# BODY|SENSE EXPERIENCE: AN ARCHITECTURE OF ATMOSPHERE AND LIGHT

BY SOL AMOUR

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## ABSTRACT:

This thesis explores notions of the immaterial and metaphysical in architecture. It seeks to 'elicit a sense of wonder' in a participant of experiential space by promoting awareness of the metaphysical through atmosphere, affect and light.

Architecture is more than purely a physical tangible object - it also crosses into the realms of the intangible, ephemeral and perceptive. The immaterial within architecture is just as important as the physical, if not more so, where a participant's perception of space is informed more by the swirling climate of atmospheric ephemera than that of material form. It is through light that architecture is enlivened and imbued with character and meaning and it is the immaterial aspect of light that evokes a sense beauty and wonder within built form. The body/sense experience, looked at through the lens of the affect, evokes an intimately humanistic response to architectural space that is unbound by race, religion, culture or creed. This allows for architecture to become the catalyst for an awareness of the metaphysical, evoked through atmosphere, affect and light.

Ultimately this thesis argues that the intangible, elusive and transitory moments within architecture are just as important as the physically present tangible object. It stresses the importance of architecture that is understood and experienced holistically, where created atmospheres, interaction of light and bodily cognition of space shape the way in which the built world is perceived.

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# [ 1.0 ] INTRODUCTION

# [ 1.0 ] BODY|SENSE EXPERIENCE: AN ARCHITECTURE OF ATMOSPHERE AND LIGHT.

This thesis puts an emphasis on understanding our environment not just through spatial means, but also the atmospheric and the immaterial. The interaction between the atmosphere of architecture, subtle illumination and considered materiality allow for the creation of a dynamic space that seeks to promote a change in awareness about the built environment we inhabit; it is by thinking about space differently that we may begin to understand how architecture can influence the lives of inhabitants not just physically, but metaphysically as well. This thesis looks towards atmosphere, the theory of affect, and light as the theoretical backdrop to ideas that deal with how architecture may inform the user of the immaterial, where it is not the physical form but the atmospheres created within that we experience as architecture. Design is used as the case study where the resultant architecture is but one possible solution of many; it is used to flesh out and understand the theoretical framework, test ideas and evaluate the potential for an architecture that accentuates awareness of the non-physical.

The overall research aim is to investigate an interaction of atmosphere and light in architecture in order to 'elicit a sense of wonder' by bringing about awareness of the immaterial and metaphysical aspects of our built environment. Through exploring the varying influences of atmosphere, light and the theory of affect upon the understanding of space, and the way in which these ephemeral ideas can change our perception of form, materiality and spatial inhabitation, an exploration of immaterial architecture may begin. Design becomes the case-study with which to test this research aim where an environment embued with light and atmosphere, as well as understood perceptibly through affect, is created.

Thus, this thesis looks towards an exploration into atmosphere as an ephemeral driver for the perception of space, light as a tool for bringing about spatial awareness through the transformation of form, and the theory of affect as a means for informing how we respond to an awareness of the immaterial. These three theoretical chapters lead towards a specific case-study design of an immaterial spatialised architecture that both captures and creates atmospheres, shifts perceptively within varying lighting conditions, and is understood through both the body-intelligence of affect and the cognitive mind. It is the depth of contrast between light and dark, hot and cold, static and moving that has the capacity to *move* us in a bodily sense, in essence allowing this thesis to explore how architecture may be consciously designed in order to influence our awareness of the intangible, the immaterial and the metaphysical.

To achieve this aim, the chapter titled *Atmosphere: The Ephemerality of Space* looks towards atmosphere as an ephemeral driver for the perceptive understanding of space. Atmosphere is understood conventionally as 'meteoric bodies of air', yet extended within architecture to be understood, both physically and metaphysically, as temperature and changeable bodies which are associated with the "uncertain, disordered, shifting and contingent; that which never quite achieves stability of form". Atmosphere is one of the building blocks of architecture that, more often than not, is a by-product of the design process rather than an actively sought after and created entity in its own right. This thesis looks to incorporate atmosphere from the beginning to have an active role in the design process so that it becomes a fundamental aspect of the resultant built form. Additionally, the chapter explores what atmosphere is, why it is important to architecture, how it relates to both architecture and the immaterial and discusses how atmosphere may be actively brought into the design process to bring about an architecture that sets the stage for an awareness of the immaterial. Anderson acknowledges

that the term atmosphere "seems to express something vague. Something, an ill-defined indefinite something, that exceeds rational explanation and clear figuration. Something that hesitates at the edge of the unsayable" [1]. It is this very understanding of atmosphere that lends itself to the second exploration of this thesis – that of the *theory of affect*, which allows us to begin to understand how we experience space.

The chapter titled *The Immanence of Affect*, looks towards the *theory of affect*, in order to understand how we respond to a bodily state change. Brought about through the awareness of the immaterial, or metaphysical, affect is considered a base humanistic response that is untainted by culture, upbringing, history and lifestyle. Affect itself is defined as being emergent from the relations between bodies, as a perception of one's own vitality, or sense of aliveness, that is a non-conscious bodily self-perception. It is an intrinsic and fundamentally human understanding of the world attributed to the body that cannot truly be rationalised by the mind. *The Immanence of Affect* explores the difference between emotions, feelings and affects in order to develop a suitable definition of affect and clearly state the boundaries and interrelationships of each. It looks towards understanding what affect is itself, the way in which affect relates to the immaterial, and finally, how affect is fundamental to understanding an architecture that focuses upon the immaterial and metaphysical. The means in which to achieve this architecturally can be relatively simple: the carefully calculated distribution of light through capture, diffusion, reflectance, scattering and projection; the contrast between darkness and light and the resultant subtleties in the grey boundaries between these two extremes; or using time as an ephemeral driver for the awareness of transitory moments.

Affect and Atmosphere both link into the chapter titled *Illuminating our World* which deals with light. Light is chosen as the primary medium to express and accentuate the

**1:** Anderson, Ben. "Affective Atmospheres." *Emotion, Space and Society 2* (2009): 78

immaterial aspects of architecture due to a few key factors. Light has a unique attribute – that of being simultaneously both a physical entity, that is able to be both manipulated and created, and a metaphysical entity that speaks to our heart rather than our head. Artificial light allows for a carefully controlled environment that accentuates and dematerialises aspects integral to the understanding of that space. Natural light creates transitory moments within architecture that are ever changing and unable to be captured – only experienced. Light ultimately allows us to experience space visually, and the careful consideration of source, materiality and intensity allow for architecture to inform us of the immaterial and metaphysical as well as the physical and formalistic. *Illuminating our World* explores both aspects of light: the metaphysical and the physical in order to contemplate the use of both, and the ramifications of each. It looks towards light's counterparts, darkness, shadow and shade, to explore how the use of these components within architecture can accentuate the impact of both artificial and natural light. It explores how light relates to affect and our perception of architecture and finally how light may be used to illuminate built form – both physically and ephemerally.

The chapter titled *Experiential Design* looks towards immaterial architecture as a case-study with which to test the ideas presented in the previous three theoretical chapters. The resultant architecture is situated in Rovaniemi, Finland, a country renowned for their connection to light both culturally and geographically, in order to test the theoretical ideas portrayed in the thesis in extreme lighting conditions. The programme is that of a Community Centre, subject to informal gatherings, that provides a secondary space to facilitate community needs in an informal environment rather than that of the town hall – which serves also as a theatre, concert hall and congress centre. The building is formalistic in nature to provide a series of immaterial moments where occupants may take stock of where they are and understand

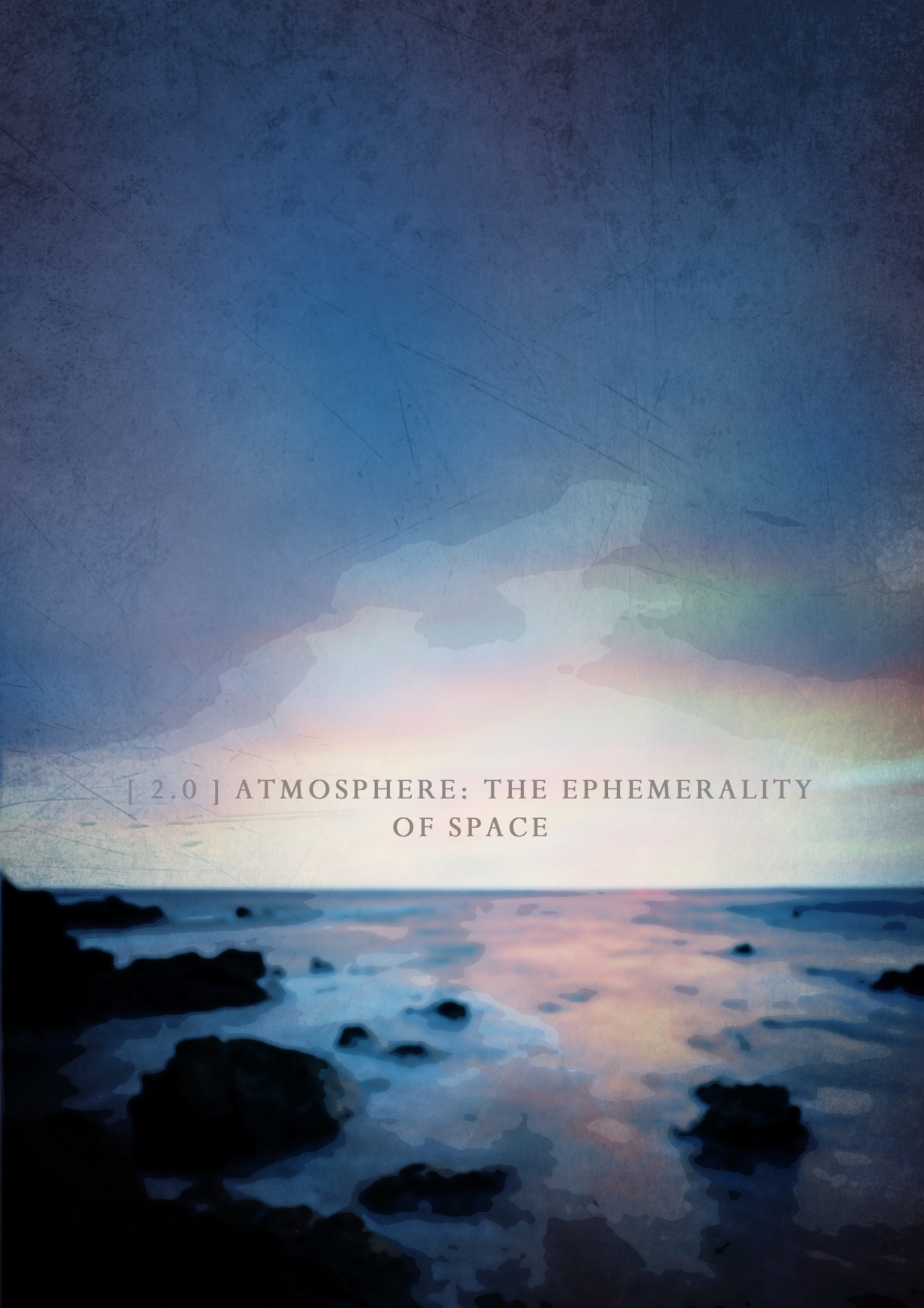
the aspects of architecture not often apparent, that of the atmospheric and affectual, brought about through the interaction between light, form, materiality and space. The *Experiential Design* chapter focuses upon the way in which spatialised form can entwine atmospheres, affect and light into an architecture that seeks to heighten our awareness of the immaterial aspects of our built environment. It discusses the implications and potentials of the site and programme in a spatialised form that promotes, at every facet, awareness of the immaterial aspects of architecture. It outlays the evolution of the design through multiple iterations and tangential explorations and systematically walks through the resultant case-study architectural outcome. It discusses the ah-ha moments within the evolution of the thesis itself that shaped the final outcome and finally reflects upon the design process in order to evaluate the successes and failures of the proposed model.

Furthermore, the problem with the immaterial in architecture lies in its nature; it is intangible, bound by non-physical parameters (although influenced by them) and hard to reproduce. Therefore, an exploration into the immaterial aspects of our built environment must consider and create a layering of ephemeral drivers to subtly induce awareness and understanding of the immaterial within architecture. Therefore, the theory of affect, light and atmosphere become said drivers for the interaction in architecture between the formal, physical aspects and the intangible, metaphysical aspects.

Ultimately, the aim of this thesis is to explore the creation of an architecture that 'elicits a sense of wonder'. The thesis achieves this by bringing about awareness of the immaterial aspects of our built environment through atmosphere and light. This experience is not to be limited by race, belief, culture or creed, therefore, the theory of affect becomes an integral way in which the design eventuates, creating

architecture that is responded to in a bodily, preconscious manner; architecture that has layers of complexity waiting to be experienced; architecture that goes beyond the purely visual or formalistic; architecture that can be affectively experienced by the complete body to promote an awareness of a spatialisation of the immaterial.

The approach to research is structured around the understanding of ephemeral drives within architecture, atmosphere and light, and designed through an understanding of the bodily pre-conscious experience of space - the theory of affect. Atmosphere is crucial to the success of this thesis in order to charge spatial interactions with feeling and sensory saturation by utilising techniques of temperature, moisture content, wind penetration and air-flow. The theory of affect is necessary in order to create space that can touch a user at a multitude of levels; that is fundamentally humanistic and non-dogmatic; that induces awareness of space beyond a peripheral glance; and that may cater to the vast subjectivity of spatial experience. Light illuminates not only physical form but the light in our eyes, the understanding in our mind; light becomes the bridge between mundane and metaphysical space. Through transitory moments, intensities that change the perception of space, and subtle interactions between atmospheres and form, light transforms our experience of architecture.



# [ 2.0 ] ATMOSPHERE: THE EPHEMERALITY OF SPACE

# [ 2.0 ] ATMOSPHERE: THE EPHEMERALITY OF SPACE

*Atmosphere: The Ephemerality of Space* is situated first to lead into the theory of affect, as many ideas and concepts relating to atmospheres are succinctly related to affect as well. This chapter, in essence, eases into the discussion by providing theoretical ideas that both introduce and tie together affect and light.

Firstly, looking at *Defining the Elusive* will require turning towards architectural and social science discourse in order to piece together an architectural understanding of atmosphere. It will define what atmosphere is, and conversely, what it is not as well as discussing some examples of atmosphere in architecture. In *The Architectural Experience* the chapter looks towards why atmosphere is important to architecture; in *The Spatialisation of Atmospheres* the chapter explores how atmospheres relate to architectural practise; and in *The Intangible Reality*, atmosphere is discussed in relation to the notion of the metaphysical. Finally, *Atmospheric Architecture* investigates how atmospheres may be brought into the design process to bring about affectual and metaphysical architecture.

## [ 2.1 ] DEFINING THE ELUSIVE:

Atmosphere is a term used in architectural discourse to describe aspects of our built environment that are tangible yet elusive, understood and yet vague and subjective – the feeling of a space which built form both creates and captures. According to Wigley, atmospheres both surround and emanate from the material object where atmosphere is produced by the physical form, perceived as some kind of "sensuous emission of sound, light, heat, smell and moisture; a swirling climate of intangible effects generated by a stationary object" [1]. Wigley further states that "to construct a building is to construct such an atmosphere" [1]; therefore considering how atmospheres

1: Wigley, M. (1998). *The Architecture of Atmosphere*. Daidalos , 18.

may influence the user is of utmost importance within the scope of this thesis.

Böhme states that atmosphere is the primary object of our perception. Initial architectural experience is not that of the built form, but of atmospheres – "the climate of ephemeral effects that envelopes the inhabitant … [where] what is experienced is the atmosphere, not the building as such" [1]. Furthermore, atmospheres themselves are objective entities that are the "shared ground from which subjective states and their attendant feelings and emotions emerge" [2]. At the same time they are an "ill-defined indefinite something, that exceeds rational explanation and clear figuration … because they both exist and do not exist" [3]. Anderson further elaborates on atmospheres stating that beyond an emphasis on the diffuse, the definition is deliberately vague as they are "perpetually forming and deforming, appearing and disappearing, as bodies enter into relation with one another … never finished, static or at rest … [always hesitating] at the edge of the unsayable" [4]. Simply put, atmosphere may be understood to be "a set of envelopes or surrounds" [5] that self-animate spaces in order to give their inhabitants the resources with which to produce worlds [6]. Atmosphere, then, enlivens space by inducing complex layers of meaning that can be understood viscerally.

*Figure 2.1: The atmosphere of ephemeral light - backlit pews in the Dresden Synagogue*

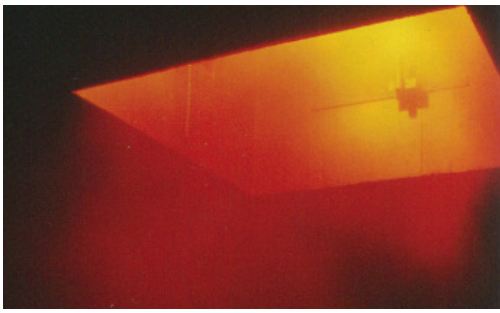


*Figure 2.2: Climate of intangible effects - mist, heat and red light*

There is a very fine line between what atmosphere is, and what it is not. Understanding the difference is crucial when fleshing out a working definition of atmosphere. Part of the problem with developing an architectural definition of atmosphere is that "there is nothing that doesn't have an atmosphere or could be described as atmospheric" [7] – cities are portrayed as having atmosphere, there is atmosphere between people, the atmosphere of a street or suburb, the atmosphere of sacred spaces, or the atmosphere of an epoch [8]. The pervasiveness of atmosphere suggests it is simultaneously both everywhere and nowhere yet retains the capacity to "influence spatial perception and experience" [9]. Atmosphere can be understood

**1:** Wigley, M. (1998). *The Architecture of Atmosphere*. Daidalos , 18.
**2:** Anderson, B. "Affective Atmospheres." *Emotion, Space and Society 2* (2009): 78.
**3:** Anderson, *Affective Atmospheres*, 79.
**4:** Anderson, *Affective Atmospheres*, 78.
**5:** Thrift, N. "Different atmospheres : of Sloterdijk, China, and site." *Environment and Planning D: Society and Space* (2009) no. 27: 9.
**6.** Thrift, *Different atmospheres : of Sloderdijk, China and site,* 9.
**7:** Anderson, *Affective Atmospheres*, 78.
**8:** Anderson, *Affective Atmospheres*, 78.
**9.** Preston, J. "In the Mi(d)st Of." *Architectural Design* (2008) no. 78: 7.

*Figure 2.3: Atmosphere - aurora borealis (Northern Lights)*

*Figure 2.4: Light beams interacting with atmosphere in Grand Central Station, New York*

to exist within a physical expanse, permeating space with a "certain mental or emotive tone" [1]. It is not purely immaterial, being bound and created by the material world, yet is not substantial inasmuch as it cannot be physically grasped. It is not aura or mood yet has been associated with such due to being closely linked with the awareness of space. Atmosphere is "neither something objective, that is, possessed by things" [2] and yet it belongs to "things that articulate their presence" [3], nor is atmosphere entirely subjective "yet [it is] subjectlike, belonging to subjects in that [it is] a sense in bodily presence of human beings" [4].

Through altering spatial conditions, architects are able to use atmosphere as a way to explore ideas of perception, experience and reality. Water falling inside a gallery or wind streaming through internal spaces "accord moments of suspension between the expectation of experience and the authentic encounter" [5]. The moment between instinctive perception and the logic of comprehension renders the architectural experience both physiological and psychological, accentuating rational expectation of an occurrence with the visceral experience of it [6]. Atmosphere does not have objective properties, such as being comforting, joyous or frightening, as it is a subjective entity that helps to elevate or mute a participant's emotional state in direct response to their spatial perception.

The concept of atmosphere, then, is elusive due to its very nature. Atmosphere is an oxymoronic entity that holds a "series of opposites – presence and absence, materiality and ideality, definite and indefinite, singularity and generality – all in a relation of tension" [7]. Addtionally, Hill notes that architecture must be "immaterial and spatially porous, as well as solid and stable where necessary" [8]. Thus, as every architectural outcome produces a kind of atmosphere, it is both logical and fundamentally important for architects to both understand and incorporate notions of the immaterial

**1:** Böhme, G. 2003. The Space of Bodily Presence and Space as a Medium of Representation. In *Transforming Spaces. The Topological Turn in Technology Studies*. Darmstadt, Germany. 5.
**2:** Böhme, G. "Atmosphere as the fundamental concept of a new aesthetics." Thesis Eleven (1993) no: 36: 122.
3. Böhme, G. *Atmosphere as the fundamental concept of a new aesthetics*, 122.
**4.** Böhme, G. *Atmosphere as the fundamental concept of a new aesthetics*, 122.
**5:** May, S. 2003. *Olafur Eliasson: the weather project*: Tate. 2.
6. May, S. *Olafur Eliasson: the weather project*, 2.
**7.** Anderson, *Affective Atmospheres*, 80.
**8:** Hill, J. "Drawing forth immaterial architecture." *arq: Architectural Research Quarterly* (2006) no. 10: 54.

and atmospheric into the architectural design phase.

Ultimately, atmosphere is an idea that in itself merits much further exploration. For the purposes of this thesis however, it can be understood as the way in which architecture viscerally and emotively impacts upon its environment which in turn informs the user. Atmosphere is an all-pervading yet intangible entity that forms an integral aspect of the immaterial - being subjective, unpredictable, porous and ephemeral in contrast to the solid, objective and known of functional, physical architecture [1].

## [ 2.2 ] THE ARCHITECTURAL EXPERIENCE:

With an understanding of what atmosphere is, its necessity to architecture must be elaborated upon. Architecture cannot exist without atmosphere - they are symbiotic entities: architecture creates atmosphere and atmosphere evokes the understanding of architecture. While not always a designed outcome, atmosphere plays an integral role within buildings - it is the primary catalyst for how we feel and experience space.

As the term atmosphere is used to apprehend perceived qualities of space, it is logical that while atmospheres may be conceived of as deliberate unique entities, they are "defined only by the perceiving subject … [where] atmospheres are in fact characteristic manifestations of the copresence of subject and object" [2]. This highlights how atmosphere, created or not, manifests in architecture subjectively with its associated ramifications for the way in which we design. Atmosphere, according to Fortmeyer, is "another way of saying mood, the intangible aura created by the conglomeration of sights, sounds and smells that permeate any given architectural or landscaped space" [3] where the resultant atmosphere is always relative to each subject. Atmosphere *can* be a specifically

**1:** Hill, J. *Drawing forth immaterial architecture*, 54.
**2:** Böhme, G. In *Crib Sheets*, edited by Sylvia Lavin, Helene M. Furján and Penelope Dean. Monacelli Press, 2005: 70.
**3:** Fortmeyer, R. In *Crib Sheets*, edited by Sylvia Lavin, Helene M. Furján and Penelope Dean. Monacelli Press, 2005: 69.

designed entity but "unintended effects are highly probable" [1].

Payne states that the human race is becoming ever more a species which "thrives on the immediate, palpable stimulation, on material fact" [2] in which it is almost irrelevant *what* it is, so much as *how* it feels [3]. His understanding points to the fact that the most potent things we feel inside architecture *are* atmospheres; architecture creates an environment in which people can "respond viscerally to atmospheres" [4], producing in some cases saturated experiences that "almost cling to the skin of the people moving through them" [5].

*Figure 2.5: Light diffused by atmosphere evoking presence and enlivening space*

Furthermore, the atmosphere of a building has a direct correlation to how that building is perceived. As atmosphere "surrounds … [or] envelopes" [6] the occupants, it is through this atmosphere that the "represented object will be apprehended and will take on a certain meaning" [7]. Atmosphere, therefore, is integral to how buildings are experienced by giving them meaning and altering their character. It is through the "creation of atmosphere that poetry is created within architecture" [8]. Beyond the creation of poetry, it is architecture itself that is "found in the relationship between atmospheres [and] the play between micro-climates" [9].

