SYNESTHESIA:
&
the synthetic affect

PETA S. I. SMITH
Firstly, I wish to express my sincere gratitude to my supervisor, Ainsley O’Connell. Thank you for sharing expertise, valuable guidance and encouragement. Your help has not gone unnoticed.

To my family, thank you for unknowingly posing as inspiration for this research topic. A special thank you to David, and Kirsten Smith, for without your continual support my studies would not have been possible.

To the many friends and Unitec family who have helped along the way, I am forever grateful to have shared this experience with you all.

Finally, to my partner, Angus. An honest critic but my greatest supporter.
The architectural built environment of office buildings are often stagnant. The lack of sensory stimulation in such settings further de-sensitise the occupants by limiting the sensory stimulation our primal bodies crave in order to function. We, as human beings flourish when our senses are aroused. Without this people are more irritable, lethargic, have an increased dependency, and as a result mental illnesses such as depression develop. It is no wonder that the statistics in depression are significantly high, and as more people continue to work in office environments the numbers continue to increase. Dissimilarly, synesthesics, are people who simultaneously perceive two or more senses when one sense is triggered, prompting an incredible multisensory experience due to their condition. These people are happy, and rarely ever suffer from depression. It is therefore assumed that under-stimulation is contributing to the rates of depression. By using synesthesia as a design inspiration multi-sensory environments are replicated in what would otherwise be fruitless working environments. Due to people dwelling in these unrewarding environments for long periods of time, it is imperative a new office typology is developed and made accessible to all. This project focuses on creating a working environment that allows people to meet, work and socialise in a multi-sensory environment in order to re-stimulate the wider public and in turn expectantly decrease the statistics of depression.

ABSTRACT

SYNESTHESIA: And the synthetic affect
BACKGROUND OF PROJECT
SYNESTHESIA: And the synthetic affect

Synesthesia:
A derivative from the Ancient Greek syn, meaning “together”, and aisthēsis, meaning “sensation”¹


Synesthesia, or as defined in modern terms as ‘synesthetic’ describes an individual who perceives two senses combined to one another and associated with this are such feelings which overcome them. These feelings are believed to be positive. They evoke a sense of euphoria brought on by triggering a combination of senses – “syn”- meaning together and “aisthē” meaning – to feel, or to perceive. This multi-sensory experience Is said to be peculiar, but to people with the condition, no known person has been believed to think they would be better off without the disorder.

“I enjoy it very much and would be hard put if these colours would suddenly vanish” (11/02/86)¹

In contrast to the condition of Synesthesia, the sterile nature of mental health treatment centres have left the architectural built environment quite stagnant. The inspiration for this research project was drawn from the basis that patients were left unstimulated, contained in fruitless environments which then lead to increased dependency, lack of creativity, an absence of initiative, lethargy and depression. Concluding that historic methods of architectural environments in these treatment facilities further contributed to the patient’s conditions, such as depression, rather than helping with rehabilitation.

It could be concluded that the office environment has very much become the model of the modern day, middle-class person, and so too have the statistics of depression. The working class spend on average 40 hours per week in their workplace, which offers little of the primal stimulation our bodies crave. Because of this, it is believed that residing in these environments for a large portion of our time is contributing to the ever growing statistics of depression. The current stigma around mental illness prevents people from seeking help from the early onset. A multi-sensory environment aiming to re-sensitise its occupiers could see a decrease in numbers of depression sufferers, as the building intends to prevent and or limit the onset effects of the illness.

Project outline

This project will see an ‘extension of the office space’ located in the central building district of Auckland city. The building will be able to be accessed by all, made up of a series of ‘synesthesic’ multi-sensory spaces. Allowing occupants of near-by offices to break away from their fruitless working environments to work and meet in a place which promotes the use of all senses, helping to aid in the re-sensitisation of the working class that would otherwise spend the majority of their time in these sterile environments.

Aims & Objectives

• To replicate the positive experiences of synesthesia through Architecture to aid in the prevention of depression.
• To evoke the use of the occupier’s senses through the use of texture, colour, light, smell, sound and taste in the Architectural environment.
• To allow all persons to experience the euphoria associated with synesthesia.
• To create an extension of the office, where people feel encouraged to break away from their complacent office environments to work in an experiential environment.

Research Question

How can the study of synesthesia be applied to Architecture to prevent the onset of depression induced by sterile environments? Can a relationship between synesthesia and architecture be explored to provoke the re-sensitisation of society, to generate a new type of experience within the built environment?

---

2 Martin, Peter (29 October 2015). “The 38-hour week a rarity among full-time workers, new data shows.”
**Scope and Limitations**

This project will focus on developing a series of spaces which emulate the various types of multisensory conditions experienced through synesthesia, focusing on combining one or more of the following sensory elements: tactility, olfactory, gustatory, auditory, colour and lighting. Limitations of this project will include creating the synesthetic experience with integrity. Because non-synesthetes will not be able to truly experience the effects of the condition, it will pose too much difficulty to replicate the disorder genuinely, especially since I have never experienced the disorder myself. Synesthesia acts as the inspiration for my research, and the imitation of this experience will instead be met with multi-sensory environments which correspond to certain synesthesia types. Individual senses such as gustatory (taste) will pose difficult to incorporate architecturally and will limit what I can achieve within this sensory modality.

**Methods of research**

- A series of iterative textured models used as a research tool will help to explore and investigate the effects and qualities of different surface types. This can then be applied to the Architectural environment employing sensory modalities such as surface treatment, shadow and light qualities.

- Carrying out a sensory study of the proposed site will produce a different approach to the usual ‘visually dominated’ method. Conducting site analysis, by means of visual, smell and sound allowing the building to take advantage of the already occurring sensory influences. This is necessary to understand the chosen site fully.

**Results of research**

Research has outlined the importance of considering the sensory elements of Architecture when designing space which house occupants for extended periods of time. The architectural built environment effects us more than originally realised, sensory elements such as touch, sound, light, colour and so on have the ability to change our mood for better or worse. The statistics of depression are continually increasing, and more often the people effected are the middle class working in office environments who are not seeking the help that they need, whereas multi-sensory environments have proven to be of value, they have the ability to reduce the effects on mental disorders even when used for only short periods of time. Multi-sensory environments can also be used for the prevention of such mental illnesses, while this has not before been implemented in an office environment, these environments have had a extremely positive effect on people in various other forms of building, with research outlining that it is possible for these spaces to have a similar effect in a working environment.

**Definitions**

**Synesthesia**
A associated sensation; especially: a subjective sensation or image of a sense (as of color) other than the one (as of sound) being stimulated

**Gustatory**
Relating to or associated with eating or the sense of taste.

**Olfactory**
Of or relating to the sense of smell

**Auditory**
Anatomy, Physiology. pertaining to hearing, to the sense of hearing, or to the organs of hearing.

---


New Zealand is ranked one of the happiest countries in which to live yet it has some of the highest rates of depression, suicide anxiety and mental disorders in the world.\(^7\)

Currently, the societal perception of mental Illness is changing. The wider awareness is highlighting the negative stigmas associated with these illnesses, stating that the discrimination suffers experience make their difficulties worse and consequently prevents these people from seeking help when it is needed. The statistics of this are regularly published\(^8\), and as a result of this, the New Zealand population is more accepting and considerate toward those suffering from Depression. Though statistics are showing an adversity to the negative stigmas once associated, comparatively to the positives with awareness, many people are still not seeking help.

The modern day middle-class person has today become prototypical of depression, these people are not seeking the help they so desperately need. To discover why the numbers of depression sufferers are so rapidly growing rather than decreasing, it is beneficial to see how New Zealand has attempted to treat depression throughout history. Throughout this chapter I intend to investigate whether mental health treatment facilities are attributing to the problem, could Architecture be the underlying issue?

---


\(^8\) Ibid.
**CASE STUDY: one…**

Seacliff Mental Asylum

A psychiatric hospital located in Seacliff, New Zealand.

Construction of the psychiatric hospital commenced in 1878, and by 1884 all patients had moved from smaller mental facilities and prisons to Seacliff. It was to be New Zealand's largest psychiatric hospital consisting of a central administration section, two wings for male and female patients, three stories high, 225 long by 67 meters wide and also housed an "observation tower" nearly 50m tall. The asylum could accommodate a total of 554 patients at a time. The need for a larger mental asylum such as Seacliff arose from the imposition of the mentally ill on the prison system, which was seen as unsatisfactory. Demands were made for separate housing and proper treatment for those with troubled minds.

Asylum keepers noted "nothing could be done for many patients, except to watch them 'at the full of the moon'" 9

Seacliff was intended to be a vast and grand asylum, to accommodate the removal of the disturbed from the purview of society, with their incarceration in the country away from prying eyes. 10

Remotely situated 20 miles north of Dunedin, it seemed the optimal place to house the annoyances of society. Suggesting that the asylum would instead be another prison solely for people with mental disorders, and upon inspection in 1886, Duncan MacGregor, inspector of mental hospitals, would describe Seacliff as "inexpressibly dreary and dispiriting". 11

Post King Truby taking over leadership of the Asylum in 1889, developments were made to the asylum that put the patient's well-being as the main priority. His task was to impart harmony and to foster soundness, the architecture of the building, however, stayed the same throughout this process.

In a matter of months, the entire landscape surrounding the hospital was changed. The virgin bush rapidly cleared to make way for lawns. For inmate's whose liberty was more restricted, recreational grounds were specially prepared to enable them to enjoy the outdoor scenery. 12

Truby encouraged the patients to dress in colours, as if they would if they were 'normal people'. 13 This showed the consideration of patient welfare being essential rather than favouring the 'image' of the asylum to those living outside.

There are details of Truby's creativity, where he replaced the drab industrial décor with coloured schemes and was quoted as saying "no longer a prison where crowds of men and women do nothing but brood over their morbid feelings" 14 suggesting that

---

9 Dr Brunton, in *The Scylla-Charybdis Syndrome*, quoting the first keeper at Oakley Hospital, 1851., the Croatia collection. Pg.3
10 Chapman, Lloyd, and Elizabeth McKee. In a strange garden: the life and times of Truby King, Auckland, N.Z.: Royal New Zealand Foundation of the Blind, 2009, Pg 50
11 Appendix to Journals of the House of Representatives 1886, section H.
13 Ibid Pg. 62
14 Appendix to Journals of the House of Representatives 1889, section H.
Christchurch press accused the health department of doing [little, or] nothing, in the way of seeking fresh thought upon the problem of mental illness¹⁵ thus prompting a new response forward from the original Georgian style mental institutes that once were. This led to the design of the ‘villa hospital’ as seen at Kingseat.

