Releasing Anxiety

a design exploration into the four levels of anxiety

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BEN SNOOKS

for mum

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To my supervisor, Joanna Merwood-Salisbury, thank you for your guidance and support throughout the year.

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RESEARCH QUESTION

This research project aims to investigate how spatial principles can be used to construct intimate connections between architecture and occupant, creating relief from anxiety. The body reacts to anxiety in many different ways, progressing through a series of mental and physical states from mild to panic level. This then raises the question, how can architecture create relief from anxiety in the context of a dense urban environment? How can sensory design create a narrative journey that transitions from anxious to calming?

◀ FIGURE 1.2 *thoroughfare looking east*

ABSTRACT

Releasing Anxiety

Being the most common mental disorder, anxiety is especially co-related with busy urban environments. The rise of urbanisation and modern technology has created a world that has significantly heightened our levels of stress and anxiety. In this context, our social responsibility and accountability as architects is increasing. How can we design with peoples’ health and wellbeing in mind? Through iterative design processes, I will create an emotional experience that connects the body with architecture, heightens the occupant’s self-awareness, and engages with site, creating a place of calm and belonging. Sensory design will be used to model the four levels of anxiety (mild, moderate, severe, panic level). The final design will create a narrative journey that stimulates a transition from anxiousness to calming.

The research proposition will be tested on a site located in a highly developed area on the corner of Elliott, Albert and Victoria Streets in Auckland’s business hub. This site was chosen not only for its central location but because it is the site of a new metro station (predicted to be the busiest station in the Auckland rail network) as well as a linear park connecting Victoria and Albert Parks. Together these infrastructural additions will increase pressure on an already over-stimulated environment. The station (Aotea station) will be incorporated into the design, creating an urban park that provides access from the concourse level to street level, drawing people up into a protected landscape area intended to relieve anxiety and provide a place of respite.

◀ FIGURE 1.3 *linear staircase*

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INTRODUCTION

Releasing Anxiety

The intention of this research project is to explore how, in a commercially motivated modern society, the use of intimate connections between architecture and the human body can create a place where anxiety is released. The body reacts in many different ways to the surrounding environment. The same can be said about anxiety; each level progresses to a more severe mental and physical state, as anxiety affects the entire body (through all senses), Sensory Design is an appropriate method to solve this pressing issue. The exploration into the four levels of anxiety can be used as a tool to challenge and evolve the user's spatial perception. This then raises the question how can modelling the levels of anxiety be used as a method to make an occupant, in an over-stimulated urban environment, more self-aware of their mental and physical state; and how might this transition through an emotional multi-sensory experience evoke our awareness of self?

Creating a narrative journey that transitions from anxious to calming, can the relationship between Sensory Design and narrative be used to release an individual's anxiety?

The project will employ the idea of Narrative Architecture and a method of Sensory Design. Narrative Architecture and Sensory Design, although two different things, are similar in many ways. Spatial narrative is more about the physical environment guiding us through space whereas Sensory Design uses our senses to direct us through these physical environments. The idea that the built environment is designed for all the sensory needs of the human body, more so than the typical practice of structure and program, lead to a greater understanding of the mind and physical body. The gathering of sensory data is critical to design decisions in this process: the senses are treated equally, rather than prioritizing vision.

THESIS STRUCTURE

PART ONE *research*

The first part of the research portfolio is to establish a theoretical background, focusing on Narrative Architecture and Sensory Design. This section provides a greater understanding of the research topic, giving a basis for the design lead research outlined in part two.

2. Sensory Design & Narrative Architecture

This section identifies the relationship between Narrative Architecture and Sensory Design and the relationship with the human body, both physical and mental.

3. Case Studies

This section investigates five case studies that each illustrate, in different ways, how narrative architecture and sensory design is used by architects to create an emotional journey through space. In particular, anxiety to calm, the use of dark and light, material changes, and noise to silence.

PART TWO *design*

The second part is the core of the design lead research which uses a variety of methods to produce a final design to attempt reduce anxiety within an urban dense environment. Each design phase critically tests material and spatial qualities against the research question.

4. Test Design *phase one*

This section tests three series of abstracted models that use the four levels of anxiety to create a physical and visual sensory narrative from one level to the next. Each series showcases the development of anxiety in different ways, the first being more interactive, second being more about the physical, and the third being abstracted drawings produced from the second series.

5. Preliminary Design *phase two*

This section is a continuation of the first, and introduces the first architectural test to a specific site, taking the experimental series from phase one and testing these on a real site. The reverse progression of the levels of anxiety is introduced as a narrative sensory journey that begins as an anxious environment that then develops into a calm space.

6. Final Design *phase three*

The final design is a development of the reverse progression of anxiety, from an anxious underground thoroughfare to an elevated and calming urban park, where the narrative sensory journey is the transition from the underground to the elevated park.

7. Conclusion

The concluding section reflects on the design outcomes from each design phase and discusses findings that were successful and the need for adjustment to the design research, and highlighting future possibilities.

METHODOLOGY

PROBLEM EPIGRAPH

“The architecture of our time is turning into the retinal art of the eye. Architecture at large has become an art of the printed image fixed by the hurried of the camera. The gaze itself tends to flatten into a picture and lose its plasticity; instead of experiencing our being in the world, we behold it from the outside as spectators of images projected on the surface of the retina.”¹

¹ Joy Monice Malnar, Frank Vodarka. *Sensory Design*. Minneapolis: University of Minnesota, 2004. 21

INTRODUCTION

Narrative Architecture & Sensory Design

This section summarizes important texts on the topics of narrative architecture and sensory design, and draws out ideas to be used in the design iterations. It focuses on writings from Cathy J Ganoe, Christel Nisbeth and Moa Liew, Frank Vodarka and Joy Monice Malnar, James J Gibson, Juhani Pallasmaa, and Peter Zumthor.

Narrative architecture and sensory design are essential to the research design, guiding occupants through a series of forms and changes, while sensory design connects the body and mind, (the senses), to the narrative path, creating a deeper relationship between architecture and the human body.

