how occupants navigate and move through the space. Careful planning is essential in compact areas, where materials must not only be visually appealing but also offer practical comfort. For instance, a well-cushioned sofa or textured flooring can provide physical comfort and a sense of grounding, while narrow walkways benefit from smooth, unobtrusive surfaces to facilitate easy movement. The closeness of tactile elements—walls, countertops, or furniture—intensifies sensory awareness, making touch a key part of the spatial experience. Tactile sensations in these environments also carry psychological weight, as certain materials can influence the perception of space. Warm, soft textures tend to create a welcoming, cozy atmosphere, while colder, harder materials can heighten the feeling of confinement. As such, the tactile design in a small apartment must strike a balance between functionality and emotional comfort, ensuring the space remains both practical and inviting despite its limitations.

Figure 34 illustrates the range of textural experiences within the apartment unit. Solid hatching represents smooth surfaces like glossed finishes, vinyl, or raw timber, while hatched areas denote rougher textures such as carpets, tiled flooring, or cold concrete. Swirled hatching highlights the warm, comforting feel of linens and bedding. Upon entering the apartment, the firm stance on the cold tiles offers a sense of stability and assertiveness, complementing the view towards the kitchen. Transitions into the mild, soft textures of carpet are less apparent and abrupt, showing the different functionalities of the space through tactility; Despite the open-plan arrangement of the spaces, the cold touches of the feet as well as the stone marble bench top highlights the tactile boundaries; The kitchen's hard, solid touches supports building confidence in cooking. In contrast, the softness of the carpet soothes the receptive nerves in the brain, effectively inducing calmness and accentuating a relaxed feeling.

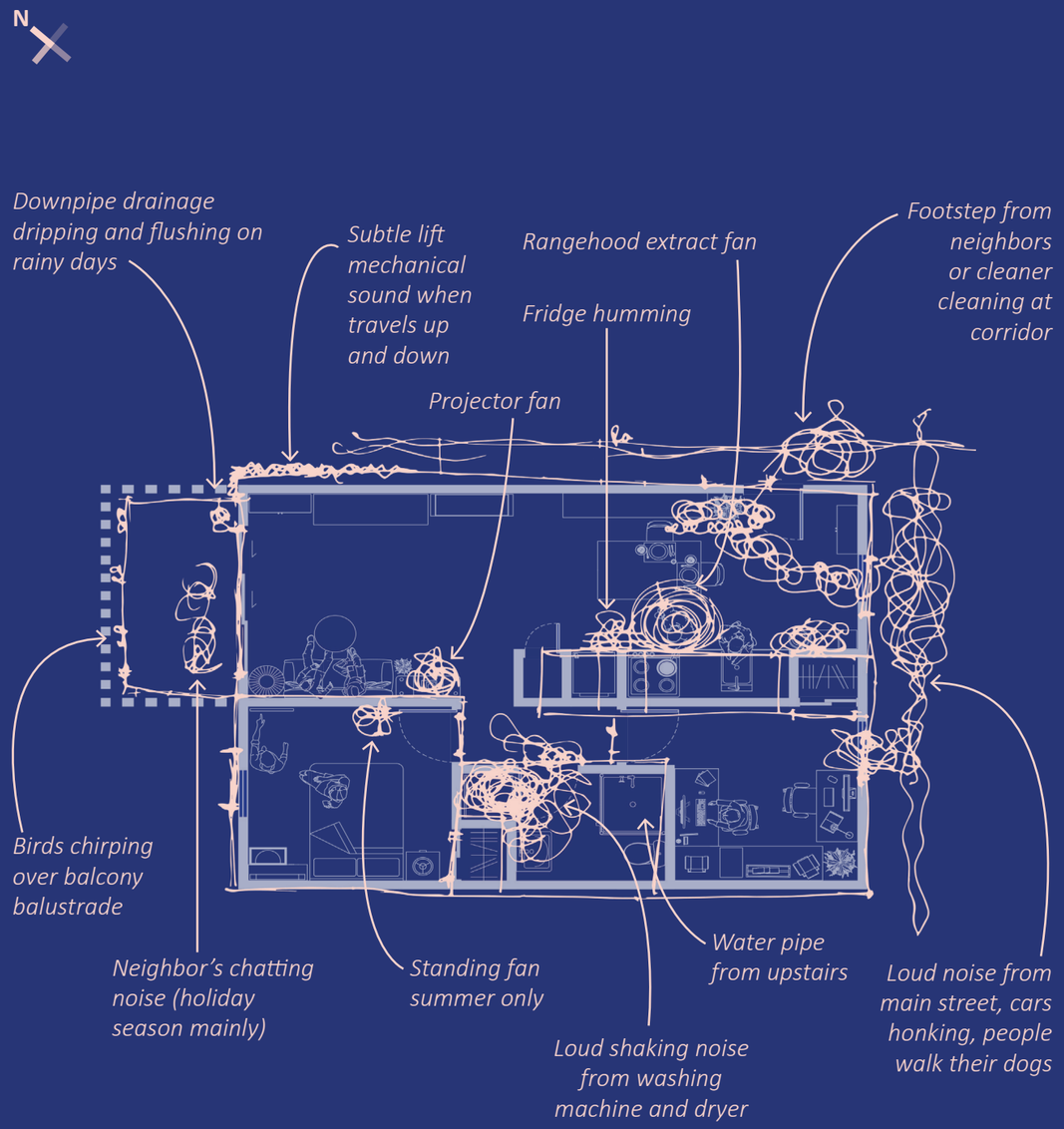


Figure 35: Analysis of noise distribution

EXPLORING SOUND

Sense of Hearing

Sound in a constrained space significantly shapes the overall experience, with noises carrying more easily and amplifying subtle sounds like footsteps or appliances. This can lead to auditory overload, causing discomfort or stress if not properly managed. Soft materials such as carpets, curtains, and upholstered furniture help absorb sound, creating a quieter, more intimate atmosphere. However, the compact nature of small spaces can blur sound boundaries between different areas, allowing noise from one room to spill into another. In contrast, larger spaces offer better sound separation. Effective acoustic treatment and thoughtful material choices are essential for maintaining comfort and functionality in small environments.

Figure 35 illustrates the soundscape of the apartment unit, where most internal sounds are muted, as evidenced by the minimal concentration of noise in the living area. The intertenancy walls effectively block external noises from the lift and stairwell, creating a more secluded atmosphere within the interior. The kitchen rangehood and laundry serve as the primary sound sources in the apartment; however, the enclosed design of the laundry and insulated walls reduces sound transmission to adjacent areas. In contrast, the open-plan kitchen and living space facilitate sound movement throughout the area, while large openings allow ambient noises from outside to permeate the apartment.

Grandparents' House

In Phase One (Chapter 4), the lived experience of my grandparent's home has been dissected, translating the sensual qualities of the space into the tangible elements such as materials/ texture and the arrangement of furniture and objects; The space had strong contrast in lighting, dim in some areas and bright in others; The space is split into various levels, adding to the element of suspense and anticipation; The varying transitions of wide to narrow and high to low retains spatial awareness; The high sills and small openings trap moisture and scent, blending the different tastes and smells of activities taking place.

Rental Apartment

On the other hand the apartment in Phase Three (Chapter 6), while larger and more spacious, identified a dramatic reduction in sensory qualities; the lighting is expected and consistent, warm and cozy in one half but cold and dark on the other; The interaction is linear and open plan across a single level; The windows are large and purely function as a source of light. The comparison reveals a significant phenomenological distinction as the former is unconventional, small and tight, exhibits emotional depth and functionalism while the latter is utilitarian, plain in its form, simple and neutral, comfortable but expected.

the intangible...

SPATIAL VS ARTEFACTS

The artefacts of threshold, movement, and furniture from Phase Two are essentially a representation of lived memories. In expressing the intangible, the artefacts carry sensorial qualities that are not perceived solely through space alone. In resolution, the scalability of the models has been considered and are being materialised as 1:1 intervention, for the culmination of the investigation. The following collages are experiments of the thought process behind the composition of the interventions, anticipating the curation and enhancment of sensory experience within a constrained environment - the actual unit at The Verto apartment block- for the final presentation and examination.

Figure 36: Transition between spaces with threshold artefacts

Collage 1

Figure 36 illustrates a key moment transitioning toward the kitchen, which is often seen as the heart of the apartment. The curated experience aims to enhance the threshold and spatial division in an open-plan environment through the placement of breezeblocks and an overhead opening to interrogate the circulation flow, revealing the space in sequenced portions. Instead of a linear progression, occupants are guided through sensory experiences—such as the smell of food, and the sounds and energy of cooking. The clear opening act as a tool to separate the dining and kitchen space and induces a semi-enclosure to the living area. A lower head clearance constricts the periphery through the opening, capturing glimpses of spatial function at the foreground. With the use of the “uncanny”, a surrealist art technique, the coincidental framing highlights the sculptural formwork in the background; tilted to accentuate movement of light and breaking the rigidity of space. Segmented vision aims to create a sense of larger space by alluding to separation and long corridors. Large breezeblocks serve as spatial dividers, separating the intimate dining and living areas from the entryway. This design extends the spatial experience, slowing the perception of time as visual focus becomes obscured.

The arrangement of scaled artifacts evokes a sense of anticipation, as obscured sightlines and uninterrupted scents and sounds create subtle tension without causing discomfort. The feeling gradually shifts to curiosity as light filtering through the breezeblocks reveals portions of the dining, and eventually, the curiosity resolves as the occupants move through the opening revealing the intimate living space deep within.

Figure 37: Kinetic threshold captures the sensory experiences

Collage 2

Figure 37 highlights a subtle yet intentional shift in attention towards the living area, a space that, despite its centrality in the home, is ironically less frequented. The living area is regarded as an intimate oasis, a retreat from everyday life. The space contrasts greatly with the surrounding spaces, free of drama, the air tranquil and still. This underutilized area is redefined by a bold architectural gesture—a monumental intervention at the heart of the apartment. An extension of the landscape, drawing ever closer to the view serving as a backdrop transforming the spatial dynamics of the living space. Through a series of timber posts, the intervention alludes to the cadence of rhythmic movement; assured and synchronised with every step and heartbeat. Between each vertical post, hang chains of mirrors trinkling below the overhead lights, creating a kinetic screen sensitive to movement, soft like fabric, transparent like glass but seemingly solid like a divider.