Construction of Kingseat Mental hospital began in 1921 with the facility officially opening in 1931. Kingseat was an attempt to replace New Zealand’s nineteenth-century asylums with a sympathetic human-scaled ‘villa hospital’ comprising two separate dayrooms, eight single rooms and more intimately scaled bathrooms. Located 30km south of Auckland, Kingseat was of similar distance to what Seacliff was to Dunedin. The villa-style intended to provide copious amounts of space, while also allowing the patients more privacy in the bathrooms and access to the outdoors and sunlight, presenting clear benefits of the sun were however only seen when the villas were oriented towards North, and the external problems did not seem to be of highest priority, and again the institute did not improve the standard of the Kingsseat grounds. One of the main driving forces behind the asylum gave to its visitors the impression the asylum gave to its visitors playing the ultimate role in the orientation of the buildings on the site, the impression the asylum gave to its visitors still seemed to prevail and the curative offerings of sunshine were sacrificed to make a public statement¹⁶. Therefore the intended outcome could not be assumed to be produced.

Kingseat was intended to improve the standard of mental health facilities, but the external problems did not seem to be of highest priority, and again the institute did not compromise the appearance of the establishment for the sake of the patients.


CONCLUDING

Both asylums exhibited movements towards ideas that should have increased the healing of patients with depression. This, of course did not happen and today we are still trying to decrease the numbers of those suffering from depression. Mental asylums are now an outdated method of treatment and it is important to scrutinise the Architectural composition of the asylum in order to learn and grow from the mistakes made. The development of the Architectural program for this research project will draw from these findings to inform the final design.

For maps and plans relating to this chapter, please refer to pages 208-211 in appendix.
Rarely ever do two synesthetes experience the same effects, nor is there a specific arousal of one particular sense that triggers the same synesthetic experiences in all ‘afflicted’ with synesthesia. The use of the word ‘afflicted’ tends to imply diseased or at a loss. Although synaesthesia is a registered medical condition, it in no way impairs or debilitates the ‘afflicted’. It is not a disease, nor is it a deficit in most cases.  

I will use the word ‘synesthete’ as defined by Richard E. Cytowic to employ the condition in a way suggesting that people with synaesthesia are not at a disadvantage with their condition. The ‘aesthete’ ending to Synesthete instead implies an enhanced appreciation of sensations.

To furthermore understand Synesthesia and the diversity of ‘symptoms’ between those with the condition, I must first explain the different forms of the condition. There are said to be 80+ forms of synesthesia, and while nearly every possible combination of synesthesia types can occur, in fact too many, researchers instead categorise these into the just a few of the more common forms.
**COLOUR-GRAPHEME SYNESTHESIA:**

This is said to be the most common form of Synesthesia, Cytowic claiming that 1 in 90 people experience this condition characterised by the blending of both colours with a number or letter. People with this condition see the letters and numbers as colours, whereas a non-synesthete would instead see the same figures and letters as black. “Colour brings the number, and number brings the colour to the minds-eye.”

Usually, though, two people will not report the same colours.

**CHROMESTHESIA:**

This form of Synesthesia is the union of sound and colour: this is when one sound activates a colour in the minds-eye. An example of this is a roar of a lion might make a synesthete ‘see’ yellow. These different colours register with certain noises—such as a high-pitched hyena may produce the colour red, and a high-pitched person may also produce red—yet at a different tone.

**AUDITORY TACTILE SYNESTHESIA:**

Similar to Chromesthesia, Auditory tactile instead induces sensations rather than colours when certain sounds are heard. Someone with Auditory, tactile Synesthesia upon hearing a distinct word could ‘feel’ that specific word in a form as touch in a particular part of the body, and sound creates a sensation on the skin without being touched.

This form is said to be uncommon compared to other forms of Synesthesia such as Colour-grapheme, yet it is speculated that the common phenomenon of autonomous sensory meridian response (ASMR), an auditory stimuli in which certain words prompt a tingling sensation in the body without being touched. Goosebumps, for example, can be an expression of this sensory response, a more relatable form of Synesthesia for the ordinary person. I am sure that every person has felt Goosebumps or ‘chills down their spine’ when listening to a song for instance, making me question if every person has had some sort of synesthetic experience in their life at some point.

---

25 Ibid. Pg. 7-8
TACTILE-OLFACTORY:
This is more commonly known as touch smell Synesthesia. This form is when the sense of touch is reacted to, and a ‘smell’ is then smelt by the synesthete. An example being, the touch of rough concrete could produce the ‘smell’ of petrol to a synesthete.

TOUCH-OLFACTORY:
Scent induces a tactile experience such as of smoothness, tactile-olfactory, taste-colour, taste-tactile and visual-olfactory, among others. It is not clear which of these is most common.

TASTE-GRAPHHEME:
This is also known as taste-colour, where a taste evokes a particular colour. Usually, the synesthete physically sees the colour in front of them.

SPATIAL SEQUENCE SYNESTHESIA (SSS):
Those with spatial sequence synesthesia can see sequences of numbers in space. Those that have it usually have an enhanced memory because the relation of numbers with spaces creates a more detailed picture for recalling events. Although not confirmed, I believe I have traits of this form of synesthesia. Up until recently, I did not realise that the way I envisage or think about different days of the week is not normal. I imagine weekdays where every day is in a line, and the closest day is the one seen as closest to me. Apparently, this is also that way that synesthetes with SSS tend to envisage days and numbers, seeing sequences as points in space. For instance, a letter such as ‘A’ might be further away, and the letter ‘B’ might appear closer. This also relates to the number form Synesthesia which is a mental map of numbers that appear whenever someone who experiences number-forms thinks of numbers.

TASTE-TACTILE
When a taste evokes a sensory feeling throughout a person’s body, this is an associative form of Synesthesia where a person feels a powerful connection between the taste and the tactile form. Michael Watson experienced sensations of contour, texture, weight and temperature when triggered by taste and smell. Once, while hosting a dinner for Richard E. Cytowic (the man responsible for making synesthesia interesting again), Watson delayed their seating with the apology that there weren’t “enough points on the chicken.” Watson physically felt the taste as a physical touch on his face and in his hands. He explains that he had wanted the chicken to be a prickly, pointed sensation, like laying his hand on a bed of nails, but the chicken came out all round. He then had to explain that the taste he was looking for in the chicken evoked a prickly sensation—the way he knew the chicken was cooked incorrectly meant that the taste instead evoked a smooth feeling in him.

Figure 10 (above)
An artist with Synesthesia gives an impression of the condition by painting what famous songs look like to her. - McCracken

References:
Definition of colour:
The property possessed by an object of producing different sensations to the eye as a result of the way it reflects or emits light. 30

Colour: “CURE.”

Pale hues of greens and blue are often seen as the colours of the asylum.

The boom in construction of the Victorian asylum saw a rise in the curative effects of colours; this was brought about by the patients considered less-offensive to society being occasionally allowed out of the building into the “green”, natural grounds. On returning inside, these patients appeared more relaxed both physically and mentally. Green distinctly being a colour pervasive to the natural world meant the Victorians missed the direct association and instead correlated the health benefits with the colour green, rather than nature itself. From this point onwards, the colour green was used throughout walls of the asylum, in the mistaken belief the same qualities of nature were being bestowed to the patients confined to their areas in the asylum. They did not realise that it was instead the sensory stimulation of being outside that was helping to rehabilitate the patients, rather than the colour itself. The intentions of the colour use were positive, but instead of helping the patients the introduction of the colour green meant that time outside was replaced with four green walls, further desensitising the patients, prolonging their pain.

Katz, A researcher (1931) found blue to be a preferred colour by both female and male in-patients while out-patients seemed to prefer the colour red, especially for people over 50 years old. Other researchers (Emery 1929) found yellow, red and green to be favoured by in-patients, although dependent on their diagnosis. The research provided no direct correlation between colour preference in the insane, as multiple researchers concluded with conflicting results.

Today colour is still used to modify environments. Rather than the outdated colour approach to asylums, colours are now used in office environments in an attempt to enliven an also sterile environment which is too occupied for long periods.

Interestingly, in the 1930’s the Architectural approach to the mental asylum saw methodological plans that were based on moral treatment. The buildings were meant to have curing effects with plenty of sunlight- again going back to the idea that one aspect of nature was the healing cause rather than the associated sensory experience. This prompted a study of the New York state psychiatric institute and Hospital “colour preference in the insane” by Seigfried E. Katz.

The “colour cure,” devised by physicians in an asylum on Wards Island, involved putting mental patients in rooms dominated by a “primary colour.” “The walls are painted in vivid colour, the bed and chair coloured to correspond to the walls, and the light shifts into the room through a shade of the same colour,” by Faber Birren.

Colours are important not only in the innate natural environment but also in the architectural built environment. The way in which we assess colour in the natural environment is based on perception, and the way in which we perceive the spaces relies on psychological influence, information and communication. Nature did not intend colour to be pure “decoration”, so why do we treat it this way in Architectural design?

Scientific studies in psychology, Architecture/Architectural psychology, colour, neuropsychology and so on, have proven that the individual human reaction to Architectural environments is primarily related to the sensory perception of colour and that colour has the ability to impact and control us as humans both psychologically and physiologically. Colour being a sensory perception means the effects can be symbolic, associative, synesthetic and emotional.

The study of colour is essentially a mental and psychological science, for the term colour itself refers to sensation.

A neuropsychological investigation discovered how the brain processes and responds to sensory information coming from the external world: in this case, colour and the effect it has on the person. When researched within the under and over-stimulated environments it was shown to trigger dysfunction in the individual.

Interestingly, studies have shown under-stimulated environments such as weak intensities of colours, monochromatic harmonies and poor colour contrasts can cause people to be more irritable, restless, and have excessive emotional responses such as depression. On the contrary, over-stimulation of colours can cause an increase of pulse rate and blood pressure, which can be caused by strong colour intensities or strong visual colour patterns.
Significance for the "quality of an appearance" and the acceptance thereof, it cannot be disregarded that colour, as an essential element in design, is often thoughtlessly misused.\textsuperscript{36}

As Architects, it is our responsibility to ensure the reception of visual stimulation, the conscious mind and the 'instant' reaction. This is often given importance over the other senses. What is not realised however is we also have the task of evoking experiences not only visually, or consciously, but in the subconscious and unconscious mind as well as all other senses. It is important that we do not give dominance to colours based on the way in which the eye receives them, but instead to a varying of elements such as the emotional associations. This is especially important in environments which people tend to occupy for extended periods of time, such as psychiatric hospitals, offices etc. Colour is a part of the conscious, subconscious and unconscious, and an experience that is integral to human behaviour.\textsuperscript{37}

Colour choices cannot be led by trends and fashions, but should instead be directed with consideration to emotions or the consequences and human response. It should concern human welfare rather than just the visual aesthetics. Colour and light are major factors in our architectural environment. They have great impact on our psychological reactions and physiological well-being. Research has proven that light and colour affect the human organism on both a visual and nonvisual basis.\textsuperscript{38}

David Felten (Professor of Neurobiology and Anatomy for the School of Medicine at the University of Rochester, New York), to the question: "When does the interaction between the mind and the body connect?" Felten answered: "The moment we begin to perceive sensory stimulation."\textsuperscript{39}

For Synesthetes, their world is filled with colour. Certain types of Synesthesia see a person’s tactile touch respond with an array of colours. The touch of textured concrete could provoke a bold pink colour to appear in front of the Synesthete’s eyes, or when a Synesthete with the “Grapheme-Tactile” type feels particularly happy, a bold red might appear. Different emotions, tactile feelings or even letters can provoke the appearance of colour.