SENSORY DESIGN

Joy Monice Malnar and Frank Vodarka discuss Sensory Design in their book, *Sensory Design* (2004). Sensory data is critical to design decisions but they are rarely applied to in the built environment. All humans experience three types of sensory response, “the first, an immediate physical response; second, a response conditioned by prior knowledge of its source; and third, a response to the stimulus as it has become identified in ones memory with a particular time and place.”² The immediate response is an involuntary reaction to what a person experiences, whereas the second is dependent on the person and their understanding (knowledge) of space, where unfamiliar sounds and smells might make a person anxious. Others may be curious and excited, whilst familiar sounds and smells are reassuring. The third is based more on experience of the user, stimulating memories and tend to have an awareness of place. An example of this is smelling a particular material such as wood. It

creates a sense of place, which may be different for different people. An example of this is the feeling of home, an experience. Light doesn’t create the same sensation as a fire place, which the warmth comforts most people. A place is a location of experience. It evokes the senses, memories and the work of imagination. “The feelings of a place are indeed the mental projections of individuals, but they come from collective experience and they do not happen anywhere else. They belong to that place.”³

The experience of a place is enhanced by an inexplicable but enjoyable odour. Our sense of smell excels in its ability to invoke awareness. Having the ability to evoke ones’ memories, it can function as a kick starter that evokes all kinds of forgotten experiences of the past. Smells can therefore serve as memory aids or as means of conducting our reactions and performance. Particular odours can endow otherwise neutral spaces with specific character.

² Malnar and Vodarka 21
³ Malnar and Vodarka xi

Without sound, visual perspective is different, less contrasting, less attention-demanding, and less informative. Quiet spaces foster a sense of independence, informative places and constantly varying soft personal sounds which have an important emotional and social impact on individuals.

The experience of the city can be closely related to the surrounding sounds. Sound would be a significant factor for the design of urban environments. "...sound plays a crucial role in the anticipation, experience and remembering places."⁴

Sound creates sensations rather than reflections, but an environment without sound is lifeless and unreal, without flow or rhythm, and can be frightening. Sounds can produce a sensory overload, but these are normal in an urban environment which can be reassuring.

"Every touching experience of architecture is a multi-sensory; qualities of matter, space and scale are measured equally by the eye, ear, nose skin, tongue, skeleton and muscle. Architecture involves seven realms of sensory experience which interact and infuse each other."⁵

James J Gibson places the five senses into systematic categories rather than detached senses: visual system (sight), auditory system (sound), the taste-smell system (taste and smell), the basic-orienting system and the haptic system. The basic-orienting system uses all the other systems which guide our orientation and the haptic system refers to the sense of touch, but this extends to include physical feeling of pain, hot and cold, muscle movement and

body sensations. This is incredibly important as it looks at how each system works with one another rather than being detached senses.⁶

"The basic-orienting system is based on the relationship between the horizontal ground plane and our vertical posture." Gibson states the basic orienting system as being the core system, while the haptic, the olfactory system, the auditory system, and the visual system all contribute information to direct us through our environment. The function of the auditory system is the arousal of the auditory sensations, permitting identification of it. Its function is to register the sounds made by the individual. If a sound is heard, you either move towards it or away from it, which is similar to the other systems in terms of its connection to the basic orienting system, where the information received from each other system determines our movement from how we walk through a city to the posture of our bodies. This can also be said about the olfactory system. Our orientation to an odour, whether it is positive or negative, attracts us towards or away from it. The haptic system is different to the other systems, it gives detailed information of the environment relative to the body, the body exploring the physical aspects of the environment we are surrounded by. The haptic system includes the whole body, most of its parts and all of its surface.

The sense of smell, 'sniffing' brings a foreign scent from an individual's surrounding into contact with the olfactory membrane. Good odours often make a person act to maximise their intensity, using their orientation to increase the intensity of smell. Whereas with bad smells an individual will do the opposite, using the basic orienting system to move away from the odour.⁸

The visual system is deemed necessary for basic movement within the environment we live in.

Juhani Pallasmaa describes the importance of the connection between architecture and the body through the senses in his text *An Architecture of the Seven Senses*, 1994. Smell is associated with being the one of remembrance, a particular smell can make us imagine a space, creating a space that isn't through the vision of the eye. For example freshly cut wood has a different odour to treated wood. Natural woods scent sends memories of walking through a forest, relating back to nature. Memory is dynamic, it often forms and reforms experience with a spontaneous emotional response. Experience is the most important way for us to connect to space through the senses.

Pallasmaa argues that there is an increasing disconnection between human senses and architecture. Architecture becoming more of a visual pleasure loses its connection with the body, rather than being shaped and moulded for human interaction, all that is seen is a 2D image through camera lenses. Something as little as using natural materials gives an interior feeling, expressing its age and history and human aspects. Synthetic materials do not have the characteristics of the natural, the knowledge of being created in a factory and never having the connection with nature and human connection. Touch being the weakest sense is still able to enhance texture, the skin,

"The surface of an old object, polished to perfection by the tool of the craftsmen and the assiduous hands of its users, seduces the stroking of our hand. It is pleasurable to press a door handle shining from the thousand

hands that have entered before us... the door handle is the handshake of the building."⁹

What is meant by quality architecture? The Swiss architect Peter Zumthor, a master of Sensory Design, describes it in terms of atmosphere. The only way to create an atmosphere is through the emotional sensibility of the human body. In his book "Atmospheres," 2006 Zumthor extends this idea through nine illustrated chapters, which discuss the significance to create an atmosphere. Buildings that offer people havens not just for one person but for anyone who occupies space, from the macro to micro scales. Architecture can be the same as when making first impressions of a person, that the judgement or feeling in the first few seconds, ultimately concludes the feeling of the architecture with a spontaneous emotional response. To create an atmosphere, is to create environments that offer people havens not just for one person but for anyone who occupies space, from the macro to micro scales. Quality makes one react differently, the amount of work gone into crafting any architectural piece gives the sense that it's taken a great deal of time to generate and thus can be appreciated. Spaces can react in their own unique in the way materials and its composition.