In contrast with the dynamic imagery portrayed by the chain of mirrors, a lone metal chair is positioned at the rear of the space, quiet and still. The metaphor of a chair, enclosed and placed against a framed view, carries poetic notions of contemplation and the act of “dwelling”. This element serves as a visual focal point, commanding attention as it draws the viewer’s eye toward the back of the room.

In closer inspection is an inviting gesture, suggesting that the living space is meant to be actively engaged with, rather than simply observed. Its presence reinforces the idea that the living area is malleable, able to shift and transform through the occupants’ interactions with the space. The arrangement of artifacts within the living area further enhances its sensory richness. This dynamic interplay between air, touch and light transforms the living area into a space that reacts to natural phenomenon, enriching the overall spatial experience of the apartment.

Figure 38: A sensory journey through space and light dynamics

Collage 3

Figure 38 presents the first view upon entry, a place from which the apartment's circulation naturally begins. To the right, a set of steps subtly enters the frame, their shadows cast on the floor creating an illusion of direction but leading to nowhere, reinforcing a sense of verticality amidst the horizontal flow of the space. On the left, the breezeblock screens the rear aspect of the apartment, diffusing the morning light into the interior. This interplay between light and material draws attention away from the living area, creating a balance of interests throughout the space.

The breezeblock partition is strategically placed to obscure direct sightlines, redirecting visual attention away from the more private living areas and toward the kitchen, which serves as a sensory focal point of the apartment. The kitchen becomes an experiential anchor, where the sounds, smells, and energy of cooking are more perceptible. The breezeblock also creates a threshold, offering both physical and visual separation between spaces, enhancing the apartment's spatial flow.

Additionally, the wind, guided through the apartment by cross-ventilation, is harnessed as a subtle wayfinding tool. As air moves through the space, it channels circulation around the breezeblock partition, naturally guiding occupants through the threshold and into the more intimate areas of the apartment. This transition, from the public entryway to the private living spaces, is carefully choreographed, offering a sensory journey that heightens the experience of moving through the apartment.

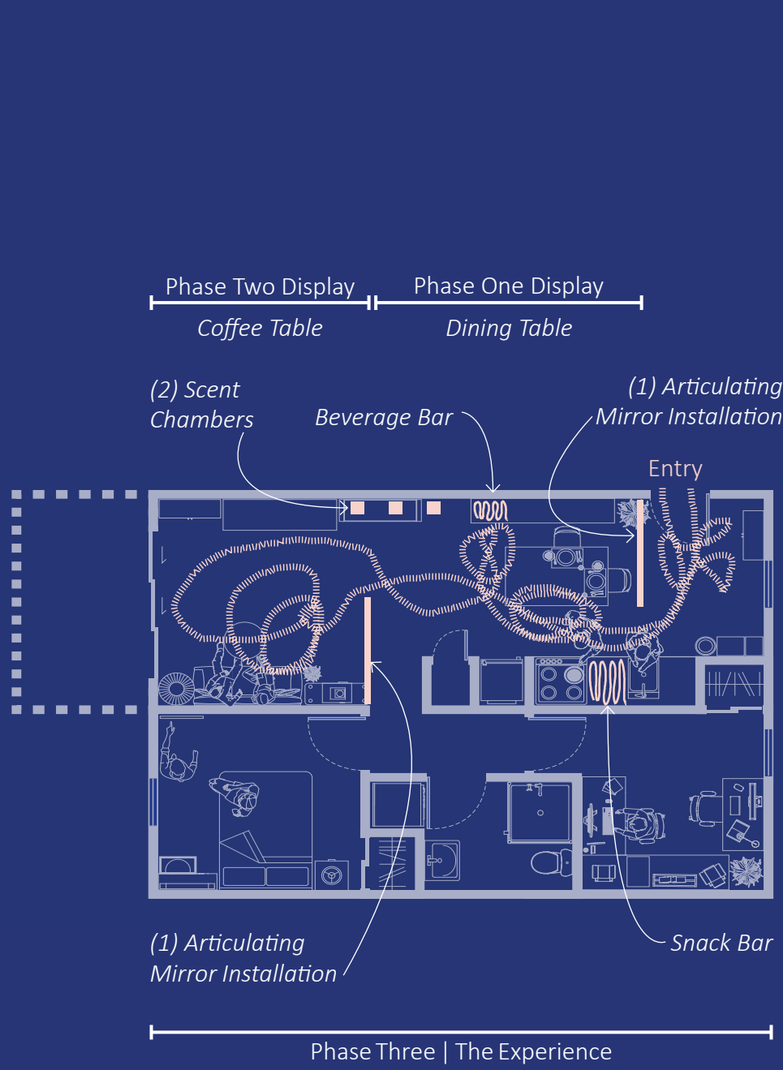


Figure 39: Mapping the journey of sensory experiences within the apartment

CREATIVE OUTCOME

The various model arrangements in this study demonstrate how design influences spatial perception and use. The research highlights that, despite high daylight exposure, the living space is used less frequently than the kitchen and dining areas, suggesting that factors like layout, comfort, and social activity impact space utilization. Sensory experiences connect and activate these spaces through interventions that reshape the apartment's experience. Circulation and thresholds create shifts in space, from wide to narrow. The collages were informed by prototyping the apartment unit to analyse a scaled reproduction of the environment (Appendix D2-D3), which speculated on the configurations of scalable interventions to inform sensory experiences, shifting the artefacts from a surreal representations to practical, interactive designs interventions which enhances spatial relationships and sensory engagement.

Figure 40: The making of the mirror screen installation

Intervention 1 | Articulating Mirror Installation

The placement of the first intervention (Figure 40) is as much a result of refined judgment as it is of functional need. Inspired by the threshold artefact from Phase Two, this intervention functions as a static monument, shaped by its purpose. Perceived as a screen, it acts as a spatial divider, creating a semi-enclosed living area that enhances privacy and limits sightlines, thereby restricting peripheral views. On an intangible level, the intervention disrupts the linearity of the double-aspect floor plan. As a result, occupants rely less on visual periphery for wayfinding, engaging more with other sensory cues. In plan (Figure 39), the arrangement of furniture alongside the interventions highlights spaces of occupancy as clustered areas, informed by not only the colour and texture of the furniture but also its physical form. The furniture emphasized a lower ground plane; however, the addition of the intervention shifts the focus away from the horizontal, drawing attention to vertical height instead. In the initial design phase of the intervention, a support structure frames the metallic screens, distracting and interferring with the intended curation of the space. (Appendix E1, E5-E7). The structure had been removed and designed as a clipping-system constructed as a series of machine-cut metallic discs, drilled and hung by hooks with a swivel chain, resulting in a spatial device which distorts the usual interplay of sensory of spatial experiences.






BOX I COMPONENT

Stained Wooden Box
Twisted Rope Handle
Satin Ribbon
Scented Wooden Beads

BOX II COMPONENT

Stained Wooden Box
(Triple Tiers Nested Pull-Up Box)
Metal Pull Handles

BOX III COMPONENT

Stained Wooden Box
Metal Pull Rings
Cheesecloth
Scented Woodchips

Figure 41: The making of three scent chamber installation

Intervention 2 | Scent Chambers

The second intervention (Figure 41), scaled to human proportion, is an evolved iteration of the "stacked crates" artefact from Phase Two. As a kinetic artefact, it introduces surprise and interaction, engaging the senses when activated. Unlike the previous intervention, where function dictated the spatial response, this one embodies the concept of a "Living space," treating the space as both a dynamic, organic entity and a contained environment meant for dwelling. When occupants approach the intervention, the drawn curiosity leads to further actions of touch, feeling and smell. Constructed as a series of drawers lined against the wall, the boxes are intended to be arranged by the strength to open, the type of action to open, and the height of the drawers. The element of interaction is conveyed by the physical form and appearance of the front ledge. When the hatch is opened, subtle fragrances are released into the air, drawn and powered by natural ventilation, dispersing the smell within the space. This is also depicted by the boxes' initial design sketches in appendix E3 and E8.

The Outcome

The combined arrangements of the interventions alter the spatial experience compared to an unadorned space. For example, an empty room without furniture feels wider and deeper, with a heightened eye level due to the clear visual balance between the floor and ceiling. Once furniture is introduced, vanishing points blur, focal points shift, and the eye level is lowered, creating a visual imbalance in the space.

The addition of the interventions aims to segment the space based on its sensory characteristics. In areas with dim or insufficient light, the interventions compensate, while in brightly lit areas, they adjust accordingly. By overlaying these sensory studies of the apartment, the placement of specific interventions is mapped out, creating a dynamic relationship between the objects and the space they inhabit.

Figure 42: Entry Mirror Screen Installation

THE SENSORY EXPERIENCE

The moment when the interventions are placed within the space, the curation of the spatial experience begins, forming impressions, criticism and judgement of the space. The purpose of the designed outcome tests the occupants into forming a lived spatiality to leave a stronger, lasting memory. With memory, spaces become meaningful and enriched in purpose.

The curation of space in its primitive form is an "organisational strategy to sort, to sift information and present in a cohesive manner. John Potter (2011) rightly deconstructs the experience of curation as an "assembly" of "writing and creation", "moving across different stages". The experience of the resulting atmosphere is best reflected, to lesser extent, with an exhibition or gallery space where depth of field is restricted. Reflecting Potter's definition of curation, the order of space begins with the division of entry and thresholds; What had been an open-plan layout, predictable and expected is segregated into scattered spaces, each of which distinguished by the arrangement of interventions. (Figures 42-49).

The result is a spatial experience retold in words below:

"With a turn of the cold, metal handle, I am immediately confronted by the solid walls enclosing around me, constricting my movement. I look to my left noticing the tall narrow window while to my right, the divider blocks my view. Momentarily, the smell of cheese, herbs and glazed meats intrudes my olfactory senses, activating nostalgic memories of my last picnic, a charcuterie on a summer beach. The transitioned touches of smooth stone marble abruptly turns to the soft, warm walnut. I could see the end of the space, glimmering with shimmering light before the smell of champagne and wine interrupts my perspective. The smell; sweet, fruity and rich, savoured with every sip. I noticed to my left, a small hatch box. Its position and size, uncanny. I approach the box but before opening the lid there is an immediate drop of the bottom, releasing fumes of fragrant air dispersing around the space. With windows open, I noticed the cool breeze gliding across my skin beneath my short sleeves. Flowing through the breezeblocks, the whistling wind dances across the space."

