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'BOUNDARY'
an expression of the dynamic unity between man and
environment

Building a paradigm to unravel the mind’s fundamental
kinship with the cosmos and its role as the vehicle of the
universe’s unfolding meaning

Maria Saridaki (BA Hons, MArch)
DECLARATION

I hereby declare that this thesis has been composed by myself, that it is the result of my own work and where reference is made to the work of others, due acknowledgment is given.
I also certify that this work has not been submitted for any other degree or professional qualification except as specified.

Maria Saridaki
ABSTRACT

The aim of this thesis is to build a paradigm to unravel the human mind’s fundamental kinship with the cosmos and its role as the vehicle of the universe’s unfolded meaning. The concept of ‘boundary’ is presented as a primary ontological force that drives, provokes and defines our thinking, consciously and subconsciously, in our attempt to achieve an understanding of self within the cosmos. It provides the hidden thread, the ‘limited concept’ that acts as a guide towards the building of this paradigm.

Challenging its primarily physical interpretation, this thesis examines the concept of boundary from its genesis, imbedded in the primary moment of the birth of human consciousness within the universe, following it along its progressive complexity. Merging a primarily phenomenological with an epistemological approach by building on a number of essential evolutionary phases in our existence, through a synthesis of induction and deduction, we are confronted by how they are driven by boundary. Myth, religion, language, culture, philosophy, science, and even architecture are manifestations of humanity’s gradual attempt to understand, adapt to and transform our world and ourselves within it and in reference to it, displaying an inherent dynamic between our mind and our world. Bound in this dialectical creative opposition, our conceptualisations of the world are seen both as insights of our mind in its attempt to unravel the meaning of the cosmos, as well as the cosmos’s attempt to gradually reveal its nature within us, thus revealing their radical kinship.

Ultimately, the aim is to reveal architecture and its embodied nature as a fundamental manifestation of our existence within the cosmos and to distil its message and purpose, its timeless task. Architecture is exposed as an existential medium, engaging the boundary between man and the cosmos, inviting us to read a model of the world while at the same time endowing us with our own sense of self and finally enabling us to coexist with our world in an interactive evolving equilibrium.
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INTRODUCTION

The concept of boundary has been a driving force in my thinking ever since I stumbled upon it during my diploma year while developing a project of my hometown of Heraklion and its complex urban situation. The seed of the concept, however, is most certainly to be found in my personal experiences and life circumstances. My voyage to ‘Ithaca’ has indeed been a long one.

Preface

Born in Crete, I believe I share the passion and subconscious curiosity of its people to seek the other. The island of Crete has been at a crossroads of cultures ever since it was populated. The sea, however, was never seen as a barrier but in contrast as an invitation towards the unknown. This realisation drove me to research the emergence of urban culture in the Aegean during the Bronze Age for my 4th year dissertation thesis (Saridaki 1998). I became fascinated by the manner in which the Minoan, Cycladic and Mycenaean cultures sought, met and influenced each other.
This merging of cultures had a far-reaching resonance displayed in the birth of Classical Greece. The seeds of the concept of boundary, tension, opposition and transformation are discernable in that thesis.

After having spent several years in Scotland as a student of architecture, I felt I needed to redirect my attention to my own identity and sense of self. During the summer of 1998, I was thus drawn to research the unique urban situation of my hometown of Heraklion in Crete. The concept of boundary first made its appearance in a physical sense, on the one hand in the enormous footprint of the Venetian Fortress of Heraklion and the sea on the other. (fig.i.1-i.2)

figures i.1-i.2: Maps of the fortresses of Crete during the Venetian occupation (1204-1669 AD) and the fortress of Candia (Heraklion). Source: Tsompanaki (1996)

