Theoretical premise

Architecture and the senses

Introduction

In our current society that is infatuated with image, sight is often the only sense that is ever stimulated when architecture and the space's created by architecture are experienced. It can be said we are living in an ocular-centric society, where many buildings are only designed to be monumental visual statements. These buildings are most often visually amazing and often appear to defy the laws of gravity, yet the spaces created within these monumental so called master pieces often do little to stimulate the other senses.

There are very few spatial experiences that can stimulate the full spectrum of our senses. Most art forms attempt to simulate the sense of lived experience, but Architecture is the only art form capable of producing lived experiences whilst providing the spatial boundaries within which we experience space.

With today's predominantly aesthetically pleasing buildings and spaces dominating the skylines of our built environment, most experiences of articulated space today can be reduced to a single experience of sensory bliss. Juhani Pallasmaa's book *Eyes of the Skin: Architecture and the Senses* explores and investigates the architecture of today and the architects of today's preoccupation with this predominantly visual architecture. He believes that this has led to *"the disappearance of sensory and sensual qualities from the arts and architecture"* (Pallasmaa, 2005:10).

In the words of David Michael Levin: *"I think it is appropriate to challenge the hegemony of vision in the ocular centrism of our culture. And I think we need to examine very critically the character of vision that predominates today in our world"* (Pallasmaa, 2005:78).

In one of Maurice Merleau-Ponty's writings on Phenomenology Sense and Non Sense, he states that architecture cannot be seen only as a *"sum of audible givens"* . Instead he describes the experience of this multi-sensory phenomena as follows:

"My perception is therefore not the sum of visual, tactile and audible givens: I perceive in a total way with my whole being: I gasp a unique structure of the thing, a unique way of being, which speaks to all my senses at once' (Pallasmaa, 2005:78).

Merlau Ponty's philosophy describes the human body as the centre of the experiential world: *"I confront the city with my body: my legs measure the length of the arcade and the width of the square: my gaze unconsciously projects my body onto the façade of the cathedral, where it roams over the molding and contours, sensing the size of recesses and projections: my body weight meets the mass of the cathedral door, and my hands grasp the door pull as I enter the dark void behind, I experience myself in the city, and the city existed through my embodied experience. The city and my body supplement and define each other: I dwell in the city and the city dwells in me"* (Pallasmaa 2005:40). Merlau Ponty's notions concerning the city can be applied on various scales from a singular space or building, to a larger urban scale.

In his book *Genius Loci,* Christian Norberg-Schulz writes about the work of Martin Heidegger in his discussions on the notion of being, and its relationship to architectural space. It is Heidegger's opinion that the primary role of architecture is to provide human beings with an essential foothold, ultimately allowing human beings to dwell within space (Norberg-Schulz, 1980:5).

It is evident that life enhancing architecture has to address all the senses simultaneously and fuse our image of self with our experience of the world. This new awareness is forcefully projected by numerous architects around the world today who are attempting to re-sensualise architecture through a strengthened sense of materiality and hapacity, texture and weight, density of space and materialised light (Pallasmaa 2005:37).

Ultimately, this dissertation aims to build a theoretical argument around the importance of multi-sensory experiences within architectural place-making. In doing so, it aims to rethink the current aesthetics only approach currently dominating architectural place making, and to create a methodology for architectural place-making that allows people to be themselves. An emphasis on sensory experiences in architectural place making as formative design generators will ultimately result in an enriched architectural tectonic that will positively influence its users.

This dissertation seeks to provide an appropriate methodology for the creation of sensory architectural place making with the primary aim being translated from a theoretical premise into an executable architectural tectonic.

For this methodology to succeed, it is important that the argument for sensory place making be traced back to its origins, whilst building upon the important philosophical ideas that have formed the basis for the argument so that informed responses for a 21st century architectural intervention can be motivated.

Origins of space planning

As the subject of this dissertation centres around different experiences of space and their effect on human behaviour, an understanding of the history of space planning is needed. This includes an understanding of where the creation of space and the geometries that determine these spaces originated.