Figure 43: Perspective towards the living space where the screens utilise airflow to guide circulation.

Figure 44: A close-up of the chain of mirrors distorting the diffraction of light to enhance lighting effects in the dining and kitchen spaces.

Figure 45: View of Mirror Screen and Three Scent Chambers

Figure 46: Bottom Hinged with Dropping Beads Scent Chamber

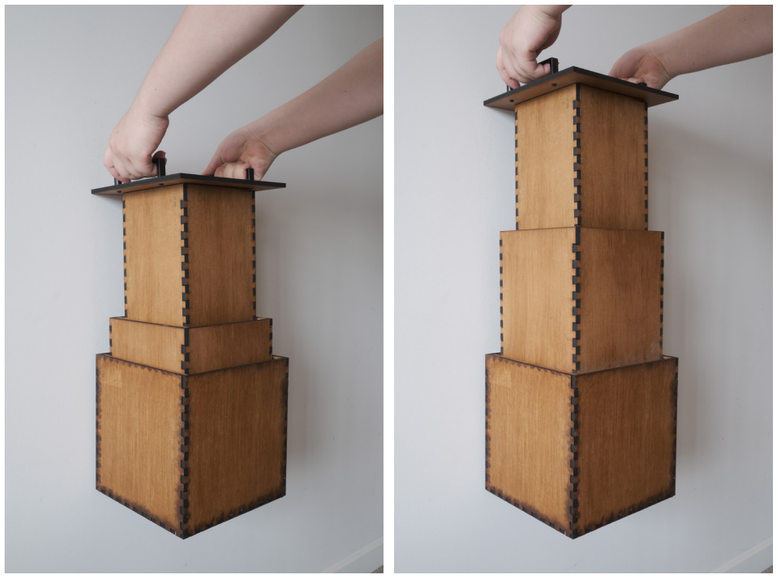
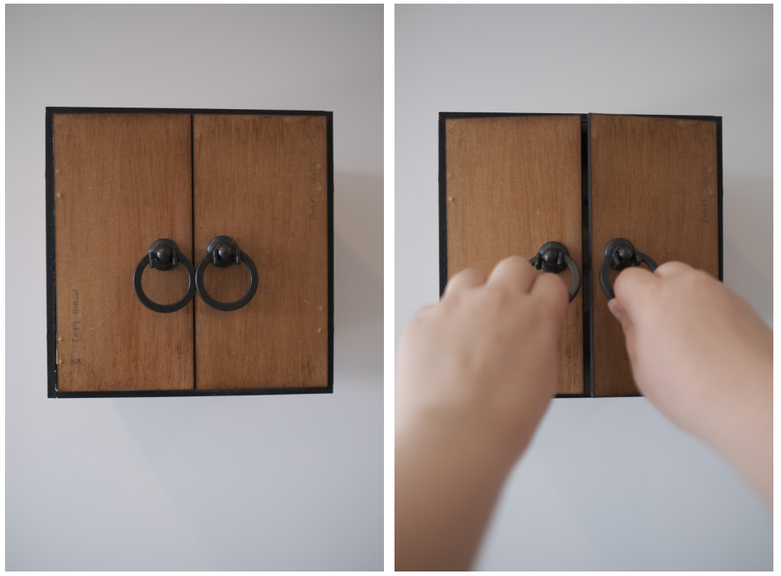


Figure 47: Triple Tiers Nested Pull-up Scent Chamber



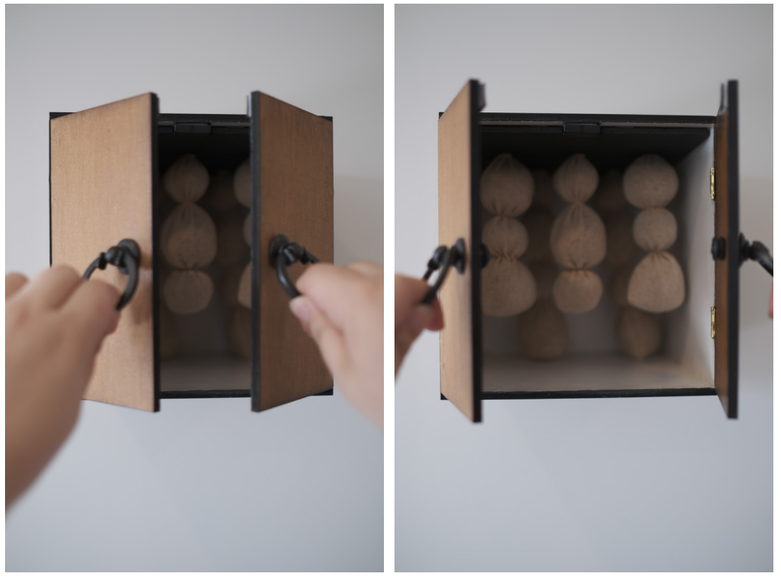


Figure 48: Double Hinged Scent Chamber

REFLECTION

Phase Three Reflection

To conclude, the integration of sensory interventions transforms spaces from purely functional to immersive and meaningful. This chapter demonstrates how sensory awareness, rooted in the deconstruction of lived spatiality and tangible objects from earlier phases, elevates the everyday experience of a medium-density apartment into a richly layered, interactive setting. By engaging touch, light, airflow, sound, and scent, previously dormant elements now actively shape spatial perception. Architectural gestures, like pivot screens and bi-folding elements, re-energize underutilized spaces, guiding movement and deepening interaction. These interventions add layers of engagement and warmth, redefining the space with new sensory richness and connection.

The chapter highlights the importance of adaptability in design. By examining patterns of usage and spatial arrangement, these interventions demonstrate that even constrained spaces can be as dynamic and responsive as conventionally larger spaces, evolving to meet the needs of their occupants. This adaptability reflects not only physical flexibility but also intimacy, emotional and sensory resonance, creating a comfortable living environment that aligns with the rhythms of life and memory.

The study of sensory-driven design responses serves as a reminder that architecture is more than just the organization of space—it is the curation of experiences. Sensory elements interwoven throughout the design process infuse spaces with meaning, depth, and connection, making them more than just ordinary places to live transforming them to environments where life is felt, remembered, and lived more fully.

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CONCLUSION
07

EVALUATION

The thesis set out with the ambition to explore the intangible aspects of space, through the lens of phenomenology, to critique the standards of comfort in compact housing design. It also aimed to utilise a design-led research approach to invetigate and fine-tune comfortability within small, constrained spaces. However, not all these objectives were fully realized. While the research was successful in understanding phenomenological aspects and breaking down sensory elements of space, the critique of design standards—particularly through demographic and technological comparisons—is unrealised. In hindsight, the prevailing issues of repetitive cookie-cutter designs detaches human inhabitants from reality, remaining soulless characters within the urban context. The thesis develops a compelling message to rethink the stratagems of design and the standards which seemingly restricts architects from creative freedom, by emphasising the importance of sensory design.

As the research progressed, relevant concepts like spatial comfort, and genius loci became more interconnected, encountering a realisation that spatial comfort is more than an enlightened sensation of being. Understanding comfort as an embraced composition of sensory elements as opposed to being purely functional; a product of experience, crafted through visual, tactile, and spatial arrangements. Paul Preciado (2014) described in his experience of inhabiting an empty house in Greece, “Uncomfortable space can be a pleasurable space. Uncomfortable space can be a space of consciousness”.

The quote suggests intangible elements shape the impressions of space, impacting our emotional attachment. This definition allowed the thesis to delve into the experiential aspects of space, where atmosphere and sensory interaction became the primary measures of the research.

The thesis presumes a definition of lived spatiality as proposed by Ozaloglu (2003) who states, “[lived spatiality] is the totality of spatial practices and social relations.”. Using this definition, the memories of my grandparent’s home are uncovered, deconstructing the “lived spatiality” into multiple layers. Artefacts became essential tools in this exploration, acting as physical manifestations of memory and sensory qualities. When integrated into existing spaces—the artefacts helped enhance the experience, yet their effectiveness was often limited by material choices and the complexity of blending with the existing architectural context. The methodology of the research determined its unconventional outcome in the earlier stages of the research, leaning towards an experiential outcome. As architects are already equipped with the tools to design with sensory elements in mind, there is a right to challenge the restrictions brought by the standardisation of design from building codes and legislation. The value of the thesis, then, was found in exploring space as a curated experience, where the goal was to affect the way occupants engage with the environment rather than simply creating a new physical design. This enigma clarified the primary goal as understanding space as a dynamic, sensory-driven experience.

CONCLUSION

The premise of Pallasmaa’s (2012) “The Eyes of The Skin”, provokes the thought that architecture should prioritize a multi-sensory approach, moving beyond visual dominance to consider how other senses—such as touch, sound, and spatial orientation—can enhance the experience of space. The term “embodied atmosphere” best captures this idea, describing a curated spatial experience that blends sensory elements to affect how occupants perceive and navigate their environment. In Zumthor’s (2006), “Atmosphere”, he describes this phenomenon as a “feeling of presence, well-being, harmony and beauty”. The thesis hypothesised the phenomenon can be achieved within the constraints of a small space, with sensory experiences enriched and optimized without altering the structural aspects of the space. This notion of using sensory interventions to manipulate spatial perception without altering pre-existing structure is a key contribution of the research, providing flexibility to the functional spaces; Analogous to the Japanese “Washitsu”, standardised typologies can be designed to allude to various functions rather than singular use. Supplementing these spaces, the spatial experience can be enhanced through furniture and objects such as the ones explored in this research, giving agency to tenants and owners of compact dwellings to curate and transform their own spaces. Behind the research is the extent of media explored in the discourse of the thesis, from analogue techniques in the earlier stages progressing into digital presentations, is an analogy to transition between the intangible and tangible dimensions.

This interdisciplinary approach combines theory with visual and physical experiments. The research shifts away from a conventional design outcome as a proposition, towards a resolution to a widely pronounced theoretical problem. Critical reflection on the process reveals that a developed experimentation would have resulted in stronger interventions and a more refined final product. The artefacts and sensory installations were evocative, tested in different spatial settings to explore their full potential. The research could have benefitted from more thorough investigations into how these interventions affect various types of spaces beyond the one used in this project. However, time constraints and the experiemental nature of the inquiry, which inevitably involved much trial and error, limited the capacity. Despite this, the thesis stands as an exploration to manipulate sensory experiences in small, constrained spaces to enrich the built environment.