The Venetian Fortress and its ambiguous meaning in the lives and memories of the people led me to choose the site of the Bastion of Pantokratoras, an area of the fortress where multiple tensions were discernable. These were identified as stemming both from the physical as well as from the symbolic realms, from the fortress itself as well as from the adjacent city within and out-with it, but always in reference to each other. (fig.i.3) Through the realisation of these multiple tensions of the chosen site, I was driven towards examining the fundamental meaning of boundary. The analysis of the site was thus quickly broadened to include and eventually to be led by an analysis of boundary both as a physical and symbolic essence.
Almost simultaneously, though, I came in contact with other disciplines, all of which left an undeniable mark in my approach towards the concept of boundary in the years to come. I had the good fortune to attend a lecture at the University of Crete by Stephen Hawking, Professor Emeritus of Mathematics at Cambridge University. He addressed the attempt in modern physics for a theory of everything, a notion that implied unity in the universe and science’s urge to understand the whole. I have always been drawn to science and in my circle of friends there were students of physics, chemistry and biology and their insights into their respective sciences helped me enrich my research in my attempt to decipher the meaning of boundary throughout the following year.

During my final year, I engaged in a series of very fulfilling debates about the nature of boundary with my then tutors Ernie Anderson and Dr. Dorothy Bell. They encouraged me in widening the scope of my research, which came to include science as well as philosophy and linguistics. During my research, the theory of everything, the anthropic principle and the phase boundary in physical chemistry as well as dialectics, Aristotle’s metaphysics and linguistic definitions served as an invisible backbone to the unravelling concept and its design manifestation. (fig.i.4) It soon
became evident that there was potential for further research and I was encouraged to develop the concept further in a Masters thesis. A gradual process of evolution took place throughout my Masters and my interest started to focus on unravelling the essence of boundary as an ontological force one that drives, provokes and defines our thinking, consciously and subconsciously. (Saridaki 1999)

During my diploma and masters, I believe that I was driven by my empirical work, approaching the boundary concept inductively and drawing my inspiration through observations. The design proposal was the natural conclusion of the observations. In my analysis and brief, I focused on ways of healing the identified broken boundaries of the site, the barriers, through what I had learned during the research. (fig.i.5) This was valuable at the time but I felt subconsciously that there was a larger picture under the surface that I needed to address and during the PhD, the search of what that larger picture was became the primary focus. Early on in the PhD, I took part in a series of very thought provoking seminars and discussions led by my supervisor Dr. Faozi Ujam that included structuralism, phenomenology, mythology and the nature of the mind among others. Needless to say I felt drawn to these notions. These introductory talks invited me to dig deeper.
Throughout the first stages of my PhD research, with the invaluable guidance of my supervisor, I was attempting to reassess the methodology. Neither inductive nor deductive reasoning alone seemed suitable in addressing the concept. Placing boundary under the umbrella of a grander theory (holism was considered) seemed forced and limiting. I considered starting the thesis with architecture (indigenous architecture) or urbanism, as this was the most obvious choice for my background and there was sufficient contemporary research going on, from which I could draw inspiration. I contemplated on starting with a problem (i.e. the effects of modernism) in order to offer my translation of the boundary as a solution. I was, however, adamant about not addressing critically any particular school of thought, as I believe they all form essential and valuable parts in our evolution. The boundary is a positive, inclusive concept. These options, therefore, failed to translate my personal insights into the subject and engage the boundary concept in the deeper manner that intuitively made sense to me.

The challenge seemed to be that the boundary concept was essentially based on an empirically unverifiable hypothesis. This was incredibly daunting but not impossible to address. Knowledge is filled with insights that at first seemed illogical.
Everything had indeed started with empirical observations but the widening research revealed the existence of a pattern throughout. The more I read, the clearer it became that there was a thread that connected everything I came across, beyond, I believe, my personal projections on them. The boundary, unconsciously became what Steven Holl calls a *limited concept* but in this case with an unlimited scope. I gradually became more and more fascinated about delving deeper into these apparent similarities, this shared DNA and the boundary concept was gradually freed of its physical manifestation and revealed itself as that connecting driving force. This inadvertently led to a formulation of a suspicion that boundary is indeed an inherent, existential ontological force and it seems to drive us consciously and subconsciously throughout all essential phases of our existence. The challenge, now, was to formulate a structure, build a paradigm to support this suspicion. I therefore chose to approach the concept organically from its genesis, through the lens of an explorative methodology, a synthesis, in an attempt to build a paradigm by merging induction and deduction in a continuous cycle of reasoning. This approach, though arduous and unforgiving at times, eventually proved to be better suited to the inherent nature of the concept of boundary.