Non- Synesthetes are often unaware of the effect colours can have on a person as the colour plays with our subconscious mind. Because we cannot physically see our mood changing from happy to sad we tend to pass it off as such things like hunger and tiredness, blissfully unaware that the room which we are inhabiting can control our mood more than we think. Synesthetes on the other hand can physically see colours—which some associate with certain moods. For example, when a black haze appears in their vision they can identify their emotions and remove themselves from the situation which is making them feel this way. Is this the reason Synesthete’s rarely suffer from depression?


\textsuperscript{37} Ibid. Pg 3

\textsuperscript{38} Ibid. Pg 3

Our biological clocks are programmed to respond to light. With changes in Autumn and Winter, this cycle can be altered and cause a disorder, or, using a more technical term, a cyclical form of depression.\(^{40}\)

The way in which we perceive space is associated with how light is incorporated within the environment.\(^{41}\) How we experience a space isn’t solely based on the visual aspect of light, but also on how our subconscious mind reacts to the environment and as a result affects how we feel. The way in which we perceive Architectural elements such as colour and materiality, is too affected by the position or quality of lighting, altering the perspective of the observer.

We depend on light for perception. It is natural that we should be psychologically affected by it\(^{42}\)

The impact of light on Architecture has been explored, with researchers focusing on the correlation between mood of building occupants and lighting. Dramatic lighting has a more noticeable effect on mood, whereas places where the lighting is not as dramatic, such as offices, the results are less noticeable. This does not mean the effects are less important however. Environmental psychologists and behaviorists assert that even in less dramatic luminous conditions, small changes in lighting can alter the mood and the emotional state of the building occupants;\(^{43}\) the positive effects being positive mood, attentiveness, excitability. In contrast, the adverse effects being boredom, decline in mood, and a flat personality. A positive lighting environment affects the mood, and in turn, helps people to perform better in their role.\(^{44}\)


\(^{42}\) Ibid Pg. 87

\(^{43}\) Ibid Pg. 93

\(^{44}\) Ibid Pg. 94
The blue hue of 10 AM tells the body to stop the release of this hormone all together and when the production of this has stopped, the body wakes and the mind starts to invigorate. The blue light has the same effect as caffeine, and also is mood boosting- we are said to be our most productive at this time of day. The afternoon hues of orange and red restarts the production of melatonin, sending the message to ‘slow down’, preparing our bodies again for sleep. Thus, when the white artificial light comes into play, it completely throws the body of this natural process. Offices often use blue-hued bright lights as studies have proven enhanced productivity rates- not realising that this effects our natural process resulting in un-restful sleep. When this is continuously the case, tension in the person increasingly builds, as well as other mental disorders.

Studies have shown that exposure to natural bright light is similarly effective in reducing depression.15

---

Importance of daylight:

All the light elements necessary to create a positive impact from the circadian rhythm can be found naturally in daylight. The colours that daylighting produces at certain times throughout the day are needed to provide effective circadian stimulus. Daylight is rhythmic in both intensity and colour over a day and season. 46

Daylighting refers to natural light, whether that be soft overcast light or dazzling sunlight, with all light qualities contributing to the visual understanding of architecture. Yes, I do talk a lot about the overuse or dominance of the visual sense, but this does not mean it is of greater or lesser value to any of the other senses. It should still be taken into consideration when designing. Lighting has the power to change the colour and intensity of the visual appearance of a material, and electric lighting tends to distort the visual perception whereas daylight has a better light quality that is more appropriate for visual tasks. Lighting quality is defined by better distribution of light, absence of flicker, better colour rendition, and highlights and shadows on three-dimensional objects.

The amount of lighting quality attributes depend on how favourable the lighting situation is; natural daylight has all of the listed qualities therefore, is preferred. Distribution of light is also a necessity and is defined by how light falls within a space, and which surfaces are well illuminated. Generally daylighting is a soft-dispersed source of light, which evenly illuminates and in contrast to this artificial light is very direct, creating hard looking surfaces and sharp shadows. Indoor spaces are often lit from ceiling light sources, which are directed downwards, generally lighting work areas such as the typical office desks with a direct vertical light. In comparison, natural daylight distributes light evenly to all surfaces and usually comes through a window, therefore lighting a room horizontally, creating less harsh shadows.

• Better colour rendition enhances visibility, allowing true colour to be perceived. Colours can appear different under different light sources, tending to look more vivid under daylight etc.

• Daylight includes a continuous spectrum of light wavelengths, rendering all colours well.

• Electric light sources are strong in some areas of the spectrum and weak in others.

• An absence of flicker is defined by rapid fluctuations in light levels which occur in artificial lighting, due to the electrical current. The fluctuations of light cause headaches, eye strain etc.. Natural light is a continuous light source, and any flicker is noticeably absent.

• Finally, sparkle or highlights are characterised by the way natural daylight is able to cast shadows and make things look 'more attractive'.


James Turrell:

Turrell is an artist primarily focused on design through light and space. “I’m interested in the sense of presence of space; that is space where you feel a presence, almost an entity — that physical feeling and power that space can give.” For decades Turrell has created meticulous environments where the interplay of light and space renders basic perception a transcendental experience. He is working to engage viewers with the limits of wonder of human perception, eliminating object and image, and showcasing colours and light in order to distort perception.

---

48 “Introduction.” James Turrell, james-turrell.com/about/
Sound in Architecture, much like smell, only seems to be discussed when it is of annoyance. This invisible sense, unconsciously perceived, often makes this sense forgotten unless it is of disturbance. The designer tends to focus on predominantly the visual sense and consider acoustics as an insignificant issue, yet others, such as Peter Zumthor, Juhani Pallasma and Ricardo Scofidio argue that acoustics are a necessity for the atmosphere and perception of space.

Sound is still very much an Architectural element and equally as important as visual properties. Every space in which we dwell acquires unique sounds, and most people do not realise they help mould the atmosphere of a space. These distinctive sounds can vary from the rich quality of a library to the sharp sound of chatter at your local café, all of which set an ambience for the environment. There often seems to be a connection between the function of a building and the sounds which occur within. These sounds are often hard to determine as they are indescribable; think of the sound of silence… it is silent but still has a certain auditory effect. Much like materiality, do we have certain expectations of how an object like a door will weigh, feel, or… sound? We assume a door, such as a wooden one, will sound better if more expensive as the depth of sound relates to the weight of the door.

"its heavy clunk reassures us that the door is a true barrier, corresponding to the task it serves."  

---

Sound is said to produce an "auditory scaffolding" for behaviour and mood, by helping the development of general cognitive abilities. The under the syndrome of auditory deprivation, the auditory scaffolding is somewhat removed, which in turn restructures the way our minds organise our cognitive abilities. Lack of sound stimulation can disturb our sensory balance, so it is therefore important to consider this when designing. A successful building will allow a person to be stimulated by sound, without hindering productivity. The office and any indoor working environment is one usually met with silence. The outdoor sounds are kept out, and any sounds within the environment are designed in a way to limit disturbance. Restricting the sound in the office is not necessarily best practice. When a space is quiet, any noise made, whether small or loud, can create an overstimulating experience, as it is in contrast to the overly quiet office space. A better working environment is one that softly stimulates the auditory sense to avoid overstimulation of sound.

Juhani Pallasmaa, Architect and publicist, truly believes in multi-sensory design arguing that sound is of equal importance to the often dominating vision sense. In his book "The eyes of the skin" Pallasmaa compares sight to sound stating "sight isolates whereas sound incorporates", describing how vision has the ability to over dominate, isolating the person from other senses they may use to perceive a space. In contrast to this, sound has an invisible quality able to mould an atmosphere. Sound has the amazing ability to be incorporated with all other elements rather than overpower. Vision is directional, whereas sound is omnidirectional; you can feel sound as well as hear it no matter in which direction you are looking, or the pathway in which you move through a building. These choices will add to the sound experience, creating a sense of interiority.

"We are seldom aware of how much we can hear. We receive a total impression of the thing we are looking at and give no thought to the various senses that have contributed to that impression."53

As I will further discuss in the tactile section of this research project, Architects rarely design for any other sense than vision. This is primarily because the process for making models and drawings does not allow them to perceive the sound, taste or tactility of the project. "Sound is really important," Ricardo Scofidio, from Diller Scofidio & Renfro, acknowledged. But then he said, unless you're an Architect designing a concert hall, "you're not thinking about how you might produce a specific sound."54

A room may be decorated with very thick soft, coloured carpet with heavy curtains around the perimeter. You could perceive this space as an intimate, warm and inviting area. While you may think the atmosphere of the space is due solely to the colours in the room, it is instead all the sound and in turn, creates a sense of interiority. A room may be decorated with very thick soft, coloured carpet with heavy curtains around the perimeter. You could perceive this space as an intimate, warm and inviting area. While you may think the atmosphere of the space is due solely to the colours in the room, it is instead all the sound and in turn, creates a sense of interiority.

"We are seldom aware of how much we can hear. We receive a total impression of the thing we are looking at and give no thought to the various senses that have contributed to that impression."53

Harry Harlow, a controversial psychologist, demonstrated in the mid-fifties, a study in which saw tactile stimulation to be more desirable than food. The study saw infant monkey raised without mothers, and given a choice between artificial surrogate mothers, to the surprise of the psychologists, the monkeys bonded with the artificial cloth mother, rather than one who could provide food. Since more studies have been done and the importance of tactile stimulation has been highlighted. Still, following almost 60 years later only few Architects have studied the effects of tactility in Architecture, and the experience it can have on the occupants.

Another study on premature infants in the eighties saw premature infants at the University of Miami school of medicine, saw infants kept in the sterile condition of the hospital, suffer. The study found that infants that had been stimulated using tactile and kinaesthetic enticement grew 47% faster than infants in the sterile environment. This saw the subjects healthier, and able to leave the hospital on average six days sooner than the other infants, saving the hospitals resources and money. Here again is proof that tactility can have a huge effect on our health and wellbeing. Still, the hegemony that the visual sense holds over Architects furthermore suppresses all other senses, including the tactile sense which seems to be proving to be of value continually.

---

Finnish architect Juhani Pallasmaa feels that most Architects are making the same oversight. With the title of “the eyes of the skin” he wished to express the significance of the tactile sense for our experience, and understanding of the world. Touch is a sensory mode that integrates our experience of the world with that of ourselves. The skin is the oldest and the most sensitive of our organs, our first medium of communication, and our most efficient protector ... even the transparent cornea of the eye is overlain by a layer of modified skin ... touch is the parent of our eyes, ears, nose and mouth. Is the sense which became differentiated into the others, a fact that seems to be recognised in the age-old evaluation of touch as “the mother of the senses”.