FURTHER APPLICATIONS

The findings of this thesis have broader implications that extend beyond the immediate research. While the research primarily focuses on constrained spaces, the principles of sensory-driven design are applicable more broadly and extend to typologies beyond the scale tested. The decision to narrow the scope to a sole typology was driven by profound issues pertaining to the small; townhouses and apartments which are substandard (Clement, 2021) and uncomfortable (Gibson, 2024). Practical applications of the thesis could enhance the design of larger environments by adopting adaptive, sensory inducing furniture to create moments of sensory engagement in otherwise liminal spaces where thresholds are void of purpose. The use of sensory design as a form of agency shifts attention from functionality to curate a sense of place. Architects could design engaging, human-centered spaces without completely designing from scratch.

Future research could also explore the intersection between sensory-driven design and emerging technologies. While this thesis relied on analogue techniques and physical artefacts, digital tools such as AI and generative design software could expand the possibilities for creating and testing sensory experiences through machine-learning. These tools could allow for more flexible experimentation, simulating different sensory outcomes in virtual environments before applying them in real-world spaces.

This approach could open new avenues for exploring how sensory-driven design can be integrated into contemporary architectural practices, especially in an era where technology increasingly influences spatial design.

Beyond architecture, the methods developed in this thesis have implications to various other fields such as public art, gallery, and exhibition deign, benefiting from the use of sensory interventions to create immersive experiences. These fields already place a high value on curating experiences, making them natural extensions of the research conducted here. In addition, the concept of “curated experience” could be applied in interior design, where sensory elements could enhance the atmosphere of living or working spaces. As the architectural profession continues to evolve, there will likely be a growing demand for spaces that engage occupants on multiple sensory levels, offering a more immersive and holistic experience of space.

GLOSSARY

Comfort

The English definition of comfort is derived from the Latin word “com-fortis” which means strong or strengthen to alleviate pain. In the context of contemporary grammar, comfort is a state of physical ease and freedom from constraints.

In spatial terms, however, comfort is a culmination of interactions between the physical, physiological, psychological, social, and cultural rights dependent on architecture, clothing, habits, and climate. (Fabbri, 2024). For the context of this research, the meaning of comfort is sensual harmony.

Sensory

The sensation, transmission and perception of physical senses (visual/sight, touch/haptic, scent/smell, sound/hear, and taste)

Part of the methodology of this research will be conducted based on the strength of the sensation experience.

Small-Spaces

In Whyte (n.d.)’s lecture on “The Social Life of Small Urban Spaces”, the size of the space is determined by the regularity of chance meetings. The behavioural responses dictate the functionality of public spaces ie; how and where people sit.

For internal spaces, however, space is defined by its lineal dimensions, area and depth.

Throughout this research, references or mentions of small spaces may be interpreted as either urban or interior enclosures.

Small vs Big:

The words denote, in a literal manner, expressions of relative size. An object, or space, can be small but perceived as being larger.

On the other hand, larger spaces could be devised strategically to be perceived as being smaller or more profound.

Lived Experience

First-person experience of everyday life; The phrase focuses on how spaces are experienced daily beyond their physical and aesthetic properties.

Threshold

Point of entry or beginning. The word symbolizes the transition from one space to another. The threshold plays a significant role in shaping the experience of movement between spaces.

Mimesis

Refers to the reflectance of natural and cultural elements in a space to create meaning.

Dwelling

Refers to living within a space but also the experience of transforming one to make a place, the sense of belonging and connection to a space.

Embodiment

Referring to the concept of experience and perception deeply rooted in the physical body, highlighting the role of sensations and how we interact with space.

Dasein

An expression coined by Heidegger meaning “being there” or “existent”. The word refers to the experience of immersion in the world.

Genius Loci

Norberg Schulz mentions the concept as the “Spirit of Place”, arguing the success of architecture is defined by its unique ability to captivate the atmosphere of the location. This theory may have connection to the making of a “lived spatiality” or “sense of place”. The theory is not limited to the scale of space, which suggests spaces of all sizes are equally capable of conveying the spirit of place.

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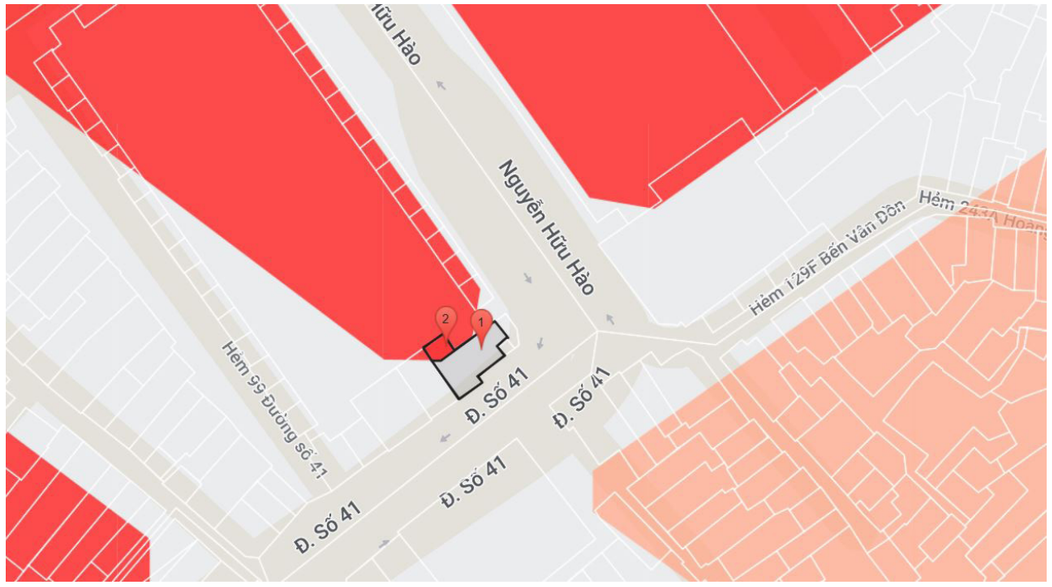
APPENDICES

Appendix A | Grandparents' House Research



A.1 | Planning Maps of Grandparents' house (Source: Ho Chi Minh City Planning Authority Maps, https://thongtinquyhoach.hochiminhcity.gov.vn/). Retrieved: 14 October 2024.

ỦY BAN NHÂN DÂN
THÀNH PHỐ HỒ CHÍ MINH

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập - Tự do - Hạnh phúc

Số: 883 /QĐ-UBND

Thành phố Hồ Chí Minh, ngày 21 tháng 02 năm 2013

SỞ QUY HOẠCH KIẾN TRÚC TP
ĐẾN Số: 2347/2013/QH
Ngày: 15/3 / 2013

QUYẾT ĐỊNH

Về duyệt đồ án điều chỉnh quy hoạch chi tiết xây dựng đô thị tỷ lệ 1/2000 (quy hoạch phân khu) khu dân cư liên phường 2, 3, 4, 5, 6, 8, 9 và 10, quận 4

ỦY BAN NHÂN DÂN THÀNH PHỐ HỒ CHÍ MINH

Căn cứ Luật Tổ chức Hội đồng nhân dân và Ủy ban nhân dân ngày 26 tháng 11 năm 2003;

Căn cứ Luật Quy hoạch đô thị ngày 17 tháng 6 năm 2009;

Căn cứ Nghị định số 37/2010/NĐ-CP ngày 07 tháng 4 năm 2010 của Chính phủ về lập, thẩm định, phê duyệt và quản lý quy hoạch đô thị;

Căn cứ Quyết định số 24/QĐ-TTg ngày 06 tháng 01 năm 2010 của Thủ tướng Chính phủ phê duyệt điều chỉnh quy hoạch chung xây dựng thành phố Hồ Chí Minh;

Căn cứ Thông tư số 10/2010/TT-BXD ngày 11 tháng 8 năm 2010 của Bộ Xây dựng quy định hồ sơ của từng loại quy hoạch đô thị;

Căn cứ Thông tư số 02/2010/TT-BXD ngày 05 tháng 02 năm 2010 của Bộ Xây dựng ban hành Quy chuẩn kỹ thuật quốc gia các công trình hạ tầng kỹ thuật đô thị;

Căn cứ Quyết định số 04/2008/QĐ-BXD ngày 03 tháng 4 năm 2008 của Bộ Xây dựng về ban hành Quy chuẩn kỹ thuật quốc gia về quy hoạch xây dựng;

Căn cứ Quyết định số 50/2011/QĐ-UBND ngày 12 tháng 7 năm 2011 của Ủy ban nhân dân thành phố về lập, thẩm định và phê duyệt quy hoạch đô thị trên địa bàn thành phố Hồ Chí Minh;

Căn cứ Quyết định số 49/2011/QĐ-UBND ngày 12 tháng 7 năm 2011 của Ủy ban nhân dân thành phố về công bố công khai và cung cấp thông tin về quy hoạch đô thị tại thành phố Hồ Chí Minh;

Căn cứ Quyết định số 5191/QĐ-UBND ngày 29 tháng 11 năm 2008 của Ủy ban nhân dân thành phố về duyệt đồ án điều chỉnh quy hoạch chung xây dựng quận 4 đến năm 2020;

Xét đề nghị của Sở Quy hoạch - Kiến trúc tại Tờ trình số 3538/TTr-SQHKT ngày 29 tháng 10 năm 2011 (gửi đến Ủy ban nhân dân thành phố ngày 30 tháng 10 năm 2012) về phê duyệt đồ án điều chỉnh quy hoạch chi tiết xây dựng đô thị tỷ lệ 1/2000 (quy hoạch phân khu) khu dân cư liên phường 2, 3, 4, 5, 6, 8, 9 và 10, quận 4,

A.2 | Reccord of Consent Notice from Authority for urban revitalisation (Source: Ho Chi Minh City Planning Authority Maps, https://sqhkt-qlqh.tphcm.gov.vn/api/bandogiay/download-pdf/QHPK/773_2013_883) Retrieved: 14 October 2024

A.3 | Google Satellite view of Grandparents' house (Source: Google Earth, n.d., https://www.google.co.nz/maps/place/H%E1%BB%A7+Ti%E1%BA%BFu+Chay+C%C3%B4+Hi%E1%BA%BFu/@10.7599107,106.7017103,193m/data=!3m1!1e3!4m15!1m8!3m7!1s0x317529292e8d3dd1:0xf15f5aad773c112b!2s Ho+Chi+Minh+City,+Vietnam!3b1!8m2!3d10.8230989!4d106.6296638!16zL20vMGhuNGg!3m5!1s0x31752f0079c0cbe1:0xbfaf390d125090e1!8m2!3d10.7598435!4d106.7020976!16s%2Fg%2F11vr94lg8t?entry=ttu&g_ep=EgoyMDI0MTAxNC4wIKXMDSoASAFQAw%3D%3D). Retrieved: 14 October 2024

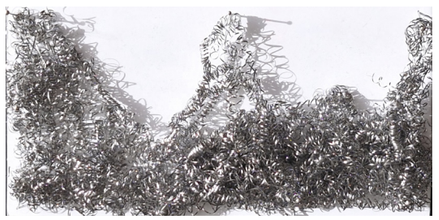
Appendix B | Initial Grandparent's Sensory Mapping

B.1 | Light and Shadow Mapping 1:40 Model using Cardboard and Newspaper. (Self-produced).