Every act of building needs a foundation, every plant needs a seed and I searched vigorously to identify it. I believe that the private journey I was on greatly influenced how I approached my research. There was a time when I became disillusioned with the progress of my thesis and decided to enter the profession I had studied for and start a life in Belgium with my other half. My aim was to find something tangible to balance out the intangible of my research. This decision, however, meant that I once again placed myself on the boundary. In hindsight and unconsciously, I lived my research. During my years in Scotland and in Belgium I experienced first hand a transformation of self; the cultural shock, the language shock, the alienation, the opposition, a renewed sense of self that allowed me to accept the invitation of the other, the redemption, the re-established balance, all to be repeated again and again in a continuous cycle. Unfortunately, instead of finding fulfilment, I felt alienated by the particular practice of architecture I was involved with in Belgium and at the same time my ongoing research suffered from these
negative emotions. It seemed as though I was leading a double life, being untrue to myself, so I decided it was essential to take a break from the practice in order to reassess my motivation. Becoming a mother gave me the final and hardest lesson of all, transforming me entirely from within. The undivided union transformed into a dialectically enriched existence of co-definition. The creative tension, the dynamic unity I discerned in the concept of boundary became lived.

The scope of my research widened; the evolution of man and mind always in reference to the cosmos merged into one. A progressive complexity, a journey was revealed, taking man and mind from a primordial undifferentiated consciousness through to a dualistic alienation and back towards a redemptive synthesis and reunification of the individuated self within the universal matrix. This progressive complexity needed to be addressed through an almost chronologically shaped argument in the building of the paradigm. Essentially the thesis reflects the inherent necessity for a dialectic, creative opposition between man and the cosmos in order to achieve an understanding of self. It reflects a perpetual transformation that is driven by boundary. The attempt has been to unravel the mind’s fundamental kinship with the cosmos and how their inherent dynamic opposition is fundamental in the rediscovery of self. It felt essential to include the role of architecture in this journey not simply because of my academic background but also because it reflects a radical manifestation of our existence within the cosmos. Architecture has the capacity to engage us in a most profound way with the otherness by inhabiting the in-between, inviting us to read a model of the world while at the same time endowing us with our own sense of self.

In the following stage I would like to address the concept of boundary as it transformed in my thinking from a physical towards a primordial concept.

---

1 Throughout the thesis I have used the masculine voice. It has not been my intention to exclude the female voice. Ideally, instead of man I would have preferred to use the word anthropos, which in my native Greek language implies both sexes and reflects our common natures. I could not find a suitable alternative in English, however, as neither person nor people suited the message or my writing style. I hope the reader can look beyond the word man and read humanity within it.
a) Approaching the boundary concept

*Boundary* comes to mind as a primarily physical presence. We often assign to it a connotation of separation. Edges, limits, borders, walls and barriers portray the boundary as an extremity or obstacle. (fig.i.6-i.9) In his Elements, Euclid defines a boundary as that which is an extremity of anything. (Euclid Bk1, Df13 2002) Intuitively we assign to boundary the authority of a separating line between two entities. However, the question arises of whether boundary is an independent entity, or if it belongs to either or both of the separated entities. Leonardo da Vinci in his Notebooks, when considering the division between atmosphere and water advocated that the boundary must be an independent surface that may not belong to either side or else it would have bulk. (da Vinci 2008)

**figure i.6: Symbolic meaning attached to a physical barrier: Tijuana and San Diego coffin memorial to border crossing deaths.**
Source: Wikimedia commons (author: Tomas Castelazo)

**figure i.7: An economic barrier and its physical manifestation: Shantytown in Caracas, Venezuela.** Source: www.urbanmedic.blogspot.com