Thus, atmosphere is fundamental to understanding and experiencing architecture. Atmosphere must be incorporated cognitively, not attained as an ingored by-product, in order to strengthen the underpinning ideas of a project to create and attain poetic architecture. It is through atmosphere that we give space meaning, by adding intangible layers of experience that influence the feelings and mood of its users.

## [ 2.3 ] THE SPATIALISATION OF ATMOSPHERE:

I propose that atmosphere is a generator of spatial awareness. Atmosphere transcends rational understanding, yet can

**1:** Fortmeyer, R. *Crib Sheets*, 69.
**2:** Payne, J. In *Crib Sheets*, edited by Sylvia Lavin, Helene M. Furján and Penelope Dean. Monacelli Press, 2005: 70.
**3.** Payne, J. *Crib Sheets.*
**4.** Payne, J. *Crib Sheets*, 70.
**5.** Payne, J. *Crib Sheets*, 70.
**6.** Anderson, *Affective Atmospheres*, 80.
**7.** Anderson, *Affective Atmospheres*, 79.
**8:** Major, M., J. Speirs, and A. Tischhauser. 2005. *Made of light: the art of light and architecture*: Birkhäuser, 69.
**9:** Wigley, M. In *Crib Sheets*, edited by Sylvia Lavin, Helene M. Furján and Penelope Dean. Monacelli Press, 2005: 55.

be logically designed and influenced physically – it sits between the realm of the tangible, the real, and that of the immaterial, the perceived. The way in which it can be used derives from its ability to change our awareness of what architecture is; the added layers of complexity transform space not just physically, but metaphysically as well.

*Figure 2.6: Light emanating from water to form diffuse atmospheric glow*

It is important to note that immaterial architecture is "the perceived absence of matter … [rather than] the actual absence of matter" [1] where atmosphere may be conceived as a congolomeration of entities such as water content in the air, humidity, sound refraction and light distribution. Thus, while it is the architect who "creates material conditions in which … [a] decision can be made" [2] it is the user who determines whether the architecture is ultimately immaterial or material. The introduction of atmosphere into architecture necessitates its accentuation at varying degrees of intensity; it is through producing immaterial conditions that atmosphere may play a vital role in encouraging "critical awareness of the spaces we inhabit" [3]. Atmosphere sparks spatial awareness, through its presence or absence, by altering our perception of matter.

*Figure 2.7: Eliassons 'Weather Project' - created atmosphere with light, radiant heat and mist*

In additon, it is important to note that atmosphere can be accentuated and manipulated but never truly controlled. It occupies and permeates space, creating its own zones, drawing boundaries, setting thresholds, establishing focal points and ultimately evaporating [4]. Atmosphere breathes new life into space; birthed and captured by architecture, atmosphere provides added layers of complexity to a building by offering new meaning about what it is to experience architecture. Atmospheres are generally made up from a series of temperatures, moisture contents, smells, wind, air and acoustic qualities.

Furthermore, when introducing atmosphere as a key building block in architecture, the materials themselves

**1:** Hill, J. *Drawing forth immaterial architecture*, 54.
**2:** Hill, J. *Drawing forth immaterial architecture*, 54.
**3:** Hill, J. *Drawing forth immaterial architecture*, 54.
**4:** Weber S., and Vöckler, K. In *Crib Sheets*, edited by Sylvia Lavin, Helene M. Furján and Penelope Dean. Monacelli Press, 2005.

*Figure 2.8: The atmosphere of the Hagia Sophia evoked through contrast and beams of light*

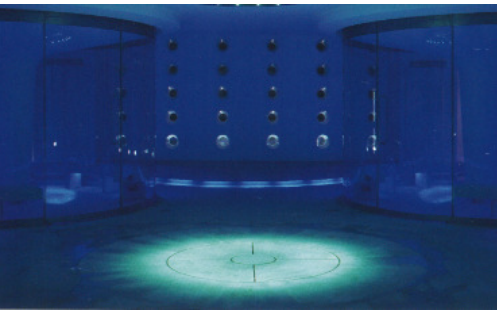


*Figure 2.9: Atmosphere evoked through colour and steam - Thermal baths in Bath*

become less important as they are but the medium of space-creating relations [1]. Space is "the material of immaterial architecture" [2]. Space allows for the capture and creation of atmosphere that manipulates space by engaging our senses, elevating our awareness, blurring horizons and adding depth to architecture. Additionally, Bloch states that "everything living … has an atmosphere around it" [3] - everything real has a horizon [4]. It is through the boundary between, or the merging of, 'horizons' [5] that architecture may seek to accentuate its atmosphere. Thus, the immaterial building blocks of architecture that seek atmosphere as its primary concern utilises horizons and space to evoke understanding, rather than physical material and form.

Finally, atmosphere is about presence in architecture – for example the smell of a sun-bleached timber column, the crisp breath of cool air rushing through an open foyer, the subtle differentiation between hot and cold upon the skin, the heady invigoration of freshness near falling water or the bouncing of echoes around an acoustically non-linear space. Atmosphere allows the user to understand architecture, not just visually but physically. Sensory input permeates the body continually providing much more than purely cognitive understanding; it is an understanding that is fundamentally human in nature - an emotionally charged spatial knowledge.

## [ 2.4 ] THE INTANGIBLE REALITY:

In *The Intangible Reality*, atmosphere is discussed in relation to the notion of the metaphysical and how it ties into the theory of affect and light which are dealt with in subsequent chapters. Atmosphere is linked intrinsically with the theory of affect, where affect is defined nominally as a person's "sensate, [bodily] response to a physical environment" [6] experienced primarily through both the presence and absence of light. Light, being the primary visual and sensorial stimuli, is chosen to reinforce an affectual exploration into an architecture of

**1:** Moholy-Nagy, L. 1969. *Vision in motion*: P. Theobald. 225.
**2.** Hill, J. 2006. *Immaterial Architecture*: Taylor & Francis. 67.
**3:** Bloch, E. 1995. *The principle of hope*: MIT Press. 222.
**4:** Bloch, E. 1995. *The principle of hope*: MIT Press. 222.
**5:** Bloch, E. 1995. *The principle of hope*: MIT Press. 222.
**18:** Preston, J. "Affecting Data." *Architectural Design* (2006): no. 78 (3): 38.

the metaphysical.

Atmosphere's very nature is elusive and hard to define. It is intangible and physically untouchable, hard to capture and difficult to convey: where the "totality of an environment that is more than the [architectural] sum of its parts" [1]. According to Anderson, the word atmosphere, when used in everyday speech and aesthetic discourse, can be used interchangeably with feeling, ambience, mood, tone and other descriptors of collective affects [2]. Atmosphere's affective ambiguity – "between presence and absence, between subject and object/subject and between definite and indefinite" [3] allows for affective experience to occur simultaneously beyond, around and alongside the formation of subjectivity [4]. It is this very notion of subjectivity in affective experience that relates atmosphere to the metaphysical, where one's perception of space is born through not only spatial experience but also one's historical understanding of space; the formation of subjectivity takes part in time as well as space.

Furthermore, atmosphere is the intangible, indeterminate face of architecture, fundamental to our understanding of space in a bodily, affectual sense and a necessary element in all built form. Our awareness of space is implicit not only through light, but through all the senses, brought into stark relief by the interaction between the material and the immaterial, between physical form and atmosphere. Moreover, atmospheres are never finished, constantly changing and evolving in a climatic mêlée as a property of both objects and subjects, always in the process of "emerging and transforming" [5]. This transformation takes part not in the atmosphere itself, but its continual subjective reworking in lived experience. Atmosphere, while physical in many regards, is primarily a complex metaphysical entity taken up in experience. Atmosphere seeks to promote awareness of the immaterial aspects of architecture by evoking a body/sense relationship to space that gives a person the ability to "see

**1:** Hodgetts, C. In Lavin, S., H.M. Furján, and P. Dean. 2005. *Crib sheets*: notes on the contemporary architectural conversation: Monacelli Press. 69.
**2.** Anderson, *Affective Atmospheres*, 80.
**3.** Anderson, *Affective Atmospheres*, 80.
**4.** Anderson, *Affective Atmospheres*, 77.
**4.** Anderson, *Affective Atmospheres*, 79.

themselves sensing" [1].

Additonally, atmosphere "dissolve[s] the material of interior space" [2] through its inherent immaterial sensory quality and by capturing the receptive visitor in its embrace [3]. Here it is through a form of social encounter, subjective as it may be, that each participant experiences this atmospheric embrace where it is not so much the temporality of space, but its relation to being part of the world of architecture that is important [4]. It is the very nature of atmosphere to be shifting and contingent, disordered and uncertain [5] yet at the same time it achieves stability and recognition by the way in which it impacts upon spatial perception.

Hill further states that architecture is "expected to be solid, stable and reassuring – physically, socially and psychologically" [6]. He notes that while architecture and material are deemed inseparable, it is the immaterial, such as the manipulation of space and surface within drawing, that aligns the outcomes of an architect with the immaterial [7]. Architecture is synonymous with both – each are but aspects of the same; physical architecture creates atmosphere and the metaphysical aspects of the atmospheric inform the material architecture. Thus, atmosphere is linked with the metaphysical by the way in which it stimulates our awareness of structure and space; by the way in which it elevates our understanding by enforcing and adding layers of complexity within architecture; and finally by the way in which it informs our understanding of future space, of future experience.

Atmosphere is related to the metaphysical by its very nature – being a non-physical immaterial building block of architecture that seeks to inform a user about space in much the same way as does the physical material choice of the architect. Atmospheres are "elements within sense experience" [8] that become "a part of feelings and emotions that may themselves become elements within other atmospheres" [9]. Ultimately,

**1:** Eliasson, O. In *Crib Sheets*, edited by Sylvia Lavin, Helene M. Furján and Penelope Dean. Monacelli Press, 2005: 69.
**2:** Frichot, H. "Olafur Eliasson and the Circulation of Affects and Percepts: In Conversation." *Architectural Design* (2008) no. 78 (3): 32.
**3.** Frichot, H. *Olafur Eliasson and the Circulation of Affects and Percepts: In Conversation*, 32.
**4.** Frichot, H. *Olafur Eliasson and the Circulation of Affects and Percepts: In Conversation*.
**5:** Anderson, B. *Affective Atmospheres*, 78.
**6:** Hill, J. *Drawing forth immaterial architecture*, 54.
**7:** Hill, J. *Drawing forth immaterial architecture*, 54.
**8:** Anderson, B. *Affective Atmospheres*, 79.

atmospheric understanding is recursive - your experience of one space may in turn inform your experience of another.

## [ 2.5 ] ATMOSPHERIC ARCHITECTURE:

*Atmospheric Architecture* investigates how atmosphere may be brought into the design process to bring about affectual and metaphysical architecture. It is through atmosphere that a heightened awareness of intangible spatial architecture may be realised – where the understanding of space is born through not just the visual, but also the body/sense of the engaged participant.

Anderson states that atmosphere has a characteristic spatial form – that of "diffusion within a sphere" [1] where the 'sphere' demarcates the horizon or the boundary. Therefore when using atmosphere as a generator of space, the design process must take into consideration the ambiguities between physical form and the fluctuating atmospheric sphere. It is by understanding where atmosphere begins, the rise and fall of intensities and its shifting degrees of influence that a designed spatialisation of atmosphere may occur.

Atmosphere can be a highly determined feature of architecture that allows for the architect to manipulate a participant's spatial understanding and perception. The affective/atmospheric dimension of architecture "not only influences use .... it also describes zones of intensity ... [that] may be experienced in widely divergent ways" [2]. This influence occurs at levels often unattainable with pure aesthetic form as immaterial architecture is often bound by heavy programmatic constraints, such as the awareness and capture of the path of the sun, manipulation of air flows and shifting temperature zones. In the scope of this thesis, immaterial architecture looks towards atmosphere and light in order to create space that 'elicits a sense of wonder'. The programmatic constraints for light alone determine, to a certain degree, material

*Figure 2.10: Reflective surfaces and water bound by highly textured materials - Therme Vals*

*Figure 2.11: Scattered light through perforations making space come alive - Kolumba Art Museum*

**1:** Anderson, B. *Affective Atmospheres*, 80.
**2:** Reiser, J. In *Crib Sheets*, edited by Sylvia Lavin, Helene M. Furján and Penelope Dean. Monacelli Press, 2005: 71.

choice, orientation and formalistic manipulation. In this instance, immaterial architecture becomes a merger between formalistic ambitions and atmospheric necessity.

Ultimately, It is through atmospheric tools that the architect may begin to explore notions of the metaphysical. By the creation and arrangement of lights, moisture content, sounds, temperatures, airflow and contrast, atmosphere is "enhanced, transformed, intensified, shaped, and otherwise intervened on" [1]. The play between light and dark with all the varying states in between, can produce character, scale and drama which underline the rhythms and movements of a building – evoking mood and providing expression [2]. In addtion, the contrast created between this interplay of light and dark has the power to "affect our emotions and create atmosphere" [3], transcending our understanding of space. Thick cloying air, hotter than is comfortable, makes space unpleasant to experience and can seek to propel us towards cooler, more temperate spaces exposed to fresher air; the way in which materials refract and manipulate sound can induce silence by deadening noise or conversely animating it – creating architecture that subtly dictates the participant's use of space; and the use of falling water can have a calming effect, simultaneously enlivening space and soothing moods in order to create an atmosphere of serenity.

*Figure 2.12: Diffuse light from above evoking mystery and presence - Brother Klaus Field Chapel*

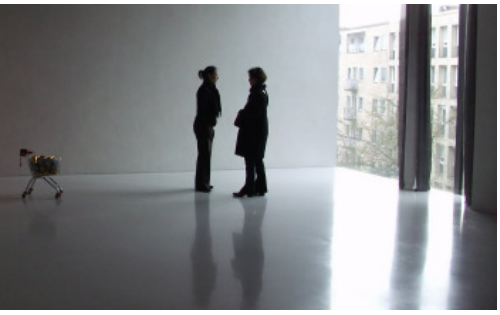


*Figure 2.13: The blurring of boundaries through reflection - Kolumba Art Museum*

However, the *strength* of atmosphere as a moderator of our perception of space lies in the layering of atmospheric conditions. As a participant's experience of architecture depends on "complex juxtapositions of many moments and conditions" [4], it is through the collective experience of overlapping atmospheres that a participant may evolve an understanding of space beyond that which form alone provides. Thus, the richness of an architectural experience is determined by the awareness of *all* senses and this is where atmosphere can play a defining role in space creation. It is through immaterial architecture, design focused upon awakening neglected

**1:** Anderson, B. *Affective Atmospheres*, 80.
**2:** Major, et al. *Made of light: the art of light and architecture*, 69.
**3:** Major, et al. *Made of light: the art of light and architecture*, 69.
**4:** Hill, J. *Drawing forth immaterial architecture*, 54.

senses, that the participant may understand the complexity of the whole through interpretation of what is present as well as what is absent [1].

## [ 2.6 ] CHAPTER SUMMARY:

Atmosphere "occupies the space between a building and its context" [2], emanates from the architecture itself and is transformed through perception by an engaged participant. It is a moderator of architecture, manipulating sptatial experience through a series of sensory inputs by defining how space is perceived and understood at a visceral level. Atmosphere adds richness and depth to architecture by changing the perception of space; prioritising the immaterial over the material, it is the body/sense experience that takes precedence in an atmospheric understanding of architecture rather than the accepted primacy of the visual. Ultimately, atmosphere provides freedom within a tightly controlled medium of expression.

In the chapter titled *The Immanence of Affect*, we look towards the *theory of affect* to provide an understanding of architecture in a way that provokes the senses over the mind through the body's pre-conscious and pre-personal response to space. It is through affect that we may begin to explore the way in which space can be experienced without the subjectivity of race, religion, culture, or creed. The following chapter discusses the theory of affect as a way in which architecture may 'elicit a sense of wonder' in its participants. Affect becomes the shift in register between heightened and passive states which in turn evoke a bodily awareness of the spatial dimensions of our built environment.

**1:** Anderson, B. *Affective Atmospheres*, 80.
**2:** Wigley, M. (1998). *The Architecture of Atmosphere*. Daidalos , 24.

# [ 3.0 ] THE IMMANENCE OF AFFECT

## [ 3.0 ] THE IMMANENCE OF AFFECT:

The previous chapter *Atmosphere – The Ephemerality of Space*, exposed that architecture changes through the dynamic introduction or removal of certain atmospheric elements. This chapter looks towards the *theory of affec*t as a way to understand architecture through the use of pre-personal and pre-conscious methods of bodily understanding. It is proposed that this understanding will allow for the creation of an architecture that elicits a 'sense of wonder' through awareness of the metaphysical that is unbound by culture, race, religion or creed.

First *The Felt, the Emotive and the Affectual* is explored in order to understand the differences between emotions, feelings and affect by defining each through architectural and social science discourse. Secondly, *Defining the Body-Intelligence of Affect* investigates affect as a driver for the recognition of surroundings in a bodily sense, while in *The Immaterial Response: Informing a User through Affect* - affect is seen as a driver for the awareness of the metaphysical in architecture through a shift in register defined as 'intensity'. Finally, *The Importance of Affective Architecture* explores how affect may be consciously brought into the design process in order to bring about an architecture that 'elicits a sense of wonder' in its participants.

## [ 3.1 ] THE FELT, THE EMOTIVE AND THE AFFECTUAL

We can understand affect to be "the transformative shifts in register that allow the subject to recognise his or her subjectivity in transformation or, as Eliasson puts it: 'We learn to see ourselves in a different light'" [1]. However, in order to conceptualise what affect is we must begin with an appreciation of the differences between affect, feelings and emotions. All are related yet are distinctly different. It is vital to not confuse affect with emotions and feelings because "affects power lies

1: Frichot, H. "Olafur Eliasson and the Circulation of Affects and Percepts: In Conversation." *Architectural Design* (2008) no. 78 (3): 34.

in the fact that it is unformed and unstructured … [where] it is affect's abstractivity that makes it transmittable in ways that feelings and emotions are not" [1].

Affect is not a personal feeling. "Feelings are personal and biographical, [where] emotions are social, and affects are prepersonal" [2]. A feeling is "a sensation that has been checked against previous experiences and labelled. It is personal and biographical because every person has a distinct set of previous sensations from which to draw when interpreting and labelling their feelings" [3]. The movement of affect is never received by a blank body "'in' Euclidean space or 'in' linear time … [because] affect does not reside in a subject, body or sign as if it were an object possessed by a subject" [4]. Feelings therefore act "as an instantaneous assessment of affect that are dependent upon the affected body's existing condition to be affected" [5].

Neither are affects emotions. Emotions are the subjective display of feelings, "the sociolinguistic fixing of the quality of an experience which from that point onwards is defined as personal" [6]. We can understand emotion to be:

> "The projection of a feeling. Unlike feelings, the display of emotion can be either genuine or feigned … [We] broadcast emotion to the world; sometimes that broadcast is an expression of our internal state and other times it is contrived in order to fulfil social expectations" [7].

Emotions are also "formed through the qualification of affect into semantically and semiotically formed progressions, into narrativizable action-reaction circuits, into function and meaning. [Emotions are] intensity owned and recognised" [8].

Affect is the "transpersonal capacity which a body has to be affected (through an affection) and to affect (as the

**1:** Shouse, E. "Feeling, Emotion, Affect." *M/C Journal: a journal of media and culture* (2005) no. 8 (6): 3.
**2:** Shouse, E. *Feeling, Emotion, Affect*, 1.
**3:** Shouse, E. *Feeling, Emotion, Affect*, 1.
**4:** Ahmed, Sara. "The Organisation of hate." *Law and Order* (2001) no. 12: 345-365.
**5:** Anderson, B. "Becoming and being hopeful: towards a theory of affect." *Environment and Planning D: Society and Space* (2006): 736.
**6:** Massumi, B. 2002. *Parables for the virtual: movement, affect, sensation*: Duke University Press. 28.
**7:** Shouse, E. *Feeling, Emotion, Affect*, 1.
**8:** Deleuze, G., F. Guattari, and B. Massumi. 2004. *A thousand plateaus: capatalism and schzophrenia*: Continuum. 28.

result of modifications)" [1] where this capacity, this intensity corresponds "to the passage from one experiential state of the body to another … implying an augmentation or diminution in that body's capacity to act" [2]. Distinguishing affects from feelings and emotions we can further explore the notion that:

> "Affect is a non-conscious experience of intensity; it is a moment of unformed and unstructured potential. Of the three central terms– feeling, emotion, and affect – affect is the most abstract because affect cannot be fully realised in language, and because affect is always prior to and/or outside of consciousness" [3].

Furthermore, the body "infolds contexts" rather than just reacting to environmental stimulation, an affect is therefore a way for the body to prepare "itself for action in a given circumstance by adding a quantitative dimension of intensity to the quality of an experience" [4].

An example of affect in action can be described when the subject is infantile:

> "An infant has no language skills with which to cognitively process sensations, nor a history of previous experiences from which to draw in assessing the continuous flow of sensations coursing through his or her body. Therefore, the infant has to rely upon intensities" [5].

What is key here is that affect is innate within the infant, and "through facial expression, respiration, posture, colour, and vocalisations infants are able to express the intensity of the stimulations that impinge upon them" [6]. According to Shouse, in the infants situation, affect *is* emotion, in an adult affect is the *intensity* of our feelings – it is "what makes feelings feel. It is what determines the intensity (quantity) of a feeling

**1:** Anderson, B. *Becoming and being hopeful: towards a theory of affect*, 735.
**2:** Shouse, E. *Feeling, Emotion, Affect*, 1.
**3:** Shouse, E. *Feeling, Emotion, Affect*, 1.
**4:** Shouse, E. *Feeling, Emotion, Affect*, 1.
**5:** Shouse, E. *Feeling, Emotion, Affect*, 1.
**6:** Shouse, E. *Feeling, Emotion, Affect*, 2.

(quality)" [1]. Thus, affect's emergence and movement through the body is the transpersonal sense of vitality that augments, either positively or negatively, the way in which we experience the world.

## [ 3.2 ] DEFINING THE BODY-INTELLIGENCE OF AFFECT:

Affect is "nothing less than the perception of one's own vitality, one's sense of aliveness, of changeability [where] one's 'sense of aliveness' is a continuous nonconscious self-perception" [2]. Furthermore, affect is defined by Thrift as "the property of the active outcome of an encounter, [which] takes the form of an increase or decrease in the ability of the body and mind alike to act" [3]. Affect can further be understood as the shifting of emotional registers in the body rather than the result that occurs from this shift – "affect adds intensity, or a sense of urgency to proprioception" [4].

Thrift understands affect to be "an 'inhuman' or 'transhuman' framework in which individuals are generally understood as effects of the events to which their body parts (broadly understood) respond and in which they participate." [5] He also states that affect is "a form of thinking … a different kind of intelligence about the world, but an intelligence none-the-less" [6]. When understanding affect as an intelligence, akin in some ways to intuition and spatial awareness, it can becomes an integral puzzle piece in the make-up of being human as it governs the *intensity* in which we experience the world around us. Affect is also defined by Deleuze and Guattari as "the nonhuman becomings of man" [7].

Massumi extrapolates this by naming affect as:

> "autonomous to the degree to which it [affect] escapes confinement in the particular body whose vitality, or potential for interaction, it is. Formed,

**1:** Shouse, E. *Feeling, Emotion, Affect*, 2.
**2:** Massumi, B. *Parables for the virtual: movement, affect, sensation*, 36.
**3:** Thrift, N. "Intensities of Feeling: Towards a Spatial Politics of Affect." *Geografiska Annaler*. Series B, Human Geography (2004) no. 86: 60
**4:** Shouse, E. *Feeling, Emotion, Affect*, 2.
**5:** Thrift, N. *Intensities of Feeling: Towards a Spatial Politics of Affect*, 60.
**6:** Thrift, N. *Intensities of Feeling: Towards a Spatial Politics of Affect*, 60.
**7:** Deleuze, G., and F. Guattari. 1994 *What is philosophy?*: Verso. 169.