"Material is endless. Take a stone: you can saw it, grind it, drill into it, split it, or polish it – it will become a different thing each time. Then take tiny amounts of the same stone, or huge amounts, and it will turn into something different else again. Then hold it up to the light – different again."¹⁰

This will be valuable in creating further detail

⁴ Malnar and Vodarka 140

⁵ Pallasmaa, Juhani. *An Architecture of the Seven Senses*. Simon, Dan. New York: Princeton Architectural Press, 2011. Pg 40-49. Book. 42

⁶ Gibson, James J. *The Senses Considered as Perceptual Systems*. London: Allen & Unwin, 1968. 65

⁷ Gibson, 73-74

⁸ Gibson, 145

⁹ An architecture of the seven senses 45

¹⁰ Atmospheres, Zumthor 25

on how to create spaces that engage with every occupant with the use of materials and composition through experience.

The following case study is an example of Sensory Design.

Monastery of Nový Dvůr

*Bohemia, Czech Republic
1999-2004, John Pawson*

Exemplar Work: Sensory Design/ Religious Space

The sensory environment is important in the monastery for both practical and religious reasons. Due to monks spending a lot of their time here, it needed to be a quiet space: doors were designed not to slam, floors that did not creak and because they spent a long time on their knees, monks required a softer material than stone. The monastery church interior is an architectural expression of the sacred. The light pours down from the sides, creating an ambiguous spatial arena where the eye is drawn to the front. Light is filtered through sculptural openings rather than stained glass. The white walls floated like blades above the heads of the congregation.

“Pawson’s design is anchored in long standing Cistercian aesthetic principles, but develops new and distinctive vocabulary for their expression... A steel frame removes the need for columns, creating volumes of great purity from which all distracting detail has been stripped away.”¹¹

The design draws on St Bernard of Clairvaux’s twelfth-century blueprint for Cistercian architecture, with the emphasis on light, simplicity of proportion and clarity of space. The simple design allows the occupant to not be distracted by the outside, windows are hidden which allows light to filter down from above, giving clarity and a space of thought and expresses its intentions through light guiding the eye to a particular point.

¹¹Sudjic, Deyan. *John Pawson Works*. Ed2. New York: Phaidon Press Inc., 2005.

NARRATIVE ARCHITECTURE

The threshold is a central component of Narrative Architecture, moving the occupant from one spatial experience to the next. Whether that is a physical or sensory change, a transitional experience from exterior to interior or totally internal experience of changes. People tend move between their physical environments using their sensory experiences. “The basis for considering threshold spaces is the phenomenological view of space... Humans move between space defining elements.”¹²

Individuals tend to structure their own understanding of space in a narrative way. Using narrative as a guide to designing can ultimately create a strong relationship between individuals and space. Cathy Ganoe expands on the human response to interiors through a narrative approach. The nature of the narrative design process is based on the experience of an individual’s movement through space. “The movement through space is viewed as physical/

external, and influenced by the position of the body, psychological and influenced by the mind.”¹³ Viewing an object can alter ones perception of space thus changing their response. This is an important factor in creating narrative designs. It creates an experience, of which most designs fall into a type, a house, hotel, etc, giving it a more personalized quality. Depth of attachments is based on symbolic meanings on four different levels. The singular (nonsalability); the scared level (expressions of self-identity); the fetish (“providing concrete meaning through realization of the abstract meanings through forms that become inseparable from ideology;”¹⁴ and the magical (transforming an individual). Design is capable of containing existing meaning and also creating new meaning, expressing old and new ideas. Human understanding of the world is not experienced just through objective data provided by cultural symbols, but an individual’s unique interaction through

¹²Boettger, Till. Threshold spaces. Boston: Birkhäuser, 2014. 19

¹³Ganoe, Cathy J. Design as a Narrative. New York: Interior Design Council, 1999. 13

¹⁴Ganoe, 6

personal experience, feelings, and memory. The angle of viewing may alter one's perception and response to space, and their movement is physical and influenced by the body's position, and influenced by the internal (state of mind). The journey describes how the design for human narratives within the environment and how narrative design creates an emotional, mental and physical (multisensory experience) through personal experience. This in itself is hard to do, so by designing and understanding human personality traits.

Moa Liew and Christel Nisbeth's text *Monument of Anxiety* investigates how architecture can send signals and messages to the visitor through communication theories, and the design process of the narrative. The use of filmic processes, tools and methods connect the mind and body through emotive stimulants and spatial sequences. Exploring a new tool to create a strong relationship between the individual and their perception of experience of space. Equally to a film that engages the emotions of the viewer, the process of the narrative is the same, inviting the user in an emotional journey creating a narrative process that makes architecture more of a surprise than a structural element. The physical space sends signals to our pure memory while our reaction to space is considered our automatic memory. "It can be seen as the stereoscope for revealing the secrets of human behavior, the threshold between the imaginary and the physical space, and the framework of life."¹⁵ The monument is built to give some form of symbolic value, that symbolic message comes from our pure memory. Atmosphere within architecture sends emotive messages and puts the visitor of space into an emotionally charged state. Once the person no longer feels emotions

within space, they become uninterested. A method to structure spatial relations and create an atmospheric effect that connects with the emotions of the individual through a sequence of spatial events. This text is important to the project as its main objective was the narrative journey through space that was based on phenomenology and the filmic process where a film connects to the emotions of the viewer. This is important to the same process of Narrative Architecture where the visitor connects on a similar emotional state through story the space is trying to communicate.

Narrative can be much more than a writing, reading, drama and cinema, narrative can shape and simplify events into a sequence that can stimulate everyone, combining both instinct and knowledge, rational understanding and imagination, which can be spatially through the urban landscapes and architecture. Cities are both, like architecture, spatial and atmospheric, giving structure and shaping experiences.