**figures i.8-i.9: Physical manifestation of ethnic boundaries:**
The Great Wall of China. Source: www.flickr.com/photos/nagy/40690200/
The Israeli-built apartheid wall. Source: www.stopthewall.org
As mentioned above, during my diploma research I based my observations of boundary on the urban situation of the hometown of Heraklion in Crete. It was soon realised that the enormous footprint of the Venetian fortress represented not only a physical but at the same time a symbolic boundary. Indeed, symbolic boundaries such as ethnic groups, age, beliefs and psychology often become apparent even in the absence of a physical boundary. (fig.i.10-i.11) In the chosen site multiple tensions were discernable stemming both from the physical as well as from the symbolic realms, from the fortress itself as well as from the adjacent city within and out-with it, but always in reference to each other.

![figures i.10-i.11: Symbolic manifestation of ethnic boundaries: Chinatown, Manhattan. Source: Wikimedia commons (author: chensiyuan) Border between the Netherlands and Belgium at the side of a street café. Source: Wikimedia commons (author: Jerome)](image)

The linguistic definitions of boundary and fortress both in Greek and in English complemented each other and provided an invaluable insight in the unravelling of the concept.

Fortress walls are the materialisation of the physical definition of a boundary. They are, however, existent even when symbolic: the expression *intra muros / extra muros*, which indicates a belonging or exclusion; the physical and now symbolic existence of the Berlin Wall, a political and social division and the Green Belt in Cyprus, the ‘neutral’ zone that separates the island from its occupied side. (Ganiatsas 1994) *To fortify*, literally means to strengthen. In Ancient Greece, the fortress implied the body of citizens, as it defined the physical limits of the city-states.
A fortress withholds, surrounds, encloses, upholds (Liddell & Scott 1968).

The definition of fortress and fortifying provides a key insight on the meaning of the boundary.

ْئِوُس (techos) ~ “Fortress”
ْئِيِذَو (techezo) ~ “to fortify”
⇒ surround / enclose / strengthen
uphold / withhold / confine

In English, the boundary is mainly perceived as a spatial definition, it is, however, also used metaphorically (e.g. ‘boundaries of space and time’). Its root in the verb to bind, which immediately indicates an energy in need of control, implies more than a spatial existence.

The boundary specifies, confines, defines and differentiates (Liddell & Scott 1968). Similarly to the fortress, the boundary divides and separates from, as a border or barrier, it limits and delimits and marks out an edge of something according to another. (Ganiatsas 1994) The boundary indicates an in-between, limiting a surface so far and no further. In Greek the significance of the word όριον, appears more obviously in its root, in the verb ορίζω. Apart from laying down an edge, it also means to define, to order, to ordain, to determine and to lay down the governing rules. Ορίσμος is the definition of a thing, the rule, the canon and όρος is the criterion assigned, which implies its character and qualities. In philosophy (logic), όρος is a term or a proposition and in mathematics it is a term of a ratio, set limits or proportion, an indication of terms and conditions (Bostantzoglou 1988). Όρος, however, also means mountain, in itself a physical landmark, a distinction in the environment. In English, the Greek root of όριον most obviously appears in the translation of the word ορίζων, which is horizon. Horizon is the edge of the earth, a perceived yet changeable, surpassable ending, used both in Greek and in English. (fig.i.12-i.13)
**Orion** (orion) ~ “Boundary”

**Orizō** (orizo) ~ “to bind”

⇒ divide / separate / dissect / specify

define / order / distinguish / confine

**Orismos** (orismos) ~ “Definition”

**Orōs** (oros) ~ “Term”, “Mountain”

**Orizōn** (orizon) ~ “Horizon”

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**figures i.12-i.13: Challenging the meaning of boundary:**

A medium of connection becomes a barrier - a Viaduct in Shanghai.

Source: Wikimedia commons (author: Alex Needham)

**Horizon: A perceived yet constantly surpassable ending.** Source: Author’s photograph

These linguistic definitions give remarkable insight in the way we perceive the *boundary* in our environment and unveil the importance of language as a carrier of meaning, as a translator but also creator of the environment.