The geometries and proportions of space and the planning of spaces can be traced to ancient Greek methods of setting out spaces. The ancient Greeks' "12-Part System" and Golden Section geometries were widely used in setting out places of civic and religious importance. Most of these systems were conceived from the geometrical concept of the universe which was greatly admired by the ancient Greeks. (Doxiadis, 1972:6)

Homer in his writings was, however, the first to explore the notion of the universe being divided into various geometric parts (Doxiadis, 1972:16). The writings of Homer were later explored and his writings expanded on and developed. In this later investigation, each of the geometric parts explored by Homer was related to the five natural elements, i.e. earth, water, fire, air and light. Each of the five elements were then associated and corresponded to one of the five human senses, which, in essence, are how we experience space.

This association is indicated below.

Cube	- Earth	- Touch
Pyramid	- Water	- Taste
Octahedron	- Fire	- Smell
Dodecahedron	- Air	- Hearing
Icosahedrons	- Light	- Sight

Sense of being/belonging

Most philosophical thoughts are based upon the question of man's existence within the world but it is the aspect of exactly how we experience our sense of being within the world that lies central to this argument.

How exactly is man's existence related to his being? How does architecture directly influence one's perception of being within a specific place? These are questions which this section of the argument seeks to investigate.

According to Heidegger the primary purpose of life is to dwell. He he describes this notion as follows: *"The way in which you are and I am, the way in which we humans are on earth, is dwelling"* (Norberg-Schultz, 1980;10).

A specific place is however required in order to dwell, thus Heidegger has been said to describe the role of architecture in an existential sense as *"to allow for a specific site to become a place"* (Norberg-Schultz, 1980:5). From investigations into the thoughts of Heidegger, Christian Norberg Shultz devises that for such a place to be successful, it needs to have a distinct character.

He terms this the '*Genius Loci*' of place.

Thus, the specific character or '*Genius Loci*' of the place allows one to dwell within that space, and it is the responsibility of architecture to define the specific character and physical parameters within which human beings can just be. On this subject Juhani Pallasmaa states that, *"Architecture, as with all art, is fundamentally confronted with questions of human existence in space and time; it expresses and relates man's being in the world"* (Pallasmaa, 2005:16)

"We are in constant dialogue and interaction with the environment, to the degree that it is impossible to detach the image of the self from its spatial and situational existence. 'I am my body,' Gabriel Marcel claims, but 'I am the space, where I am,' established the poet Noel Arnaud" (Pallasmaa 2005:64). From this extract it is evident that the relationship between place, space and the search for the individual being is based upon two degrees of experience. The first is the individual's experience of that space, and the second is the combined experience with other users that collectively facilitates our human rootedness (Pallasmaa, 2005:19).

One now has to ask, how do we actually physically and mentally experience a place, and how can architecture manipulate this experience. To investigate this it is believed that the philosophy of phenomenology should be investigated, as it forms the basis to various architectural theories enquiring into how we experience architectural space.

Phenomenology in architecture

Phenomenology is both a philosophical design current in contemporary architecture and a specific field of academic research, based on a physical experience of building materials and their sensory properties.

In simplest terms, phenomenology is the interpretive study of human experience. The aim of phenomenology is to examine and clarify human situations, events, meanings, and experiences *"as they spontaneously occur in the course of daily life"* (von Eckartsberg, 1998:3).

There are numerous definitions of phenomenology. However for the sake of the argument, the definitions of philosophers Edmund Husserl and Martin Heidegger have been adopted.

Husserl describes Phenomenology as *"the reflective study of the essence of consciousness as experienced from the first-person point of view"*. Heidegger expanded on this definition with the introduction of the concept of ontology. Ontology is *"the study of conceptions of reality and the nature of being and [he] believes that the phenomenology is the method of the studying being itself"*.

Phenomenology has been used as the basis for many architectural theories, and can be defined as an approach that incorporates a multi-sensory experience of place making, striving towards a methodology of creating spatial phenomena. Creating a singular sensory experience can easily be achieved, but the creation of a collective environment that can stimulate all the senses is more challenging. This collective experience of our senses is explained by psychologist James J Gibson, who does not categorise the senses as five detached senses but instead describes the senses as five sensory systems. These are: the visual systems, auditory systems, taste-smell systems, basic-orientating system and haptic system (Pallasmaa, 2005:41-42)

Gaston Bachelard talks about a *'polyphony of the senses'* and states that *"Every touching experience of architecture is multi-sensory: qualities of space, matter and scale are measured equally by the eye, ear, nose, skin, tongue, skeleton and muscles"* (Bachelard, 1971:6). He believes that instead of mere vision, or even the five classical senses, architecture involves several realms of sensory experience which interact and fuse into one another.