*"The various physical parts of a space signify as a result of the actions – and experiences – of the participant, who assembles them into a personal construct. The narrative coefficient resides in a system of triggers that signify poetically, above and in addition to functionality. Narrative means that the object contains some 'other' existence in parallel with its function."*¹⁶

The church through the centuries has accumulated narrative through the desire of reflecting the story of god, configuration of the body in plan and their decoration. "The process of familiarisation with any one urban

environment requires endlessly complex and risky experiment, with every main route encountered deepened by experiments in wandering, or what the Situationists called *dérive*."¹⁷

The following case study exemplifies Narrative Architecture.

¹⁵Nisbeth Christel and Liew Moa. *Monument of Anxiety*. 3

¹⁶Nisbeth and Liew, 16

¹⁷Nisbeth and Liew

The Danteum

Rome, Italy
Unbuilt 1938, Giuseppe Terragni

Exemplar Work: Narrative Architecture

The Danteum by Giuseppe Terragni is an unbuilt project from 1938 based on the square and the golden ratio. The significant aspect of this project is the repetition of forms, making the user familiar with the space but changing its atmosphere, it is a great example of narrative design as it embodies a poem. The levels, forms, and spaces of the Danteum are Terragni's interpretation of Dante's Divine Comedy. The sequence of spaces experienced by the visitor leads through hell, purgatory, and paradise. As the Divine Comedy includes references to numerology and geometry, the poem could be seen as a written allegory of the physical structure of the afterlife. Terragni, in his turn, took the text and designed a physical model of that written allegory, also using numerology and geometry. The project uses very simple gestures that are repetitive but have different elements, which creates an entire different experience for the user. The Danteum has a strong narrative journey where spaces are juxtaposed representing the sequence of spaces experienced. This has been expressed through the atmosphere, mainly through the amount of light entering a space, paradise being a place of light while hell being one of darkness.¹⁸

¹⁸Schumacher, Thomas L. *Terragni's Danteum*. Ed2. Princeton Architectural Press, New York. 2004.

INTRODUCTION

case studies

This section analyses five case studies that each illustrate different ways in which the architects have used aspects of Sensory Design to create narrative within architecture. The first case study looks at how the Jewish people's ordeal in the Holocaust during WWII is translated through the users experience into a narrative sensory journey rather than a museum displaying works. The Jewish Museum in Berlin gives a glimpse into the suffering of the Jewish people. The creation of an emotional experience connects with the body. The Endless House was an organic form where all ends meet constantly, the same as the human body; this case study was selected for the close connection between the architecture and human body. This

is an example where the architect wanted the movement through architecture to be like moving through your body and thoughts. The third case study by architect Martin Masse, is more of a monumental architectural form that expresses memory, representing a town which once lived, but has now disappeared. Tomba Brion by architect Carlo Scarpa created a memorial to enhance the experience of the user through his forms and attention to detail through drawing. Believing that that a cemetery should be a place of happiness not sadness. The final case study, the Broad Museum, exemplifies how two programs can dictate the circulation of people within architecture to create a full experience for the occupants.

1. **JEWISH MUESUM**
DANIEL LIBESKIND

2. **ENDLESS HOUSE**
FREDERICK KISLER

3. **TIERRA DEL FUEGO**
MARTIN MASSE

4. **TOMBA BRION**
CARLO SCARPA

5. **BROAD MUESUM**
DILLER SCOFIDIO + RENFRO

Jewish Museum

Berlin, Germany
1996 - 1999, David Libeskind
Case Study: Museum

1.

GERMANY

△ FIGURE 3.1 *daniel libeskind*
△ FIGURE 3.2 *outline of germany*
▷ FIGURE 3.3 *urban proximity*

JEWISH MUESUM

Narrative sensory journey

In describing his design intention Libeskind says; “A visitor must endure the anxiety of hiding and losing the sense of direction before coming to a cross roads of three routes.”¹⁸ This creates a narrative for the occupant, who has to endure the experience of three different routes, which represent German history, emigration from Germany, and the Holocaust. An extensive amount of the building is void and glass, making the viewer look up towards the light, giving the experience of the Jewish people in WWII, in their darkest moment, where you feel you will never escape, yet “the small amount of light sends a little hope.”¹⁹ The concrete helps create an overwhelming atmosphere, being cold created a chill and where a small slit in the wall allowed small amount of light. The interior is mainly reinforced concrete, and takes the user through multiple spaces, galleries, empty spaces, and dead ends. Even though it is a museum, the extension is intended to create an experience that depicts what most cannot understand.

¹⁸Schneider, Bernhard. *Daniel Libeskind: Jewish Museum Berlin: Between the Lines*. Munich: Prestel, 1999.12.

¹⁹Schneider. 16

Endless House

1950, Frederick Kiesler

Case Study: Unbuilt

2.

△ FIGURE 3.5 frederick kiesler
△ FIGURE 3.6 endless house drawing

ENDLESS HOUSE

Case Study: Spatial Concept

The Endless House is Frederick Kiesler's answer to the intricate relations between man, nature, and technology. His main concern was the psycho-social aspect beginning with the aesthetic element then then functional after. Kiesler wanted to create architecture that when inhabited, felt as though it were your own body, moving from each room as you do when you move through thoughts. Kiesler believed in elastic spatial concepts, arguing the shape of the concept design is based on a lighting system, allowing ample light throughout each corner of every room. His project the endless house was called endless because all ends meet constantly, like the human body.²⁰

²⁰Cantz, Hatje. *Friedrich Kiesler: Endless House 1947-1961*. Ostfildern-Ruit, Deutschland : Hatje Cantz, 2003.

Tierra Del Fuego

Tierra Del Fuego, Argentina
2014, Martin Masse

Case Study: Monument, unbuilt

3.