The *boundary* is not just a physical presence, it separates, confines and limits, but it also defines and orders, it represents rules. A *boundary* defines by confining and confines by defining. A duality becomes evident. The *boundary* is the in-between. There is an ontological dependence of one and other. Boundary cannot exist in isolation of the entities it binds. The *other* is the physical or symbolic reality, the opposing entity that makes the *boundary* exist. One only exists when there is something to oppose and to define it: the *other*. In this sense, the *boundary* is indeed no longer a physical or spatial conception, its existence is metaphorical, symbolic.
Boundary is the medium through which entities begin to exist and are defined, enabling them to withstand in themselves opposition, enabling the creation of meaning. The boundary is an invitation and provocation to opposition, a medium towards creation of meaning. This is the developing definition of the boundary, a materialisation of the ontological unity of opposing and mutually defining entities. The boundary is redefined as a distinction between opposing entities, creating them and being created by them, not an end or a beginning, a limit or a barrier, but a symbolic existence, a filter for meaning.

b) Aims of the thesis

Challenging its primarily physical interpretation, the first attempt will be to identify whether the concept of boundary is emerged or revealed by searching for the moment of its genesis as a primordial concept. Building on a number of essential phases in our existence we will be confronted by how they are driven by it, thus revealing it as an inherited, existential/ontological force that drives the perception and formation of the environment and our being. Through a sequence of dynamic and defining oppositions between us and the world, us and our concepts, inner and outer, meaning is created leading to understanding, definition, development and transformation. The boundary becomes the medium for the creation of meaning through which things begin their presencing. Who we are is a matter of perceiving, and revealing the reality includes the boundary.

The aim of this thesis is to build a paradigm to unravel the concept of boundary as an inherited existential ontological force that has consciously and subconsciously driven the formation of our environment and us within it in a perpetual co-existence and co-definition.

The value of the boundary concept is presented through its manifestation as an invitation to opposition; an invitation to experience that leads to transformation. The mind brings to surface a tension. Choosing to separate things in his mind, man in
fact relates, connects and binds that which he has separated. These entities have similarities in essence, in order for them to be perceived and related. Their relation implies unity and tension is an expression of that unity. Their opposition is materialised through the boundary. The boundary takes them to a deeper level of unity; it defines and structures their unity. Complexity and diversity are also implied in the boundary, as increased complexity will lead us to deeper unity through opposition.

Throughout the thesis we will see how the boundary materialises this invitation to an experience in the form of religious experience, knowledge experience, scientific experience, and so on. The invitation to opposition created by the boundary sparks off the arousal that becomes evolution. In order to perceive the universe we are provoked by it to construct it through thought. The evolution of our existence within the cosmos is motivated by our inner world by means of abstraction, symbol and conceptual thought. The existential/cosmological qualities of boundary enable it to become a major medium, a driving force of this process of building our knowledge. Myth, religion, language, culture, philosophy, science, and even architecture are manifestations of humanity’s gradual attempt to understand, adapt to and transform our world and ourselves within it. They will become in this thesis, the backbone of unravelling our existence and the role that boundary has played in it. Through these evolutionary stages we will gradually become aware of the inherent dynamic between our mind and our world in our attempt to achieve an understanding of self while at the same time yearning to understand our position in the cosmic scheme. Bound in this dialectical creative opposition our conceptualisations of the world will be revealed both as insights of our mind in its attempt to unravel the meaning of the cosmos as well as the cosmos’s attempt to gradually reveal its nature within us. The mind’s radical kinship with the cosmos and its role as the vehicle of the universe’s unfolding meaning will be thus revealed.

*Boundary* will be revealed as a permanent concept, as a notion created in the past through a series of evolutionary, physical and metaphysical tensions. The object of this study is an interpretation of the creation of evolution, of something that has
permanency; that is unending. The ontological holistic identity of the concept of boundary and its dynamic nature will provide us with a powerful tool to achieve in our natural and urban environment a continuum of culture, as well as a realisation of a coherent world picture, where nature and man coexist in an interactive evolving equilibrium.