Thus, in our current ocular centric society the question remains as to how exactly, can we create multi-sensory experiences in architecture?

Specific Phenomenological Methods

There are four methods of phenomenological research, each with their own methods and arguments for and against.

- First Person Phenomenological Research
  - Where the researcher uses his/her own firsthand experiences
- Existential Phenomenological Research
  - The specific experiences of specific individuals and groups involved in actual situations and places are used (von Eckartsberg, 1999:4).
- Hermeneutic Phenomenological Research
  - Interpretation of text
- Commingling m,thods
  - Very often the phenomenological researcher uses the first-person, existential, and hermeneutic approaches in combination

Problems associated with the architecture of today?

The contents of this topic are subjective and views may differ from person to person. However in a time where expansive architectural wonders, which often defy the laws of gravity and that are composed of an amazing array of contemporary materials, are the flavour of the week, one might ask: Is Architecture in crisis? Although responses may vary, for the state of the argument this statement has to be critiqued and evaluated in accordance to the current state of our society. The argument is drawn from the debate of the theorists who view our current society as an ocular-centric one.

"The pathology of today's architecture can be understood through a critique of the ocular bias of our culture. Architecture has turned into an art form of instant visual image" (Pallasmaa, 2000:78)

The concept of an ocular-centric society places vision as the primary sensory stimulant that dominates all creative expression. This is not a concept unique to architecture; it occurs in almost all art forms. As Pallasmaa writes; *"The bias towards vision and the suppression of the other senses has resulted in the disappearance of sensory and sensory qualities from the arts and architecture."*

(Pallasmaa, 2005:10).

Our society is dominated by mass media and consumerist trends and bombarded by visual stimuli that are transmitted via television, the internet and advertising. As such, this bias towards vision is understandable. It is only when this bias is critically assessed on an urban scale that the negative effect that this ocular-centric approach has had on the richness of our urban realm becomes clearly evident. In the *Eyes of the Skin*, Pallasmaa is concerned about the state of our public realm and states that: *"Our cities have lost their echo altogether. The wide, open spaces of contemporary streets do not return sound, and in the interiors of today's buildings echoes are absorbed and censored"* (Pallasmaa, 2005:51).

The philosophy of phenomenology can be understood in context to our time, societal conditions and pre-occupations.
"Phenomenology was conceived as a return to things as opposed to abstraction and mental constructions" (Norberg-Schultz, 1980:8). Thus, Norberg-Schulz highlights the need for an architectural approach that stimulates the full range of

our senses, through his proposal for a return to the essential architectural elements which he believes have been lost in contemporary architecture.

This call for a return to the use of essential architectural elements should not be misunderstood, as it does not discourage or ignore technological advances. It essentially aims to encourage a re-investigation of an architectural language that can promote intimacy, and ultimately encourage the development of an architectural language that once again brings us together with the built environment through an architectural articulation done according to the human scale. This change will engage users as active participants instead of uninvolved spectators in built environments.

Pallasmaa speaks of the difficulties in initiating the shift towards a contemporary sensory architecture, saying that: *"Around the world today we are attempting to re-sensualise architecture through a strengthened sense of materiality and hapacity, texture and weight, density of space and materialized light"* (Pallasmaa, 2005:37).

Steven Hall believes that the solution is much simpler and says that architecture should aim towards the development of a language where *"The way spaces feel, the sound and the smell of these places, has equal weight to the way things look"* (Steven Hall in Pallasmaa, 2005:7).

Le Corbusier wrote: *"The purpose of architecture is to move us, Architectural emotions exist when the work rings within us in tune with a universe whose laws we obey, recognise and respect"* (Norberg-Schultz, 1980:6)

According to Kevin Lynch, identity is usually created by things that people relate to or through association. Identity and meaning can therefore be seen as realted. Often when trying to portray meaning in architecture, identity can come about. Lynch also mentions that identity can go beyond the structure and architecture itself. It can also be created by functions which take place within a particular place or structure. *"Alternatively an object seen for the first time may be identified and related not because it is individually familiar but because it conforms to a stereotype already constructed by the observer."* (Lynch, 1960:6) What Lynch is reffering to is an archetypal image.