ARGENTINA

Δ FIGURE 3.10 outline of argentina

TIERRA DEL FUEGO

Case Study: Expressive architecture

The Tierra del Fuego project is a huge and dramatic inverted pyramid, tribute to a former tribe, the Selk’nam people. The memorial design has the purpose of avoiding the repetition of the mistakes of the past. Its structure sinks into the ground “bowels of the earth” to take the visitor to an underground space, where an interactive experience is lived with sculptures and a huge mural. The project is trying express our duty to the past, avoiding the repetition of the genocide of the American Indians. The design tries to search for a new architectural form and means of expressing memory. It makes the emotions very visual, and transmits the sensitive memory through spatial experience. It represents a town that once lived, and has now disappeared without a trace. From the ground level base, the pyramid extends down towards death and oblivion. The descent down symbolises different stages of the genocide: colonization, evangelization, extermination, disease, confinement of people, miscegenation and the definitive eradication of their customs and culture.²¹

²¹Franco, Jose Tomas. *Tierra del Fuego*. Archdaily.com. <https://www.plataformaarquitectura.cl/cl/759094/tierra-del-fuego-un-dramatico-memorial-en-honor-al-desaparecido-pueblo-selknam>.

The Broad Museum

Los Angeles, California, USA

2015, Diller Scofidio + Renfro

4.

UNITED STATES OF AMERICA

△ FIGURE 3.15 outline of united states
△ FIGURE 3.16 urban proximity

THE BROAD MUESUM

Case Study: Form

The Broad Museum is a contemporary art museum built in downtown Los Angeles. Designed by Diller Scofidio + Renfro, it will have the capacity to hold 2000 art works with an 11148 sqm of floor space.

The museum was designed to support two different programs, public exhibition and a storage area. The form of the buildings are also in two parts, named the veil and the vault, the organic form of the vault and the façade being the veil. The architects believed rather than making the storage a secondary program to the public gallery, the “vault” played a key role in the way people experienced the Broad from entry to exit, where the curved underside creates a lobby space for public circulation which draws people up through to the third floor gallery. Leaving the gallery floor requires the user to move through the vault, where there are glimpses into the storage area of the art collections.²²

²²Heyler, Joanne. *The Broad: an art museum designed by Diller Scofidio + Renfro*. Los Angeles, CA, 2015

The Brion Cemetery

San Vito, Italy

1977, Carlo Scarpa

5.

Δ FIGURE 3.21 outline of italy

THE BRION CEMETERY

Case Study: Detail

The Brion Cemetery was designed for Giuseppe Brion who died in 1968. Scarpa was commissioned to devise a memorial, that contain multiple features in a modern style which was respectful rather than overwhelming. He created a memorial that was not only fitting its purpose, but enhancing the experience of the living with form, light and space which, engages them into contemplation. This was one of his only works that Scarpa would look at with pleasure, “...everyone is happy to go there – the children play, the dogs run around – all cemeteries should be like this.”²³

Scarpa’s incredible work and execution of handrails, floor patterns, benches and door pulls set him apart from others in his generation. He did not use spatial themes, but rather using and manipulating materials in relation to the human body. The way in which he worked was by constantly drawing with pencil work which was his way of researching how the existing and his interventions can create an experience to the user through touch and feel of the materials used, rough stone and fragmented concrete. This is critical to the design development of the four levels of anxiety, through design iterations will both the forms of each level evolve but also the atmosphere and the connection to body through the senses.

²³Muraben, Billie. *The Modernist Architect who helped to build Venice*. AnOther. <http://www.anothermag.com/design-living/9741/the-modernist-architect-who-built-venice>. (accessed May 22, 2017)

INTRODUCTION

phase one

The first design phase presents a series of sculptural tests that investigate the progressive levels of anxiety from mild to panic level as spatial and material expressions. The first series was an experience test, all of which looked identical to the eye, but when touched and picked up gradually became more fragile, creating some form of immediate anxiety. The second series is a more abstracted version of the first. These are presented as a progressive, material and spatial journey analytical drawings of these sculptural models led into the next design phase.

Levels of Anxiety

Four Stages

Your body responds to anxiety in a variety of different ways, causing more numerous and intense symptoms as the level of anxiety increases.

△ FIGURE 4.1 anxiety diagram

TEST ONE

Cube

The beginning of the design phase started with idea of representing the levels of anxiety as physical models. This led the creation of cardboard cubes 120x120mm with interactive installations inside each cube. However, it was limited in that it only represented levels of anxiety from one the perspective of one sense, vision. The next phase was using the same idea but each cube was slowly deteriorating. The intention behind this was if someone interacted with each cube, they would react differently.

The first iteration was a deteriorated solid cube, which slowly progressed to each surface becoming detached with metal rods holding them in place, continuing onto becoming less stable as you interact with them. The idea behind this experiment was to see how the form of a cube can create an unknown reaction when interacted with, whether or not the outcome for the person who experiences the objects feels the same about it as another does, the last cube being as though it is about to fall apart.

Mild

Moderate

Severe

Panic Level

△ FIGURE 4.3 *black card model series*

△ FIGURE 4.4 *black card model series*

TEST TWO

Clay & Wire

The second experiment of the levels of anxiety in a physical form represents a narrative progression from the mild anxiety to panic level. The use of clay and wire mesh created a series of small models that when organised into a linear configuration represented abstract ideas of what each level could look like, and how it transitions from pure form to one that's deteriorating revealing the emotional and physical distress felt when experiencing anxiety. The visual aspect of each level is clear; the

mild series are smooth where the mesh wire is covered in clay but also reveals the mesh shape. Moderate level starts to deteriorate where the clay begins to crack and more of the wire mesh is exposed. Severe is where the model clay begins to become rough and far more appealing to the eye, whilst the panic level models have completely deteriorated, the wire mesh is highly exposed and the clay has become very rough and fragile, almost cave-like.

Mild

Moderate

Severe

Panic Level

TEST TWO

Narrative sensory progression

After photographing the models in linear series I began to test how this series could become more of an architectural narrative and sensory progression. When placed into human scale, the physical development of the linear series highlights how an occupant could navigate through each series and these models could become spaces and connections to other programs. Placing these images into a long series to create one journey showcases the progression and the narrative journey experience from level to level.