Pallasma believes buildings have “turned into image products detached from existential depth and sincerity.” Architects are designing for the visual stimulation, these buildings look good, but do they really feel good? Computer imaging tends to flatten our magnificent, multi-sensory, simultaneous and synchronic capacities of imagination by turning the design process into a passive visual manipulation, a retinal journey. For tactile designs to start being incorporated by architects, it must first become a trend, but there is currently little assistance in producing haptic designs as there is little demand in the architecture world. Pallassma’s argument is that focusing purely on the visual sense is over dominating and does nothing to ignite any of the other senses. In order for Architects to embrace the other senses we must develop programs to display more than the image of the building, this is currently being made accessible by the continuing development of virtual reality.

---


---

Professor V.S Ramachandran, of San Diego found the relation to creativity as seeing links, whether they are random links or if they are literally there. Metaphors are essentially phrases linking seemingly different concepts. For example, cheddar cheese is often referred to as ‘sharp’ when in reality the touch of the cheese it is soft. So why are we using certain tactile notions in language to achieve the effect of taste? Shakespeare is famous for his metaphors, and many of which are synesthetic involving links to the senses. When he uses the expression ‘bitter cold’, he is connecting the taste of bitter and the feeling of cold, linking them together. Logically, this does not make any sense, but everyone can understand. It is feasible that the same genes that give rise to synesthesia then when expressed more diffusely make you more prone to express over several sensory realms and make you more creative and imaginative. The emergence of language has always been a topic for debate, how did we evolve the language from grunts of apes, to denote objects and events to the objects of the world.

Professor Ramachandran held a test, believing that we link certain sounds to objects. His simple experiment showed people selected at Radom two shapes (as shown in Fig 27) He then asked for them to say which shape they thought was a ‘Boubou’, and which
they thought a ‘Kiki’. The majority spontaneously said the bulbous amoeboid shape was a ‘Boubou’, and the sharp shape was responded with a ‘Kiki’. This is a non-arbitrary analogy, a spontaneous correspondence to pick the amoeboid shape as the ‘Boubou’. The hearing in your brain mimics the gentle undulation of the visual contour. Similarly, ‘Kiki’ has a sharp edge to it, a sharp sound. And that is mimicking the sharp edge or the contour of the object.

Ramachandran believed this synesthetic connection between hearing and vision was an important initial step towards the creating of words.

In conclusion, we understand shapes and tactility in a much more in-depth manner than previously thought. Frequently, we are mixing up metaphors with physical feelings. There is an involuntary action within us to understand the tactility of an object. We understand the tactility of touch through a more in-depth analysis, that being visual and sound (language).

What are the effects of these environments, it is important to consider the effect of tactility when conducting my research into materiality and environment. By creating a conceptual link between the dominant sense of vision and the suppressed sense modality of touch\(^6\), environments are created which test the minds preconceived ideas of space, and in turn, arouses the intellect. It is crucial for architects—as for other designers—to anticipate people’s experiences, by being aware of the different sensory inputs and assessing them as such while making design decisions. \(^4\)

---

\(^6\) James Turrell, ‘Plato’s cave and light within’, in elephant and butterfly, permanence and change in architecture, of Mikko Heikkinen, 9\(^{th}\) Alvar Aalto symposium (Jyväskylä), 2003, Pg 144

CHAPTER VII

Olfactory - Smell

The power of the Olfactory:

The smell sense first begins to emerge before we are born "by the end of the first-trimester baby can smell foods that mom is eating". It is the predominant sense very early on, and throughout our development into adulthood. We are born smelling, our sense of smell has played a vital role in our development.

Smell is an incredible sense. It is the most sensitive of all senses, and can instantaneously inform a person of their disgust or pleasure to an item before applying the use of any of the other senses such as taste or texture. So this applies where the smell of such foods immediately turn us away or say 'yum' before tasting. Smells are also attributed towards memory; it is said that people can remember smells with 65% certainty after a year of smell, whereas memory of visual information is only around 50% after just three months. Because of the strong memory associated with the smell sense, smells can trigger emotions. Studies show that 75% of emotions are triggered by smell, which is linked to pleasure, well-being, emotion and memory. Certain smells might trigger painful memories, such as white lilies do for myself - which I think has to do with the fact they have been present at every funeral I have been to, as I attribute the smell of white lilies - although pleasant, reminds me of death. Or smells can trigger pleasant memories, such as the smell of cinnamon and cloves mulling, brings a sense...

---


of calm to myself as the smell in my mind is attributed with warm mulled drinks on a serene winter holiday. Because of individual preferences, it must be taken into consideration when incorporating scents into design. The aim of incorporating scents into the design is to stimulate the smell sense which is so necessary for human functioning, if the smell were to trigger a negative emotion the use of smell would, therefore, be negative, for this reason, it is so important to use scent in a positive manner by careful selection of appropriate scents.

Another point to note is the way in which smells are not constant. You stop noticing scents after awhile, experts believe that your brain try’s to concentrate on new smells, an original response would be to detect for predators etc., freezing out its processing power for logging new scents and changes in odour intensity, this is called olfactory adaption. All of our senses, taste, smell, touch, sound and sight work by detecting new sensations. If the sensation doesn’t vary, our brain will filter this as background noise, ready for any new ‘event’ that will appear.

The sense of smell tends to get bored easily. Upon entering a fish market, you are instantly made aware of the fishy-stench that seems to penetrate the air, if you are brave enough to hang around a little while you will quickly notice the smell fade. That is until you start to walk around and the different types of fish alert your smell sense and again, you can smell the fish. But, by the time you reach the checkout, you should no longer be able to detect the assortment of fish aromas around you. We inhale and exhale more than 20,000 times a day, it is critical our minds are able to clarify smells to allow our attention to switch off from the many differing smells. Otherwise, we would constantly be distracted. We get acquainted to odours such as those of our own homes, it is only when a smell varies that we realise a scent was there in the originally.

Because of this, I found it only fitting to explore the scents of my site, are there smells that dominate the area, or do these too fade into the atmosphere?

Kate McLean is an artist, designer, and creator of smell maps of cities around the world. She outlines the three most important categories of smell:

- Curious and unexpected smells.
  Volatile and disappear quickly, examples Kate gives are old books or chocolate powder.
- Episodic smell.
  Apparently hang around for awhile, smells such as flowers, food, metals and fish.
- Background smells.
  Linger pervasively in space, for example, the smell of stagnant water.

There were three steps made while trying to hunt out the smells of downtown Auckland. Smell catching, smell hunting, and lastly free smelling. Smells noted, included but were not limited to, oaky woods, sea water, fish, perfumes, fresh air, oils or smells of cooking, rubber, car fumes, smoke and machinery. Interestingly, horrible smells like fish, cigarette smoke and fish all seemed to be ‘curious smells’ meaning they disappeared quickly, whereas the smells of cooking near the restaurants, and the fresh scent of the air seemed to linger pleasantly. It is fair to say my smell sense had been provoked in downtown Auckland, due to the abundance in ranging smells prevalent in the area.

Sight and sound have always been considered in our Western culture from the time of Plato as “noble” senses—the only ones deserving of our interest. As amazing as smells can be in the outdoors, it seems that it is the only place to experience them. It is clear that in places of work, or indoor communal areas, olfaction is merely problematic. Through the use of mechanical ventilation systems, it has been made simple to designed out of the typical indoor environment, rather than offering opportunities for delight.

In a 2006 book by Italian Architects Anna Barbara and Anthony Perliss, Hervé Ellena of Ellena Mehl Architects observes olfaction to fall within ‘the dark side of architecture’, included in the details often excluded from design practice with place odours coming about unconsciously.

Why is it that some architects

---


69 Ibid.
fail to recognise the opportunities presented by the sense of smell in creating enjoyable buildings and places to satisfy all of our senses?

For some reason, we as designers tend to undervalue the use of senses as a necessary function, and we prioritise the pleasantness of a space, such as a smell free environment. Aggravated by the societal emphasis on the deemed 'greater' sense of vision. Smell apparently was once categorised as a lower animal instinct, associated with the poor and uneducated. Smells such as the fish we smell along the water’s edge have been depicted over time as being unhealthy, and are deemed to contaminate the perfect environment we apparently live in. As a result of this, instead of embracing these scents that make up our society, Olfaction has been dishonoured of having any purpose, or anything valuable to contribute to architecture.

In the process of sanitation infrastructure begun some 200 years ago in all European cities, we not only succeeded in eliminating bad smells but in total deodorisation.

**So how can we incorporate smells into architecture?**

by considering space as a sense-stimulating environment and not as emptiness; -Creating means to visually represent odours.

Materials and the form of a building play an integral role in smell ambience.

Materials can produce their own smells, hold other scents or completely dispel any smell from a space, dependant on how a scent might be incorporated with other senses could be used to heighten the effect of smell on the occupant. The burning of different items to create smells pertains in many cultures, sweet sage for native American traditions or more fragrant scents of oud are used in Arabic culture. The Western culture instead focuses on filtering out these smells that make for unique environments. Scent was however embraced by Western culture in the middle ages; chamomile was used as ground cover, with sweet odours permeating from the trampled flowers. Or the sweet wooden smell that would waft through church ceremonies.

Smell is architectures hidden dimension, so why should we hide it? Even if we are surrounded by beautiful scents such as fragrant flowers. Most discussions focus on eliminating bad odours, which outweighs any discussion about the sources of pleasant smells.

Materials in architecture can be used as an expression of smell, recycled woods and other materials can create scents that leave an impression on a room. Fragrant plants such as jasmine and lavender can be incorporated, as well as dried plants, burning oils and incense. When these smells are incorporated in a way that does not allow the smells to be entirely filtered out by all mechanical systems the building can then begin to create an identity through smell.

---


The 35th Venice Biennale in 1970, saw artist Edward Ruscha devise a way in which to incorporate taste into the American pavilion. The structure housed 360 sheets of wallpaper that had been silk-screen printed with Nestle chocolate, encouraging the participants to question the relationship between taste and euphoria. The pavilion later proved that too much of one thing can be bad and the chocolate, to which we often attribute the taste to ecstasy, instead overwhelmed the visitors of the pavilion with the overpowering smell. The chocolate then started to melt... and the insects swarmed.

**Combinations of the senses**

Humans can characterise around seven categorical types of taste and in comparison to this; our sense of smell can detect over 1 trillion odours. 74 Olfaction amplifies the sense of taste. Therefore what we taste is not literal, but instead determined by the associated smells. Vision can also be transferred to taste, colours and certain details can arouse the taste buds 75. If a sugar cube was placed in a persons mouth and the subject was in an orange scented room, almost always the subject would proclaim the item placed in their mouth as an orange flavoured lollie. The same method can be applied to Architecture but rather than the orange scented room, an orange coloured room can have the same effect, concluding that our sense of taste is more-so determined by the environment in which we inhabit.