> qualified, situated perceptions and cognitions fulfilling functions of actual connection or blockage are the capture and closure of affect" [1].

Aditionally, affects are "virtual synesthetic perspectives anchored in (functionally limited by) the actually existing, particular things that embody them" [2]. The term 'body' in affect does not just refer to the human body, but may be understood as "active rather than passive … encounters between all kinds of bodies: architectural bodies, natural bodies, bodies of water and air, and human and animal bodies" [3]. Affect, ultimately, increases our "capacity for existing well in [the] world" [4]. Therefore, affects are not limited to a single body; they are "not purely the property of a single (human) being" [5]. Frichot expands on this by stating that "if each participant experiences a slightly different affect, it is through the negotiation of his or her perceptual disagreement that he or she manages to form a community of sorts" [6].

Affect may be further defined as "emergent from the relations between bodies" [7], where this emergence makes "the materialities of space-time always-already affective" [8]. Anderson builds upon the Deleuzian understanding of affect by noting that it occurs "before and after the distinctions of subject-world or inside-outside" [9].

## [ 3.3 ] THE IMMATERIAL RESPONSE: INFORMING A USER THROUGH AFFECT

Affect is a biological, innate force that is intuitive and broadly speaking intelligent, understood as the bodily equivalent of our sub-conscious. The intelligence that is affect distinguishes between the hundreds or thousands of stimuli that bombard the human body at any given moment by "infolding them all at once, and registering them as an intensity" [10]. Affect *is* this intensity. Thus, affect controls the shift in register of intensities, filtering out the unnecessary.

**1:** Massumi, B. *Parables for the virtual: movement, affect, sensation*, 35.
**2:** Massumi, B. *Parables for the virtual: movement, affect, sensation*, 35.
**3:** Frichot, H. *Olafur Eliasson and the Circulation of Affects and Percepts*, 35.
**4:** Frichot, H. *Olafur Eliasson and the Circulation of Affects and Percepts*, 34.
**5:** Kraftl, P., and P. Adey. "Architecture/Affect/Inhabitation: Geographies of Being-In Buildings." *Annals of the Association of American Geographers* (2008) no. 98: 215.
**6:** Frichot, H. *Olafur Eliasson and the Circulation of Affects and Percepts*, 34.
**7:** Anderson, B. *Becoming and being hopeful: towards a theory of affect*, 736.
**8:** Anderson, B. *Becoming and being hopeful: towards a theory of affect*, 736.
**9:** Anderson, B. *Becoming and being hopeful: towards a theory of affect*, 736.
**10:** Shouse, E. *Feeling, Emotion, Affect*, 2.

In order to inform of the metaphysical, the affectual response must be triggered at a high enough intensity so as to amplify "our awareness of the … [metaphysical in such a way] that we are forced to be concerned, and concerned immediately" [1]. The word 'concerned' here is synonymous with 'aware' where the amplification of the metaphysical in the subjective environment requires the user's full immediate attention. The body understands this immediacy "by resonating with the intensity of the contexts it infolds … to ensure that it is prepared to respond appropriately to a given circumstance" [2]. Furthermore, it is through intensity that affect stimulates our response; in order to create metaphysical awareness, the stimulated affect must be translated as urgent. Stimulated at a biological, bodily level with an attached urgency, affect may inform the conscious mind of this need. Therefore, it is through this translation that awareness of the metaphysical may occur.

There are two modalities of affectual shift: that of the communal where a form of 'group think' occurs and the affectual shift of one user may influence another; and that of the personal where a user's bodily understanding of space informs conscious understanding through the shift in register coupled with the immediacy of the amplification. Under the communal paradigm, affect may be understood as "not purely the property of a single (human) being" [3]. The inference of this is that affects are more than human or 'transhuman' which may influence other users collectively. It is this subtle communal persuasion that has import for informing a user of the immaterial where the immediacy of one user's bodily recognition of awareness may trigger the bodily awareness in other, less perceptive users. Frichot explains that "If each participant experiences a slightly different affect, it is through the negotiation of his or her perceptual disagreement that he or she manages to form a community of sorts" [4]. This negotiation occurs at the affectual "pre-personal … pre-conscious" [5] level between bodies.

**1:** Tomkins, S.S., and E.V. Demos. 1995. *Exploring affect: the selected writings of Silvan S. Tomkins*: Cambridge University Press. 88.
**2:** Shouse, E. *Feeling, Emotion, Affect*, 2.
**3:** Kraftl, P., and P. Adey. *Architecture/Affect/Inhabitation: Geographies of Being-In Buildings,* 215.
**4:** Frichot, H. *Olafur Eliasson and the Circulation of Affects and Percepts*, 34.
**5:** Thrift, N. *Intensities of Feeling: Towards a Spatial Politics of Affect*, 60.

Under the personal paradigm, affect is also the necessary trigger to bring about awareness of the metaphysical. However, the generation of the affectual response in this instance must be through varying levels of exposure and intensity at a greater order so that the response to the architecture, specifically the interaction of light within spatial form, may be triggered. The senses, in this case, are the medium for affectual awareness. Primarily through sight and the visual, but also through temperature variances on the skin, the quality of sound, and the subtlety of smell within spatial form, the intensities of these sensory inputs cause an involuntary affectual response.

Knowing this, the design of an architecture that seeks to 'elicit a sense of wonder' requires specific interventions. The interaction of light within spatialised form can cause an affectual response to an environment by eliciting a bodily understanding of the immaterial. In this instance, light acts as the bridge between the physical and the metaphysical as the act of illuminating architecture in turn 'illuminates the mind' of the user: the perception of architecture is changed through light. It is this direct change in the layers of awareness, the affectual shift in understanding about architecture which in an instant causes transcendence of perception. This perceptive shift *is* awareness of the metaphysical.

## [ 3.4 ] THE IMPORTANCE OF AFFECTIVE ARCHITECTURE:

In order to create an architecture eliciting this 'sense of wonder' in the inhabitant, affect must be considered as an integral aspect of the way in which to design. It is through affectual considerations that architecture may evoke a bodily awareness of the metaphysical to in turn inform the conscious cognitive mind. Our understanding in this way is humanistic, rather than cultural, racial, religious, gendered or experiential. This provides a platform for the awareness of the metaphysical that is unbiased across the aforementioned

spectrums of human differentiation.

Affect has the capacity to engender an intensity of response beyond the capacity of the conscious cognitive mind alone to comprehend. It also has the capacity to elicit a response in a user that is gleaned from the affectual response of other users as being'affected-affecting' are inextricably linked aspects of the same entity. The shift in affectual register in one body may directly influence the shift in another because "when you affect something, you are at the same time opening yourself up to being affected in turn" [1]. This has direct architectural implications for the design of a spatial endeavour that induces a sense of wonder. It begs the question: how do you go about designing, in terms of the affectual response, for the collective versus the individual? And how may we engender architecture to elicit these responses regardless of the occupancy of the room be it one user or one hundred?

Thus, in order to completely embrace an architecture that elicits this sense of wonder, affect must become the operator of space, or the producer of space, through bodily experience [2]. This bodily experience provides a neutral platform for understanding the architecture. Therefore, affect may be understood as a knowledge with which *to* design immaterial architecture. Architecture in this instance is not only created specifically to bring about awareness of the metaphysical by eliciting a sense of wonder, but also functions as an attempt to stabilise affect in order to "generate the possibility of pre-circumscribed situations, and to engender certain forms of practise … including aspects such as form and atmosphere" [3].

Subsequently, the incorporation of the body into architecture (In this instance, the function of understanding being affective, bodily responses to space) facilitates a shift from an "interiority based on pre-existent properties for an emergent 'internal resonance' generated from the architectural framing of the material flux" [4]. This internal resonance:

**1:** Anderson, B. *Becoming and being hopeful: towards a theory of affect*, 735.
**2:** Hansen, Mark B. N. "Wearable Space." *Configurations* (2002). no. 10: 322.
**3:** Kraftl, P., and P. Adey. *Architecture/Affect/Inhabitation: Geographies of Being-In Buildings,* 228.
**4:** Hansen, Mark B. N. "Wearable Space." *Configurations* (2002). no. 10: 348.

> "designates the capacity for certain systems to mediate between disparate levels of being - that is, to process potential energy into organized and distributed matter. Specifically, internal resonance corresponds to a living system's capacity to bring disparate orders of magnitude into communication, and thus to maintain the meta-stability that is the precondition of its ongoing individuation" [1].

The framing of architecture, then, must be a negotiation between formal manipulation, resultant designed space, atmospheric qualities, and the life of the user's body.

Frichot notes that it can be said that society suffers a waning of affect through the empty consumerism that dominates contemporary culture. As such, architecture that provides a platform for affectual awareness of the metaphysical increases our capacity to exist well in the world [2].This reintroduction of the neglected can cause architecture to be seen in a different light through a shift in affectual registers. Affect becomes an active, rather than passive, shift in the midst of encounters between bodies, where the term 'body' is used to demarcate not just the human, but the architectural body, the natural body, the animal body, a body of air, a body of water [3]. These encounters, when coupled with many "ephemera of duration" [4] provoke positive activation of affect which allow "fixed subjectivities ... [to] transform within a living world" [5].

In the end the means in which to achieve this architecturally can be relatively simple: the carefully calculated distribution of light through capture, diffusion, reflectance, scattering and projection; the introduction of atmospheric qualities such as the rippling of water due to the movement of air; the quality of the air we breathe; the temperature of the surrounding environment; the contrast between darkness and light and the subtleties in the grey boundaries between these two extremes;

**1:** Hansen, Mark B. N. "Wearable Space." *Configurations* (2002). no. 10: 349.
**2:** Frichot, H. *Olafur Eliasson and the Circulation of Affects and Percepts*, 34.
**3:** Frichot, H. *Olafur Eliasson and the Circulation of Affects and Percepts*, 35.
**4:** Frichot, H. *Olafur Eliasson and the Circulation of Affects and Percepts*, 35.
**5:** Frichot, H. *Olafur Eliasson and the Circulation of Affects and Percepts*, 35.

the interaction between light and atmosphere with the careful use of colour and texture; and time as an ephemeral driver for the awareness of transitory moments. Thus, architecture can be designed through an understanding of the theory of affect: how we as human beings react to architecture in a bodily way which in turn makes our conscious cognitive mind aware, in order to allow an occupant to experience a 'sense of wonder'.

## [ 3.5 ] CHAPTER SUMMARY:

Affect engenders a response to space that is hard to quantify; it goes beyond cognitive understanding by eliciting a bodily response to environments. It is a pre-conscious, pre-personal bodily self-perception that filters our awareness of the world. It governs our bodily response to space by informing a participant of what is necessary, and what is not, through a shift in register between heightened and passive states of spatial awareness that can be understood as a register of *intensity*.

Understanding affect and how it may cause awareness of the metaphysical within architecture, we have yet to understand how we may apply this knowledge to achieve an affectual response. It is essential to stimulate a sense of wonder in the user through immaterial means, and light has the capacity to be understood as both physical and metaphysical, as well as being the strongest of visual stimuli. Light is able to be both felt, in terms of presence and temperature, and to change our perception of objects when presented under different conditions as well as ultimately illuminate our world.

Therefore we look towards light to provide an understanding of the immaterial, the metaphysical and the atmospheric and to reinforce and create affectual response. It is through light that we may begin to understand how to design an architecture that elicits a sense of wonder. Eliasson manipulates light as one of his fundamental materials which in his artwork *Your*

*Activity Horizon* (2004) allows space to be "split apart by the brilliant line of an artificial horizon" [1]; where the artwork is owned by the user of the space – it is "incomplete without the uncertainty of the one who perceives it" [2].

In the chapter titled *Illuminating our World*, we delve into how light may be understood architecturally in order to elicit a sense of wonder, maintaining that light is understood affectually, atmospherically and physically. Light becomes the ephemeral objective participant to the physically subjective presence of human occupancy. We may further understand the need for light because "the inability to see anything, to be rendered completely blind, is to deprive us of one of our most important senses – sight. It reminds us that we most notice light, a medium readily taken for granted, when it is absent" [3].

**1:** Frichot, H. *Olafur Eliasson and the Circulation of Affects and Percepts*, 33.
**2:** Frichot, H. *Olafur Eliasson and the Circulation of Affects and Percepts*, 33.
**3:** Major, et al. *Made of light: the art of light and architecture*, 63.

# [ 4.0 ] ILLUMINATING OUR WORLD

## [ 4.0 ] ILLUMINATING OUR WORLD:

Light is a paradoxical material that exists simultaneously as both a physical and metaphysical condition. Thus, perceptively, these conditions may be understood as differing aspects of the same. Light bridges the gap between the world of the immaterial, the atmospheric,with that of the physical, the concrete. Light enables us to see; it informs, stimulates and excites us, and without light there is no visual form – it conditions our perception of the world in both the physical and immaterial senses [1].

This chapter will begin by looking at *Spatial Transformation* where a brief overview of the importance of light and its ability to transform space is outlined. *Light as a Metaphysical Condition* looks towards light's immaterial qualities, exploring how light affects our perception and habitation of space. L*ight as Physical Condition* looks towards light's physical attributes in order to explore how light may not only illuminate space, but also the modes in which it does so. *Light's Dualistic Opposites: Shadow and Darkness* looks towards contrast as a driver for understanding architecture, explored through the use of darkness, shadow and shade. *The Immaterial Qualities of Light* deals with how light is related to both affect and atmosphere and how light may be utilised to inform our perception of space; and finally *The Architectural Reality* discusses how light may be used in design to bring about spatial awareness through the creation of affectual and metaphysical architecture.

## [ 4.1 ] SPATIAL TRANSFORMATION:

Light transforms space. It is through light that architecture is enlivened, understood, experienced, and perceived; architecture cannot exist without light. Light plays a fundamental role in not only our perception of architecture, but in life itself - it is a communication tool; it is knowledge; it is energy; and it is magic – our very world is made of light [2].

**1:** Major, M., et al. *Made of light: the art of light and architecture*, 1.
**2:** Major, M., et al. *Made of light: the art of light and architecture*, 1.

Zajonc states that there are "two lights [that] illuminate our world… one is generated by the sun's rays, and the other one answers – the light of our eyes" [1], where it is the relationship between these two elements that enables us to see and, if either were missing, we would be blind [2]. In the simplest sense, light allows us to see, to position ourselves within our immediate context and reveal the surrounding environment. Light "help[s] us negotiate the physical world" [3] by enhancing our visual acuity in order to reveal detail - allowing us to make sense of our environment [4].

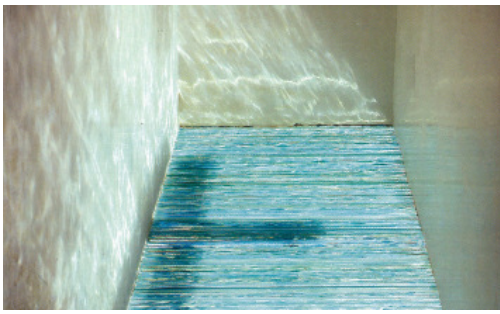


*Figure 4.1: Scintillating display of light through stacked glass - La Alberca Pantheon*

Architecture needs more than just physical contentment through the infusion of daylight in space – it is also expected to be:

> "emotionally satisfying: to appear alive rather than dead; to take hold of our affections with moods that resonate with what we wish to feel inside; to keep us in touch with the flow of nature; and to empower us to make spaces our own by activating our perceptions and dreams" [5].

These very depths of experience establish the need for light beyond purely the visual as light also stimulates the mind and satisfies the spirit.

*Figure 4.2: Diffuse light filtering through penetrations and down curvaceous planes*

## [ 4.2 ] LIGHT AS THE METAPHYSICAL CONDITION

The primary way in which we understand light, especially with regards to the immaterial aspect, is through vision. Steven Holl states that "vision is not a certain mode of thought of presence towards self; rather, it is a means given to use for being absent from ourselves" [6] where a lack of vision renders things invisible, just as a lack of sound renders our world in silence. When we talk about vision in the metaphysical sense we talk about the perception of said rendering of our world

**1:** Zajonc, A. 1995. *Catching the light: the entwined history of light and mind*: Oxford University Press. 3.
**2:** Zajonc, A. *Catching the light: the entwined history of light and mind*, 3.
**3:** Plummer, H. 2009. *The Architecture of Natural Light*: Monacelli Press. 6.
**4:** Zajonc, A. *Catching the light: the entwined history of light and mind*.
**5:** Plummer, H. 2009. *The Architecture of Natural Light*: Monacelli Press. 6.
**6:** Holl, S., and Architektur Zentrum Wien. 2002 *Steven Holl: idea and phenomena*: Lars Müller. 78.

in light, not the tangible touching of the light; we experience the physical world through the metaphysical one.

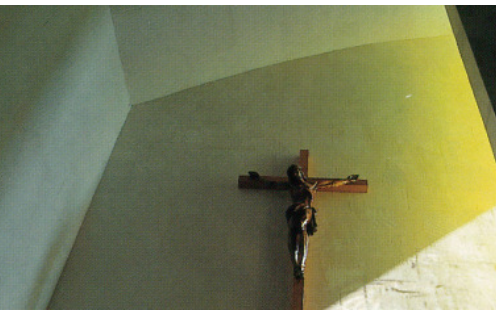


*Figure 4.3: Coloured light evoking notions of the immaterial*

Light may begin to be understood as a metaphysical condition through the work of architects such as Tadao Ando, Steven Holl and to a lesser extent, Norman Foster. Ando's architecture deals with light as a metaphysical spatial driver that allows his buildings to transform through light. Light in his buildings is a continually shifting, ever morphing movement of perception and discovery that changes as the lighting conditions vary over the course of a day. Ando "infuses us with breath through the depths of layers of spatial design flooded with light … [where] all is flowing light, without abstraction … as if there were no fixed spatial composition" [1]. Additionally, through his work Ando has been noted as having a preference for high contrast when dealing with light - of dim lighting broken by shafts of light unexpectedly piercing the darkness [2].

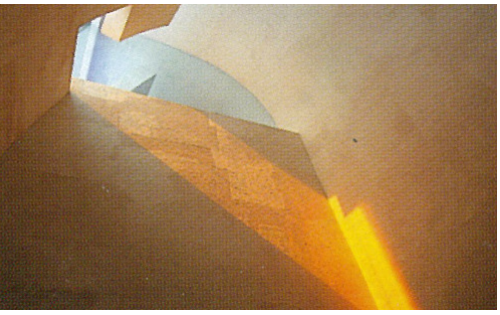


*Figure 4.4: Glowing beam of light illuminating a section of wall in colour*

Ando's approach to the physical is perceptively immersive; he plays with preconceived material notions by paradoxically rendering concrete as though it were a light material. Concrete for Ando is the most suitable physical surface for the interplay between the ephemeral (natural light) and the material (concrete) due to its ability to become abstracted, negated and approach the ultimate limit of space where the actuality of walls are lost and only the space enclosed gives a sense of really existing [3]. It is light that allows this to happen, and in Ando's case, the very careful consideration of how structure and form interact with light in the creation of metaphysical space. Architectural materials for Ando do not end with the tangible forms of concrete, wood, glass and steel but also encompass the intangibility of light and wind in order to appeal to the senses [4].

Foster's architecture is a fusion of the polar opposites of function and the spiritual. He fundamentally believes that "if spaces we create do not move the heart and the mind then

**1:** Blaser, W. 2001. T*adao Ando: architektur der Stille*: Birkhäuser, 17.
**2:** Blaser, W. T*adao Ando: architektur der Stille*: Birkhäuser.
**3:** Blaser, W. T*adao Ando: architektur der Stille*: Birkhäuser.
**4:** Ando, T., & Frampton, K. 1984. *Tadao Ando: buildings, projects, writings.* Rizzoli.

they are surely only addressing one part of their function" [1]. The term 'spiritual' here is interchangeable with 'immaterial' where architecture looks towards celebrating ephemeral building materials such as light and the wind. Foster focuses on the 'social dimension' to acknowledge that architecture is essentially generated by the needs of people - both spiritual and material, where architecture "is about quality: the quality of the space and the poetry of the light that models it" [2]. Foster is a huge proponent of light within space but, in contrast to Ando, uses high technology rather than simple materials to achieve his designs. Foster's architecture is fundamentally functional and contemporary, looking towards the future as much as the past while still appearing as spiritual as Ando's, yet in a distinctly different way. He uses extensive glazing to create plays on light through reflection, transmission, diffusion and refraction that can be defined as an utterly subjective contemporary spiritual experience (in terms of time, space and orientation).

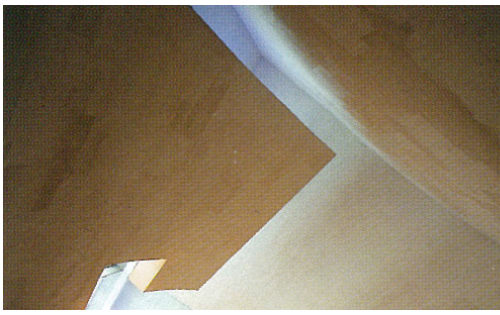


*Figure 4.5: Ambient daylight enlivening form*

To further expand upon light as a metaphysical condition, we must understand the very human desire to seek out and understand the unknown. The unknown by its very definition cannot be cognitively understood. However, we can see and experience the unknown through proximity and presence, and in doing so make a connection with the immaterial that gives us a pre-conscious understanding that is comforting. In architecture, the unknown is the metaphysical or immaterial aspects of our world that are perceptible, but intangible and understood by the heart and the soul as well as the mind and body. They enrich the physical world around us with meaning and desire and enchant us with their very ephemerality. Bailey explores this notion of enchantment by understanding it as a 'life-enhancing ecstasy' which the soul demands by "thrusting us into reverence, adventure, dance, drink or rebellion. The heart cannot survive without enchantment's nourishment" [3].

*Figure 4.6: Evoking presence through immaterial light*

For Hejduk, the architect must create the 'spirit of a thought'.

**1:** Foster, N. 2005. *Reflections*: Prestel, 86.
**2:** Foster, N. 2005. *Reflections*: Prestel, 4.
**3:** Bailey, L.W. 2005. *The enchantments of technology*: University of Illinois Press, 1.

An architecture that deals with the mysteries of space and form must also essentially become "thought provoking, sense provoking and ultimately life provoking" [1] in order to seek out the architectural qualities and human values which give it spirit [2]. The actual creation of a 'spirit of a thought' must therefore involve not only the physical aspects of architecture but also the metaphysical to cater to all the mores of human perception and spatial understanding. It is through these means that light and wind, as immaterial building blocks, act as a catalyst for an understanding and appreciation of ephemeral architecture.

Thus, the metaphysical conditions of light affect how architecture is perceived; the visual dimension becomes abstracted and diffused, rendering the material immaterial and causing a shift in understanding about the world we inhabit. In essence, architecture "enters into a symbiosis with light" [3] which not only allows form to be created in light, but also allows "light to become form" [4]. The metaphysical conditions of light bridge the gap between the tangible reality of material form with the intangible reality of immersive, visually abstracted immaterial architecture.

## [ 4.3 ] LIGHT AS A PHYSICAL CONDITION

The physical condition of light allows us to understand in scientific terms what light actually is as a physical entity. This section explores the physical, tangible aspects of light in order to understand how light may be utilised not only to illuminate our physical environment but also the modes in which this can be attained in architecture. We are able to 'feel' the warmth of the sun on our upturned face as the sun's rays hit us physically, or feel the sudden drop in temperature, the 'chill', as the sun passes behind a cloud on a cool winter's day. It is by understanding light physically, along with its metaphysical attributes that we may begin to consider how

**1:** Hejduk, J., W.H.J. Bergh, and Nederlands Architectuurinstituut. 1993. *Berlin night*: NAi Uitgevers, Netherlands Architecture Institute, 18.
**2:** Hejduk, J., et al. *Berlin night*. Netherlands Architecture Institute, 18.
**3:** Meier, R. In *Made of light: the art of light and architecture*, edited by Mark Major. Birkhäuser, 2005. 149.
**4:** Meier, R. In *Made of light: the art of light and architecture*. Birkhäuser, 149.

it can be used in the design of an architecture to bring about awareness of the metaphysical.