△ FIGURE 4.6 clay + wire model journey levels

△ FIGURE 4.7 clay + wire model progressive journey

TEST THREE

Drawings series

Photographing these models as a linear configuration collectively, I explored different configurations, where the models were separated and connected. I then produced overlaid drawings highlighting the spaces the models created, the space created between them and the shadow they produced. The drawings can be interpreted as the experience of the body slowly degrading from level to level, under the stresses from the over-stimulated urban environment, or potential plans for designed spaces.

△ FIGURE 4.8 clay + wire model drawings

△ FIGURE 4.9 clay + wire model drawings

△ FIGURE 4.10 clay + wire model drawings

△ FIGURE 4.11 clay + wire model drawings

△ FIGURE 4.12 clay + wire model drawings

△ FIGURE 4.13 clay + wire model drawings

TEST THREE *cont*

Drawings series

This series takes the drawings and breaks up the linear progression into categories where each different drawing could be analysed, showcasing the different levels of anxiety that have been extracted from test two models. There is a definitive difference between each drawing type, the shaded series have more depth in gradient whereas the others give more detail in the outlines.

△ FIGURE 4.14 *drawing series*

△ FIGURE 4.15 drawing series

△ FIGURE 4.16 drawing series

△ FIGURE 4.17 drawing series

△ FIGURE 4.18 drawing series

INTRODUCTION

phase two

The second design phase extends the first, beginning to explore ways in which the drawings produced can create thresholds and a narrative journey through a chosen site. Auckland central was an ideal location to test: an empty site in an urban dense environment. The overall design had the potential to integrate the redevelopment around the site. This included the current construction of the underground Aotea Station adjacent to the site. This design phase will investigate how the design will respond to the construction of the station which, will increase the over-stimulation of the surrounding environment.

Site Analysis

*Albert, Elliott, Victoria Streets
Auckland, New Zealand*

Urban Dense Environment

The proposed site for this research is located in the heart of Auckland’s central business hub. The site, exposed on three faces, can be said to be exposed like the human body is to the urban environment, creating a relationship between our experiences with the urban environment in architecture. For Auckland, this location is essential as it is located in the most dense part of the city, aligning with the intention of the design research of creating

architecture that releases anxiety for people in an urban dense environment. As Auckland becomes more developed, the city is only going to increase its density, especially near the site, where a new metro station (predicated to be the busiest station in the Auckland rail network) as well as a linear park connecting Victoria and Albert Parks, will ultimately increase the over-stimulated environment.

△ FIGURE 5.2 auckland cbd density map

△ FIGURE 5.3 auckland density map close up

Site Analysis
auckland

△FIGURE 5.4 auckland density site street + existing adjacent program analysis

Post Aotea Station Development

△ FIGURE 5.5 site street context detail

Aotea Station Concourse Level

△ FIGURE 5.6 site + station context detail

TEST FOUR

Drawings to create narrative journey

The beginning of this series continues what had been done in phase one but now starts testing on the selected site: taking the selected drawings (shadow drawings) from test three and placing them on site to create thresholds and a narrative journey through the site. The chosen narrative journey was then tested on the site's surrounding context. The four corners where the site interacts with its immediate context is where the pressure points are located, with the larger threshold placed on the corner

of Albert and Victoria streets as this is where most of the stimulation will come from. Crowds of people and passing traffic contribute to the increasing over-stimulated environment as Auckland density grows. The connection to Aotea station and the journey from the train station to the street forces people to potentially have a new experience every time. Occupants will encounter, while moving through the thoroughfare, large open and tight small spaces.

△ FIGURE 5.7 shadow drawing series > on site

Chosen Drawing

△ FIGURE 5.8 shadow drawing series > on site

△ FIGURE 5.9 shadow drawing series > on site

△ FIGURE 5.10 shadow drawing series > on site

△ FIGURE 5.10 shadow drawing series > on site

△ FIGURE 5.11 site street context plan detail

Station Entrance

Elliott Street

Crowne Plaza

△ FIGURE 5.12 site station context plan detail

TEST FIVE

Extruding Drawings

Using Frederick Kiesler's belief in creating architecture as though you were occupying your own body, moving from one space to another as you move from thought to thought, this case study influenced the next step: creating a progressive journey up towards a large connected space. This starts when all the separated entrances gradually become one large space. These internal spaces are the inverse of the ground level space. This series tests

the same idea as placing the drawings on site; introducing the reverse progression of anxiety, extruding these drawings to create a space above that releases anxiety. The underground area being a place where anxiety is heightened and the narrative sensory journey from the thoroughfare towards an open connected space, is the experience of slowly releasing anxiety as the user travels upward.

△ FIGURE 5.13 *extrusion drawings*

Journey 1

Ground

Level One

Level Two

Level Three

Level Four

Journey 2

Ground

Level One

Level Two

Level Three

Level Four

△ FIGURE 5.14 extruded floor plans

Journey 3

Ground

Level One

Level Two

Level Three

Level Four

Journey 4

Ground

Level One

Level Two

Level Three

△ FIGURE 5.15 extruded floor plans

Journey 1

Journey 2

Journey 3

Journey 4

△ FIGURE 5.16 extruded floor plan journey

▲ FIGURE 5.17 extrusion sections

▲ FIGURE 5.18. extrusion sections

FORM

The form produced is the exterior design of the extruded drawing, shaped by the interior journey from the open thoroughfare, with multiple entrances, to a rooftop zone being one large open space. The internal form is wrapped in a simple box, which hides the organic form, representing the exterior of the body in relation to anxiety, where people tend to suppress their inner anxiety. The purpose of this design is for people to encounter a space which heightens their anxiety, to make them more self-aware of their physical and mental wellbeing. The journey up slowly reduces the stimulation and creates a pathway to a place of calm, where extraneous sensory stimulation is removed.