The question of how we can create this architectural tectonic that can stimulate multi-sensory phenomena is yet to be answered. It also needs to be determined how a tectonic can express technological advancement as well as a return to a more traditional approach at the same time?

Development of a sensory architectural language

To derive a methodology for the development of an architectural tectonic that can stimulate multi-sensory phenomena, it was important to identify physical examples that already successfully address sensory architecture. When the identified examples were further examined, a common denominator was found in the awareness created through the architecture of the spatial relationship between nature and the built environment. Nature in this sense, not only includes scenic natural beauty in its conventional sense, as is evident in many examples, but also natural phenomena such as light quality, the fall of shadows, the reverberation of rain on a roof, the materiality of a surface or even just the feeling of a calm breeze against our bodies. The creation of these phenomena is simple; however it is making the user aware of the phenomena and appreciative of them that presents a challenge.

We as humans do not only experience space by using the five commonly accepted senses, but in fact possess another sense: that of space. The debate that often arises from this suggestion is whether this additional sense exists or whether it is just a combination of the five commonly accepted senses which facilitate the formation of a spatial sense.

"Every moment of our experience, and that includes the experience of space, is un-analysable as a whole and must be broken down into the analysis of some of the constituent parts in order to gain a deeper understanding" (Hillier, 1996:85). Christian Norberg-Schultz explains that the human relationship to the built environment is rooted in experience. He believes that people create their own mental image of their environment thus creating individual perceived feelings. These feelings are usually associated to an individual's background or personality and can be related to the functions or symbolic aspects of space.

Pallasmaa believes that tranquility is the most essential auditory experience created by architecture. Although, not all sites are located in a place that has a connection between the built environment and nature, all works of architecture have the potential to explore and exploit natural phenomena, regardless of site location and conditions (Pallasmaa, 2005:47).

Thus this dissertation aims to provoke a thought process that will lead towards the creation of a sensory architectural experience, regardless of the site location.

Many architects and building designers today completely ignore the potential of the experience of natural phenomena. New phenomena such as 'sick building syndrome' indicate how negative interior-orientated buildings have become for their inhabitants. Artificially regulated environments remove us from the reality and sensory qualities of the outside world, and create environments that add nothing to the quality of the public realm. Architectural responses must start to blur the edges between the outside and inside and invite us to project our thoughts towards an architecture that reinstates sensory experiences and the sense of being within built environments.

The use of simplistic natural elements, if exploited appropriately, will bring about an architecture that celebrates our being within the world, and will result in environments that stimulate our sense and make the experience of architecture an experience.

Certain tools that have been identified as appropriate to manipulate the experience of space are:

Sight (Light)

It has been argued that architecture needs to be experienced by a combination of all the senses. However, it is our initial visual sensory perception of an object which intrigues us and attracts us to it.

Luis Barragan states that: *"most contemporary public spaces would become more enjoyable through lower light intensity and its uneven distribution"* (Barragan, 1989:242).

The contrast between light and dark, artificial and natural lighting and hard or soft lighting can enhance or detract from the experience of space.

"In great architecture there is a constant deep breathing of shadow and light: shadow inhales and illumination exhales light " (Pallasmaa, 2005:47).

"Architecture is the masterly, correct and magnificent play of masses bought together in light" (Le Corbusier, 1959:31).

Touch (Materiality)

Materiality can play an important role in the search for architecture of sensory experiences. The sense of touch can be broken down into physical touch and emotions. Physical touch can be manipulated with textures. For example cold and warm surfaces and the feeling of the elements on the human body create different spatial experiences.

Emotions can be manipulated through experiences such as proximity and isolation, exposure or enclosure, as well as the experience of other emotions including happiness and fear.

These creative ideas come into fruition through the use of essential building blocks or building materials. Thus material selection is important, in particular with regard to the ageing effect of buildings and building materials, which is usually seen as negative. As soon as materials show signs of ageing or decay, they are replaced or altered. This change of character of the materials can add to the vibrancy of the space, as the character of the space is in constant flux.