B.2 | Clusters/Tactile Density Mapping 1:40 Model using Pins and Threads. (Self-produced).

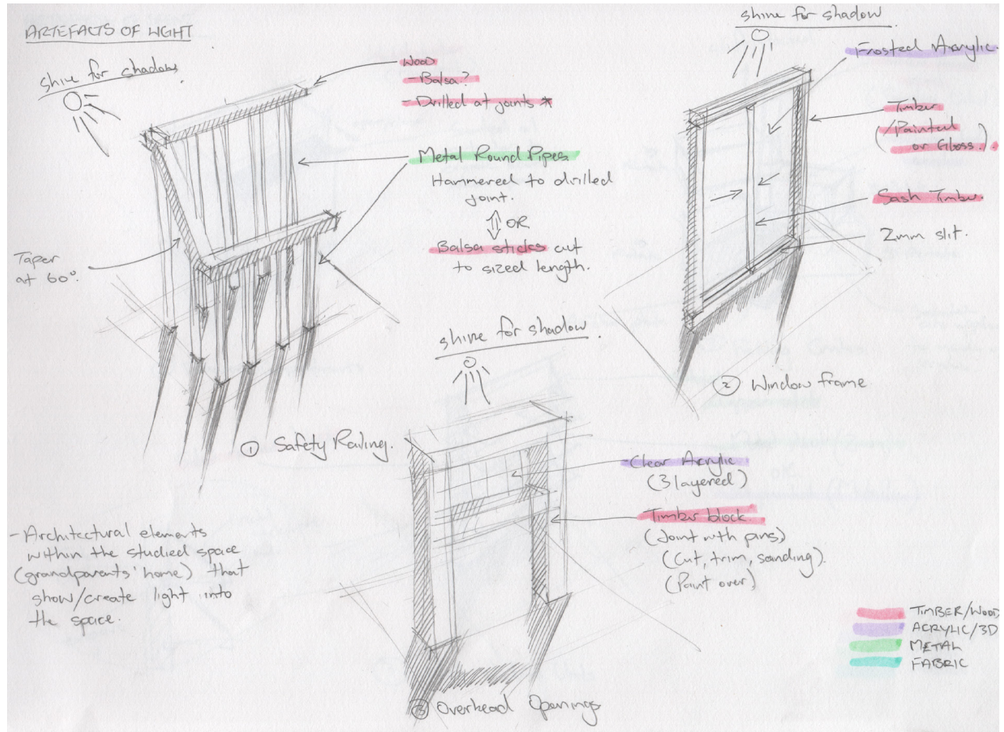
B.3 | Breeze Mapping 1:40 Model using Fur Fabric. (Self-produced).

B.4 | Scents Mapping 1:40 Model using Watercolor. (Self-produced).

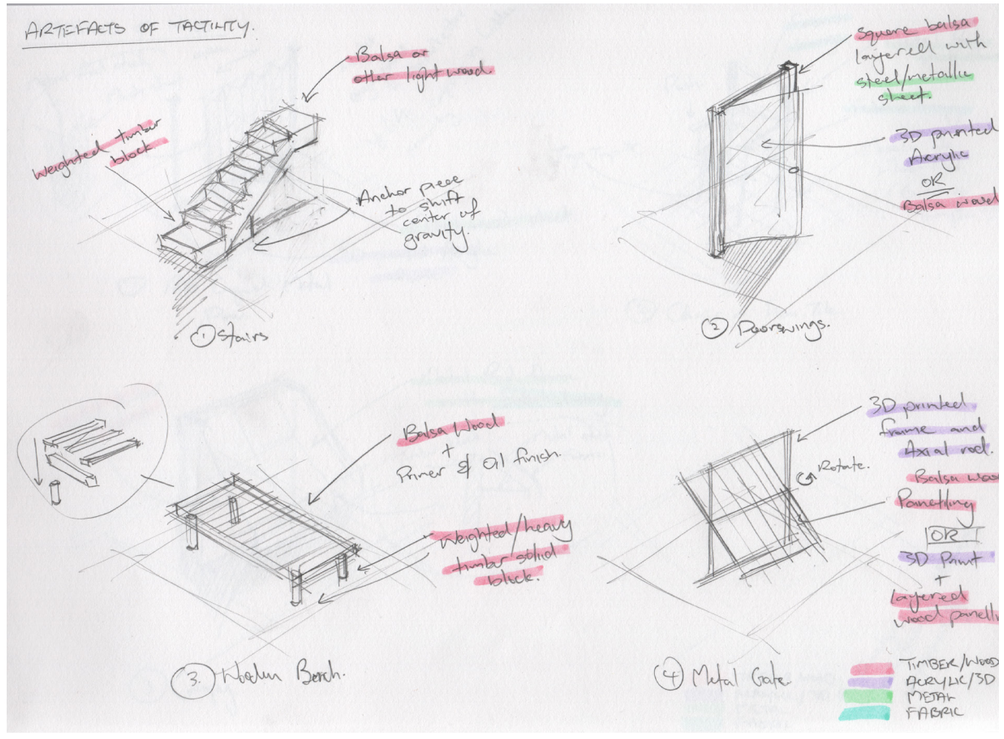


B.5 | Noise Mapping 1:40 Model using Metal Scrub. (Self-produced).

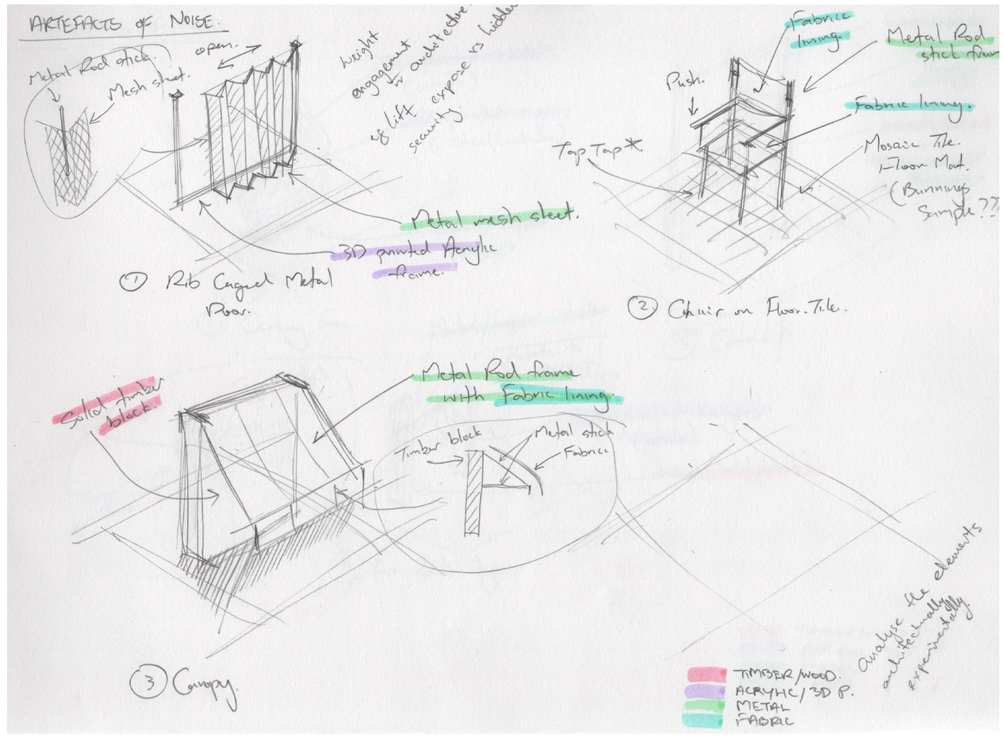
Appendix C | Artefact vs Sensory's Analysis



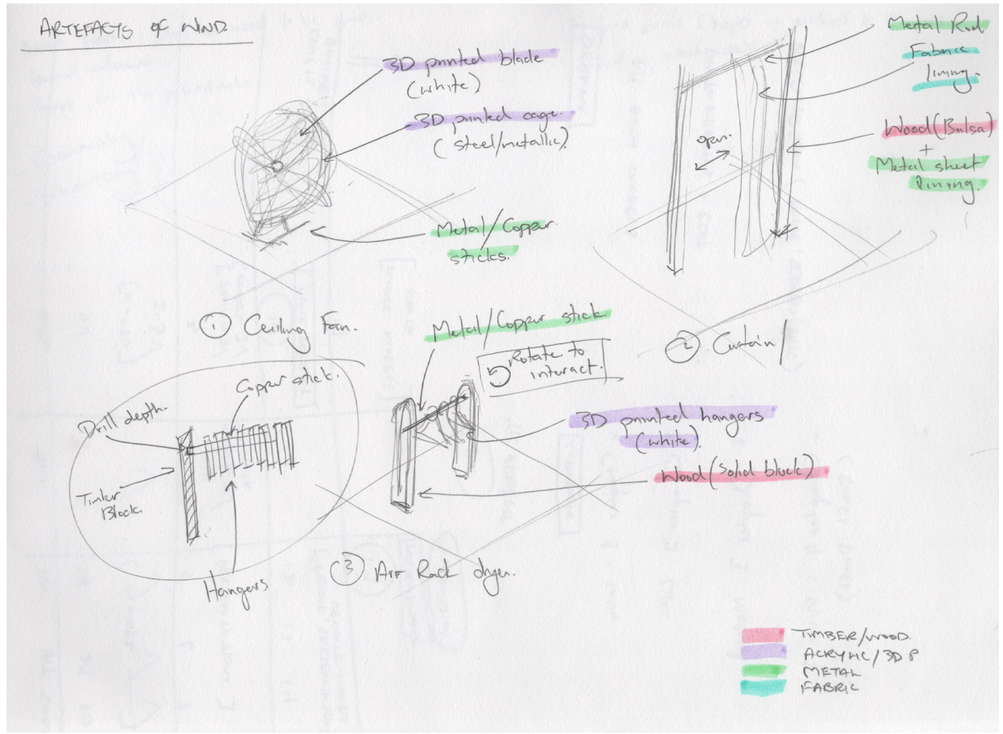
C.1 | An exploration of architectural elements showcasing the interplay of light and shadow within a space. (Self-produced).