The thesis will begin by exploring into the genesis of the concept of boundary and will follow it along its progressive complexity. A paradigm will thus be invoked and will result in the presentation of the nature of architecture as a profound embodiment of our holistic connection with the universe. The boundary concept will be revealed as an awakening and healing medium for the tensions that architecture and our built environment have to deal with. In so doing architecture will again be revealed as the embodiment of human existence’s holistic unity with the environment, as the medium through which mankind can retain, create and transform its meaning.

c) Organisation of the thesis

Chapter 1: Genesis of the Primary Boundary as Man and the Otherness: The emergence of Consciousness of Self within the Universe

In the first chapter of the thesis, I will address the concept of boundary from its genesis, imbedded in the primary moment of the birth of human consciousness within the universe. Here we will see how this almost sudden realisation of self, and thus of difference, sparked by a major redesign in the architecture of the mind, becomes experienced, lived and expressed through the creation of religion, language, art, science and eventually culture. (Mithen 1996)

In the emergence of consciousness of self I came across the first and perhaps all consuming evidence of the concept of boundary. The realisation of difference brought to life the ever-present duality between us and the cosmos; a yearning to reconnect with it. Man and the otherness were from that moment on placed in a
never-ending pattern of tension and opposition, provoking each other in a dynamic structure that reflects unity. I saw man and his natural environment as a unified whole, both parts of an undivided, ever-evolving structure, a universal mind.

Chapter 2: The birth of knowledge in myth as invitation to re-unite with the cosmos: Cosmology and myth as representations of boundary

In the second chapter, I attempted to follow the birth of consciousness and realisation of difference in its evolving complexity. The first invitation / provocation for mankind to belong and re-affirm his seeming independence within the bounds of his surrounding environment was to construct it in thought, bringing forth the birth of knowledge in world-view. I began to see the gradual development of world-view as a container of knowledge, as an attempt of man to reinstate himself within the structure.

Mircea Eliade’s insights into the purpose of creation myths and their liturgical practice as vehicles for the transformation of ‘sacred time’ into ‘real time’ were very influential. They showed how a culture creates its own reality by binding itself to creation and thus ensuring its purpose, meaning and survival. Through the creation of world-view, a constant interaction with the surrounding cosmos is ensured and perpetuated, being constantly re-examined. I saw that the boundary between man and the universe became in this manner lived, stored and transformed in myth. I took inspiration from a wide variety of examples of cosmogonic myths and some will be addressed in order to draw insights into how they represent the nature of reality for a group of people and their place in that reality. I chose the Dreamtime of the Indigenous Australians because it is one of the oldest and most constant creation world-views and Greek Theogony and myths, the Babylonian Enuma elish as well as the Christian faith as they reflect my own background.²

During my research, I became attracted to the seemingly common driving force behind the mythical and religious expressions of humanity. The next step was to try

² Hindu and Buddhist world-views also present powerful examples but there was limited space to expand and I preferred to stay closer to my own background and world-view.
to identify these collective forces. The pervasive mythical themes of the Earth Mother, the Sacred Marriage, the suffering hero and life and death allegories were chosen, as they are perceived in a variety of myths from different cultures. They provide the scripts for man’s dramatic search for belonging and his attempt to find solace in his encompassing universe. These are of course not the only possible examples. The intention here is to explore on how they invite and provoke us to realign ourselves in a dynamic equilibrium with our environment, our present, past and future existence as expressions of the boundary’s essential and collective nature.

According to Mircea Eliade, for these men, nature was fraught with a religious value and their own natures were open to receive it and be part of it, in contrast to modern men who attempts to desacralise nature. Though the maturity of his mind pushes him to question his existence in a profane world, man is ultimately unable to escape his sacred nature. In fact his dual nature is essential for the creative opposition with the cosmos to be perpetuated.

In my research, Jung and his psychological insights on the nature of the mind, the collective unconscious, the self-regulating psyche and archetypes seem to support this claim. I began to see them too as expressions of the boundary concept. According to Jung, myth and religion are needed in order to locate the self in the universe. Archetypes evident in myth creation possess an immense emotional significance, necessary for human experience in its cosmic significance. They appeared to me as manifestations of the dynamic power of the boundary. They represent an unconscious vehicle of unification with the cosmos enabling an adaptive and healing process linking man back to the universe.