There are many sources of light. What we refer to as 'natural light' is light emitted by the sun (sunlight), stars (starlight), moon (moonlight; which is reflected sunlight) and from bioluminescent organisms. What we term 'artificial light' is light created through manmade objects such as light bulbs and LED screens. Another distinction to be made is that natural light is unpredictable and difficult to control, but yet is something we must build our environment around while artificial light is both controllable and creatable. Artifical light gives us the ability to design both the source and the subject as well as the ability to manipulate the parameters of its use [1]. Artificial light ensued from the need to illuminate our world after dark and while mimicking many attributes of natural light it is fundamentally different. These differences relate to intensity, the visible versus the invisible light spectrum and our affinity as biological organisms to natural light. However, both natural and artificial light reveal surface, colour and shape which informs our individual perceptions of the world as well as providing man with a common language [2].

The American artist James Turrell uses light as the primary medium in his installation work. His appreciation of light is in its inherent instability and fragility, because while light is a powerful entity which we have a primal connection to, situations that allow for its felt presence are fragile [3]. Turrell likes to work with light so that it is felt physically, in order for the participant to actually feel the presence of light inhabiting space. Here, rather than the visual, it is the bodily response to light that is of paramount concern, where in order to truly immerse yourself within Turrell's sense/experience installations, you must understand his work with light physically.

Light interacts with the surface it falls on, shaping it through

*Figure 4.7: Penetration of light within darkened corridor*

*Figure 4.8: Illumination of textural form showing the way and eliciting movement*

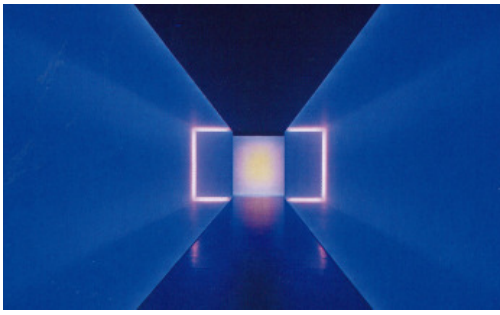


*Figure 4.9: Manipulation of artificial light to create a blurring of boundaries and focus*

**1:** Major, M., et al. *Made of light: the art of light and architecture.*
**2:** Major, M., et al. *Made of light: the art of light and architecture*, 1.
**3:** Turrell, J., and Kunsthalle Basel. 1987. *Mapping spaces: a topological survey of the work*: Peter Blum Edition.

*Figure 4.10: 'Tower of Wind' front lit - the default condition*

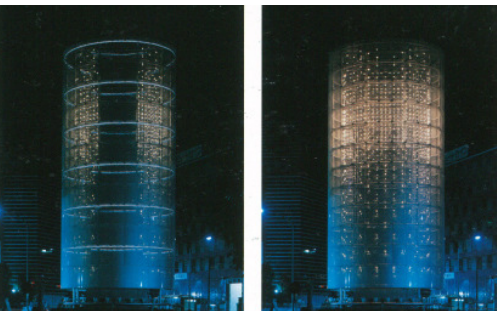


*Figure 4.11: 'Tower of Wind' back lit - the expressive nighttime condition*

reflection, transformation and perception. Through reflection off a surface such as water, light changes our understanding of architecture by creating a continually shifting refracted light; such a reflection may be "seen as the extension of built form" [1]. Depth and movement of light can be generated through the use of light permeable materials, where varying opacities, perforations and patterns create a depth of light and shade. Light permeable materials can be transformed when lit by light, becoming almost "transparent when lit from behind and solid when lit from the front" [2]. Toyo Ito's, tower in Yokohama – Tower of Winds, has been designed with this in mind, appearing solid by day but dissolving by night into an abstracted display of light and colour that renders the architecture intangible and ephemeral [3].

When exploring the concept of light as a physical condition, colour is an aspect that must bare consideration. All light is made of spectral colour, constantly changing, shifting and taking on new hues and tones. We experience light in a multitude of different ways, from the bright peeking sunlight streaming through clouds at dawn rendering the world in orange, red, and yellow hues to the deep blue shades of twilight where the world is full of deep shadow and low contrast, to the omnipresent cool brilliance of midday [4]. Light's ability to have colour, and for that colour to be controlled, enhances our perception of architecture. Light can act as signifier, controlling the perceived image, providing expression and creating atmosphere [5].

Furthermore, natural light is never static. The movement of light is a "linear process where time and space meet" [6]. Our perception of time is rendered by our awareness of the course of a day and it is through this movement of natural light that we experience architecture. Form appears to move and shift, at least perceptively, over the course of a day by the way in which it is rendered in transitory light. Form is "the visual shape of mass and volume" [7] which light makes

**1:** Major, M., et al. *Made of light: the art of light and architecture,* 83.
**2:** Major, M., et al. *Made of light: the art of light and architecture,* 87.
**3:** Major, M., et al. *Made of light: the art of light and architecture, 83.*
**4:** Major, M., et al. *Made of light: the art of light and architecture,* 105.
**5:** Major, M., et al. *Made of light: the art of light and architecture,* 105.
**6:** Major, M., et al. *Made of light: the art of light and architecture,* 133.
**7:** Major, M., et al. *Made of light: the art of light and architecture,* 149.

legible; there "is no form without light" [1]. By altering the light that impacts upon form, you can not only "redefine the shape of an object but also reinterpret its character and meaning" [2]. Thus, natural light changing over the course of a day visually transforms architecture. It is the *movement* of light that continually changes our perception of form. Architecture is defined by light as it is "entirely reliant on the presence and quality of light" [3] in order to perceptively exist.

Therefore, the physical conditions of light inform our perception of architecture - notably through the source, direction, temperature and movement of light. The physical conditions of light have the capacity to shift our understanding of architecture in a bodily, spatially orientated sense. They allow us to experience colour, warmth and intensity through the control of natural light or its artificial generation.

## [ 4.4 ] LIGHT'S DUALISTIC OPPOSITES: SHADOW AND DARKNESS

The counterpart to light, darkness, is as integral to our perception of space as light. Both are universal themes in architecture and "just as light is all around us, so is darkness" [4]. They are polar opposites but each may not function without the other; the absence of light results in perceptual blindness through the obscuring of sight by a lack of visual stimuli, while the absence of darkness results in an obscuring of sight through oversaturated stimuli. It is in this contrast between light and darkness that architectural space may be read and understood. Through the use of shadow, shade, and darkness as well as light we are able to spatialise a form that elicits movement within the individual who experiences it. This section deals with darkness in all its forms: shadow, shade and darkness itself. It looks towards contrast as the driver for understanding architecture exposed to both light and shade and how this may impact on an architecture designed to elicit a sense of wonder in those who experience it.

*Figure 4.12: The evocative boundaries between light and dark*

**1:** Major, M., et al. *Made of light: the art of light and architecture,* 149.
**2:** Major, M., et al. *Made of light: the art of light and architecture,* 149.
**3:** Major, M., et al. *Made of light: the art of light and architecture,* 149.
**4:** Major, M., et al. *Made of light: the art of light and architecture,* 61.

*Figure 4.13: Presence and absence of light - the contrast between varying levels*

In architecture, the "absence of light is as critical … as its presence" [1] because "through the relationship between light and dark we are able to determine the form of architecture by the manner in which space and surface is revealed" [2]. Contrast is a term used to describe the intensity of difference between light and dark. High contrast refers to harsh boundaries while low contrast refers to a gradation between the two, where the quantity of light and shade informs not only the way we see but also determines the mood and expression of our environment [3]. Shadow and darkness are both as integral components to architecture as light is, and by working with light spatially we must have a firm grasp of how to maintain both darkness and shadow; one does not exist without the other in spaces that are harmonious to human occupation. Maintaining darkness can be as simple as the inclusion of shadow casting objects, form or the careful positioning of aperture and artificial light source.

There are two types of contrast: the total absence of light which we term darkness and the co-existence with light which we term shadow [4]. Shadow is different from darkness as "light is always present within shadow; if it wasn't then we wouldn't be able to see anything within it" [5]. Shadow is intrinsically related to light, specifically the source of light. They are twins: shadow cast from natural light changes in "perfect harmony with the movements of the sun" [6] and like light has "quality, quantity, direction and focus" [7]; shadow cast from artificial lights is more predictable and controllable by intensity, orientation, focus and colour but often is subject to interference from other sources resulting in diffuse contrast and muted gradations of light and darkness. It is also very important to note that "humankind has evolved to thrive during the hours of darkness as well as light" [8] and that "while it is important to receive bountiful amounts of light at the right time we also require darkness to maintain our circadian rhythms and therefore our survival" [9]. Light and darkness therefore must be integral parts of architecture because not

**1:** Major, M., et al. *Made of light: the art of light and architecture,* 59.
**2:** Major, M., et al. *Made of light: the art of light and architecture,* 59.
**3:** Major, M., et al. *Made of light: the art of light and architecture,* 59.
**4:** Major, M., et al. *Made of light: the art of light and architecture,* 63.
**5:** Major, M., et al. *Made of light: the art of light and architecture,* 64.
**6:** Major, M., et al. *Made of light: the art of light and architecture,* 59.
**7:** Major, M., et al. *Made of light: the art of light and architecture,* 59.
**8:** Major, M., et al. *Made of light: the art of light and architecture,* 63.
**9:** Major, M., et al. *Made of light: the art of light and architecture,* 63.

only do they give form expression, but they facilitate the very act of being alive, of how we perceive and inhabit the world.

*Figure 4.14: Shadow patterns cast by the transmission of light through translucent material*

Complete darkness, that is the total absence of light, is a distinctly rare thing in the field of architecture. As light by its very nature carves out darkness, it is exceedingly difficult to design spaces that are completely dark. In architecture, it is only when you make a resolute attempt to try and create a space that is completely dark that you realise how hard it can be to totally negate light [1]. Shadow and shade on the other hand are integral tools in an architect's repertoire. Shadow provides us with visual information that allows architecture to inform us of the direction, intensity and movement of light across the course of a day through the interaction between form and natural light and the subsequent casting of shadows. We are able to 'read' shadows, with their depth and length informing us of climatic conditions and the time of day as well as orientating our perception of north, south, east and west [2].

Shadow also allows us to change perceptions. By choosing specific lighting elements we can create different moods for a space; by carefully considering aperture and materiality the building can 'speak' to us, and by layering natural light with artificial we can create space that has subtleties of contrast which evoke a sense of familiarity in the occupant.

## [ 4.5 ] THE IMMATERIAL QUALITIES OF LIGHT:

Light has the ability to affect us in many ways. Not only do we rely on its physical properties to navigate the world around us, but light speaks to us as human beings in ways that are harder to quantify; it has the capacity to affectually influence us. This section explores how light relates to affect and atmosphere and how it may be utilised in design to affectually influence our perception of space.

**1:** Major, M., et al. *Made of light: the art of light and architecture, 63.*
**2:** Major, M., et al. *Made of light: the art of light and architecture,* 65.

*Figure 4.15: Serenity and peace evoked through contrast and light's interaction with material surface*

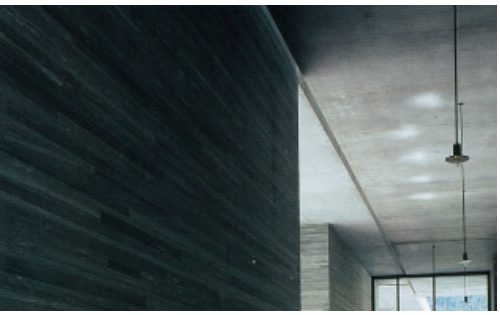


*Figure 4.16: Spatial awarness understood through the differences in lighting conditions*

Light has the ability to transcend emotions by causing an affectual shift in a participant. The subtle play between shadow and shade, light and dark, bright and dull, omnipresent and particular can cause a pre-personal pre-conscious bodily response to space. When designed with affect in mind, light can be the primary driver for spatial awareness by unlocking the potential of not only light's visual stimuli, but also its physical aspects. The interplay between the warmth of a light shaft in a chilled concrete room shadowed in darkness can cause an involuntary bodily response, a shift in register that brings about awareness of the metaphysical aspects of architecture. The ineffable power of faint shimmers of light in a light-deprived room stems from the human relationship with light and the visual. Shadows wrap our surroundings in secrets, dulling our visual perception and stimulating a primordeal desire for the light to reappear and burst forth [1]; for the visual to ascend to primacy again. Ando works with two different kinds of light - one of a space of light in darkness where dim light emerges, the other of a light cutting sharply through darkness as if manifesting itself through strong contrast with darkness [2]. His work can be described as nothing less than visually stunning and affectually stimulating – causing awareness of the metaphysical aspects of architecture through powerful plays between light and shadow.

Light has the ability to also interact with atmosphere, heightening the power of a transformative shift in the sensory understanding of architecture. Light streaming down through heady air, imbued with water vapour causes refractions and diffusion that illuminates space majestically. Warm light flooding into an uncomfortably hot space becomes unbearable while conversely, warm light filtering through a small opening into a chilled room provides a modicum of comfort and draws a participant in towards it. The warmth of the sun's rays beaming down a cool autumn's day mitigates a cold breeze and becomes immediately noticeable, as a drop in the ability to feel comfortable in space, when hidden behind shifting

**1:** Plummer, H. 2009. *The Architecture of Natural Light*: Monacelli Press.
**2:** Ando, T. In *Crib Sheets*, edited by Sylvia Lavin, Helene M. Furján and Penelope Dean. Monacelli Press, 2005.

cloud cover. As light is a transitory element, the coupling of this with ever-shifting and pulsating atmospheres creates a dynamic environment that must be experienced physically to be understood cognitively; it is through light that atmospheres are supported, accentuated, and transformed. By piercing an atmosphere, light imbues it with a life-enhancing energy that both visually stimulates and saturates the other senses. It is the union between two shifting, elusive and dynamic ephemera that creates metaphysical architecture - space that can, and is, experienced on multiple levels simultaneously, through the body, the mind, the visual and the sensory.

## [ 4.6 ] THE ARCHITECTURAL REALITY

The symbiotic relationship between form and light is one of the core tenets of architecture; both are fundamental to the making of space and to architecture's understanding. Light informs us of architecture through its interaction within volume, through the interplay between light and darkness, colour and contrast. This section explores how light is applied to the design process by looking at the way in which light transforms materials, reveals content, enlivens architecture and informs spatial awareness. In essence it looks at how light can illuminate our built environment both physically and immaterially.

*Figure 4.17: Evocative space created through a diffuse glow*

Materials are transformed through light by refraction and reflection, diffusion and transmission, absence or presence and intensity. Light has the ability to transcend material conditions allowing for a participant to understand them in a dematerialised sense - both texturally and metaphysically. The diffusion of light through a perforated canopy casts interlinked shadow/light patterns that diminish the importance of the material itself - where what is created is not so much the sum of its parts, but the play of the light cast itself. The way light interacts with the reflective qualities of a material is also an essential design component that has major ramifications upon

*Figure 4.18: Space defined through the presence, reflectance, and absence of light*

the resultant spatial experience. Hard, reflective materials bounce light through spatial voids, increasing our awareness of form and character and the relationship between objects. Soft materials absorb and mitigate light allowing for the capture and accentuation of space as a diffuse entity, promoting silence and serenity. Light has the ability to also mask the perception of form. Structural columns can become dematerialised expressions of 'light, no light, light, no light' [1] that reference the immaterial rather than the physical, the concrete. When choosing material, you are in actuality choosing the way in which the architecture will be lit, perceived and inhabited.

Likewise, light reveals content. The interplay between light and its dualistic opposite darkness creates contrast within space. The careful consideration of the sources of light within architecture must be part of the selection criteria as the very perception of space depends on how light interacts with form. Light source has a palpable bearing on the casting of shadows, the depth of shade and the existence of darkness as the "more focused a light source, the sharper the shadow will be" [2]. A spotlight will funnel a strong beam of light at a target, while a diffuse bulb will flood a room with ambient light. Large windows allow for the penetration of ambient daylighting and direct sunlight while carefully constructed small apertures oriented towards the sun's path can create natural spotlighting. Source of light then becomes doubly important when considering multiplicity; within any given structure, very rarely is there only a single light source. The varying intensities, direction, colour and type of light source can create a blending of shadows and depth of contrast within architecture, or make a space appear washed out and sterile. Thus, it is the relationship between light and darkness that is important, the rendering of these two fundamental elements within space, that causes wonder and evokes immaterial notions by providing infinite variety within spatial experience.

*Figure 4.19: Light revealing content*

Similarly, architecture is enlivened through light. Light

**1:** Rosa, J., and P. Gössel. 2006. Louis I. Kahn, 1901-1974: *enlightened space*: Taschen.
**2:** Major, M., et al. *Made of light: the art of light and architecture,* 65.

animates space through its interaction with atmosphere and material, informs the visual dimension and subtly dictates the body/physical through temperature variances. The power of natural light to animate space comes through its shifting qualities over the course of a day. The beauty and splendour of dawn radiates freshness and colour at the birth of a new day; the penetration of rays through thick rainclouds in a blustery wet storm kindles contentment and joy; the pervasive warmth of the midday summer sun entices relaxation; and the cool twilight glow blankets space in deep shadows that promote silence and reflection. Artificial light has a similar effect, but is generally subtler due to lower intensities: its real power manifests when the sun goes down. Artificial light can be controlled and coloured. It can shape both our perception and the actuality of space by stimulating the visual senses and speaking to the affectual body/sense in order to enliven our experience of architecture. All of the qualities of both natural light and artificial light impact upon architecture's spatial dimension. The architect has ultimate creative control over how a building is perceived through the choices made with regards to light and its application therein.

*Figure 4.20: The colour of light*

Light also informs our spatial awareness by imbuing architecture with character and meaning. It primarily dictates the way in which we perceive space through the visual yet also through the body and touch by the transmission of the warmth it carries. As Pallasmaa notes, "every significant experience of architecture is multi-sensory; qualities of matter, space and scale are measured by the eye, ear, nose, skin, tongue, skeleton and muscle" [1]. Light interacts with particles in the air such as dust or water vapour to texturally appear as inhabiting space. The amount of light within a void dictates how we navigate that void. Light marks the path with which to follow, orientates us to the outside world, and causes space to transform over the course of a day through the ever-changing play of direct and diffuse. Ultimately, light and architecture are twinned in a symbiotic relationship – light requires form to manifest and

*Figure 4.21: Light imbuing architecture with character and meaning*

**1:** Pallasmaa, J. 2005. Hapticity and Time. In *Encounters: Architectural Essays* edited by Juhani Pallasmaa and Peter MacKeith. Rakennustieto Oy, 2005.

form requires light to be understood and experienced.

## [ 4.7 ] CHAPTER SUMMARY

Light is an essential aspect of architecture; it "reveals beauty, function and form. It defines the image, colour and texture of buildings … it determines visual boundaries and our understanding of scale. [Architecture] is designed not only to provide light, but also to be experienced in light" [1]. Light may also be understood to have both physical and metaphysical components that shape the way we understand and experience it. It has close ties to both atmosphere and the theory of affect through the body/sense experience and has the ability to transform space perceptively. Architecture has a long history with light. Kahn notably worked with light as an underpinning ideal within space creation noting that "No space, architecturally, is a space unless it has natural light" [2]. Light is the primary building block in the immaterial tool-kit for architects, yet in order to do light justice, its potential for the metaphysical transformation of space must be explored at a much greater level of detail than the scope of this thesis permits.

Looking at the chapter titled *Experiential Design,* the three theoretical chapters of atmosphere, affect and light provide the basis for a designed building that seeks to promote awareness of the immaterial/metaphysical aspects of architecture. The resultant design exploration is but one of many possible solutions and is treated as a case-study rather than final, perfect solution. It is used to flesh out and understand the theoretical framework, test ideas and evaluate the potential for an architecture that accentuates awareness of the non-physical. The design chapter will focus upon the varying degrees of success at entwining atmospheres, affect and light into architecture that seeks to heighten our awareness of the immaterial aspects of our built environment.

**1:** Major, M., et al. *Made of light: the art of light and architecture,* 1.

**2:** Kahn, L.I., and N.E. Johnson. 1975. Light is the theme: *Louis I. Kahn and the Kimbell Art Museum : comments on architecture*: Kimbell Art Foundation, 15.

# [ 5.0 ] EXPERIENTIAL DESIGN

# [ 5.0 ] EXPERIENTIAL DESIGN

In *Illuminating our World*, light was discussed with regards to how it can enliven, illuminate, and transform space through perceptual shifts in understanding. Light becomes the link between atmosphere and the theory of affect, promoting awareness of the metaphysical aspects of architecture. Light in essence is the catalyst for change, transforming space through transitory moments and varying intensities of colour and temperature, darkness and light.

*Sited Programme* discusses the issues and potentials that result from the case-study architecture and its chosen location. It looks at the chosen programme and how this influences the decisions made in the resultant final design. *Evolution of Design* discusses moves made during the design process that fed back into the theoretical framework of the thesis, understanding the symbiotic nature of the piece through the influence at certain stages of each key component - the visual and the theoretical. *Case-Study Architecture* talks about the final design of a case-study piece that explores how the theory of atmosphere, affect and light may be specifically brought into architecture to stimulate awareness of the metaphysical aspects of our built environment. *The Value of Why* looks at the ways in which this thesis evolved, discusses the relevant choices and their resulting implications. *The Testing of Ideas and the Ah-Ha Moment* discusses what has been learnt though the process of designing an architecture that seeks to 'elicit a sense of wonder'. Finally, *Design Reflection* reflects on the successes and failures of the case-study itself, reflecting on what could have been and the potentials for further research and development into an atmospheric and affectual architecture.

## [ 5.1 ] SITED PROGRAMME:

Due to the importance of light in the proposed application, a site of extreme lighting conditions was paramount when looking towards creating a piece of architecture that seeks to promote awareness of the metaphysical. The site is situated in the city of Rovaniemi, Finland. Rovaniemi is located within the Arctic Circle and is otherwise known as the capital of Lapland, boasting a population of approximately 60,000 inhabitants. It is located between the hills of Ounasvaara and Korkalovaara at the confluence point of the Kemijoki and Ounasjoki rivers - sitting at the latitude of 66.59 ° north and a longitude of 25° east. Rovaniemi also experiences atmospheric phenomena: the aurora borealis (northern lights), a major tourist draw card.

*Figure 5.1: Locality Plan thumbnail*

*Figure 5.2: Site Plan thumbnail*

*Figure 5.3: Rendered Massing Plans thumbnail*

The choice for Rovaniemi as site is simple: the case-study architecture needs to be located within an inhabited site, either far north or far south in order to push the experience and perception of light within extreme conditions. Rovaniemi fits all of these categories. The actual site chosen is a green-field site, existing as an open expanse ringed by native birch trees with a small children's playground at the northwest corner. Surrounding the immediate site is a ring-road that services the apartment blocks that make up the small suburb on the edge of the commercial sector. Thus, the choice of site was dominated by a few key factors; the surrounding architecture is mono-aesthetic and dull with minimal variation; the green-field expanse requires minimal sitework; the city has a resident and transitory population large enough to service the use of the proposed case-study; and the site experiences extreme lighting conditions due to the latitude. These all culminate in an appropriate site to deal with the creation of architecture that 'elicits a sense of wonder' in the occupant by promoting awareness of the metaphysical.