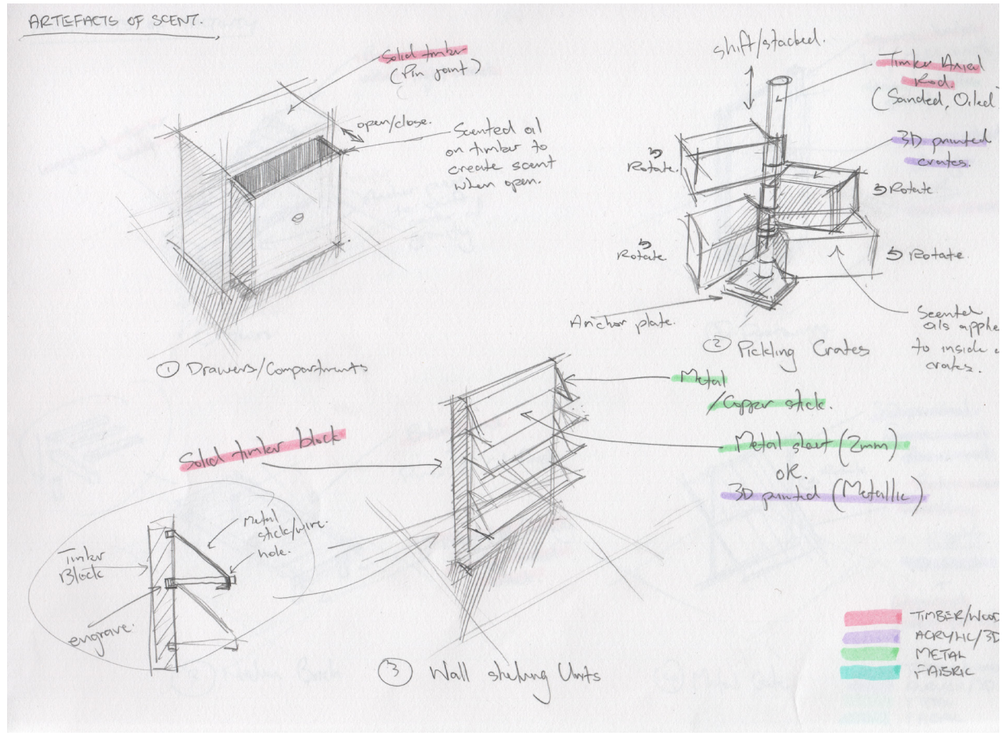
C.2 | An exploration of architectural elements showcasing the transitions of tactility and materials within a space. (Self-produced).



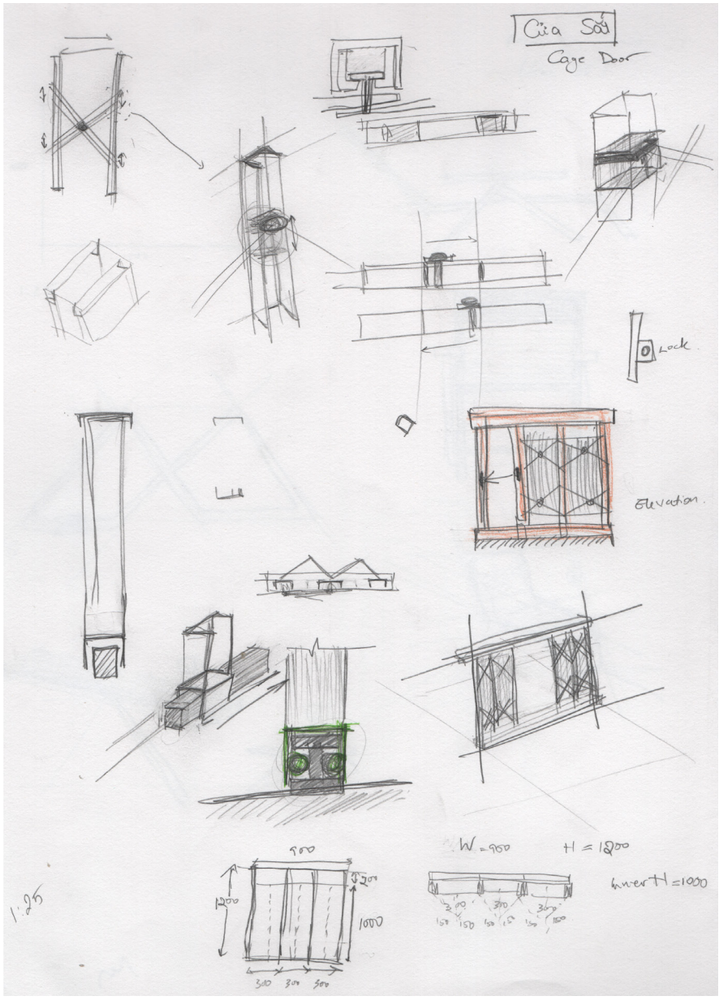
C.3 | An exploration of architectural elements that capture sounds. (Self-produced).



C.4 | An exploration of architectural elements showcasing the movement of wind and breeze within a space. (Self-produced).



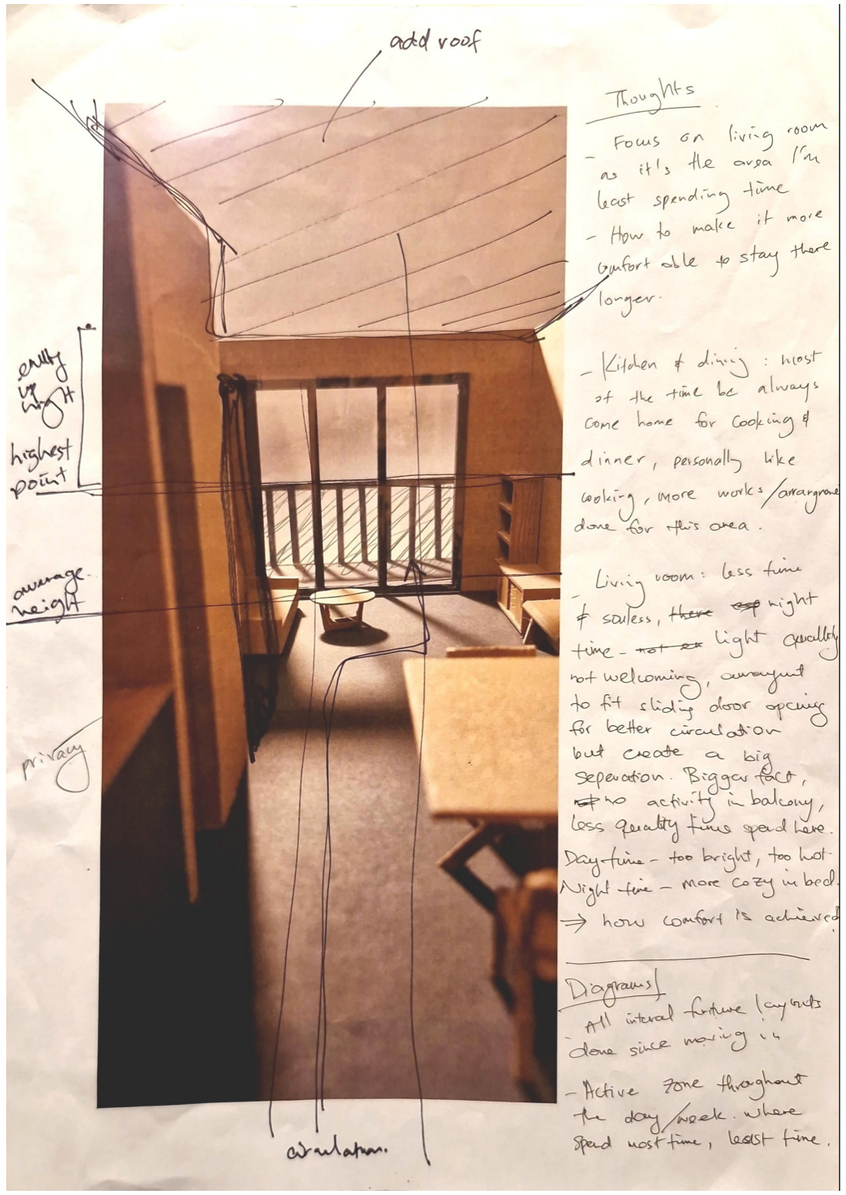
C.5| An exploration of architectural elements holding scents. (Self-produced).