► FIGURE 5.19 architectural form of extruded

Interior form

Isometric

North Elevation

East Elevation

INTRODUCTION

phase three

The final phase is the continuation of the previous two design phases. It introduces a revised design and added program to create a stronger narrative sensory journey from an anxious space to one of calm. The design further investigates site conditions, exploring where over-stimulation is located within and around the site, and how the design can encourage people to engage with the given narrative progression. The program plays a key role in how people experience the journey, where choice of different types of circulation give the user a slow, moderate, and fast journey upwards.

REFLECTION

At this stage it was fitting to revise what had been explored and designed in the first two phases and reflect on what the research question is asking. Observing the final results of the preliminary design, it had not been fully resolved in terms of program, how sensory design is going to be used to create a narrative emotional journey, and how all the space is occupied. The final design phase has the potential to add program to site and create a stronger sensory experience where the thoroughfare is a place of heightened anxiety, the journey being the transitional space, and the addition of a program on top creating a place of calmness and release of anxiety.

PROGRAM

elevated urban park

The chosen program for the final design phase is an elevated urban park that creates an architectural experience for users around the site and a place of respite. The program is chosen on the basis that it is able to reduce the overstimulation of the senses, returning the occupant of an urban dense environment to a place where sounds, smells, touch and sight are satisfying to both the body and mind. The program below the urban park is the thoroughfare from Aotea Station to the wider urban environment which is the zone where anxiety is heightened. There is an added potential for a large rest room area and commercial space in the future.

▷ FIGURE 6.1 trees + sky

LIGHT STUDY

site conditions

This investigation identifies where sunlight falls on site throughout the year, which will influence where circulation is located in the design. Part of this is to consider how these findings could potentially add to the anxious/ uncomfortable space in the thoroughfare, during summer creating a hot interior and during winter cold, while the circulation, as a transitional zone, becomes more comfortable as the user travels towards the urban park. The following images illustrate the sun’s movement across the site at different times of the day and year.

Summer sunlight
site analysis

Spring and Autumn
sunlight site analysis

Winter sunlight
site analysis

▷ FIGURE 6.2 light study on site

March and August

June

December

△ FIGURE 6.3 site diagram overlay

Summer

Cone Locations

△ FIGURE 6.4 circulation + light funnel location

Anxiety Mapping

△ FIGURE 6.5 anxiety mapping > site context

ANXIETY ON SITE

auckland central

Part of the design research is to identify where anxiety might occur on and around the proximity of the site. The narrative sensory journey will deliberately heighten anxiety in the thoroughfare zone in order to contrast with the architectural elements that can reduce anxiety and create a place of calm. The following images showcase the areas where heightened anxiety is located.

FORM ITERATIONS

The funnel locations identified in the light study suggested a way to create a series of the journeys from the thoroughfare to the urban park. This is the first stage of the final design process, creating formal light “funnel” each with its’ own circulation system. Each of the three circulation zones are to have different experiences for the user, the speed of their journey varying from, slow, moderate, to fast.

△ FIGURE 6.6 funnel forms

△ FIGURE 6.7 funnel forms

DESIGN ITERATIONS

thoroughfare & urban park

This stage continued with the development of the light funnels, or circulation forms, and now adds the full design to the site: structure, program, and façade. The first image introduces pathways from Aotea Station which direct users under the three circulation zones through three different pathways. Each is carved out from the original site where the structure is exposed. The form of the urban park landscape is inverted on the ceiling of the urban park. The second iteration reduces the size of the organic form on the corner of Elliott and Victoria Streets and adds thickness between the thoroughfare and urban park. The third iteration showcases the façade design, which juxtaposes the internal organic form that is wrapped with an external

geometric form, expressing the exterior of the body in relation to anxiety, where the interior of the thoroughfare represents the suppressing of anxiety. The fourth iteration reduces the size of the façade and gives people a glimpse of the urban park from the exterior and introduces the final design for the circulation, a ramp (slow journey), linear stairs (moderate journey), and spiral stairs (fast journey). The final design opens the thoroughfare area to create a larger more anxious space and finalises the form of the urban park, where trees are planted around the perimeter to reduce the surrounding noise and introduce natural sounds, smells, textures and visual effects.

Δ FIGURE 6.8 design iteration one

Δ FIGURE 6.9 design iteration two

Elliott Street Elevation

Albert Street Elevation

Victoria Street Elevation

△ FIGURE 6.13 *final design iteration exterior perspective*

△ FIGURE 6.14 *final design iteration exterior perspective*

△ FIGURE 6.15 *design iteration five exterior axonometric*

FINAL DESIGN

thoroughfare & urban park

This is the final part of the design phase where the narrative sensory journey from an anxious space to a place of calm is realised through form, material, texture, light and shadow. The following images all illustrate the detailed design. The plans and sections showcase the detail of the narrative journey and overall architectural design, while the following renderings highlight the sensory and experience of the users through each of the three circulation paths from an anxious space to one of calm.

The urban park creates a place of peace, and introduces a dense green belt around the edge of the landscape, largely reducing the noises from the surrounding environment. This allows for the user to experience familiar senses, the smell of grass, wood and trees, the sound of water, the trees’ movement in the breeze and birds sing. Together the touch, sound and visual aspects create a place of calm due to the instinctive response of the body and mind to a secluded natural environment.

FIGURE 6.16 thoroughfare plan

FIGURE 6.17 urban park plan

FIGURE 6.18 section aa

FIGURE 6.19 section bb

FIGURE 6.20 section cc

JOURNEY ONE

renders

The following images illustrates the movement of occupants from Aotea Station and entering the thoroughfare zone. The pathway carved from the original site directs the user towards the large organic form, the ramp (slow journey) which not only has an entrance to the urban park, but travels to the top of the park for people to experience the full site and their surroundings from above. The surface is smooth and the user is able to touch the surfaces to enhance their journey upwards.