Today's buildings are often seen as flat and this can be attributed to a weak sense of materiality or an inadequate celebration of materials.

In most cases, newly built architectural works seek to achieve an ageless beauty, employing materials with little or no life, and are in a constant stagnant state. Pallasmaa states that: *"The architecture of the modern era aspires to evoke an air of ageless youth of a perceptual present"* (Pallasmaa, 2000:79). In order for a built environment to evoke life *"a building should be what it wants to be"* (Louis Khan, unknown)

This approach stands central to an honest materiality that expresses the sensory experience of these materials in the purest form. It embraces the ageing effect of materials in a way that celebrates the patina of age.

"Natural materials - stone, brick, and wood - allow our vision to penetrate their surfaces and enable us to become convinced of the veracity of matter. Natural materials express their age and history, as well as the story of their origins and their history of human use" (Pallasmaa, 2005;31).

Hearing (Sound)

"Sight isolates, whereas sound incorporates" (Pallasmaa, 2005:49).

Sounds from the environment can create a relation to the outside of the building, even if there is no visual connection to the surrounding outdoor context. Elements such as a gentle draught through a space can have an interesting effect on the human psyche. Different experiences can be achieved through sound and its reverberation. For example, a feeling of isolation can be achieved by the hollow echo of footsteps in a blank hard space and a feeling of intimacy and closeness can be created in a warm or occupied space.

Taste

"Our sensory experience of the world originates in the interior sensation of the mouth, and the world tends to return to its oral origins." (Pallasmaa, 2005:59)

The experience of taste in architecture is difficult, if not impossible to capture. It is therefore proposed that an association with taste is created instead. The proposed restaurants in the development could start to make this association.

Smell

A strong relationship between interior and exterior spaces together with natural ventilation can be used to draw aromas from elements such as plants, from the surrounding environment.

The sense of smell is closely associated with memory, allowing the smell of a particular place or item to trigger a memory or association. The smell of the various materials used in the proposed development can create associations with various spaces or exhibitions previously experienced by the user.

These tools individually cannot create a sensory architectural tectonic, but carefully combining and manipulating them to make the user aware of and appreciative of these tools is the real methodology for the creation of a sensory architectural experience.

Pallasmaa's notion of 'fragile architecture' has often been misunderstood. Consequently he has expanded this notion as follows: An architecture of *"weak"* or *"fragile"* or, more precisely, an *"architecture of weak structure and image"*, as opposed to an architecture of *"strong structure and image"* (Pallasmaa, 2000:81).

This notion can be seen as an approach that is contextually relevant and responsive, and that encourages the users of the architectural place/space to linger and explore, rather than just pass through. Strong structure and image should however be combined with a strong sense of materiality, texture, light, shadow and other sensory experiences that pays homage to our human scale.

The marrying of the past and the present, contemporary and traditional technologies, could offer the solution to the creation of a sensory architectural experience. In particular, this could be acheived by the investigation into the creation or development of a tectonic that both express' technological advancement and pays homage to a return to a more traditional approach.

This approach to architecture represents the general views, current trends and thinking of today's society, as well as those in the present day realm of architecture. The past is celebrated and re-visited into in many spheres of current society.

Solutions to many social and architectural problems are sought from the past and past experiences; an approach which, when reinterpreted and combined with present day technological advancements, this approach lends itself to improved solutions and sensory architectural experiences.

By approaching architecture in this way, this notion of architectural thinking will remain deeply rooted in the phenomena of the past, whilst embracing the performance life of contemporary society.

When this method of architectural place-making is implemented and put into practice, the proposed spatial arrangements of these newly built environments should initiate a sense of intimacy and tranquillity together with a heightened awareness of natural phenomena. It is believed that technologically advanced elements and materials, such as mediamesh screens, advanced cladding systems and audiovisual equipment, can and will only enhance the experience created within and by these spaces.