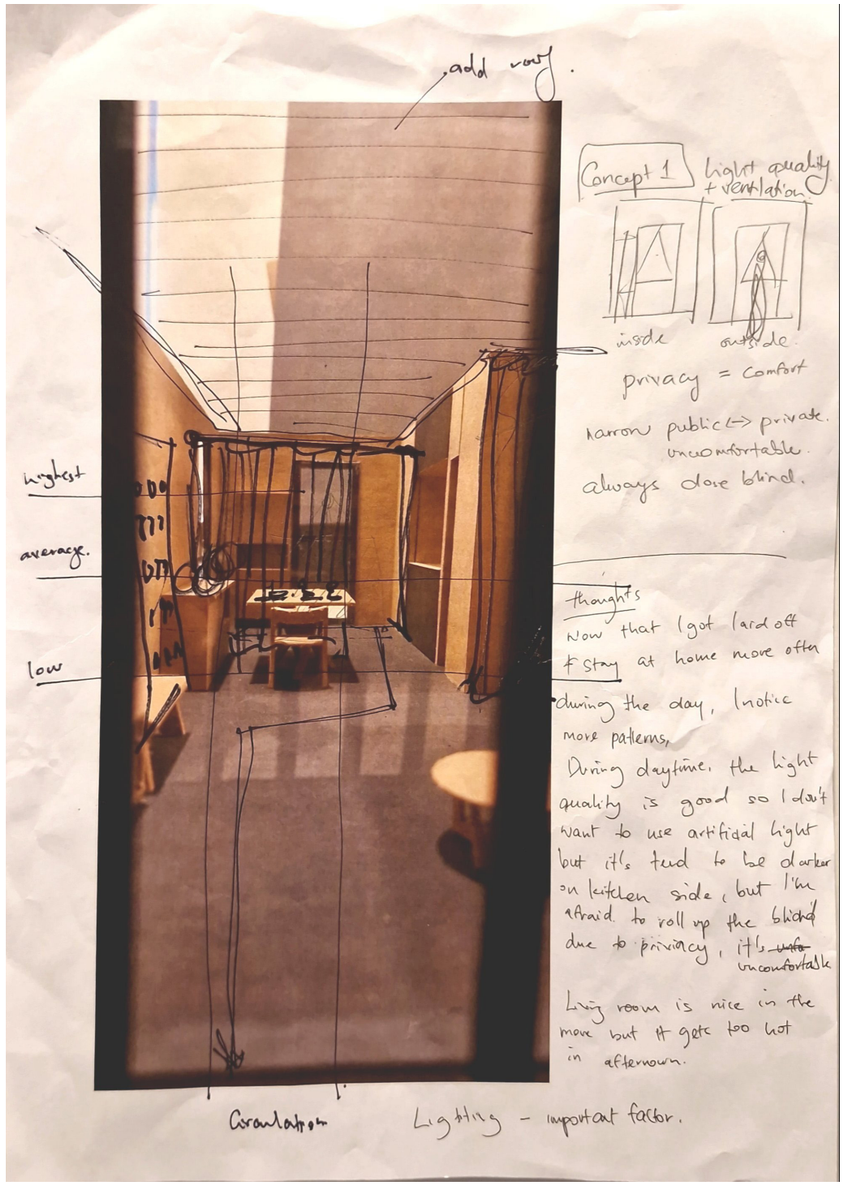
C.6 | Study on the mechanism of a signature metal folding door that produces a unique sound when in motion. (Self-produced).

Appendix D | Rental Apartment's Analysis

D.1 | 1:20 Scaled Model of Apartment for Site and Sensory Analysis Featuring Current Furniture Layout. (Self-produced).

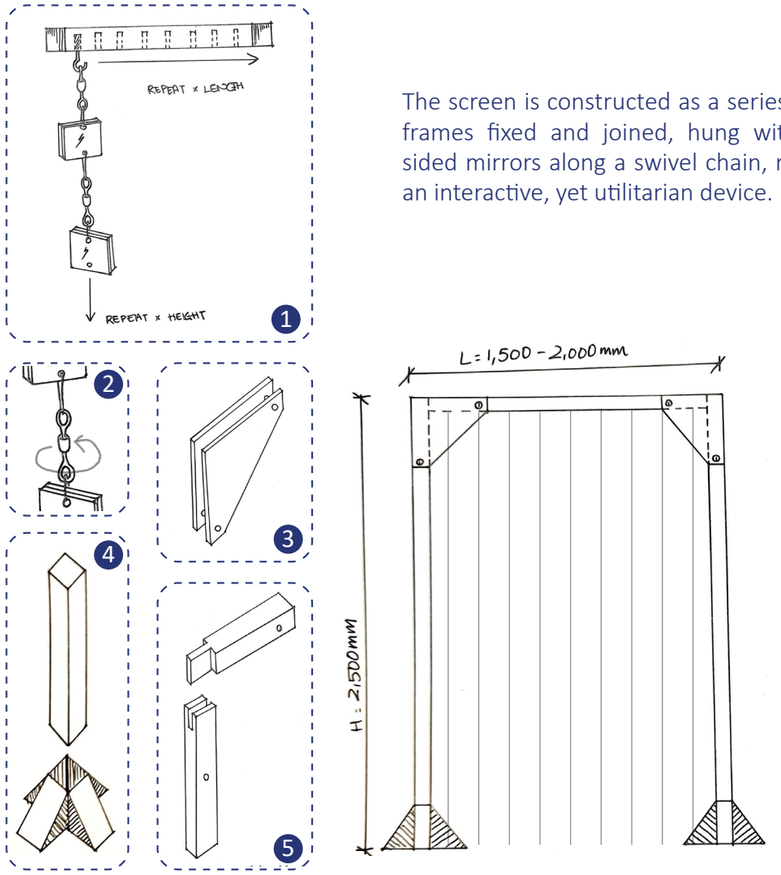


D.2 | Perspective 1- Exploring Sensory Experiences in Space with A Personal Reflection on Sensory Qualities. (Self-produced).



D.3 | Perspective 2- Exploring Sensory Experiences in Space with A Personal Reflection on Sensory Qualities. (Self-produced).

Appendix E | Concept Design and Mock-up Presentation

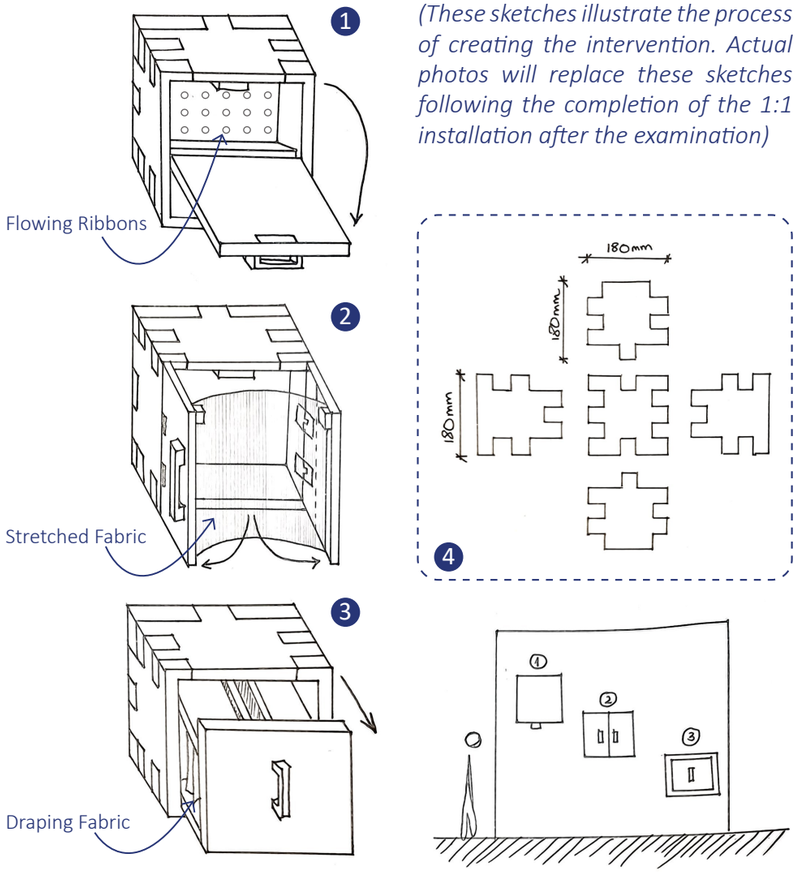


The screen is constructed as a series of timber frames fixed and joined, hung with double-sided mirrors along a swivel chain, resulting in an interactive, yet utilitarian device.

1 | Horizontal Bar Fixing System
2 | Swivel Hook & Fish Wire
3 | Reinforced Corner Panels
4 | Footing Connection
5 | Timber Frame Joint

E.1 | Sketch of the mirror screen potential components and installation process. (Self-produced).

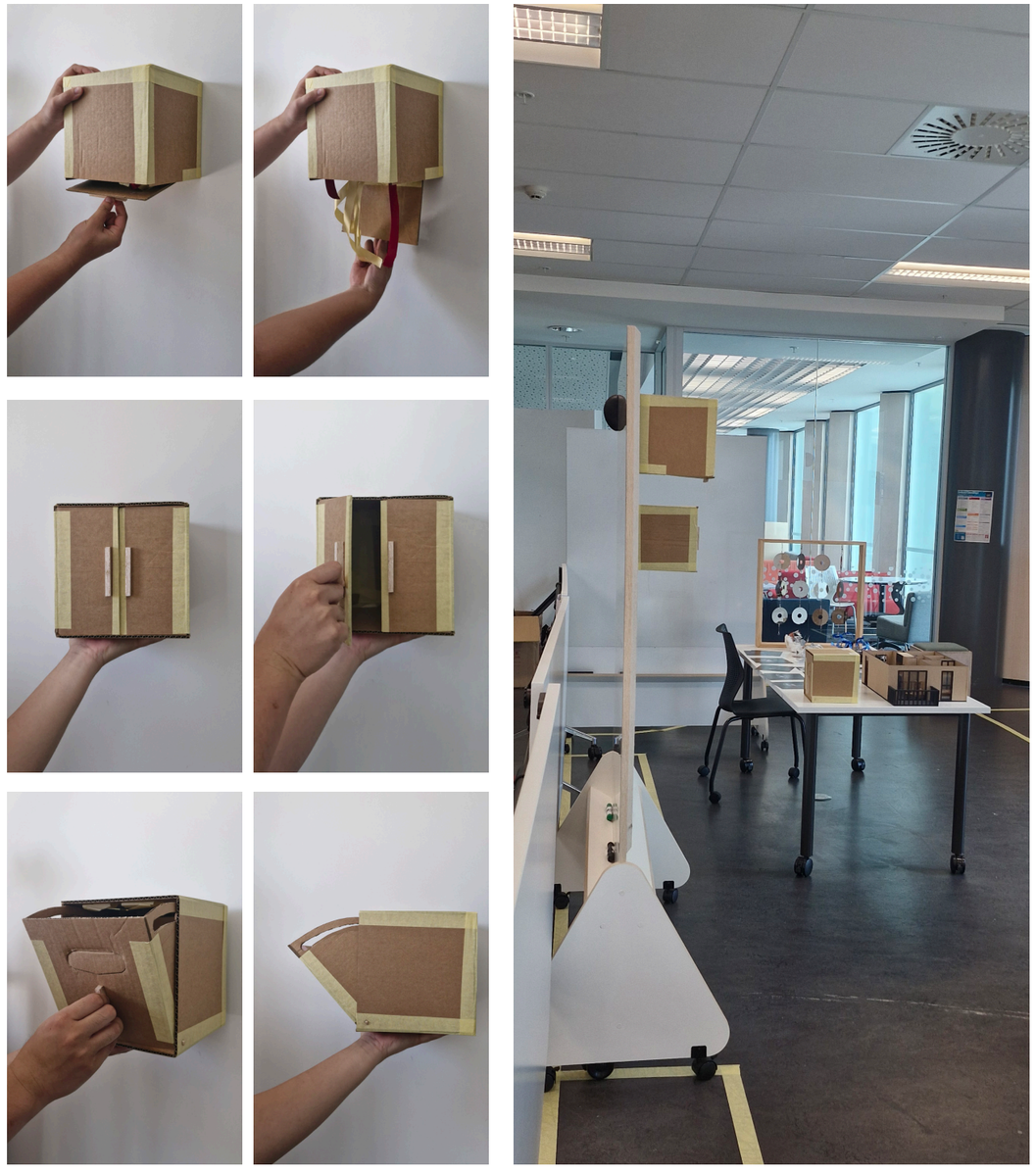
E.2 | Partial screen installation within a mock-up apartment layout for an informal presentation on campus. (Self-produced).