Chapter 3: Knowledge as state or/and process:

Boundary between innate and experiential knowledge

This apparent collective essence discerned in the birth of knowledge, raised in my mind the age-long question of the essence of knowledge as learned or innate and the role that boundary could have played in it. I was driven to explore into the nature
and make-up of the mind. The intrinsic relationship between man and the environment as it is manifested in the architecture of our mind and the nature of knowledge gradually unfolded.

I approached the nature of perception and cognition and it became clear that they are bound as two interrelated functions of our existence, permeating each other. Perception is seen as providing the link with the otherness while cognition providing the guideline, the direction that allows its interpretation. I then proceeded to search for tangible examples of our minds adaptations to the environment. I chose schemata (experiential and cosmogonic), evolutionary forces and constructs. In the research they were revealed as the blueprints that guide us in this process of reference with our environment. The essence of the boundary concept, the notions of distinction, tension, opposition, invitation and transformation made their appearance again, revealing the existence of boundary as an inherent notion in the nature of our mind. I saw that these innate adaptations of our mind were created in order to help us record a model of the world within ourselves, enabling us to cope with the demands of our existence. I realised that man is physically and spiritually deeply bound with the cosmos, their relationship going beyond that of one and other towards part to whole. Our mind is revealed as the boundary. Our human nature is interpreted as inhabiting the boundary; indeed we are the manifestation of boundary.

The message of this section is that experiential and non-experiential (cosmological) knowledge exists within us as a unified whole in dynamic transformation. This is ultimately an expression of the concept of boundary. The mechanisms of our mind are inherited tools enabling us to visualise, live, create and transform our existence within and in constant reference with our environment revealing the mind’s fundamental kinship with the cosmos.

Chapter 4: Structure and the nature of Language

In the previous stage, I began to discern a sense of coherence and unity, a universal order expressed in our relation with our surrounding world, created by the nature of
our mind. This realisation directed me towards structuralism. Ever since I first encountered structuralism, I felt drawn to how it seems to ‘bind’ everything together through relation. Although it is a challenged school of thought, I do believe that it can offer us valuable insight into the nature of our relation to the world. Through this lens, I attempted to draw more insight into the nature of unity; as wholeness, transformation and self-regulation infuse the notion of structure.

It is in this way that Giambattista Vico addresses ‘sapienza poetica’ (1725) or poetic wisdom, as an explanation of the inherent nature of mankind’s intuitive response to the environment. Vico affirms that man creates himself within his environment by constructing his reality intuitively; in a process that is not only structured but also structuring. I chose the example of language in order to address how this unique human adaptation - in a similar manner as schemata, constructs and environmental preference - is not only unifying but also directive. In my research, I saw how language assisted man in his journey of reference with the cosmos, revealing the working of his mind and the nature of his humanity.

Through the insights provided by leading figures as de Saussure, Chomsky, Sapir and Whorf and Lévi-Strauss, as well as opposing and enriching views by Jacques Derrida and Michel Foucault, I attempted to reveal the notion of structure and language in particular as a manifestation of boundary. I perceived the dialectic unity of boundary between langue and parole, between the signifier and signified, our concepts and our expressions of them. Our inherent ability to construct language as well as its innate ‘architecture’ provided me with yet another insight into man’s fundamental kinship with the cosmos. As Vico affirms, man perceives within the world the superimposed nature of his own mind. Through language his humanity is endowed with the ability to find expression, substance and meaning and to receive the cosmos that is engaging him in a perpetual interaction.