The programme of a *community centre* was chosen for an

exploration into the immaterial, intangible aspects of architecture. Proposed to be an informal version of the town hall, which also acts as a theatre, concert hall and congress centre, the community centre caters to political discussions, community meetings, small formal gatherings and group sessions in a spatialised form that promotes, at every facet, awareness of the immaterial aspects of architecture. The entire structure heightens your awareness of where you are and the impact of the ephemeral upon space.

*Figure 5.4: Locality Plan showing location of Rovaniemi in relation to the surrounding international context*

*Figure 5.5: Site Plan showing location of community centre in Rovaniemi*

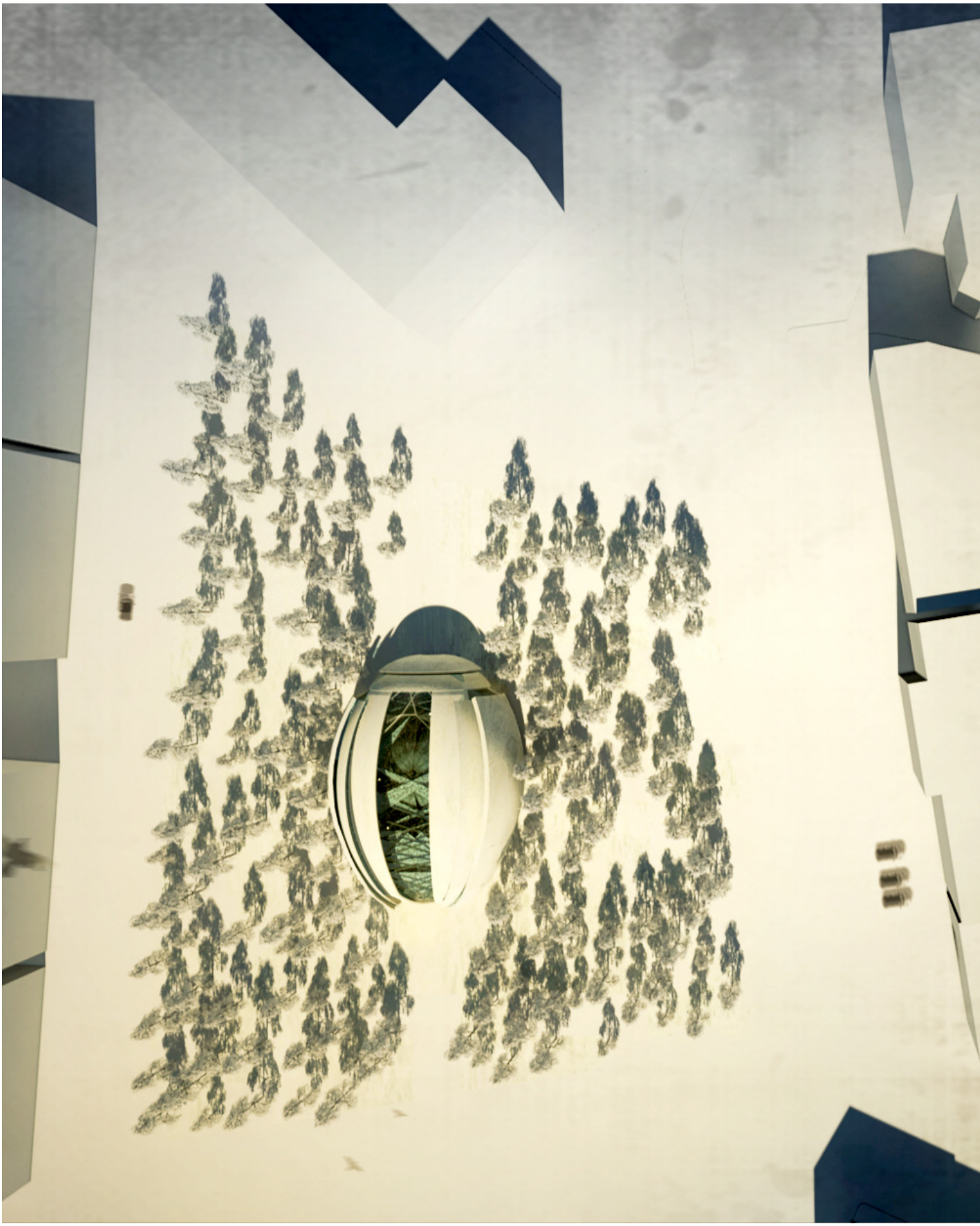


*Figure 5.6: Rendered site plan showing scalar relationship between community centre and its surrounding context*

## [ 5.2 ] EVOLUTION OF DESIGN:

*Figure 5.7: Digital lighting study with reflectance*

*Figure 5.8: A study of light emission and the cast of shadows*

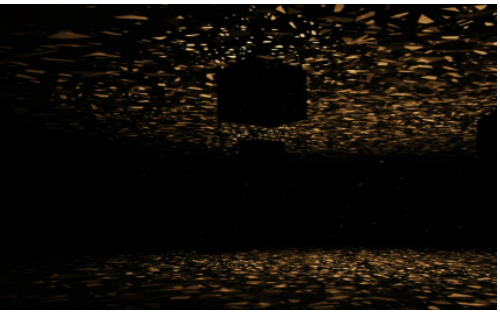


*Figure 5.9: Dappled light cast by boxes emitting light*

*Figure 5.10: Illuminated hallway with translucent glass*

In its process the evolution of design has taken many tangential directions, being explored through a vast array of material, formalistic and lighting maquettes, sketches and computer models. All of these renditions fed into the final design in some way or another, having impact through a series of scalar, textural, layout and orientation schema by understanding the context of what worked, and what did not: there had to be a lot of failed attempts to understand the consequences of actions. However, this was an invigorating learning process that dramatically improved the resultant architecture.

A series of lighting models were created at the outset to understand the way in which form dictated interaction with light and the casting of shadow patterns. These models were simple yet evocative and show the same intensity, source and colour of light portrayed in vastly different ways through the use of wrapping, symmetry, angles, distortions and layering. They also served to understand the way in which light was dictated by technology available to the architectural industry through the use of rendering and modelling applications.

Transition zones of light were utilised to understand trajectories and fall-off values when dealing with natural lighting. They incorporated light provocateurs as well as light inhibitors through the use of reflectance, aperture control and perforation. Directional light versus diffuse light was understood through models that dealt with angled perforations within a wall or roof, where the azimuth of the sun would dictate the cutting of solids in a series that presented at certain times of day direct sunlight and at all others a diffusion of daylight. Other models looked at how light changed the perception of space: looking at the orientation of space to the sun exploring how light interacted purely from above (The 'underground scenario') versus purely from the side (The 'glowing scenario'); dealing with the appearance of matter

when bathed in sunlight, daylight or artificial light; and playing with a participants spatial understanding through the use of thick versus thin members.

After exploring a series of models, the first iterations of design started to take shape, evolving in parallel with the theoretical explorations into atmosphere and affect. The programme of this thesis underwent a series of changes progressively as the year developed, beginning as a wellness centre inclusive of saunas, masseuse and swimming pool, progressing through the concept of sound with a rendition of a concert hall and congregation centre through to the final chosen programme of community centre.

During each rendition, certain aspects of design merited further development while others became painfully inapplicable to the marriage of theory and architectural outcome. The original foray into architecture, the wellness centre, failed to address concerning aspects of site and location, focusing upon the formalistic and developing ideals that weren't consistent with the theoretical evolution of the thesis. Set midway within the ground plane it failed to address light beyond half-hearted gestures, where light instead of being the driver for design, became a secondary process that was tacked on at the end: It didn't fit within the self set parameters of the thesis.

The second foray into design, the concert hall and congregation centre took a different tack, focusing upon design at the expense of programme. At the time the written portion of the thesis consisted only of affect and light and as such focused upon the spatialisation of these theories at the expense of the practical. The second foray was ill conceived as the mechanical and programmatic needs of the intended design conflicted with the creation of metaphysical space. It questioned a series of lighting conditions created through a deep latticed dome and multiple surrounding shell layers, where light that entered the space was highly controlled and simultaneously

*Figure 5.11: Direct light through perforations in corridor*

*Figure 5.12: Tunnel study with reflective material and single sourced light*

*Figure 5.13: Tunnel study with warped reflective surface*

*Figure 5.14: Tunnel study back and front lit*

both diffuse and direct. The space became monolithic, drowning the subtleties of light out with dominating form and a functional failure through the use of an oculus at the apex that would beam direct sunlight down onto the stage. However, what was birthed from this process was the need to readdress the theoretical underpinning of the thesis as a whole, and out of this came the inclusion of *atmosphere* as a primary driver for the understanding of immaterial architecture. What also resulted was the need for a smaller, more intimate space that prioritised the understanding of space through affectual, atmospheric means and the carefully considered interaction of light within space.

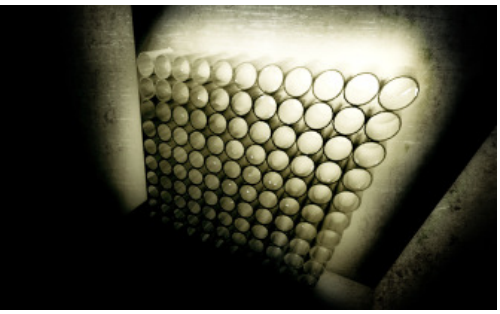


*Figure 5.15: Tubular lighting study - playing with darkness and glow*

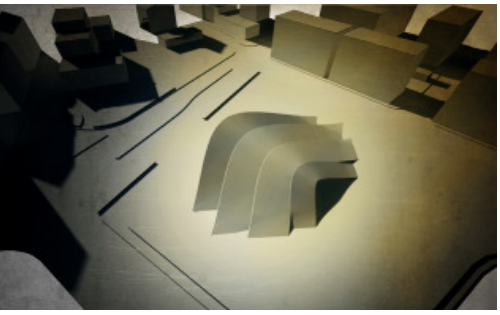


*Figure 5.16: Early design iteration - delving beneath the surface*

*Figure 5.17: Occulus to the Heavens design iteration - front entrance perspective view*

*Figure 5.18: Ramping roof extends the public domain*

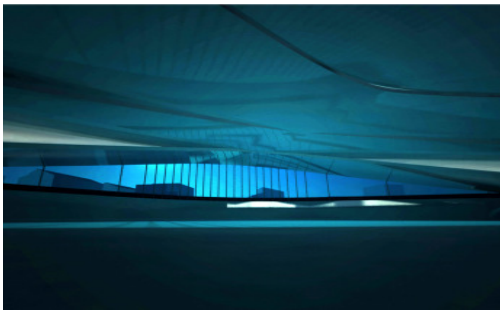


*Figure 5.19: Interior of ramping roof design iteration with blue tinted glass*

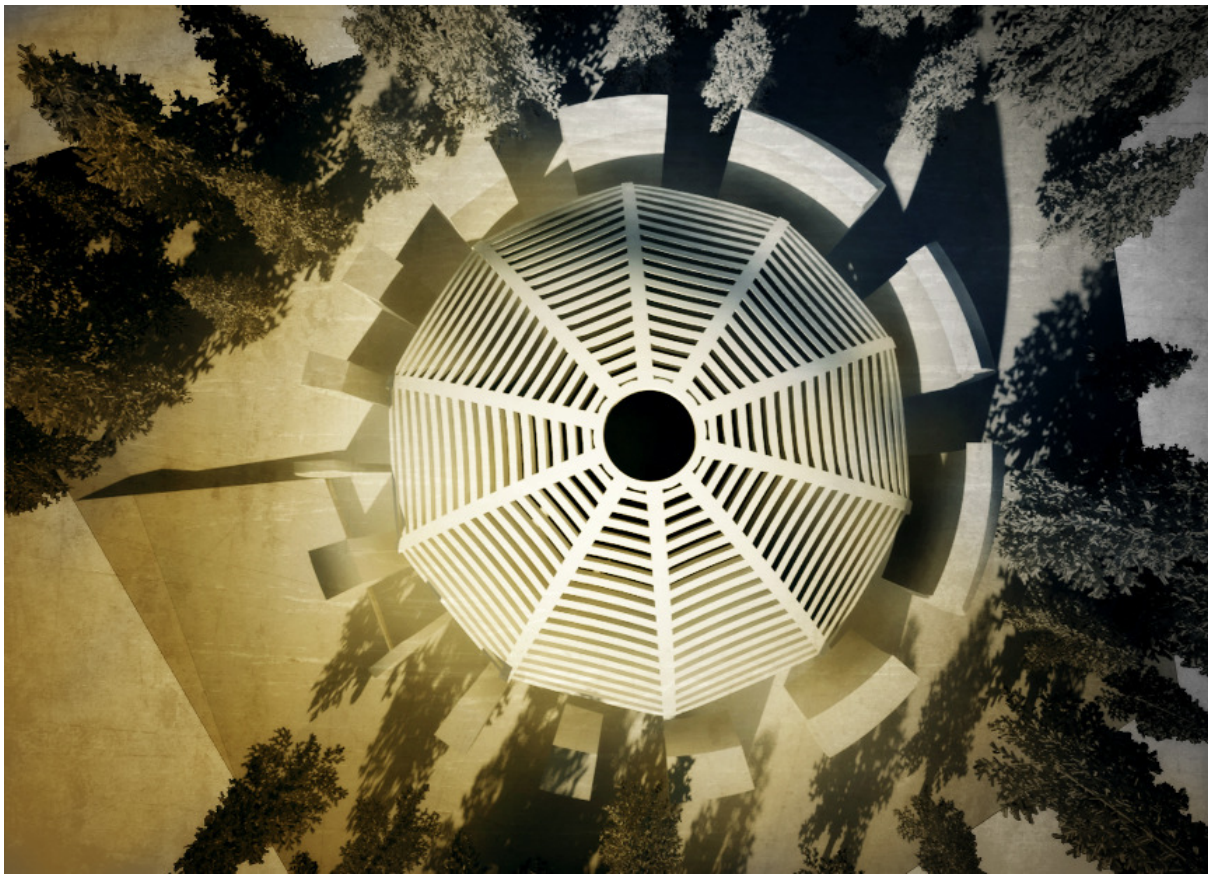


*Figure 5.20: Occulus to the Heavens birds eye view render*

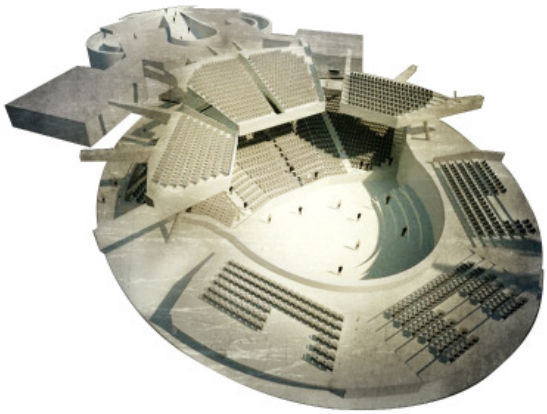


*Figure 5.21: Concert Hall design iteration - interior structure*

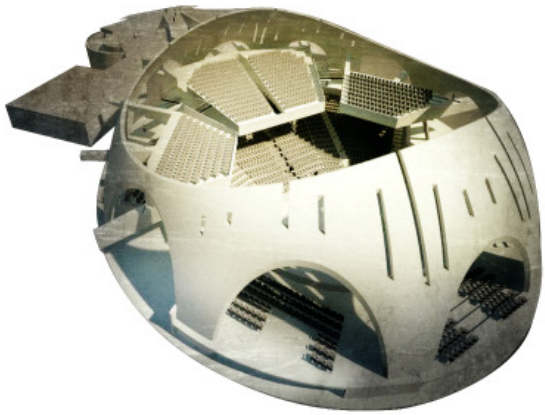


*Figure 5.22: Concert Hall design iteration - internal shell structure*

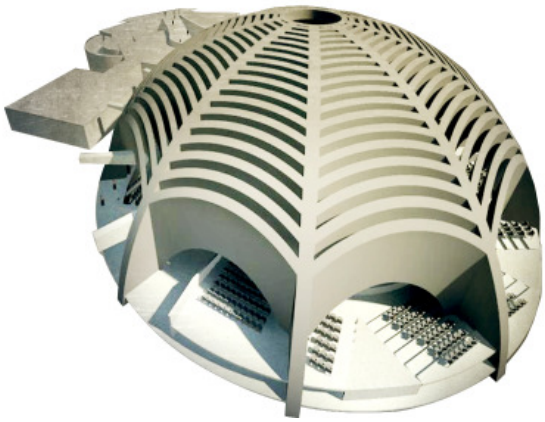


*Figure 5.23: Concert Hall design iteration - latticed dome structure*

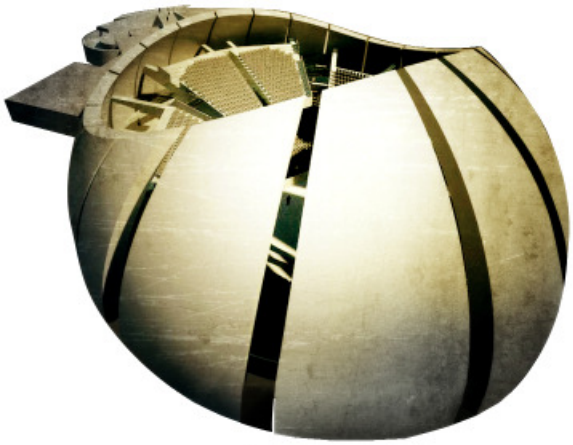


*Figure 5.24: Concert Hall design iteration - exterior sliced shell structure*

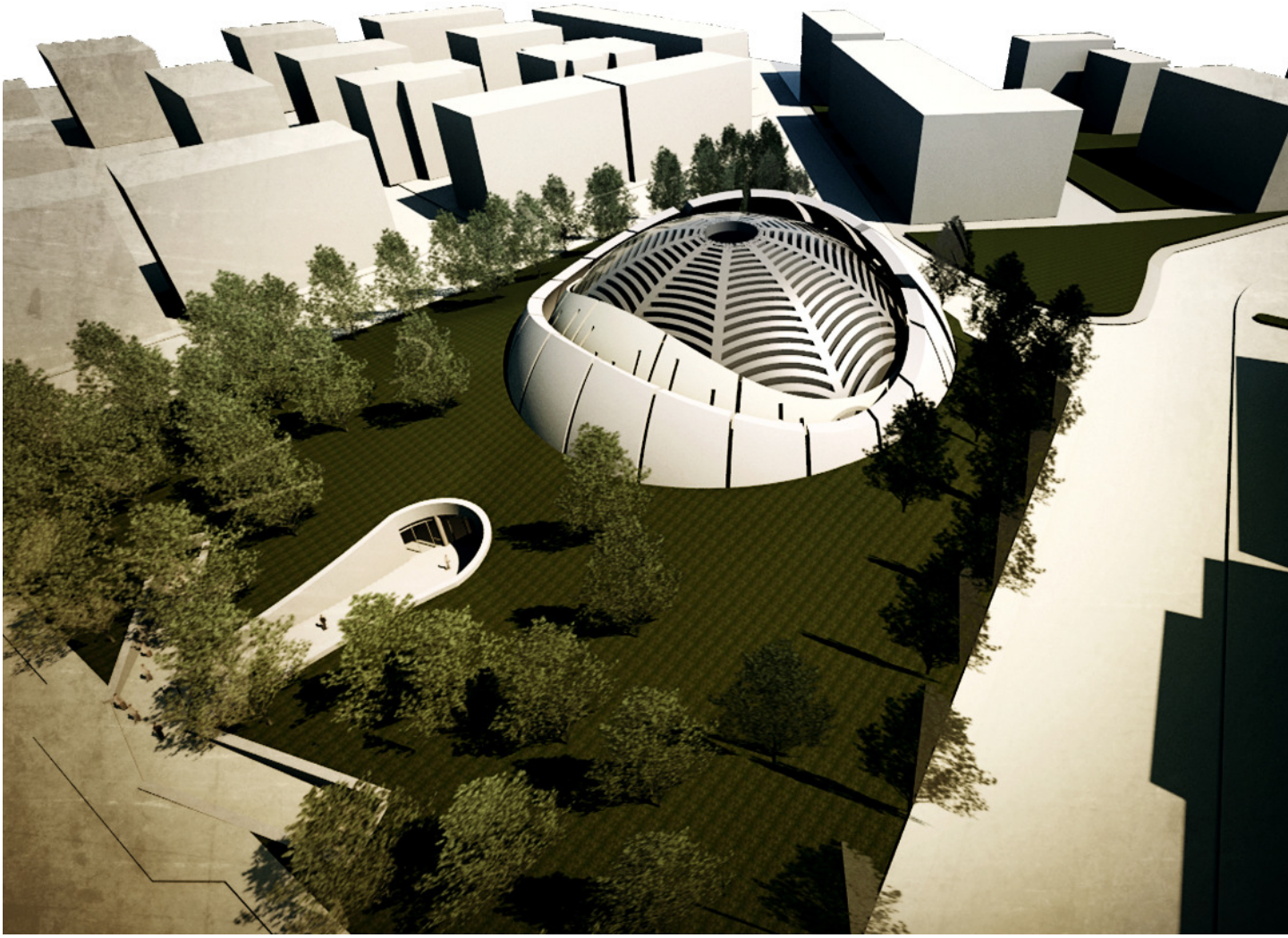


*Figure 5.25: Concert Hall design iteration - birds eye view render showing building location and surrounding context*

*Figure 5.26: Close up of the 'Nut Husk' dome in the middle of the community centre*

*Figure 5.27: Close up showing the 2m x 2m grid*

## [ 5.3 ] CASE-STUDY ARCHITECTURE:

Understanding the implications of size, focus and orientation from the previous attempts at formalising this thesis, the final design was able to be birthed at a scale consistent with the theoretical understanding of atmosphere, affect and light. The programme was not set in stone at the outside of the design, but was loosely decided upon and grew in stature as the architecture evolved, ever more shaping decisions and informing the design process as the building grew.

The underlying concept was for a series of spaces within spaces, akin to a nut husk that has fractured open to let light in, creating a transition zone of sorts where light could interact with materials and form to dramatically inform the users about the immaterial aspects of the space they were experiencing: in essence to create experiential architecture. The intensities of the resulting space are controllable in a sense through the application of artificial light, but primarily rely on the natural environment to dictate the way in which the building is utilised. The building is an expression of the immaterial aspects of architecture, experienced through the course of a year by shifting and transitory moments in light and atmosphere, and theoretically understood through the theory of affect. Thus, the building becomes vastly different to experience over the course of a day, through seasonal change and weather patterns. Working primarily with natural light in both summer and the equinoxes and converging solely towards artificial light in the depths of winter, atmosphere completely dictated by the actuality of site in terms of temperature and wind variances and a material palate applicable to the Finnish vernacular, an architecture of the immaterial was born.

The building has been designed using a set 2m x 2m grid, with diagonal grids running through these nexus points. Columns

in the interior, alluding to the trunks of trees sit at varying widths within this grid structure and mirror the native birch trees planted outside in the same grid. The birch trees planted outside transition from intensely populated, emphatically gridded at the centre, to a more sporadic, chaotic segregation around the perimeter giving the illusion of a native forest. While all trees have been planted within this grid to give a connection with the interior of the built form, it becomes less apparent they are designed near the periphery by the careful creation of open clearings and staggered planting regime that results in varying tree heights. The approach to the community centre is through this man-made forest. The north and south axes are devoid of trees, creating an open expanse that reveals the building at the centre. To the rear, this gives visual access to the circular end of the building – the small cafe space – and a view into, and out of the kitchen itself. To the front, it provides primary access to the building both visually and physically, through a grassed expanse and simple path. Both green spaces are intended for use by the general public allowing for picnics and games as well as public congregations.