Peter Zumthor designed the baths at Vals to be a multi-sensory experience, tactility, sound and sight all have been meticulously sought-out. Taste on the other hand was argued that through the experience of the texture, sound and colour of the water, the effect of taste was achieved through simply tasting the bath

---


water. As bland as water is, it is the associated senses that pronounce the taste. Again arguing, that taste can somewhat be achieved through other means.

“the experience of water (including taste) is an integral part of the architecture.”
Peter Zumthor – baths at Vals

In the tradition of Western culture, vision is treated as the dominant sense. Plato views taste with obscurity and disdain. To him, taste is ‘beastly immoral’ because it is bodily. He states it is inferior sense as it relates us back to animals. Flavour of taste is instead dependent on odour of smell; and the tactile qualities of food such as rough, soft, hot and cold are the proper objects of the sense of touch, not taste... Aristotle is tolerant but agrees that good flavours are pleasurable and nourishes the needs of survival guided by temperance or moderation to protect against the dangers of taste. Following the foregoing, taste in the period of enlightenment and contemporary eras is briefly explored in the ensuing sections.

This is not a literal quote to say that in order to taste Architecture you must lick the stone surface, but instead implies that materiality and such can encourage your tastes to be aroused, or your 'mouth to water'.

Following on from this, it does seem apparent through the means of trial, and opinions of historical philosophers, that taste cannot be incorporated solely. There has not been a literal taste of Architecture since the narrative of Hansel and Gretel. Architecture can encourage the sense of taste, but through the means of Olfactory and Visual, rather than just purely taste. So to conclude from this, it will be important to investigate other means than literal taste. The aim will be to stimulate the oral function of the body through provocation of the other senses.


77 Ibid.

Snoezelen: Dutch derivative from; “snuffelen” to seek and explore, and “doezelen” to relax.

Snoezelen is the name for a controlled multisensory environment (MSE). These environments were first developed in the 1980’s by two Dutch therapists; Jan Hulsegge and Ad Verhuel who intended to create a space for enjoyment through sensory experience for those with intellectual difficulties.

Our sensory involvement as human beings starts from the moment we are born. We are constantly experiencing audible, visual, tactile, olfactory, gustatory, vestibular and proprioceptive as well as interceptive sense. In every instance we learn how to react to the sensory information that is being passed through our central nervous system for us to respond, the more exposure to stimuli, the more established the neural pathways in the brain will become, and an important part of our unconscious thinking. Thus, believed by both Hulsegge and Verhuel to be crucial to the development process in early childhood, and in response to this, the Snoezelen room was developed for the use of intellectually disabled children.

Sensory rooms are designed to help people learn to relax, self-regulate and self-soothe. Using the room can assist service users to cope with the distressing inpatient environments.

These environments are made to evoke responses in the visual, tactile (touch), olfactory (smell), auditory (sound) and gustatory (taste). They are essentially a room that emits fine vibrations of rhythm and tone, colour, sounds and often include a water bed that adapts to the body shape, giving warmth and comfort and...
muffled noise dependent on the movement. Taste stimulation is often achieved by offering small amounts of textured food such as popcorn, jelly, sherbet, or highly aromatic foods such as citrus fruits. And the olfactory sense is stimulated by small pots containing homely scents such as cloves or peppermint, or the same everyday aromatics are dispensed via an aromatherapy diffuser.

The conference led by Lesley Collier states that Snoezelen rooms are a tool for sanity, this is not a place that someone can experience once and be cured of whatever ailment they may experience. People who visited a room once a week for 20 minutes over a six-week period were shown to have significantly reduced feelings of depression and anxiety. Snoezelen rooms simply arouse the senses that humans once used consistently. This was, of course, a time where depression rates were low in comparison to today’s visually dominated world.

As mentioned before, Snoezelen rooms were developed for people with learning difficulties, but have been found useful in other disorders besides the intellectually disabled. This is being developed and is progressively being used for people with mental illness. Elderly suffering with dementia were found to have improved memory and function ability within 10 minutes of being in a multi-sensory environment and the treatment has also been proven to be effective on mental disorders, such as depression. People with mental health disorders can often feel overwhelmed with life, and feel as though everything tends to be ‘coming at them at once’. Although this sounds like a stimulation overload, it apparently is instead caused by the overuse of one sense, in today’s world we are constantly dominated by the visual sense) which tends to dominate and in turn overwhelm, especially to those with pre-existing mental disorders. A multi-sensory approach reduces the amount of pressure or direct stimulation. It arouses all senses, rather than just one, with the sensory input being said to improve the quality of life and also functional performance.

The aim of a Snoezelen room to counter the effects of depression, to stimulate and arouse a patient with depression as people suffering from such disorders are usually functioning at such a low level of arousal. Seeing as the arousal of an individual may be linked to their mental states, and seeing how a space also can affect the mind, it is reasonable to assume the designer creates a space which in turn arouses the senses of an inhabitant in order to create the healthiest environment for the dweller. This as seen in previous years – in the mental asylum was not met, as the health of the patient was not usually associated with the effect of the building or to sensually arouse the patients. Instead, the aim was to “suppress” the arousal of the already ‘low aroused’ patients. Even in today’s buildings it is naively believed that over-stimulation was responsible for lack of focus or mental productivity, which is the reason that commonly occupied spaces such as offices lack any design to promote arousal of the senses. Instead, we are met with white walls, and bright lights in order to ‘maximise productivity’. Snoezelen rooms have proven to be effective in assisting a more productive mind, mental clarity, lessered symptoms of depression and anxiety and even memory recognition for unknown reasons.

The effectiveness of the Snoezelen rooms are fitting to the study of sensory performance on the mind, especially on those with depressive disorders. Architecturally these rooms are a very un-natural experience, by this I mean the ways in which the senses are aroused. Bright fluorescent lights, artificial smells, and other irregular methods are used in these rooms to create that sensory arousal. While effective, these are not spaces I believe can translate to the natural, outside world. Through my research, I aim to find natural Architectural alternatives to the otherwise unnatural Snoezelen room by implementing the base principles of the Snoezelen room to assure the use of multi-sensory environments in my project will have a positive effect on an occupier of my proposed building.
CHAPTER X

Materiality

Materials have the ability to change the societal and physiological effects of an environment. It is imperative for Architects to foresee the effect that material choices can have on a person’s surroundings. An Architect’s design intention and the materials used to understand the motives are completely bound with each other. In addition, materials’ inherent and associative qualities carry much of the design content.

What are the effects of the temperature of concrete? Does a heavy cold door have an effect on our perception of space before we enter a room? Or can a light wooden door create the same impression? Apparently associating heaviness with weightiness also accounts to the impression of seriousness, therefore questioning if the hardness of floors and walls influence the perception of the space in which we inhabit. “Among other effects, heavy objects or spaces made job candidates appear more important, rough objects made social interactions appear more difficult, and hard objects increased rigidity in negotiations.”

Individuals responding to holding a warm item, such as a hot drink were more likely to perceive the people around them as friendlier, than those holding cold elements. Do the tactility of materials affect the way in which we engage with others, do materials have the ability to change people’s perception and approach towards others, and in turn have an effect on our personality and happiness?

Studies done on the symbolism of building materials concluded that people tend to characterise personality characteristics like warm and cold, or tough and tender, to certain materials. The conclusion drawn was that individual components of a material’s personality are associated with its sensory qualities.

“In a way material dictates the concept . . . And materials are not interchangeable . . . To me, the material really is the starting point of the story.”


CHAPTER XI
Site & program developments

Separated into three parts – the design response is a sequential collection of drawings created in response to a design challenge, investigation or exploration.

Part One
Exploration of site, context and early design concepts and ideas. From this, conclusions will be drawn in order to progress and influence on to the proposed design. The site selection will be based on the research outlined in previous chapters.

Part Two
Iterative design process, and project developments. This part will see the relationship of design-led research through the iterative design process, which will see investigations into textures, light and shadow. Outlining the twofold that coexists between written research and design drawings.

Part Three
The final design resolution looks to employ all of the ideas, developments, and conclusions resulting from the drawings and text into a public building ‘extension of the office space’ for the workers of the Auckland CBD.

Through this section, key site qualities, programme and spatial function will be outlined. Research outline in previous chapters of this document, is to be interpreted throughout. Ideas in the text are to be translated into the built form.

Incorporating the use of multi-sensory environments as a programme driver, and utilising the application of ‘Synesthetic’ qualities within the building proposes a new type of architecture for the prevention of depression.

The exploration for an ‘extension of the office’ site will be initiated in Auckland, New Zealand.
Figure 32 (above)
Future plan for Auckland Viaduct
The highlighted site aimed to be located in an area that allowed patients to fully reintegrate back into the normal patterns of everyday life.

Dated methods of treating people with mental illness’s being explored by myself have now proven to have failed, the fundamental principles of these out-dated treatment facilities were – a place of retreat, away from the city or any location where “triggers” of the disease may occur, also a way to hide away these people that were considered an embarrassment.

Therefore it was at some point in time decided to remove patients from these environments that feared would set-off or impact the recovery of a patient.

This did benefit the patient for a short period of time, but upon the return to the everyday life, ordinary tasks were found to bring the patients back to the onset of their problems.

New research suggests that rather than removing the person from the problem area, it instead is beneficial to treat the person in the same environment in to which they will return to - rather than isolate them from the world.

How I intended to incorporate these ‘new’ ideas, was to locate the facility in a familiar place to Auckland, in the midst of the hustle and bustle of the city. It was also important that the site was easily accessible by public transport, as well located on a fairly flat site. In the last century, Elevation of buildings was used to impose and intimidate patients into surrendering their control to the mental institute, the elevation of such large buildings only made the buildings seem larger, more dominant and at a higher hierarchy than the people housed in these environments, and in turn intimidated the patients, which did not help with rehabilitation, or guide a patient to want to admit themselves.
The importance of transparency and exposure of mental illness in society lead to the conclusion that continuing to place the building from the ‘typical’ location of a mental institute, such as a hospital or an unfamiliar area away from family and friends, is further causing the problem. The building on a seemingly flat site will be more approachable, and allow patients to want to seek help rather than be intimidated. The building aimed to target the middle class, who make up a large portion of sufferers, often do not have access to the help in which they need, nor do they seek the help as they feel they are not entitled to the help due to their status in society. A building in the midst of their working area, that was non invasive therapy, and encouraging would hopefully address the suicide rates in New Zealand.