Conclusion

The creation of a multi-sensory methodology for architectural place-making is complex, as each design intervention has a requirement for an individually created sensory experience related to the function of the place or space. The creation of a multi-sensory architecture cannot be reduced to a singular formula, nor can it simply be abstracted from the previously mentioned tectonic elements. The creation of such an environment requires all elements to work together, including the influence of human beings and the energy they bring to an environment. The combination of all these elements will result in an architecture that touches the soul as a symphonic whole with each aspect performing in harmony with the other
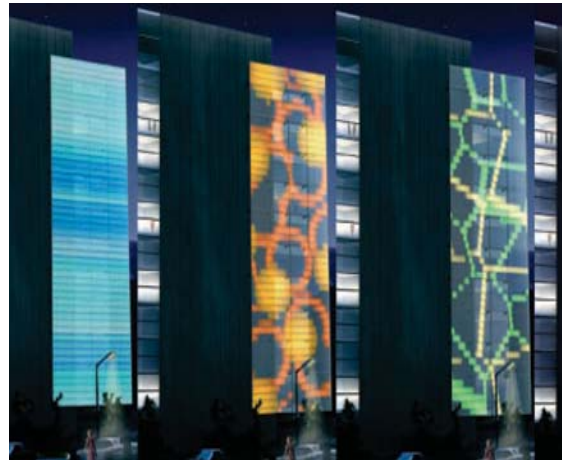
FIG 3.1_GKD Mediamesh effects

FIG 3.2_ Exposed brick - Hector Pieterson Memorial Museum

FIG 3.3_Use of natural stone - Stone House

FIG 3.4_Mediamesh creates multimedia experience on building facade

FIG 3.5_Use of natural timber - 'The organic House'

Light

FIG 3.6_Fall of light accentuating curve of wall

FIG 3.7_Soft ingress of natural light

FIG 3.8_Use of colour creates colourful shade spectrum

FIG 3.9_Filtered light adding to the visual complexity of the space

FIG 3.10_Skylight used to provide soft natural light in the creation of a sense of tranquility

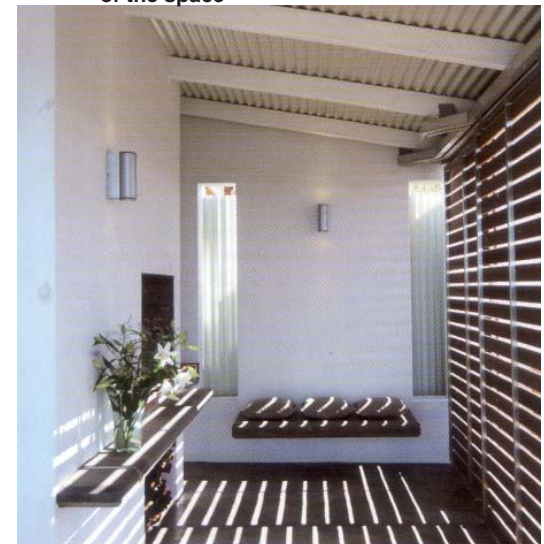**FIG 3.11_Materiality enhances shadows**

FIG 3.12_Shadows adding depth to a space

Materiality

"Natural materials - stone, brick, and wood - allow our vision to penetrate their surfaces and enable us to become convinced of the veracity of matter. Natural materials express their age and history, as well as the story of their origins and their history of human use." (Pallasmaa, 2005:31)

FIG 3.13_Colourful palette of materials

FIG 3.14_Layered materiality

FIG 3.15_Neutral surface bought to life through shadow articulation

FIG 3.16_Shadow reveals true textured materiality of wall

FIG 3.17_Texture adds depth to surface

FIG 3.18_Layered materiality

FIG 3.19_Light enhancing natural beauty of exposed brickwork

Spatiality

FIG 3.20_Spatial and visual connection between internal and external environment

FIG 3.21_Tranquility enhanced through material selection

FIG 3.22_Internal courtyard

FIG 3.23_Spatial experience enhanced through colour

FIG 3.24_Tranquil roof space

FIG 3.25_Boundaries blurred between inside and outside

FIG 3.26_Spatial relationship between external and internal space

Massing

"Architecture is the masterly, correct and magnificent play of masses bought together in light." (Le Corbusier, 1959:31)

FIG 3.27_Elevation of massing creating intimate spaces underneath

FIG 3.28_Spatial relationship of different massings create interesting inbetween spaces

FIG 3.29_Massing provides shelter and gives a sense of security and safety

FIG 3.30_Deep window recess enhances wall depth experience

FIG 3.31_Light enhances the formal language of the masses