(These sketches illustrate the process of creating the intervention. Actual photos will replace these sketches following the completion of the 1:1 installation after the examination)

1 | Single Hinged: Scented ribbons cascading downward
2 | Double Hinged: Scented fabric extending outward
3 | Pull Drawer: Scented fabric gracefully flowing
4 | Timber Box: Crafted with finger joints

E.3 | Sketch of the scent chamber potential components and installation process. (Self-produced).

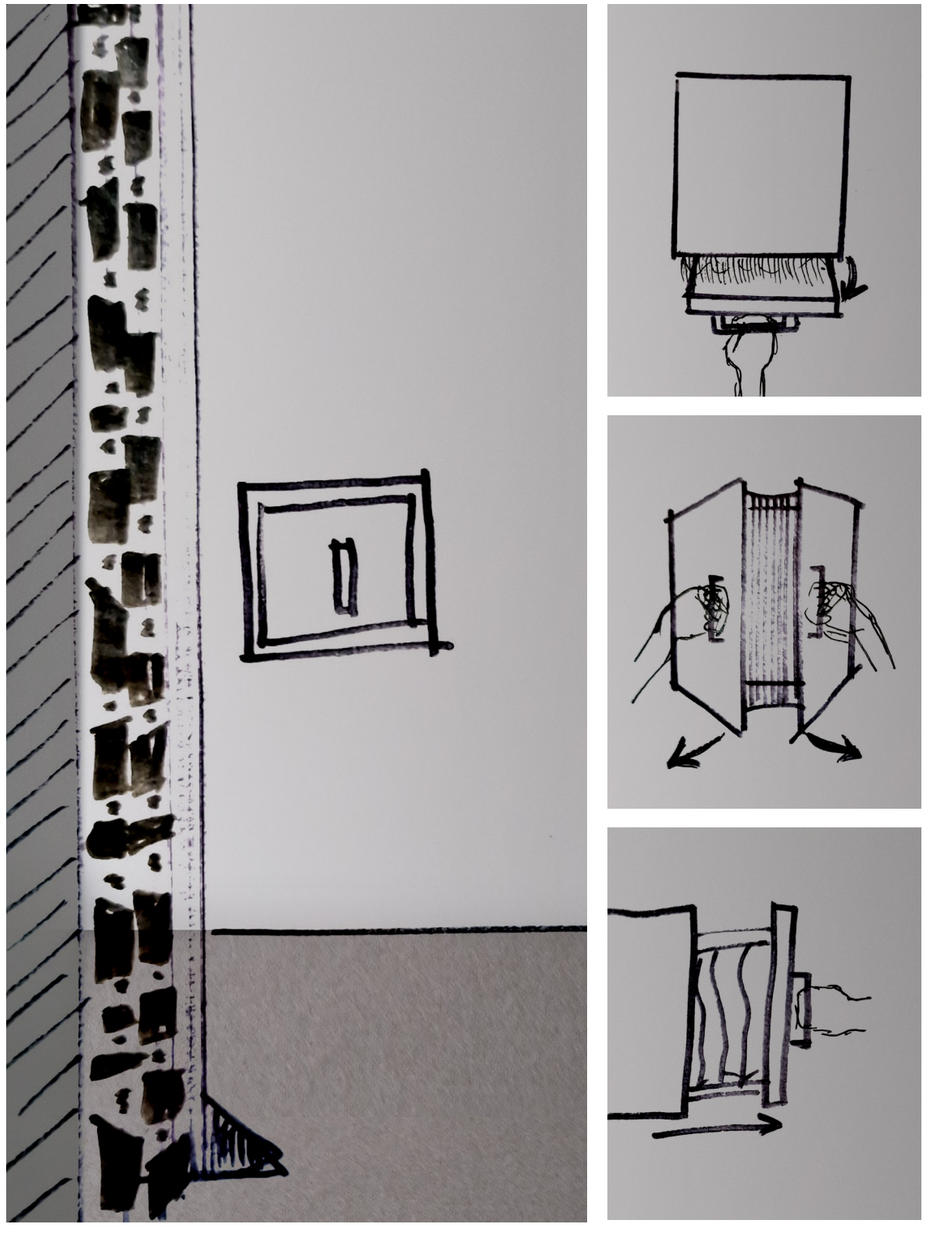


E.4 | The scent chamber mechanism mock-up installations and pin on fake wall to demonstrate for an informal presentation on campus. (Self-produced).

E.5 | Draft Mirror Screen Installation at Entry Door. (Self-produced).

E.6 | Draft perspective towards the living space where the screens utilises airflow to guide circulation. (Self-produced).

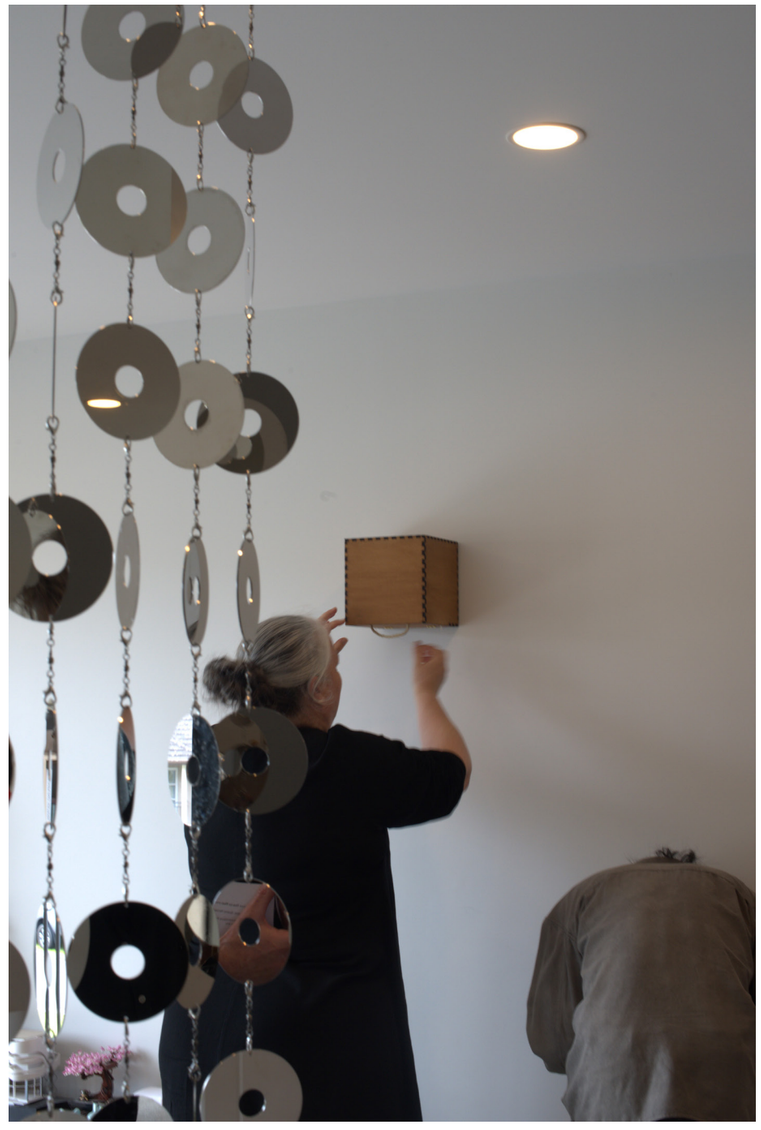
E.7 | Draft close-up of the chain of mirrors. (Self-produced).



E.8 | Draft view of Mirror Screen and Scent Chamber. (Self-produced).

Appendix F | The Moments of Sensory Experience Journey on Presentation Day

F.1 | Upon entering the apartment, juries encounter the first mirror installation, accompanied by Vietnamese food and drinks reminiscent of childhood, enhancing the sensory experience. (Self-produced).



F.2 | Juries explore and interact with the scented chambers one by one. (Self-produced).

F.3 | The mirror disc gently rotates with the wind, creating a subtle division and transition. (Self-produced).

F.4 | Juries revisit the scented chamber to identify each fragrance. (Self-produced).

F.5 | As part of the experience, the scented chambers are designed for ease of use, allowing smooth opening and closing. (Self-produced).

F.6 | Everyone gathers in the living area, sitting comfortably while taking in the surroundings. With the wide sliding door open, cross-ventilation allows the breeze to flow through. This moment serves as a final immersion into the sensory experience as I conclude the presentation. (Self-produced).

SENSE-SCAPE

Spatial Perceptions Of The Intangible

Scan the QR code or copy the link below to access a short film that explores how sensory experiences enhance comfort and intimacy within confined spaces. Through interactive installations, the film takes viewers on a sensory journey designed to evoke these emotions. This serves as the final creative outcome response.

https://youtu.be/I-noRopZQAE