As my investigation developed, ethical issues arose. I am not a doctor, I am a designer... how could research be attained on people to ensure the theories outlined were true or could be applied to people suffering from depression, in order to product a positive result? To somewhat prove the point, testing people with the early onset signs of depression in Synesthesic environments was unavoidable, and certainly unethical.
Part One - Site and program developments

Figure 35 (above)
Proposed building program
site one
Further research into multi-sensory ‘Synesthetic’ environments, and treatment of mental illness, proved to be very hard to justify with little experience in dealing with conditions such as depression. It cannot be proved that this is certain to work, but I am proposing that Synesthesia could be a solution, and I also do believe this is something that should be looked into. This ultimately led to another program development, instead of focusing on the treatment of people with the early onset signs of depression, the focus had now shifted to the research and development of the potential in Synesthetic Architecture. A research centre would see my ‘idea’ be proven, and brought to life. The location of site had moved only two hundred metres or so, but the program had been altered to be more logical.

This program proposes a research centre which will allow people of the Auckland CBD to use and explore the Synesthetic rooms. Observation by researchers to monitor behavior changes will hopefully deliver positive results. The programme will be split into two parts.

**Part One:** The research centre which would monitor the effects of these Synesthetic environments to see if such multi-sensory environments showed a positive change on people, which would then further be researched more importantly on people suffering with the early onset signs of depression.

**Part Two:** Would see the research centre be developed into a clinic which would act much like the original program, of a treatment clinic for the early onset signs of depression.

The scope of this program would see an attempt at part 1 outlined above. But, much like the initial program posed problems in terms of ethics. How could significant numbers of people be obtained, and where do you find people willing to be monitored and researched in the building in order to ‘prove’ the concept.
Sensory design has shown great positives in people, especially in the treatment of early onset of mental disorders such as depression, yet the ethics posed as a problem that did not seem feasible.

Questioning whether the lack of basic sensory stimulation in everyday environments was contributing to the problem, rather than further researching ways that stimulation could be used as a treatment method as outlined in Site 2 program developments. Previously, people with disorders we put away into institutes that lacked stimulation, and rather the asylums assisting in the recovery of the patients, the lack of sensory stimulation worsened the already deteriorating patients. Furthermore prompting the development of barbaric treatments such as lobotomy’s which are now known to only benefit a miniscule amount of severely damaged patients. These discouraging buildings, Is believed to further attribute to the worsening of the disease in the patients.

The equivalent of these buildings in present-day society could arguably be the office. For over eight hours a day a person is confined to a usually sterile environment. Offices lack any sensory stimulation to which our primal instincts crave. Smells are quickly extracted from the building, light is purposefully artificial to distort the inhabitant from any external forces, sounds are kept to a minimum bar the usual patter of the keyboard, and the visual aspect is usually a screen, or the sanitary white walls.

The final, and chosen program will allow the normal office worker to escape their stagnant office environments for even just an hour a day to work in a multisensory environment.
Figure 40
Overall site image
The building will be an office space consisting of private, semi-public and public working areas. It will act as a ‘community centre’ for the surrounding office buildings. This building will allow nearby offices to escape their sterile working environments, to work in a synesthetic multi-sensory building even just for short periods of time.

Previous studies into multi-sensory environments such as the Snoezelen Room outlined in chapter IX have seen significant results in people who had visited a multisensory room for one hour a week over a six week period. By providing a multi-sensory environment for these offices, people will be encouraged to break away to work in a more productive environment and in turn reflect positively on their mental state.

Offices in Auckland City are adapting to modern ways of working, by bringing in yoga and pilates instructors for an hour a day they are trying to help with the mental state of their workers. There has been a significant interest in methods to create a happy modern working environments.

A building such as this will be accepted and should be encouraged by surrounding offices.

An office working space as a community centre make the building available to any office willing to work in such an environment. By creating this space as a ‘community centre’ the building is able to reach a wider audience than if the project was to focus on one office at a time. The building will be accessible to all in the Auckland CBD area, and for people out of Auckland central willing to commute in.

BUILDING PROGRAM:
• Public single working stations/ hot desks
• Private single working stations
• Public meeting space
• Private meeting space
• Lounge/ social areas

The site must accommodate the following requirements:
• High Urban Density. To allow access to the highly concentrated office area, to provide an ‘escape’ for as many offices as possible.
• Within proximity to the Central Building District
• Easily accessible to public transport, to allow people out of the central building district to also use the facilities, as well as meet for consultations and conferences.
• Located away from man-made elements such as traffic noise, to allow sound to be incorporated without the disturbance of external forces.
• Have a northern frontage, to make the most of natural daylighting.

• Southerly winds, for passive cooling, sounds, and as a path to filter through incorporates scents.
• Have full visibility from surrounding areas, in order to encourage the public to explore the building.

An empty site that fulfilled the above criteria was identified:

East Wharf, 220 Quay Street, Auckland 1010

The chosen site has close proximity to high density office spaces, is located near bars and restaurants along the viaduct which allow constant flow of visitors. Parking is close by for visitors from out of the city, the site also within walking distance to bus’s, train’s and two ferry services. The site has full northern frontage, to take advantage of natural lighting, as well as open to the southerly/ western winds.
An open plan, flexible office environment; Generator.

Generator, is a serviced office and event venue located in various locations throughout the Auckland Central building district. These spaces house a series of shared desks, as well as multiple meeting rooms. A desk, or meeting room can be booked for personal work, or to hold meetings with clients or business partners, and are especially useful for bringing everyone together in the same place. Unlike the standard office environment, generator is "positioned to put you and your business amongst that energy, to create opportunities for networking, sources of inspiration and that accidental magic that happens when great minds work together".86

A modern working environment, like generator is a development from traditional working spaces. They allow people to come and go, without being refined to the same desk each day. Communal break-out areas allow for a more informal approach, or as stated by generator "pull up a barstool and clear emails with a coffee in hand".87

Materiality through the spaces combine warm toned walls, earthy-coloured bricks and natural timbers, creating the atmosphere of a warm inviting environment, differing from the standard sterile working space.

The bridge is located on the proposed site, connecting Quay street to Te whero island.

Originally erected in 1932, the bridge is a steel bascule rolling truss bridge spanning 13.788 Metres between the east and west of the Auckland Viaduct. This was the originally the sole navigable entrance to the Viaduct basin, carrying a railway connecting Wynyard wharf to oil loading facilities at the Auckland Ports. The bridge allowed fishermen and other boats to move to and fro, by rolling back at a 90-degree angle operated by a counterweight, which is still existing.

The bridge is rich in character, signifying the history in the area, and is one of the few bridges of its type in the world. The site would loose its charm if the bridge was to be taken away, and is important to keep the walking connection between the eastern and western viaducts.

Although the bridge is not Heritage listed, therefore it is feasible to subtract from the site, but this would pose more loss than if the bridge were to be included in the design. For this reason, the bridge will stay standing on the proposed site, and the design instead will work around the existing Viaduct Lift Bridge.


To really embrace the sensory elements of the site, a study was done by walking through the site signifying the different smells. These smells are categorised into: Episodic smells, these were strong smells that disappeared quickly. These episodic smells experienced on site were that of mint, which was the smell of chewing gum as people moved around, perfumes and the smell of cigarette smoke. Episodic smells are smells that hang around for awhile, these smells were fish, car fumes and the oils of the nearby restaurants cooking. Lastly, background smells. Background smells are scents that linger in a space, such smells of salty water and general whiffs of 'fresh air'.

Smell catching was attempted in order to sniff out different elements of the site. These smells that were "caught" by sniffing close, were oaky woods, rubber, and machinery/oil smells.
PART ONE

Site Section looking west
Site analysis will see if the site achieves all the desired outcomes as outlined in site requirements.
Fig. 52 Roads
Fig. 53 Restaurants
Fig. 54 Offices
Fig. 55 Residential
Fig. 56 Combined
A further in-depth analysis of the site saw a line drawing outlining the direction of essential sights. These being, the link to Wynyard quarter/the viaduct events Centre, surrounding restaurants and bars, the maritime museum, and most importantly the surrounding offices. The sun angle is also outlined.

These lines divide the site, allowing concept building forms to be created, these forms will then be explored in 3 dimension.
Figure 59
Proposed building form developments
This concept sees public and private working/meeting on the northern frontage of the building, whereas majorly private working is positioned to the southern end of the building. Circulation is achieved by connecting the two northern and southern areas by a thoroughfare underneath the existing historic lift bridge. Thus, allowing pedestrians to still use the existing lift bridge as an arterial walkway.

Problems:
1. Northern frontage is of the same height as the southern wing. Casting the southern end of the building in shadow.
2. Restaurants and public areas are positioned to the south of the site, their view from these public spaces would predominantly be a large wall cast in shadow.
3. Viewing from the public spaces, the lift bridge is incased in the building, and is not visible from surrounding public areas. This then sees the visual connection between Quay street and Wynyard lost, and could hinder the use of the pedestrian bridge. Developments should see the visual connection to the bridge from surrounding public areas.
PART ONE
Exploration of form

1. This concept sees the building built up equally on both the northern and southern sides. A bridge has been instated over the building so that the bridge is seen from surrounding areas, keeping a visual connection.

Problems:
The new bridge that will raise over the building will see either removal of the historic lift bridge, or it lost beneath the new bridge.

2. The form of this concept allows morning light and evening light to penetrate deeper into the site. While the midday sun is blocked by the circulation tower. The visual connection from surrounding public areas is still kept.

Problems:
Again, the southern side of the site is cast in shadow for a portion of the day, this can be used to an advantage to limit heat gain. Through developed design, alterations can be made to allow the southern end of site to access more light.

3. The build up of building on the southern facade allows for the most penetration of natural light.

Problems:
Views from surrounding areas will see the southern end of the building which will be cast in shadow. The visibility of pedestrian bridge is also lost with this concept.

4. This concept sees the building built up on the northern frontage and built down on the southern end. This allows the visual connection between the surrounding public areas and the original historic bridge.

Problems:
The height of the building on the northern frontage creates shadow and therefore casts the southern wing of the building in darkness. This will also be seen as the bad side of the building from surrounding public spaces.
PART TWO

Exploration of texture, shadow and form.

Aesthetic perception vs. Sensory qualities.

Throughout this chapter textural qualities will be explored through a series of iterative designs. A sequence of ‘eggs’ will see different textures applied, eggs being the perfect form to grasp and hold in order to really feel the textural qualities.

Methods:
• 3d printing
• Plaster
• Silicone
• Rubber Latex
• Resin.

The shapes will start off as fairly simple models, as they develop parts will begin to be extruded, shifting the focus of research from just textural qualities, to light quality, shadow, form and texture. The study of these models will help to find the effects on a person which can then be developed into qualities of a building.

Figure 65 (left)
Proposed building form developments
WALL AND SHADOW STUDY

*Exploration of light, shadow and shape.*

This study saw a series of walls set up in plan on various angles and combinations. The walls were then evaluated in elevation to see the effect of depth and shadow.

The most effective wall combinations on forming depth were those that stepped back and forth, as the further part of the wall was able to capture shadow creating the illusion of a deeper depth.