*Figure 5.28: Close up of birch tree planting grid*

Structurally the building is segregated into two components: extensive glazing held up by columns mimicking tree trucks and beams mimicking the tree boughs and a self-supporting external shell comprised of steel-reinforced precast-concrete curvaceous elements. The choice of structure was subject to the requirements of the thesis, serving to not only hold the building up but comprise the primary elements within the spatialisation of immaterial architecture. The extensive glazing is supported via the concrete shell sections, as well as the timber columns and steel beams. Self-cleaning safety glazing extensively covers the roof of the building. A dual layer of glazing is required to provide a safety factor when considering snowloading which has the added benefit of providing an insulator buffer that mitigates temperature loss in an environment that experiences severe temperature

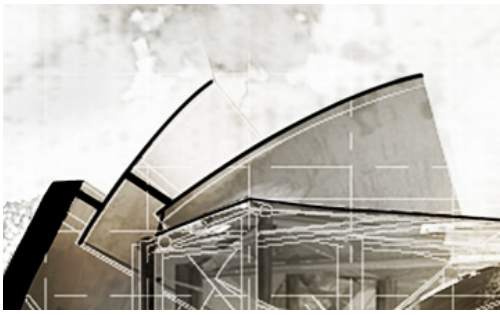


*Figure 5.29: Close up showing relationship between glazing and structural shell walls*

differentials across the course of a year. Overall the community centre is self-supporting and in fact a series of components that partially interlink. The inner-most is a reinforced concrete arch and the outermost a reinforced curvaceous concrete shear wall – both connected via steel through a waffle-slab, polystyrene infused thin concrete shell section. The curvaceous outer shell allows for the cascading of natural light, primarily daylight, to filter down from above to inform the user of texture and verticality; the inward shells provide gaps that also promote the filtration of light downwards by capturing direct sunlight at certain angles in order to gently guide it down through the canopy structure. The meeting between shell and ground form the entrance on the southern facade.

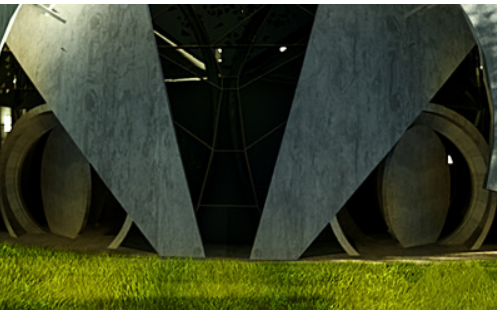


*Figure 5.30: Close up showing the 'tunnel' entrances to the community centre*

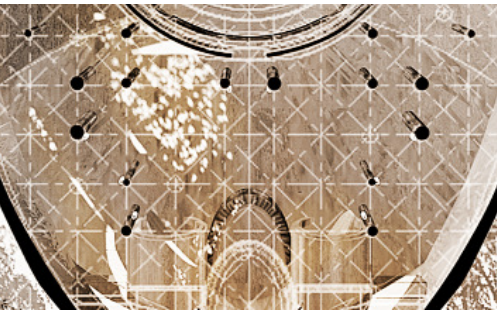


*Figure 5.31: Close up of foyer showing dappled light cast by the spinnaker sails above*

The entrance to the community centre is through two small 'tunnels' that disappear into the building, sneaking between the outer-shell elements. This allows for grandiose doorway entrances that also allow for the segregation of air-flow in the sub-zero temperatures of deep winter where external conditions can be harsh and unforgiving. Immediately inside the entrance is the foyer space: an experiential zone generally devoid of ornamentation that consists of a double-height space interspersed with varying columns in both height and width, a 'ticket booth' and several ornamental lanterns that provide ambient light when desired. The foyer provides the first experience of the community centre, where open space interspersed with tall vertical columns gives the illusion of the external forested environment. A subtle diffuse glow from the hanging lanterns interlinks with the dappled light cast by the perforated spinnaker sail canopy above, which mimic the way in which light filters down through the trees in a forest. These sails move in summer with the wind variances on site through cross-ventilation, bathing the foyer in an ever-moving display of dappled light and shifting shadow.

The use of an extensive canopy at the front of the building

limits the influx of natural light, promoting the relationships between shadow and shade, light and dark, direct and diffuse to influence the users understanding of space. Light enters the foyer from three distinct sources: cascading down the curvaceous shell, filtering through the perforated canopy and emitted from the diffuse lanterns, combining in subtle relationships that provoke a bodily response to space as well as a cognitive one.

During the depths of winter the conditions are reversed; natural light becomes increasingly hard to come by, therefore the artificial takes precedence. Under floor heating provides ambient temperature regulation in winter, creating temperature differentials between the lower and upper portions of the internal environment causing the delicate spinnaker sailed canopy above to undulate in subtle motions. The heated environment within causes snow in small falls to melt allowing the building to emit light during the dark depths of winter. In essence winter is about the escape of artificial light, the subtle illumination and the inviting glow, while summer is about the filtration and penetration of natural light within and the play of contrast between shadow and shade, light and dark, daylight and sunlight.

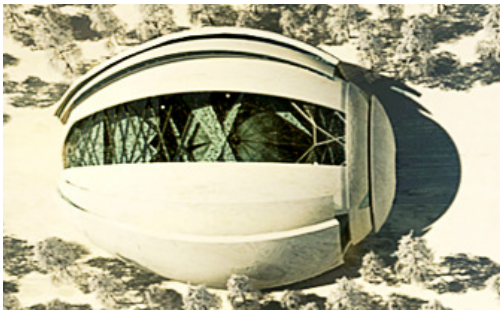


*Figure 5.32: Spinnaker sail distribution shown under roof glazing*

*Figure 5.33: Close up of ampitheatre dome*

From the foyer you gain an understanding of the building: behind are the vast revolving concrete doors that flood daylight into the space; to the left and right the concrete shells arc towards the rear of the community centre; the canopy above comes right down to the tunnel itself before rushing skywards giving a sense of scale and opening up the foyer vertically. The room itself ramps up towards the middle of the building, providing a platform with which to enter into the 'womb-like' central dome: the amphitheatre, a double-skinned nexus point. The dome is entered by walking through a mentally tight interstice between two shells: the external silvered 'sun-bleached' birch dome and the internal tinted reinforced glass. The double shell mutes all view of the interior, while

*Figure 5.34: Close up of perforated bathroom ceiling*

allowing the 'glow' of light from direct sunlight to penetrate within. The double shell is important in creating an internal amphitheatre that is experienced as a destination in its own right – a place that is just as much about the celebration of darkness as it is light.

Traversing the rising floor and the dome entrances, there are public bathrooms on either side, each experiential in nature, with a sloped perforated ceiling mimicking the spinnaker sails of the foyer, reached through a darkened corridor with a hint of light at the end. At the rear of the building is a small cafe space that caters to both the general public and communal events hosted at the community centre. The perforated canopy above fades out here allowing a vast quantity of daylight to cascade down and penetrate into the cafe space both from the roof above and the large side windows.

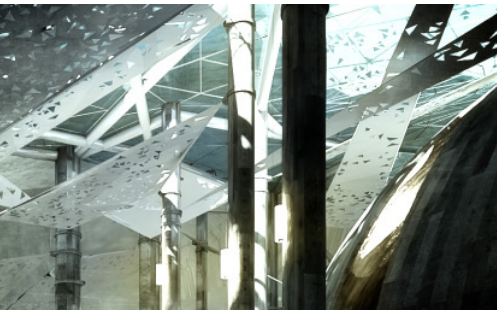


*Figure 5.35: Image showing monochromatic material palate*

The materials of the building are monochromatic in colour, but texturally very different in order to provide a capture basin that sets atmosphere and light as the primary protagonists. Here the building is secondary yet also allows for visual interaction between material and light. The outer shells are comprised of white concrete, rendered smooth to the touch on the exterior while being rougher on the interior to play with the daylight cascading down from above. The columns within are made up from sun-bleached timber, silvered over time in LVL format, as is the dome itself which is constructed from glue-laminated timber with steel reinforcing rods hidden internally. The steel beams above are painted in a diffuse dull silvered off-white colour in order to texturally interact with light without being extensively reflective. The colour scheme is that of white concrete and silvered 'sun-bleached' timber in order to create an open canvas with which to experience the light and atmosphere of the building. The building experience is then perceived not through the colour of the physical material, but the colour of the intangible and ephemeral; atmosphere and light shape the way in which the space is understood, where

the physical becomes a textural backdrop to the intangible, that causes the interaction of these ephemeral aspects to vary spatially.

*Figure 5.36: Overlay showing cohension between overall grid and planting scheme*

Lanterns hanging down from the columns illuminate, at varying heights, the space with a diffuse warm glow. These are supplementary in summer to natural light but become primary in winter. Coupled with winter-only lights above the canopy, these serve to illuminate the internal environment in the depths of winter within various light spectrums. The colour rating of the lighting reflects the intensity and colouration of the sun during the summer months, being a faintly tinted yellow, but primarily white light while the lanterns themselves offer a faint yellow glow that bathes the building in comforting golden hues.

When planting the external forest, care was taken to understand the average growth height of the silver birches in order for the community centre to function as intended over the course of its lifetime. The silver birch, natively populated across the greenfield site itself, has been planted in a set grid of 2m x 2m horizontally and vertically as well as the meeting point of this grid allowing for a 1.414m grid diagonally. The silver birch grows to an average height of 13.9m which allows both sunlight and daylight to penetrate into the structure and not negatively affect over time the primary function of the building: the symbiosis of atmosphere and light creating an experiential architecture that promotes awareness of the immaterial.

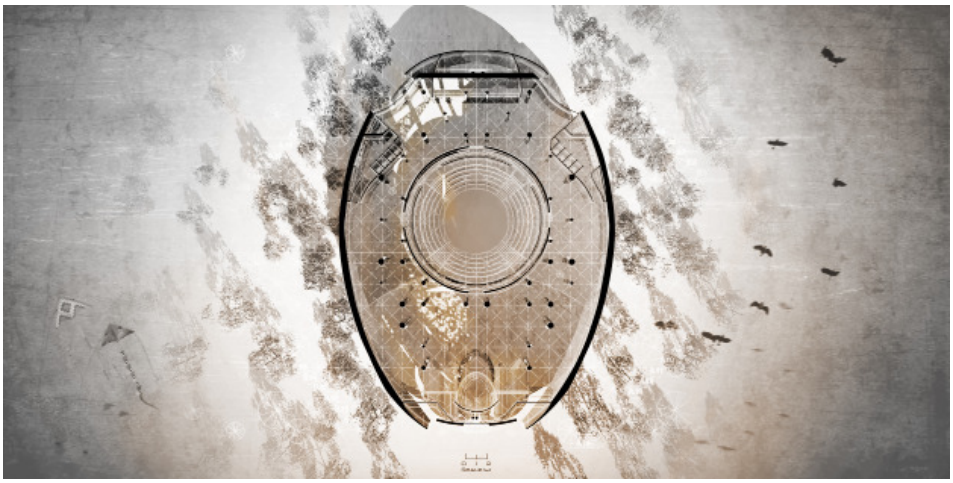


*Figure 5.37: Plan of community centre*

## PLAN:

Unlike a conventional plan, the case-study architecture (Community Centre) has multiple 'levels' yet not in the traditional sense and can only be described successfully as a single plan due to the nature of its construction.

The plan 'cut' has been taken at 2.0m above ground level - accentuating the column layout and centralised nature of the dome in stark contrast with the heavy outer shell. The plan renders the building in a legible, basic, format that explores the relationships between horizontality and verticality, form and no-form, presence and absence, and light and dark. Set deep within a specifically planted forest set out in a precise layout on the same grid the building has been constructed upon, the community centre is an experiential piece that seeks the capture and creation of atmosphere and light in order to create an ephemeral, immaterial architecture that 'elicits a sense of wonder' in its participants.

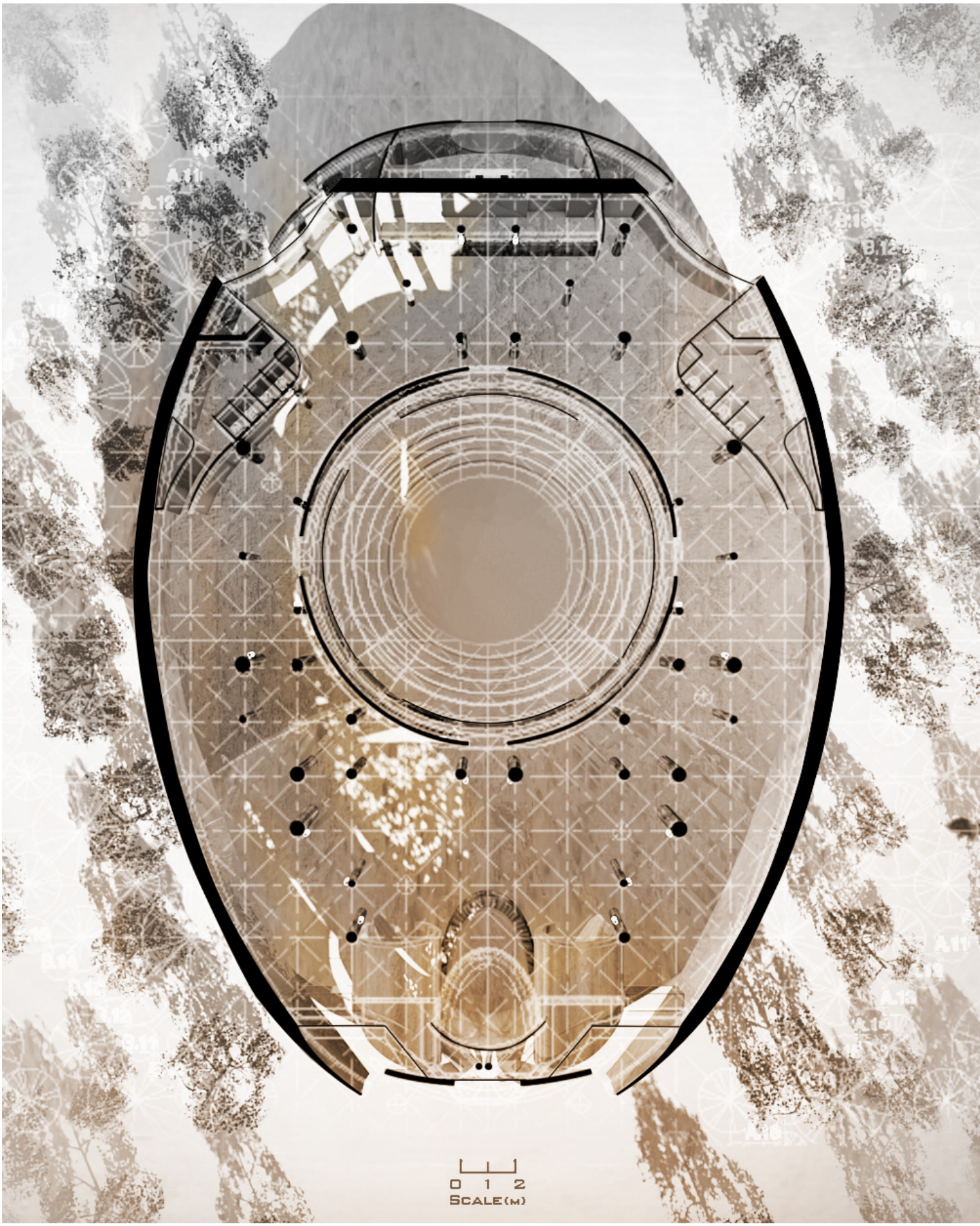



*Figure 5.38: Close up of plan of community centre*

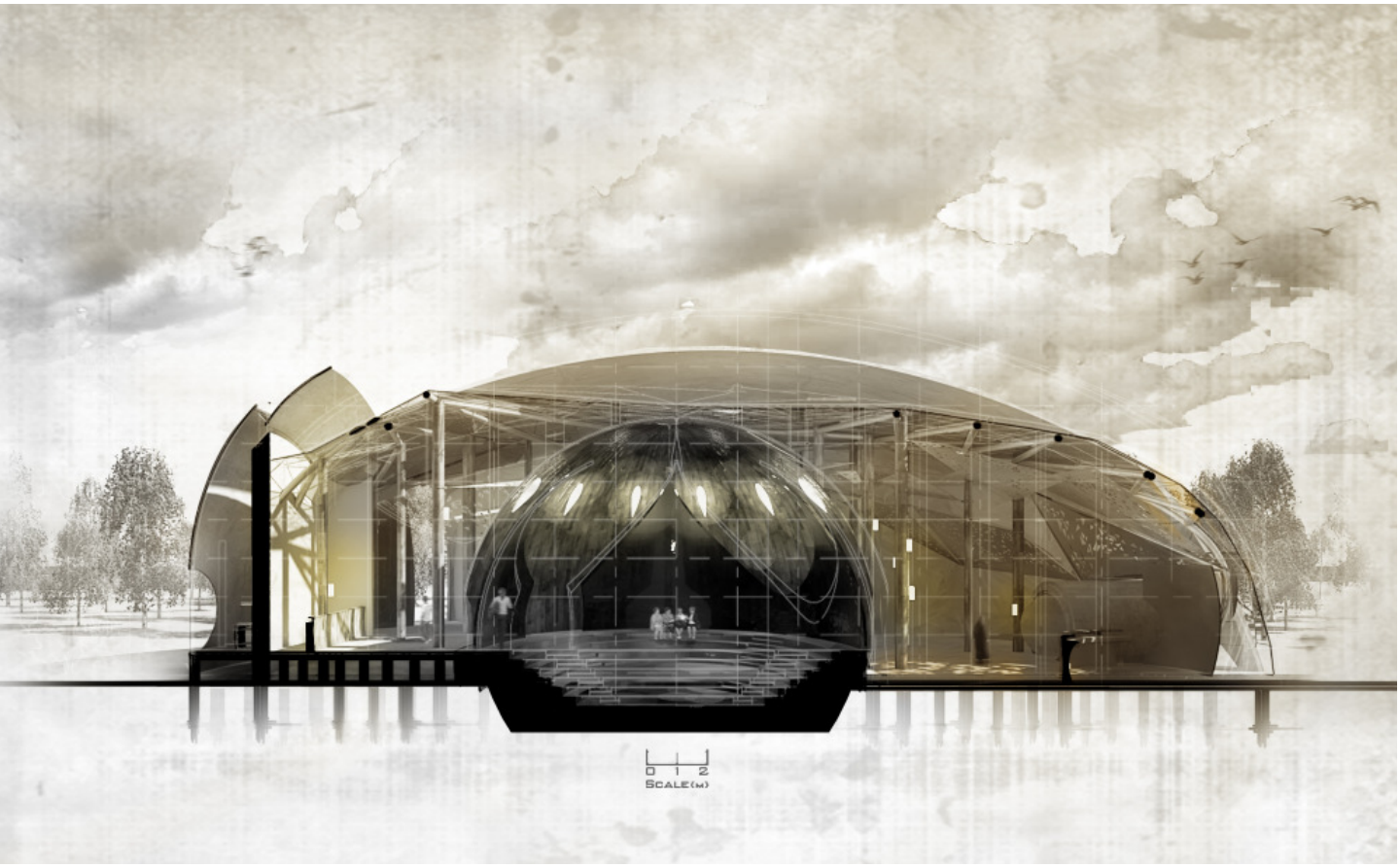



*Figure 5.39: Longitudinal section*

## LONGITUDINAL SECTION:

The longitudinal section accentuates the relationships between form and space, presence and absence. It juxtaposes the dominating nature of the 'destination point' - the dome, with the surrounding encapsulated space that is a carefully constructed balance between 'what is' and 'what is not'.

The section shows the rear shells capturing sunlight and propelling it downwards into the cafe space, as well as articulating the gradation between light and shadow: the front of the building having denser perforated sails mitigating the light than the rear cafe end of the structure. It explores the relationship between the ground and the building itself, taking into account the localised ground conditions (Extensive rock on site below grade making excavations difficult) by touching the ground lightly and only penetrating the surface for the dome itself.

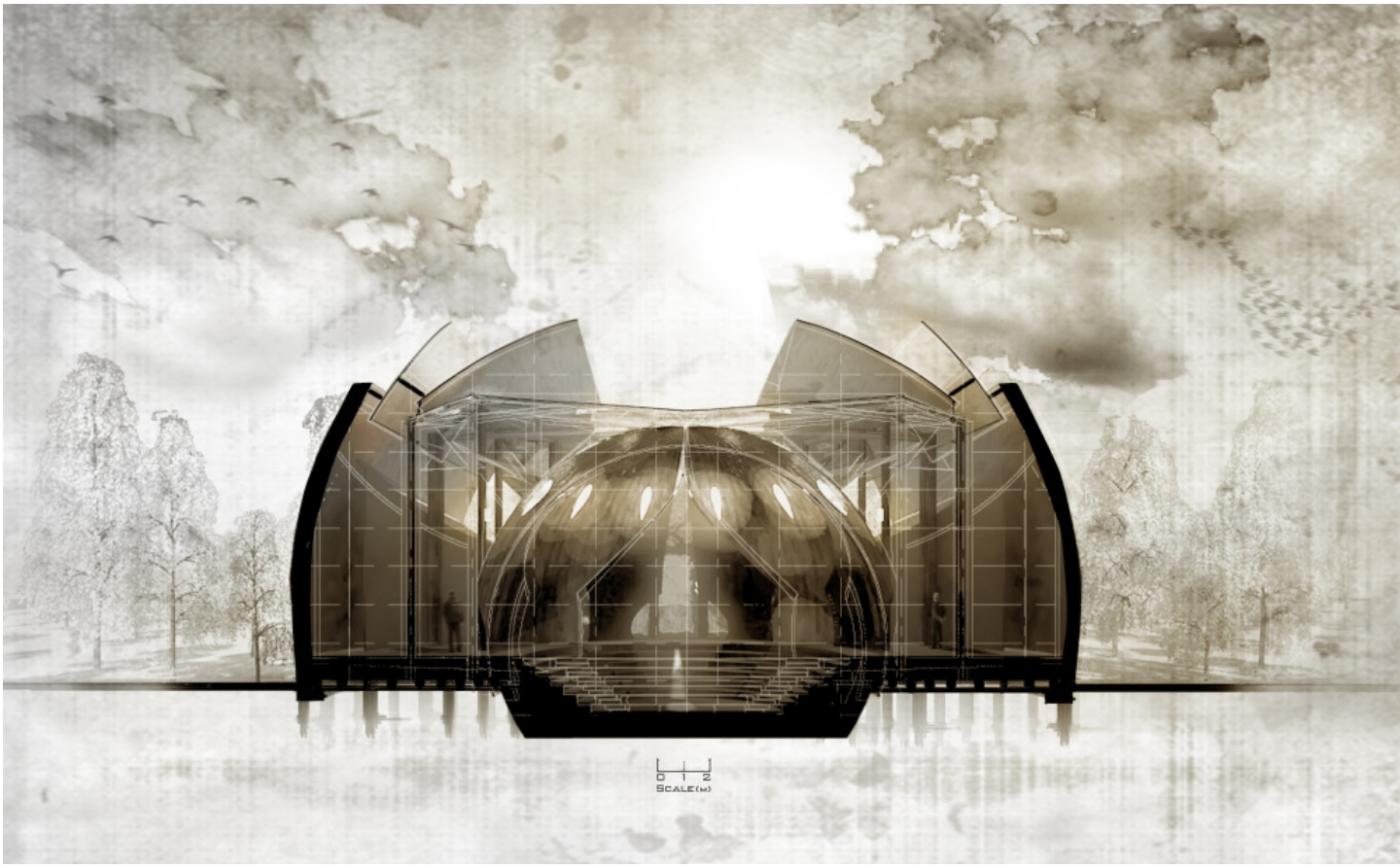



*Figure 5.40: Transverse section*

## TRANSVERSE SECTION:

The transverse section highlights the relationships between the shell structure itself, showing the way in which light is 'scooped' up and cascaded down into the community centre - providing subtle ambient daylighting. It accentuates the relationship between outside and inside - the former consiting of the concrete shells and external glazing, the latter consisting of columns, dome and internal lighting.