△ FIGURE 6.21 view > looking east > journey one

△ FIGURE 6.22 view > looking east > journey one

△ FIGURE 6.23 view > ramp looking up > journey one

△FIGURE 6.24 view > urban park + ramp entrance > journey one

JOURNEY TWO

renders

The following images illustrates the movement of occupants from Aotea Station and entering the thoroughfare zone. The entrance to the thoroughfare zone opens up and exposes large structural elements which direct the user towards a linear staircase (moderate journey). The stairs give the opportunity for people to touch and interact with the surface of the form and give them a moment of pause and reflection, before entering the urban park.

△ FIGURE 6.25 view > looking east > journey two

△ FIGURE 6.26 view > linear stairs looking up > journey two

△ FIGURE 6.27 view > linear stairs > journey two

△ FIGURE 6.28 view > urban park looking north > journey two

JOURNEY THREE

renders

The following images illustrates the movement of occupants from Aotea Station and entering the thoroughfare zone. The entrance is the same as journey two but directs users under the spiral staircase (fast journey). This is for users who want to journey straight up to the urban park. The spiral staircase mimics the organic form of the light funnel but unlike the other two journeys it does not allow the user to interact with the surface, which is rougher.

△ FIGURE 6.29 view > looking east > journey three

△ FIGURE 6.30 view > spiral stairs looking up > journey three

△ FIGURE 6.31 view > spiral stairs > journey three

△FIGURE 6.32 view > urban park looking north > journey three

CONCLUSION

The intent of the design research project is to answer the questions, “how can architecture create relief from anxiety in the context of a dense urban environment? How can sensory design create a narrative journey that transitions from anxious to calming?”

The first three chapters focused on the theoretical background of narrative architecture and sensory design in relation to the body, both physically and mentally. The goal was to discover how narrative architecture and sensory design might be used in order to relieve anxiety in a dense, over-stimulated urban environment, through architecture. These methods were used to analyse five case studies that give a greater understanding of the topic, through built and unbuilt works, establishing a design framework for the three design phases.

The first design phase, ‘Test Design’, involved

creating a series of physical models and drawings that explored and established a narrative progression through the different levels of anxiety. These techniques explored the experience of anxiety both physically and visually, through all of the senses. The following two design phases used the findings from the previous tests to create a design in an urban dense environment in central Auckland, the proposed new Aotea Station. The preliminary design used some of the drawings from the first phase to create a narrative journey through the site, creating a reverse progression from anxious to calm. The final design reflected on the previous two design phases, developing the spatial and material qualities of the proposed design. Through the process, the program of an urban interchange, thoroughfare and elevated park was developed in order to create a narrative progression, releasing anxiety through sensory stimuli.

CRITICAL REFLECTION

The findings from this design research project demonstrate the importance of the iterative design process. The first design phase was successful, creating a narrative progression through the levels of anxiety. However it could have explored further ways to heighten anxiety through different sensory methods, rather than testing only through sight and touch. The preliminary design shifted from testing through abstract models to creating forms on a selected site. This led to the reverse progression, the journey towards a place of calm. The design was limited in its success as it had no program, and the scale was too large for an individual to engage with the architecture through sensory

means. The only resolved result was the narrative journey. The final design illustrates the narrative sensory journey from the future Aotea Station, through to the wider urban area, and upwards to an elevated urban park. It introduces program and develops the design from the previous two phases, where the success of the design was making the thoroughfare zone the area of over stimulation and the urban park the area of calm. The intent of the interior was to create a space which heightens an individual's anxiety, allowing them to understand the conditions of their own body and mind, then to use the journey towards the urban park as a transitional zone. While this use of narrative

sensory methods was successful way, the representation of this narrative journey needed further development.

A key point noted in the final design review was the value of creating a place where people experience heightened anxiety? This developed into the discussion of the levels of anxiety being the focus of the design, and the progression from one level to the next. A remaining question is if this framework might be usefully introduced into a home or workplace? In conclusion, this approach is only suitable in a public environment where the inhabitants have the choice to come and go. However while the home should be a

place of relaxation and the workplace one of focus, both would benefit from the application of methods of sensory design.

To conclude, this thesis began with the proposition that architecture is ignoring the needs of the human body and mind by focusing on vision as the dominant sense, when all senses contribute to human wellbeing. The result of this research is a design that reconnects the human body and mind with a state of calm, by focusing on reducing anxiety in an urban dense environment, using methods of narrative architecture and sensory design.

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Table 13.1 LEVELS OF ANXIETY		
Anxiety Level	Psychological Responses	Physiologic Responses
Mild	Wide perceptual field Sharpened senses Increased motivation Effective problem solving Increased learning ability Irritability	Restlessness Fidgeting GI "butterflies" Difficulty sleeping Hypersensitivity to noise
Moderate	Perceptual field narrowed to immediate task Selectively attentive Cannot connect thoughts or events independently Increased use of automatisms	Muscle tension Diaphoresis Pounding pulse Headache Dry mouth High voice pitch Faster rate of speech GI upset Frequent urination
Severe	Perceptual field reduced to one detail or scattered details Cannot complete tasks Cannot solve problems or learn effectively Behavior geared toward anxiety relief and is usually ineffective Doesn't respond to redirection Feels awe, dread, or horror Cries Ritualistic behavior	Severe headache Nausea, vomiting, and diarrhea Trembling Rigid stance Vertigo Pale Tachycardia Chest pain
Panic	Perceptual field reduced to focus on self Cannot process any environmental stimuli Distorted perceptions Loss of rational thought Doesn't recognize potential danger Can't communicate verbally Possible delusions and hallucination May be suicidal	May bolt and run OR Totally immobile and mute Dilated pupils Increased blood pressure and pulse Flight, fight, or freeze

Δ FIGURE A1
 levels of anxiety

Δ FIGURE A2
 contour context model

△ FIGURE A3 sun diagram model > summer

△ FIGURE A4 sun diagram model > spring + autumn

△ FIGURE A5 *sun diagram model > winter*

Releasing Anxiety

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