The walls that allowed light to pass through created no illusion of depth from the exterior, but light is able to pass through and cast an interesting shadow on the interior floor.

In conclusion, to create an illusion of depth it is important to allow the shadow to cast on the exterior wall. In contrast, if light can penetrate through, it will instead cast a pattern on the ground.

This is further explored in plaster models, please refer to figure 67, 68, 69 & 70 on page 123-124.
Part Two - Texture, Shadow and Form

PLASTER ‘WALL’

*Exploration of texture, shadow and form.*

Figure 67, 68, 69, 70

Plaster wall models demonstrating light, texture and shadow.
3D Prints, iterative texture, light and shadow models.
Part Two - Texture, Shadow and Form

3D PRINT

Exploration of texture, shadow and form.

Figure 86, 87, 88, 89, 90, 91, 92, 3D Prints, iterative texture, light and shadow models.
3D PRINT

Exploration of texture, shadow and form.

Figure 93, 94, 95, 96, 97, 98, 99
3D Prints, iterative texture, light and shadow models.
3D PRINT

Exploration of texture, shadow and form.
3D PRINT

Exploration of texture, shadow and form.

Figure 107, 108, 109, 110, 111. 3D Prints, iterative texture, light and shadow models.
Part Two - Texture, Shadow and Form

SILICONE NEGATIVE

Exploration of texture, shadow and form.

Figure 112
Pink silicone negative model.
CLEAR SILICONE

Exploration of texture, shadow and form.
Part Two - Texture, Shadow and Form

RUBBER LATEX

Exploration of texture, shadow and form.

Figure 119, 120, 121, 122
Latex iterative texture, light and shadow models.
PART TWO

Exploration of texture, shadow and form.

**3D PRINTS**
The 3D prints have an illuminating effect, showing a stark contrast between shadow and sunlight. The use of daylight ensured a better colour rendition, the 3D objects appear to their true colour: white, and it is easily contrasted against the harsh shadows. The prints are successful in seeing how light disperses through the models, and the effect of shadows. The darker the shadow, the more the effect of depth within the object, and in contrast when the crevice is more illuminated it appears shallower. The cuts in the various models help to cast interesting shadows on the ground, and could be developed to room types.

**CLEAR SILICONE**
Gives the realistic effect of frosted glass. This was more a study of the interior environment rather than the shadows cast. This material was very easy to work with as it is hard wearing with a lot of stretch. It would be hard to replicate this material with a real building material in the eventual building. Alternatives to silicone as a building material could be the use of materials such as Kevlar.

**PINK SILICONE**
Much like the clear silicone in texture and strength, the pink silicone was used to create negatives of the 3D prints. This helped to see how these textures could be used in an interior environment.

**RUBBER LATEX**
This modelling material crumpled, shrunk and had little light reflection, thus proving that material reflection and luminosity is necessary in creating a desired effect. Points where the material ran thin did illuminate small amounts of light giving the impression of the highest points on the model, yet this was due to the thickness of the material rather than actual light illuminance.

**The 'Kiki'**
Models which look sharp. These models seem the most interesting. The sharp points create interest, and the varying crevices between each point create dark shadows giving the perception of depth. When holding these pointy objects, they are enjoyable as the points act as an intense form of sensory stimulation. They are interesting, and provoke the tactile sense. These Kiki forms are successful in promoting tactile stimulation, light and shadow. Combining a Kiki form with another sensory modality such as sound would successfully create a multisensory environment replicating a synesthesia type such as auditory tactile synesthesia. The pointy surfaces could create reflectance and reverberation issues with acoustics, so materiality must be considered when designing with Kiki forms.

Figure 123, Plaster iterative texture, light and shadow model.
Plaster has a rougher texture when compared to other modelling materials used, such as silicone and 3D print plastic. The reflection of light is very minimal, but it does make for a diffused ambient light quality. Shadows are not as harsh, making for a natural appearance. There is a certain softness of the light quality, which can only be achieved in soft furnishings and some timbers, materials such as glass and hard surfaces tend to create the opposite to the effect the plaster is giving. The effect of light and shadow of the plaster can create a soft and gentle environment, this can be replicated with soft materials and could be used for single working environments and private meeting spaces where sharp noises should be absorbed, this is able to be achieved by soft fabrics.
Part Two - Texture, Shadow and Form

OPAQUE SILICONE

Exploration of texture, shadow and form.

Figure 129, 130, 131, 132, 133, 134, 135, 136
Silicone iterative texture, light and shadow models.
Figure 137, 138, 139 (left) Pinkysil negative of the egg texture models. Demonstrating possible room texture.

Figure 140, 141, 142 (right) Pinkysil negative of the egg texture models. Demonstrating possible room texture.
N'EGG'ATIVES

Exploration of texture, shadow and form.

By creating negative models of the textured eggs, an impression of how the interior spaces could feel when these textures are applied and or developed into a building form and surface.

These negatives begin to explore how the texture of the 3D printed eggs can be applied to a buildings surface, in this case it represents the interior environment of a room.

The indented forms create the feel as if they are pushing outwards, where as the forms that extrude into the space feel as though they are imposing.

This needs to be taken into consideration, careful not to impose too much on the environment resulting in an uncomfortable occupant.

Figure 143, 144, 145
Pinkysil negative of the egg texture models. Demonstrating possible room texture.
Part Two - Texture, Shadow and Form

Figure 146
Exploration of light
PART THREE
Design

Concepts and designs from part one and two are further developed in this chapter. Responses to challenges outlined in the document are investigated through drawings. Applications of programme and function and theory are navigated in this chapter.

After finalising the site, research into multi-sensory aspects and synesthesia, a design response considering all of these elements will be designed.

Synesthetic elements, which are sound, touch, taste, sight and smell will be employed in the design to create differing atmospheric outcomes of space, heightening ones experience within the Architectural environment.

Along with this, the design will incorporate all of the functional programmatic requirements of a flexible office space. Although it has been argued that typical forms of presenting Architecture are purely visual, such as the classic plan, section and elevations, I will still be using these techniques in the final presentation in order to convey my building fully.

A design response considering all of these elements will be proposed.
Key design considerations

• Keep to a scale relevant to the room type. I.e small and intimate for single private areas, or larger environments for public working areas.

• Avoid the use of unnatural light, in order to keep the occupants with the circadian rythem of sunlight it is imperative that natural daylighting is incorporated throughout the building.

• Keep the visibility of the existing viaduct lift bridge from the surrounding public areas, in order to keep a visual connection between the eastern and western ends of the viaduct harbor connected and accessible.

• House all necessary amenities, such as eating areas, bathrooms etc.

• Provide social areas

Materials will need to:

• High quality finish

• Replicate the models studied throughout Part two of design.

• Have some translucency to allow daylighting

• Soft materials will need to be considered for acoustic qualities.
This concept design was derived from the art of scent exhibition, by Diller Scofidio and Renfro. By using high tech delivery systems to release a scent to a person, the exhibition aimed to appeal the visual, and instead ignite the other senses which are commonly ignored.

By Combining scent, texture and light, in an architectural environment as seen in the drawing (right) a multi-sensory Synesthetic effect of Colour-Grapheme-Olfactory is achieved.
A section impression of a typical 'synesthesic' room, combining light and texture.
Part Three - Design

Figure 151
Building program
Translating the texture of the eggs and creating a ‘skin’ to encase the building program resulted in the proposed building.

With this design, issues have arisen. The charm of the site, is the missing piece between Quay Street and Te whero island. By creating a building in this location, the building acts as the ‘missing piece society needs in order to function as a whole’. The proposed approach as seen above completely removes the visual connection to this connotation. The building covers the link between these two locations and as a result loses its charm and ‘connection’. It instead appears just another building in the middle of a site. Developing on from this it is necessary to build within the site rather than splay out over and above, losing its charm and quality.

The scale of the building has also lost the charm and textural qualities that have been thoroughly explored in the iterations of the printed eggs. Scale is very important in this building, in order for the multi-sensory environments to have an effect they must be at an appropriate scale per room. The above building gives the impression of large, daunting building, which then translates as unapproachable. It seems the tactics used in the design of this building, are replicating that of the original asylum. Asylums were large, dominating, and...
infliced fear on the inhabitants. The research throughout this project has concluded that this is instead damaging, building should be approachable and of relative scale. This building must be developed further to be of human scale, and be approachable.

By translating the eggs into a building as a whole, rather than individual environments, the detail and quality is lost. Further development of this project should see the textural, light and shadow qualities of the studies carried out in Part two of Design in this document further developed into a series of synesthetic- multi-sensory spaces, at a more intimate scale.

Lessons learnt:

• Scale is important and must be considered in order to fully acknowledge these environments.
• Approachability is an aim of this building, the surrounding office occupants must want to use this building, for without them this building will fail.
• Sensory qualities are the driver of this project, they must be fully incorporated throughout the building.
• Each multi sensory environment must be developed from the findings in this explanatory document.
• Keep the visual difference between Te whero island and Quay Street in order to metaphorically say that this building, by filling in this area, is the ‘missing piece in society’.
The floor plan sees an organic shape flow between a series of spaces.

1. **Casual working**
   Will allow the public to meet, work, socialise and relax in a comfortable, informal ‘multi-sensory’ setting.

2. **Casual Working / Cafe**
   A cafe/ Canteen area will allow the public to break away from their offices at lunch time to socialise and meet. This is such an important aspect to mental health, therefore is necessary to include in the building program. The food available will also allow the Gustatory (Taste) and Olfactory (Smell) sense to be ignited.

3. **Public working**
   An area allowing the public to work at communal working stations.

4. **Individual and group working**
   These areas will be for private groups or individuals, looking for an intimate space to work in. These rooms will specifically relate to the various types of synesthesia. For instance, a room combining colour and sound to replicate the synesthetic condition of Chromosethsia and so on.

5. **Lecture theatre/ Events centre**
   This room will allow conferences, lectures and other various events to be held in a multi-sensory environment.

6. **Bathrooms**

7. **Kitchen**

8. **Outdoor lecture**
   Provides seating for the public, and room for events to be organised in correlation with the other areas of the facility.

All areas will promote the use of multiple senses to directly implement the synthetic effect of synesthesia.
PART THREE

First Floor Plan

The top floor allows circulation to flow between the outdoor East Wharf and Te Whero Island.

1. Entrance
This entrance allows the public to enter and take the lift if need be.

2. Lifts
As above.

3. Viaduct lift bridge
The existing viaduct lift bridge structure is to stay on site, the building will instead work around/ through the existing structure.

The circulation of the first floor allows circulation from multiple points of both the East wharf and Te Whero Island. This allows the public to fully integrate within this new building.
The circadian rhythm sees our bodies respond to the naturally occurring colour hue of the different daylighting hours, helping our body to respond to certain times of the day accordingly. The issues as discussed in Chapter four, are spending long periods of time under artificial light disconnecting our bodies from the naturally occurring circadian rhythm. A building corresponding to the daylighting hours, by providing exaggerated hues of the equivalent colours would see a person reconnect with the circadian rhythm and as a result a person's body would be more regulated, helping to sleep with ease at night. And in turn lessen stress and reduce the effects of depression.
Figure 166 (left) Perspective from Easy Wharf (Quay Street).