The section shows the relationship between daylight and artificial light, where the comprehensive whole is experienced through a sympathetic fusion of both the natural and artifical resulting in a series of spaces that are subtly lighter or darker depending on purpose: light becomes the generator of spatial awareness through capture, fusion and careful consideration.

*Figure 5.41: Evocative image of summer outside front of community centre*

## SITUATIONAL AWARENESS: THE SITING OF ARCHITECTURE

Architecture must bear a relationship to site. Within the context of this thesis, the careful consideration of site was important when constructing a 'spatialisation of the ephemeral'.

A greenfield site within the city of Rovaniemi was chosen in order to reinforce, in an architectural case-study, the Finnish connection to nature. The building is situated within a man-made forest reminiscent of the natural landscape of Finland, and left as a destination point in the centre rather than a hyper-designed outcome. As such, there is no paving leading to the architecture: sited within the centre of a 'forest', it becomes an experience not only in itself, but also in the journey it takes to get there.

*Figure 5.42: Close up of front of community centre*

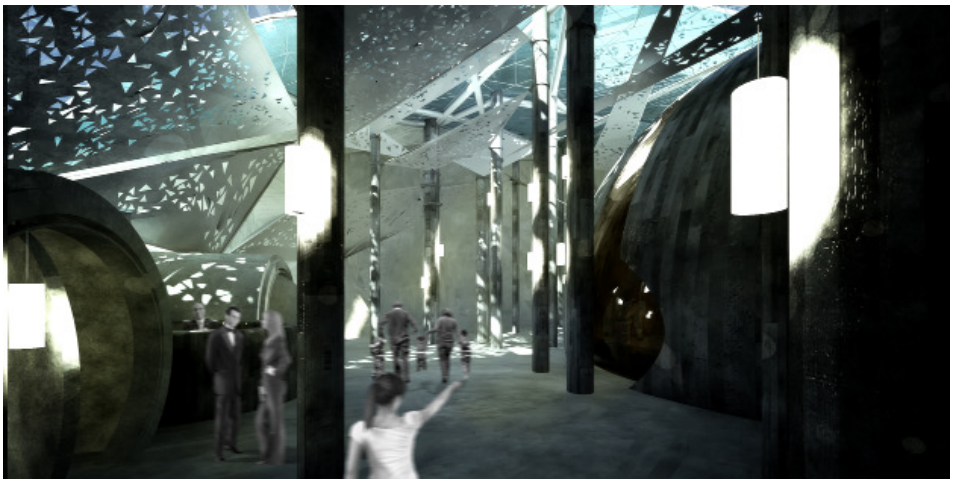


*Figure 5.43: Foyer of community centre - the interplay between varying light sources*

## EXPERIENTIAL SPACE: THE FUSION OF ILLUMINANCE

The foyer accentuates the relationship between natural and artifical light; it is a fusion of illuminance, set to inform the user of the metaphysical through an appreciation of the variances in natural and artificial light, through the ephemera of movement and within an atmospherically active environment.

Shadow and shade play as great a role as light within space perception and understanding and are integral to the experience and understanding of immaterial architecture. It is the very contrast between light and dark and sensory spatial knowledge of atmosphere that evokes an affectual response.

Dappled light, cascading down from the spinnaker sails above, coupled with the strong vertical columns and criss-crossed beams above paralell an experience of the natural forested landscape of Finland; it is not so the much the way it looks so much as the way it *feels*.

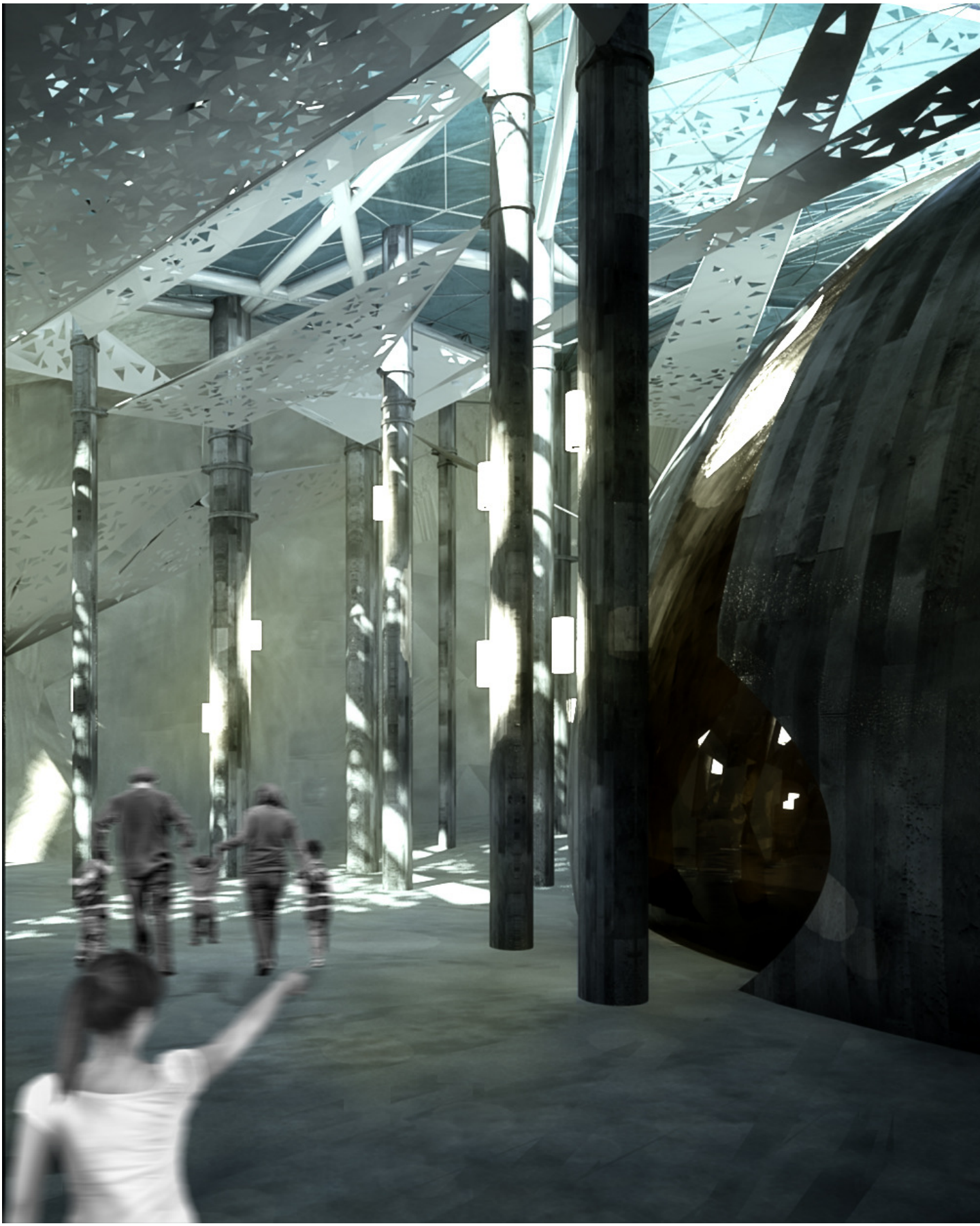


*Figure 5.44: Close up of the foyer showing the relationship and fusion between different illumination sources*

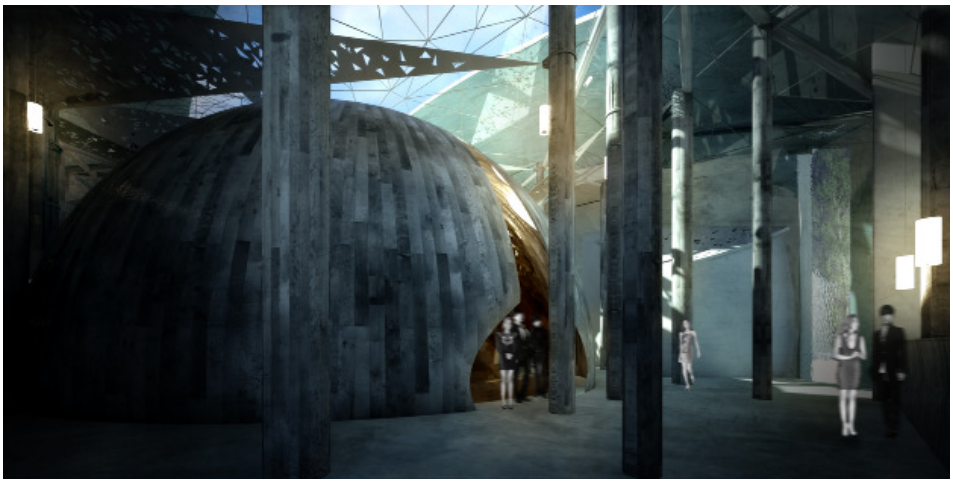


*Figure 5.45: Cafe space in the community centre - the experiential transition zone*

## MILLING AROUND: TRANSITION ZONE

The cafe space accentuates spatial transitioning: from light to dark, tight to broad, low to high and rectilinear to curvaceous. It is through transition zones that the community centre evokes affectual response; when saturated with a monotonous environment, the body may only respond by deeming the majority unimportant, but when exposed to an environment that is atmospherically variable, illuminated through a series of 'spaces' that gradate from darkness to light and a material palate that is of mono-colouration yet texturally quite diverse the body/sense intelligence of affect can cause an emotional shift in register, in effect, 'eliciting a sense of wonder' in the participant of said space.

*Figure 5.46: Close up of the cafe space hightlighting the presence and absence of material objects*

*Figure 5.47: Entrance to the bathroom in the community centre - the interplay between light and dark*

## THE EPHEMERA OF LIGHT AND SHADOW:

The relationship between light and shadow is vastly important to the success of the proposed case-study architecture. It is by transitioning through light and dark that we may perceive architecture to be more than purely physical - a perception that allows space to become enlivened, articulated and experiential.

The contrast between light and shadow in this building specifically relates to experience. A participant will move through a series of spaces, some saturated in light, others bound by darkness, that simultaneously indicate proposed use and facilitate the movement through space.

Experiencing the building becomes a journey between the comfort of darkness and the invigoration of space bathed in light.

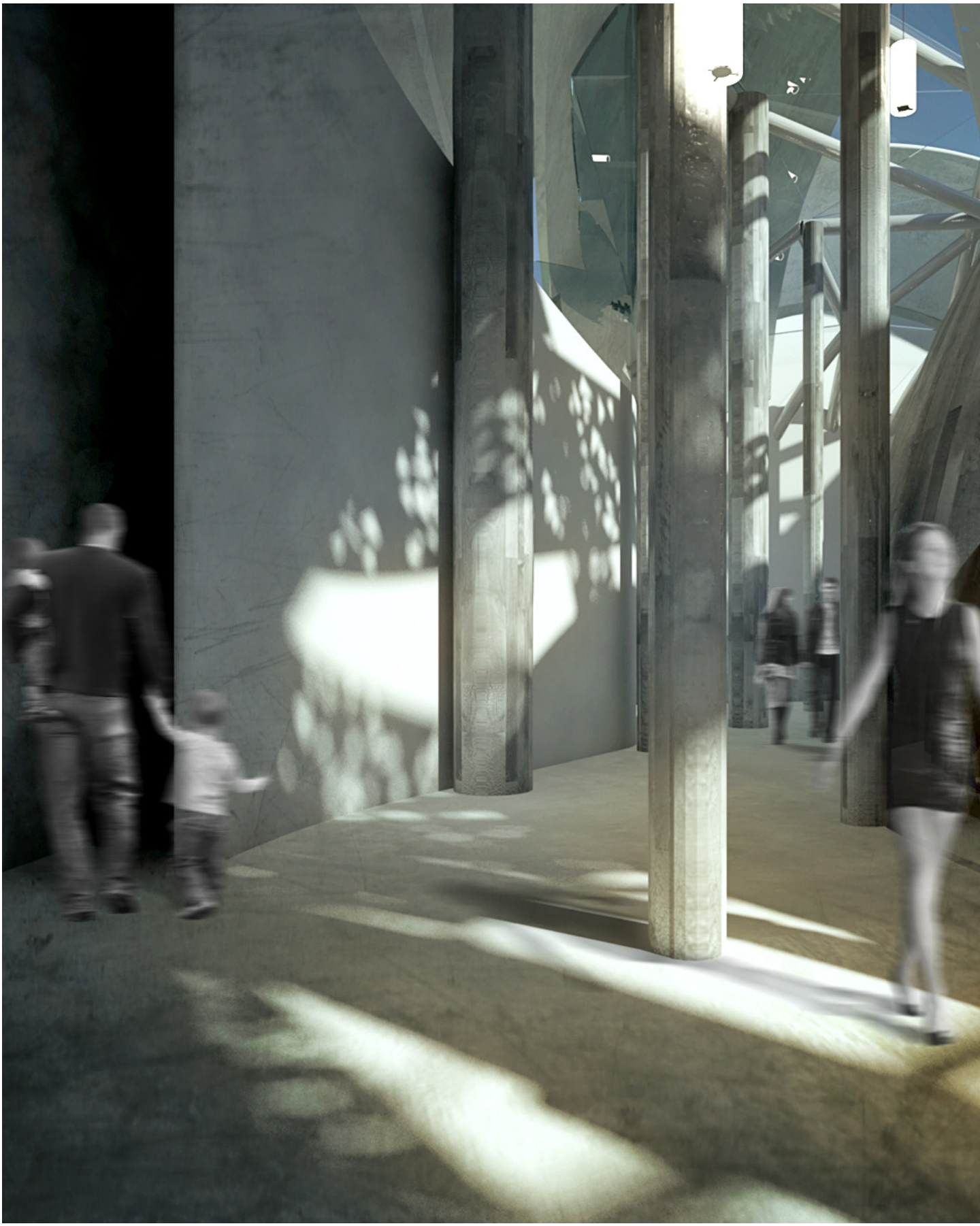


*Figure 5.48: Close up of the bathroom and dome entrances accentuating the level of contrast between light and dark, shadow and shade*

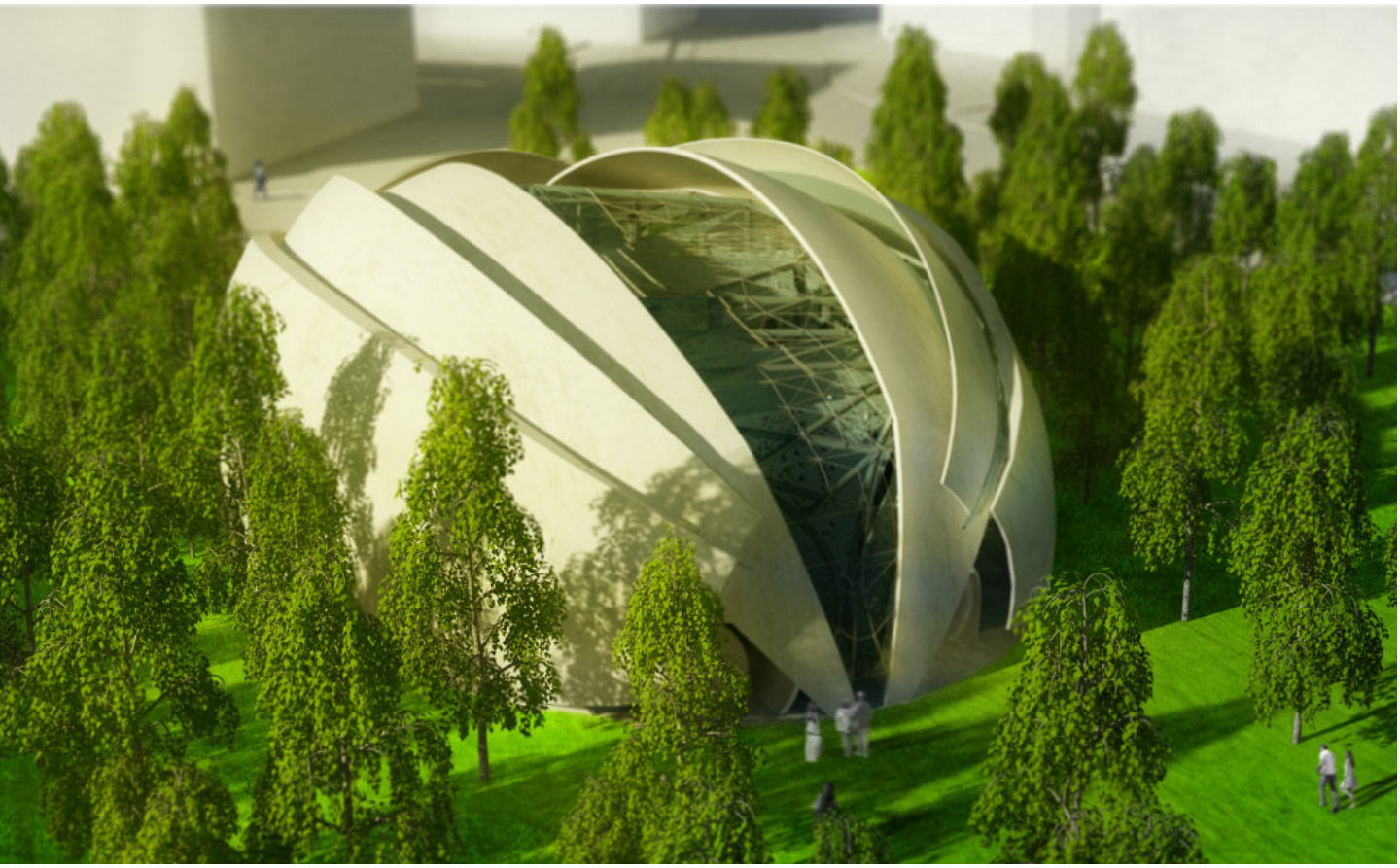


*Figure 5.49: Community centre - the summer condition*

## SHIFTING PERCEPTIONS: THE SUMMER CONDITION

Due to the nature of its location, the case-study architecture experiences dramatic seasonal change within the course of any given year.

The summer condition is all about the penetration of natural light from above, evoking a sense of the Finnish forest: dappled light penetrating down through spinnaker sails that undulate subtly in the wind through cross ventilation, tall columns emulating the trunks of trees, criss-crossed 'bough' beams above casting a series of shadows below, glowing 'lantern' lights that provide a subtle ambient light within, and the final destination - the dome, glowing itself from internal light eminating through a translucent glass wall.

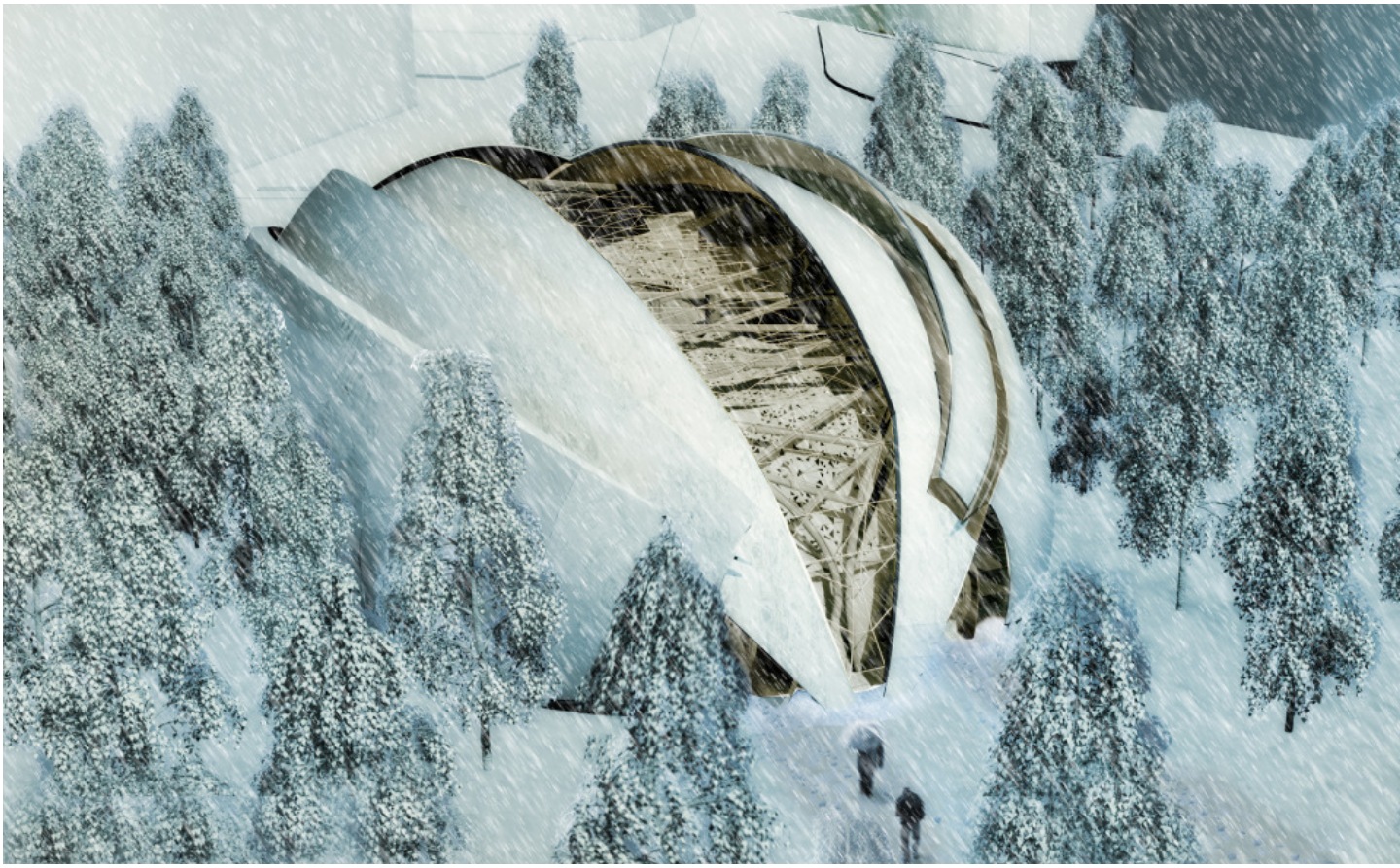


*Figure 5.50: Community centre - the winter condition*

## SHIFTING PERCEPTIONS: THE WINTER CONDITION

The winter condition is all about the release of light outside, the 'glow' of artifical light in a stark and bleak environment: comforting, warm tones of light that emulate the sun break free from the curvaceous form - enticing the user inwards. The building in winter becomes a space to socialise, both formally and informally, within immaterial architecture that retains its functionality, but in a subtler way. Underfloor heating causes temperature differentials that subtly move the spinnaker sails above, causing the dappled light cast from above to undulate slowly, providing a sense of rhythm and a modicum of comfort.

## [ 5.4 ] THE VALUE OF WHY:

This thesis was born through an interest in why spiritual space has the power to emotionally move its participants. Regardless of religious affiliation, agnosticism or atheism these spaces are extraordinarily powerful. It soon became apparent that there were certain architectural moves that defined the 'vernacular' of space that moves an occupant emtionally: the considered entrance of light within void, generally from above, the contrast between light and dark and the cast of shadows, the scale of space often imposing vertically, the material palate of considered reflectances, the introduction of colour at specific junctions, and the subtleties between form and enclosure.

*Figure 5.51: Material presence and absence - Thorncrown chapel*

*Figure 5.52: Imposing verticality - La Sagrada Familia*

Rather quickly the endeavour changed from the origin point of religion to become purely secular; how could space move people without the preconceived notions of the holy and of God? The immaterial and metaphysical aspects of architecture became the thesis focus. Through the creation of a space to bring about awareness of the elusive/intangible within architecture, the architecture would serve to help 'elicit a sense of wonder' in its participants. Thus, the thesis question evolved over time to understand the implications of the spatialisation of the immaterial, brought about through atmosphere, affect and light.