Figure 167 (right) Perspective looking at the Historic lift bridge.
Figure 168 (left) Textural qualities of a synesthesic room.

Figure 169 (right) Perspective of Synesthesic room submerged underwater allowing sound, and light sensory qualities.
Figure 170 (left)  
Perspective of a sensory textured meeting room.

Figure 171 (right)  
A development of a natural egg into a room.
CONCLUSION

The question “How can the study of synesthesia be applied to Architecture to prevent the onset of depression induced by sterile environments? Has been thoroughly explored throughout this explanatory document. It has been outlined that architectural elements such as light, sound, colour and texture can influence the way in which we respond and feel in a space. Therefore it is concluded that Architecture has the ability to lead to a positive perception of our surrounding environment.

A relationship between synesthesia and Architecture can be incorporated in architecture to provoke the re-sensitisation of society through a 'new' type of experience within the built environment. I cannot state whether or not this project has achieved its aims without actually experiencing the space, but it can be assumed based on the research outlined in this document that the incorporation of multiple senses in the Architectural environment can positively effect the mental state of a person.
BIBLIOGRAPHY

- Appendix to Journals of the House of Representatives 1886, section H.


• Dr Brunton, in The Sylalla-Charybdis Syndrome, quoting the first keeper at Oakley Hospital, 1853, the Crozier collection.


• Dr Brunton, in The Sylalla-Charybdis Syndrome, quoting the first keeper at Oakley Hospital, 1853, p. 3, the Crozier collection.


• Fragrances: du désir au plaisir», under the direction of Joël Candau, Marie-Christine Grasse and André Holley, Musée International de la parfumerie de Grasse, Ed. Jeanne Laffitte, Marseille, 2002

• Freidrich Nietzsche, thus spake Zarathustra, Viking Press (New York), 1956


• “Introduction.” James Turrell, jamessturrell.com/about/introduction/.

• James Turrell, ‘Platos cave and light within’, in elephant and butterfly; permanence and change in architecture, ef Mikko Heikkinen, 9th Alvar Aalto symposium (Jyväskylä), 2003


• Lawson, B (2001), The language of space, p. 173,


- Martin, Peter (29 October 2015). “The 38-hour week a rarity among full-time workers, new data show”.

- Medical Superintendent, Kingseat Hospital, to the Director-General, MHD, August 8, 1947. ANZ: R20960887.


- Plans, policies and projects - Auckland Council. www.bing.com/
LIST OF FIGURES

1 “Nursing Staff In Front of Seaciff Lunatic Asylum, about 1890.” Nursing Staff In Front of Seaciff Lunatic Asylum, about 1890 - Archives New Zealand. Te Rua Mahara o te Kawanatanga. http://archives.govt.nz/gallery/v/Online Regional Exhibitions/Archives New Zealand Dunedin Regional Office Gallery/Being at Seaciff Lunatic Asylum/Buildings and Grounds/nurses on lawn.jpg.html.


12 – 13 IMAGE BY AUTHOR; photo taken at Anne Shelton dark matter exhibition, Auckland Art Gallery 10/04/17


19 IMAGE BY AUTHOR; circadian rhythm


22 “Turrell, James” https://i.pinimg.com/originals/d9/aa/ba/d9aabab570b4776b07e-


“Plans, policies and projects - Auckland Council.”


“Auckland, N.Z: Auckland City Council.”


Libraries, Auckland City. Sir George Grey special collections= Ta Hori Kerei nga kohinga taonga whakahirahira.

“Plans, policies and projects - Auckland Council.”


“Plans, policies and projects - Auckland Council.”


150 IMAGE BY AUTHOR; sectional image of typical texture egg as room

151 IMAGE BY AUTHOR; building program

152-157 IMAGE BY AUTHOR; building perspective

158 IMAGE BY AUTHOR; ground floor plan

159 IMAGE BY AUTHOR; first floor plan

160 IMAGE BY AUTHOR; north elevation of building

161 IMAGE BY AUTHOR; east elevation of building

162 IMAGE BY AUTHOR; south elevation of building

163 IMAGE BY AUTHOR; west elevation of building

164 IMAGE BY AUTHOR; circadian rhythm evening light

165 IMAGE BY AUTHOR; circadian rhythm morning light

166-171 IMAGE BY AUTHOR; perspectives
Concrete
One of the most universally used building materials, and an excellent source of thermal mass. The often-cold touch of concrete can spark a “strong” impression on building inhabitants. Although this material is adaptable regarding sensory— for instance, colour and texture, the temperature will need to be considered. As cold and warm temperatures can be the difference in a room being dominating as opposed to welcoming. Concrete has come a long way in recent. Concrete can be made translucent which is a bonus when incorporating natural lighting into a space.

Wood
A traditional building material, the material can now be engineered to suit many buildings as well as offer translucent properties. Timber is a diverse material, and widely available in New Zealand. An important thing to note would be the scents in which timber can emit, creating a natural odour to provoke the olfaction sensory response.

Steel
A diverse material often used in reinforcement, but also doubles as a way to construct appealing skins of buildings. Steel, like concrete, has fluctuations in temperature which can affect a person’s perspective of a space and can often quickly absorb the sun’s heat—leading to overheating of a building and a weakened atmosphere. It is important to control the temperature when steel is used in façade design. Another quality to take into account is the sterile nature of steel; it can sometimes seem clinical. The high reflectance of certain steels means the sterile nature of the material can often be omitted by the use of lighting design.

Plastic
Plastic holds plenty of possibilities regarding form and texture. Generally a smooth surface, it often comes across as sterile and reflects a lot of the light away. Different colour’s, textures and effects can be created with plastic, so it is important not to judge the use of plastic on the generic plastic types.
Textiles
Textiles are used for finishing as well as tensile structures. Inflatable spaces, wooden fabrics, casting etc. are all shapes and spaces that can be curated through the use of textiles.

Glass
A material most- used for achieving transparency and light, and because of this, a prevailing element in façade design.

Kevlar
A synthetic fibre material that has enormous strength capabilities. It is less rigid than steel, yet seriously strong. Although a new material, this material could help to create a more organic shaped space, as well as allow natural daylighting and other sensory elements.

Carbon Fiber
Five times stronger than steel, twice as stiff and weighs significantly less. The formation of carbon fibre makes it adjustable, and a flexible material to work with. Because of this, the carbon fibre can be constructed to allow translucency and natural light to penetrate through the material, as well as natural light it can also allow air flow allowing for other sensory input.

Photovoltaic cells
Photovoltaics are no longer restricted to the large solar panels and have now become standard practice to include in a building. Developments in the photovoltaic cell have seen translucency, coloured, kinetic, and irregular shaped. The possibility’s to create photovoltaics as a part of the structure are now endless and should be considered when designing. Coloured photovoltaic could be incorporated into my building in order to keep the exterior of the building lit at night.

Composite Fibres
A way to incorporate texture into the walls and flooring of my building could be achieved by using composite fibres. Much like carbon fibres and textures, they can add amazing textures as well as be designed to allow light to filter through.
Appendix

KINGSEAT HOSPITAL

Plans
Mental asylums were made to accommodate the removal of the disturbed from the purview of society, with their incarceration in the country away from prying eyes. This meant removing them from the public, to far away locations.

This has now been proven to be ineffective, because as these people returned to normal society they were suddenly at the forefront of their problems again. Often called 'trigger' situations. It was concluded that treating patients in the area of 'trigger' was instead most beneficial. A look at the existing locations of asylums relative to the main City shows just how removed these patients were.

Kingseat
Located 44 kilometres away from central Auckland, this asylum was isolated. No where for the patients to escape to, away from their problems. By removing them from the trigger location into a facility completely isolated, it was not addressing the persons problems and instead hid the person as they were a deemed the 'problem'.

Seacliff and Cherry Farm
Much like kingseat, Seacliff and Cherry farm- two large asylums were located in isolation.

Lake Alice
Located around 40 kilometres from both Palmerston North and Wanganui, Lake Alice really was removed from the norms of society. Again proving that isolation was standard practice in the asylums.

Porirua, and Mount View
Although Porirua and Mount View look somewhat close to Wellington central, around 10–20 kilometers. They were located away from the high density areas of Wellington. Although not separated in distance much like the other asylums, these facilities were still removed from the city and in isolation.
FINAL DESIGN PRESENTATION
CIRCADIAN RHYTHM ROOF DETAIL
420 X 354
SECTIONAL MODEL OF EGG CLUSTER
SCALE 1:50

TEXTURAL EGG MODELS
SCALE 1:1
VARIOUS TEXTURAL AND WALL MODELS
VARIOUS SCALES

VARIOUS MATERIAL MODELS
VARIOUS SCALES
SCENT BOX - CREATED SCENTS IN THE EXAM ROOM
VARIOUS SCALES

SITE MODEL
SCALE 1:1000
Full name of author: PETA SMITH

ORCID number (Optional):

Full title of thesis/dissertation/research project (the work):
SYNESTHESIA AND THE SYNTHETIC EFFECT

Practice Pathway: ARCHITECTURE

Degree: MArch (P.rh)

Year of presentation: 2017

Principal Supervisor: JEANETTE BUDGET

Associate Supervisor: MINSLEY O’CONNELL

Permission to make open access
I agree to a digital copy of my final thesis/work being uploaded to the Unitec institutional repository and being made viewable worldwide.

Copyright Rights:
Unless otherwise stated this work is protected by copyright with all rights reserved.
I provide this copy in the expectation that due acknowledgement of its use is made.

AND

Copyright Compliance:
I confirm that I either used no substantial portions of third party copyright material, including charts, diagrams, graphs, photographs or maps in my thesis/work or I have obtained permission for such material to be made accessible worldwide via the Internet.

Signature of author: [Signature]

Date: 11/10/2017
Declaration

Name of candidate: PETA SMITH

This Thesis/Dissertation/Research Project entitled: SYNESTHESIA;

AND THE SYNTHETIC EFFECT

is submitted in partial fulfillment for the requirements for the Unitec degree of

Masters in Architecture (Professional)

Principal Supervisor: JEANETTE BUDGET

Associate Supervisor/s: AINSLIE O'CONNELL

CANDIDATE'S DECLARATION

I confirm that:

- This Thesis/Dissertation/Research Project represents my own work;
- The contribution of supervisors and others to this work was consistent with the Unitec Regulations and Policies.
- Research for this work has been conducted in accordance with the Unitec Research Ethics Committee Policy and Procedures, and has fulfilled any requirements set for this project by the Unitec Research Ethics Committee.

Research Ethics Committee Approval Number: N/A

Candidate Signature: [Signature] Date: 11/10/17

Student number: 1367073