The introduction of atmosphere was crucial to the integrity of this thesis. The theory of affect and light alone, while powerful entities in their own right, lacked a bridge, a link between them and, in the case of affect, a way to physically influence space to bring about an affectual response. By using light as the common entity with atmosphere and affect (who themselves have many links within aesthetic discourse) an architecture that promotes awareness of the immaterial could be conceptualised, explored and finally realised.

## [ 5.5 ] THE TESTING OF IDEAS AND THE AH-HA MOMENT:

During the course of this thesis, certain explorations into design resulted in the need to re-establish the conceptual underpinnings of the self-set brief. Originally looking at purely the theory of affect and light, the design was progressing in certain areas yet was somehow lacking in cohesion across its entirety. Through the process of design, it becomes apparent for the need to add atmosphere into the theoretical mix.

Atmosphere is the vital link that ties all of the theoretical explorations together with the design to create a realisable built outcome. Atmosphere allows for the introduction of a seeming intangible, yet controllable to a certain extent, entity that parallels the introduction of light as the primary realisation driver for the ephemera of wonder. By understanding how architecture may create atmosphere, atmosphere that fundamentally changes the understanding and perception of space, we are able to tangibly explore affect itself. Ultimately, the design has gone through a multitude of iterations, but has only become a cohesive whole after the introduction of atmosphere – it is the glue that holds this project together.

Through the creation of this thesis my eyes have been opened to a world of possibilities within fields of architecture that are subjective and elusive, hard to define and capture, yet thoroughly rewarding and mind-blowing when created within our built environment. It is only through embracing all of the ephemera that impact upon our perception of space that architecture can truly be called 'great'. Atmosphere, affect and light are three fields that relate to architecture by enhancing our understanding of space, often subconsciously and unknowingly: they are powerful entities that shape the way in which we view the world.

*Figure 5.53: The evocative nature of atmosphere - Blur building*

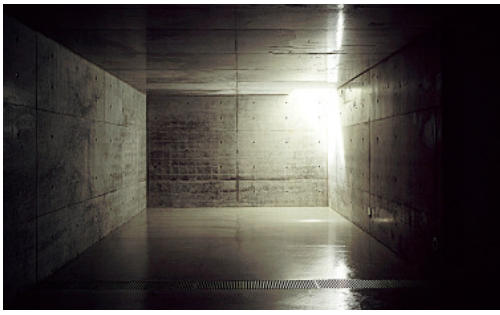


*Figure 5.54: Penetration of light - Noh house*

## [ 5.6 ] DESIGN REFLECTION:

This entire design project is but the first of many explorations needed to understand how architecture may influence and inform the user of the metaphysical. This thesis has looked towards atmosphere and affect – yet has barely scratched the surface of these two evolving fields of exploration. Further exploration into how the ephemera of architecture may influence our understanding and perception of our built environment is needed at a much deeper level. This thesis basically attempts to set the tone and whet the appetite for an immaterial architecture, where the formalistic, aesthetic and functional aspects become secondary and subdued compared to that of the intangible, immaterial and atmospheric.

Architectural understanding must evolve to further understand the unique presence of art and science within our chosen field of expertise – because it is the very introduction of 'art' that allows for architecture to bridge the gap between the tangible, physical and real with the elusive and hard-to-define world of phenomena. Art gives us the ability to take on and explore the immaterial and metaphysical realms of architecture. Therefore, this building sought to overlap the physical and immaterial boundaries of architecture to form a building that spoke of both simultaneously; the experience is a multi-layered approach that allows for both a bodily and cognitive understanding of space where an attempt is made for a participant to be stimulated across all facets of being.

*Figure 5.55: The presence of mass - capturing the immaterial within material confines*

Through the process of design, form becomes apparent as a requisite catalyst for the creation of immaterial architecture. There is a certain level of mass necessary when seeking the creation of the immaterial within architecture. The fine balance between 'mass' and 'no-mass' either charges a space with the atmospheric and ephemeral or, alternatively, mutes its presence. Through numerous design iterations, this careful balance of light and atmosphere within spatialised form

was explored. The resulting final case-study architecture presented in this thesis becomes the means with which to test the success of this balance.

*Figure 5.56: LVL columns - the 'trunks' of trees*

Within the evolution of the architectural design, solutions had to be found for numerous problems associated with the pragmatic necessities of architecture; in pushing the immaterial and metaphysical aspects, the realities of structure and fire safety suffered. The resultant architecture has been designed with a consideration to structure, yet it has been superceeded by the necessities of the immaterial: atmosphere and light. While the outer shells could be considered structurally sound with the obvious necessary calculations, the glazing itself would have to be looked at in a much greater level of detail. The glazing is held up by the series of timber columns, painted steel beams and by the shell walls themselves. Snow loading was considered due to the location and double layered, electrically heatable toughened glass was chosen to mitigate snow loads. The actual sizing of the panes, however, hasn't been taken into consideration and in reality there would most likely have to be more structure. Yet the addition of aesthetically considerate glazing structure should not take away from the creation of an immaterial architecture as it would just add another layer of perforated material for the light to pass through. Due to the building height, the LVL columns could be subject to bending and would require an internal steel stiffening column - in essence making the timber a facade. Additionally, fire safety could be a concern given that both entrances/exits are at the front of the building, so the addition of a regulatory fire exit would have to be explored and implemented in such a way so as not to diminish the building's primary purpose.

*Figure 5.57: Glazing structure in community centre*

In the end, the resultant architecture is ultimately but one potential architectural outcome in a sea of possibility. The core components of exploration within this thesis are all at varying stages of understanding and acceptance within the

field of architecture, and must be further explored to even begin to scratch the surface of their potential. Therefore, this thesis poses more questions than it answers, being but the first step in the long journey of understanding and working with the metaphysical. The building is a nodal point in aesthetically simplistic surroundings that seeks to stir discussion on not just the formalistic physical aspects of architecture, but also the immaterial aspects of our world. Due to the chosen site and primary user base, the architecture seeks to elicit a sense of wonder through a merging of metaphysical entities: shadow and shade, light and dark, atmosphere, and the transitory and elusive ephemera of wonder.

# [ 6.0 ] CONCLUSION

## [ 6.0 ] CONCLUSION:

Architecture can be understood as pragmatic, functional, aesthetic and structural but also ephemeral, atmospheric, emotive and sensorial. One could argue that our built environment is primarily designed considering the former – the mundane, rather than the latter – the experiential. The aim of this thesis was to explore how architecture could heighten a user's awareness of the immaterial aspects of spatialised form through the use of ephemeral drivers such as atmosphere, affect and light. It argues that the intangible, elusive and transitory moments within architecture are just as important as the physically present tangible object. It is vital to discuss how architecture is understood and experienced holistically, where created atmospheres, light interaction and bodily cognition of space shape the way in which we perceive the built world. This thesis explored some of the possibilities for the creation of metaphysical architecture, looking towards the theory of affect, atmosphere and light in order to elicit movement within a participant of space.

In *Atmosphere: The Ephemerality of Space* this thesis looked towards notable theorists such as Jonathon Hill, Ben Anderson and Gernot Böhme in order to understand what atmospheres are and how they can be created within architecture to influence the perception of space. In *The Immanence of Affect* it looked towards Eric Shouse, Nigel Thrift and Helen Frichot among others to piece together a working understanding of affect within the realm of architecture. In *Illuminating our World* it looks towards practising professionals such as Major, Speirs et al., Henry Plummer and Tadao Ando to understand how light may impact upon architecture in order to bring about affectual awareness of the immaterial.

As the nature of this thesis is about exploring the potential for architecture to promote awareness of the immaterial aspects of our built environment it is programmatically loosely

defined. Beyond the obvious need for a community centre to cater to a vast array of individuals, little emphasis has been put on the actual programmatic necessities. The importance of programme is secondary to the understanding of that metaphysical space. Therefore, all the architectural moves made within the design of the community centre reflect the need for light and atmosphere to subtly manipulate a participant's understanding of space through the theory of affect.

Tangible solutions to the design of affectual architecture are understood through light and atmosphere; the filtration of light down through the canopy above that merges with, and rebels against, the golden lantern glow washing over the senses; the manipulation of cross ventilation allows for the weather outside to blend with the atmosphere inside, gently moving the cloth canopy above to create scintillating patterns of light and dark.

In order to test the theoretical ideas promoted by this thesis, the site was chosen in extreme conditions where the accentuation of light in particular was used as a proponent for a change in spatial awareness of its inhabitants. The locality, Rovaniemi, experiences drastic seasonal changes ranging from sun-drenched summers that only experience twilight and barely any true darkness to chaotic snow laden winters where the sun barely broaches the horizon. The seasonal shift creates huge impetus for an atmosphere within space that parallels and juxtaposes with the weather outside – creating a cool and calming light-bound interior in summer and an inviting glowing shell in winter.

The physical site had huge bearing upon the resultant architecture. The surrounding context of mono-aesthetic apartment buildings lent itself towards an architectural design solution that was community minded. The existence of native birch trees around the perimeter of the Greenfield site impacted upon the metaphorical allusion towards recreating the dappled light experienced in one of the many

forests of Finland and the proximity to the heart of Rovaniemi allowed for the architecturalisation of an affectual space. The creation of a community centre meets the needs of the town by allowing for an informal gathering space that juxtaposes with the town hall which itself caters to formal events.

The resultant design is but one of many possible formalistic solutions; it is not so much the aesthetic output that matters as the way in which the form lends itself to atmospheric inhabitation and its interaction with light. Architecture is the key component in testing the theoretical ideas within the thesis through the manipulation of form, material, aperture, scale and overall space creation. The way in which form interacts with light is integral to the success of the thesis.

Light is the primary ephemeral driver eliciting a visual response in an occupier of space, informing the body-sense of spatial perception and ultimately trickling down into cognitive recognition of the immaterial. Every facet of the building has been designed with this in mind. The careful choice of materiality, relationship between elements, verticality of space, penetration of light, capturing of shadow and the undulation of form all come together in creating an immaterial milieu.

The potential problems resulting from the final architectural solution result from the subjectivity of the thesis topic. Atmosphere and light all influence a user in different ways while affect becomes the pre-personal pre-conscious driver of bodily understanding. The result is architecture that has an impact - the problem lies in the *intensity* of that impact. It is through the use of affect that this gap is bridged but in doing so diminishes the power of subjectivity within the perception of space. As the architecture has been designed to question and promote awareness of the metaphysical aspects of our built environment, the potential problem lies within the creation of an immaterial space that is both subtle and yet blatant enough to move those who experience it.

To solve this problem, the design would have to address spatial experience across the course of a year. The intensity of experience will vary due to atmospheric and lighting conditions beyond our control yet an underlying, palpable entity must exist within the community centre that speaks to the participant metaphysically – the immaterial must always be present. The fine line between theory and design is important to resolve architecturally when considering this thesis as a whole. Due to its very nature there are many blurred boundaries between 'what is' and 'what is not' where the defining factor is entirely subjective. Architecturally speaking the created building must articulate to every user, at some level, the immaterial aspects of our built environment and the way in which they have the power to transform the perception of space.

Further developments are needed within the fields of atmosphere, affect and light in order to leverage the true potential of metaphysical space creation. The field of atmosphere has begun to be understood within the realm of architecture yet appears to play a vastly more important role within our experience of space than previously credited. In order to fully grasp the potential of atmosphere it must become an integral tool in the arsenal of the architect. The theory of affect has been discussed in architectural discourse yet primarily resides in the social humanities and is a unique way of understanding how the human body responds to sensory saturated environments. However, architecture must embrace an understanding of affect in order to further understand how to create spaces that move people. Light, of all three theoretical chapters, is the most developed and understood in terms of architecture. Yet light has often been relegated to a purely functional role within space creation, adhering to the illumination of space over the 'illumination of the mind' - where the latter must be pushed further within architecture to leverage its full potential.

## *Conclusion*

Overall this thesis poses more questions than it answers, looking towards additional research to glean answers from a field of architecture that is by its very nature elusive, hard to define and highly subjective. The fields of the immaterial and metaphysical within architecture merit further thought and design explorations to even begin to understand the ways in which the immaterial may be highlighted over the physical. This thesis attempts to provide a foundation for further research that may parallel the understanding and theories behind atmosphere, affect and light within the field of architecture.

# [ 7.0 ] BIBLIOGRAPHY

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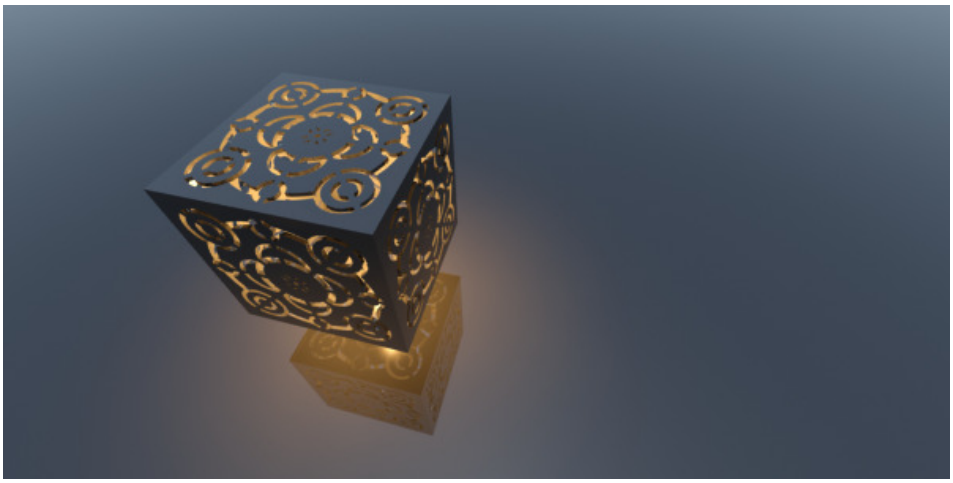
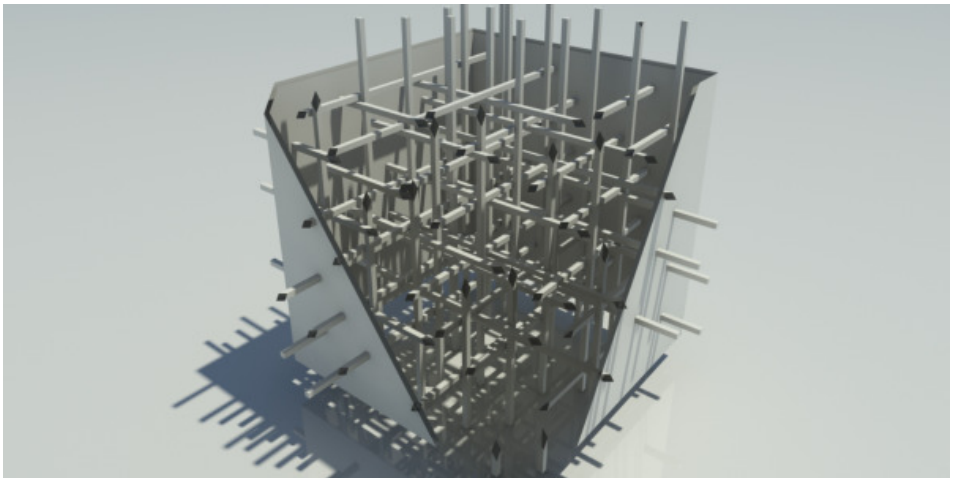
# [ 8.0 ] APPENDIX



*Rendered Maquette: Pattern Box emitting light on reflective surface*

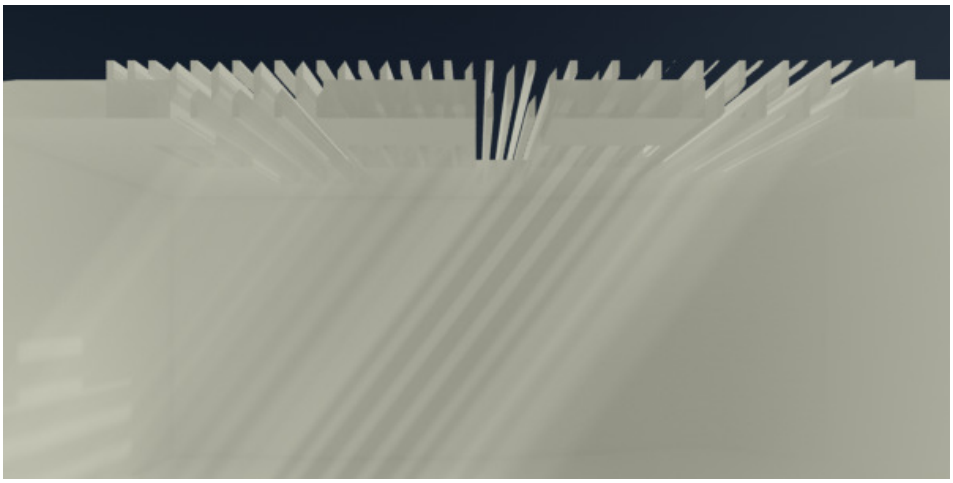


*Rendered Maquette: Penetrated box filtering light through confined space*

*Crafted Maquettes: Wood and Acrylic laser cut boxes to play with filtration of light*

*Crafted Maquette: Wood laser cut box to play with pattern and filtration of light*

*Beams of light within corridor*



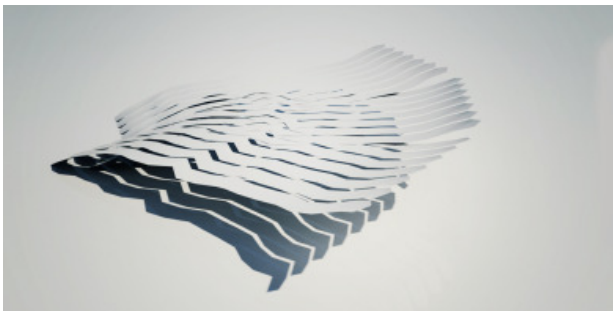
*Beams of light within corridor - slice view of roof perforations*

## SHADOW AND SHADE: A STUDY OF DARKNESS AND FORM

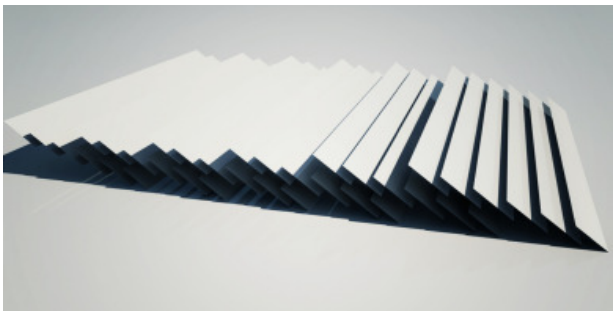
These rendered images all relate to explorations of light. They look at how form and surface may interact to create varying depth of shadow and shade.

The above images relate to direct beams of light filtering through a perforated roof structure.

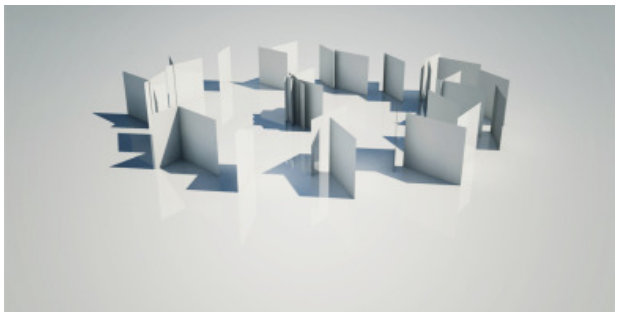
The images to the right all relate to formal manipulation in order to understand reflectance and formal interaction. They create contrast and shadow depth.



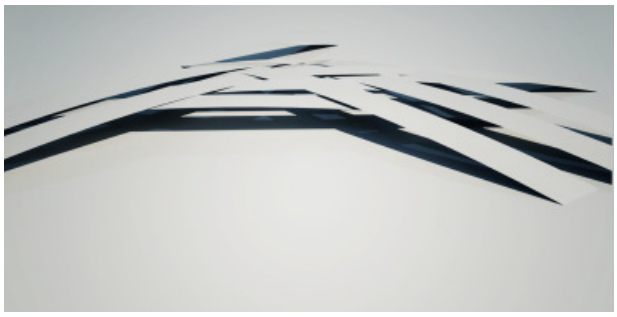
*Rotated form*



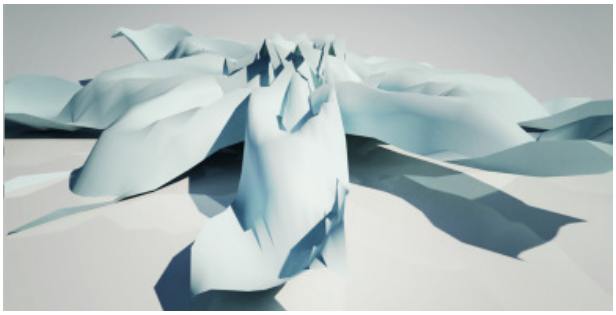
*Stacked form*



*Stone henge*

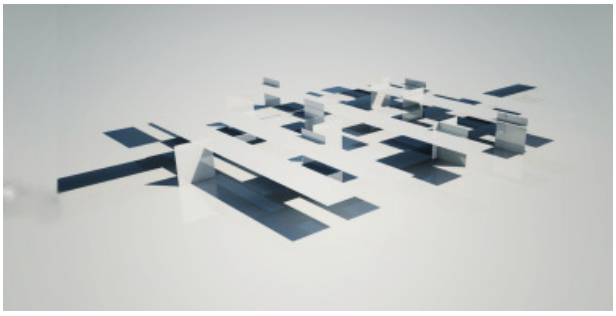


*Draped form*

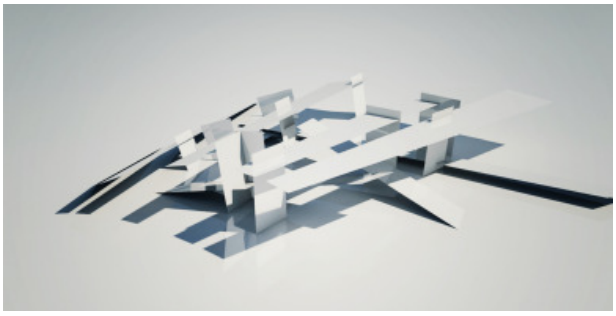


*Organic form*

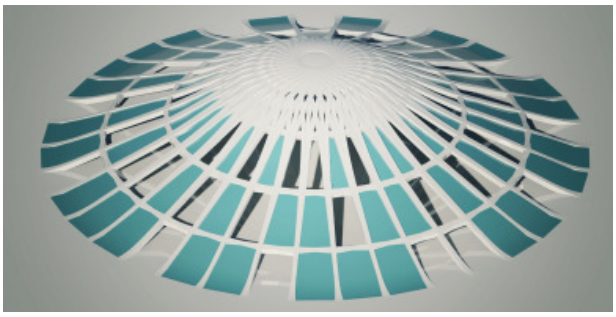
*Ramped form*



*Rectilinear form*



*Distorted form*



*Gladiator form*

*Shell form*

## SHIFTING PERCEPTIONS: SOLAR MOVEMENT

The sun's movment vastly impacts upon spatial perception. Thus, it is imperative to explore how space is understood and experienced across the course of a day rather than purely influential moments within space and time chosen at whim by the architect. The subtlties between diffuse and direct, daylight and sunlight change how architecture is navigated, enlivened and perceived. As such, this solar study of the 'cafe space' examines how light changes the way in which the immaterial is evoked and understood in our built environment. It looks at where light falls at a quarter past the hour, every hour, from 6:15am till 11:15pm on the 21st of June 2011.

*6:15am Cafe Space*

*7:15am Cafe Space*

*8:15am Cafe Space*

*9:15am Cafe Space*

*10:15am Cafe Space*

*11:15am Cafe Space*