3 I am a strong believer that there is no such thing as a wrong insight. Every step of our evolution is valuable as it reflects the maturity of the mind at the given time. Once in a while, however, we seem to be returning to challenged notions and theories, re-examining and reformulating them as they have enduring qualities. I believe that structuralist thinking has this enduring quality, not as a rigid theory but as a medium towards understanding relationships and this is how I have used it here.
Chapter 5: The emergence of Culture: a system in transformation

Throughout the previous stages, I could see the creative tension, the dialectical unity that the boundary implies as a necessary driving force to achieve transformation. I began to see how this viewpoint informed the evolution of culture. The transformation of culture as a living system is seen as an essential point to the survival of a culture. My research on the emergence of urban culture from several years before resurfaced in my mind.

In my analysis of the emerging cultures of the Aegean for my 4th year dissertation thesis, I had come across this process of creation in the example of Classical Greece and its genesis through the boundary between the Minoan and Mycenaean cultures. (Saridaki 1998) I could now see how these individual systems were combined to create, through the passing of time, a unique whole, making their interaction just as important as the outcome. The two cultures were drawn to each other by their difference and their dynamic natures provoked a series of adaptations in each other. (Saridaki 1998) The boundary concept found here a true expression of the potential strength and depth of meaning that a dynamic unity can create. The example of the civilisation of classical Greece born out of this interaction is the ultimate expression of the concept of boundary as a driving force in our world.

Throughout this chapter, I attempted to provide a tangible example of man’s complex existence within the cosmos by delving deeper into the meaning of culture and tracing the evolution of its meaning through time. Man’s creation of culture is exposed as an attempt to interpret and transform the surrounding world into meaning beyond space and time. Language and its evolution are revealed as the ultimate code through which culture and in effect the understanding of mankind’s evolution could be examined. Culture is not only communicated through language but also through the material documentation of art, carrying distinct codes and messages that provide vital knowledge of the external world and a sense of unity with the environment merged within a structure of feeling.
In the process of presenting boundary as an ontological, inherited / existential force that consciously or subconsciously drives the formation of environment and the realisation of being, it became important to examine the meaning and implications of cultural transformation, as it is possibly the most profound manifestation of man on earth. Culture is transmitted both horizontally within a group, but also vertically learned and transferred from one generation to the next not as a thing but through a process of evolution. The environment plays a formative role on culture as the long-term involvement of people with their physical and social environment influences variation among cultures.

I found that cultural evolution is informed by the processes associated with genetic / biological evolution. Culture was revealed as a living, evolving organism, as an expression of the boundary concept; a system whose viability depends on its ability to transform itself through creative opposition. Our genetic evolution has gifted us with the capacity to create culture and this unique human adaptation has ensured our survival.

I came across the concept of emergence quite late in my research, however, it helped me to identify the unknown, mysterious factor that triggers transformation in the emergent system of culture. The catalyst, the internal directing process that triggers emergence, is the human mind, inhabiting the boundary and working in unity with the cosmos in a part to whole relationship. In this relationship, the boundary does not belong to the system; it is precisely the locus of unification of the system with the environment, the locus of kinship.

**Shift:** The Primary Boundary between Man and Otherness deepening in complexity

Throughout my research, I saw man and the cosmos engaged in a constant dialogue as actors in a grand theatrical stage. In its earthly stage, the drama of our humanity reached now an exciting turning point. The boundary between the universal mind
and our mind, so evident in the makeup of our mind, in our creation of cosmology, religion, myth and culture, reached a point of deepening complexity. Man’s evolving mind endowed him with an urge towards greater independence. He had now achieved his footing in the world and the next stage of his evolution involved a questioning of his own existence and of the reality that surrounded him. I saw that the message that has so far been carried in a single direction now branches out and lends its expression to every manifestation of life.

From now on we see man exploring into abstract realms of thought in his attempt to apply reason to his existence. The strength of his own mind became at the same time both an instigator for achieving independence but also the force that invited him to reconnect with the otherness. We see for the first time the imposition of abstract ideas questioning our existence and the reality of our world. The deep yearning though is still to understand who we are and what our role in the world is. I was intrigued by what I discerned to be a parallel path binding our evolving scientific and philosophical mind and how this was also perceived in our creation and experience of architecture. My objective for the following section was, therefore, to reveal how science, philosophy and architecture have been driven by the creative force of boundary engaging human thinking in a perpetual opposition with the cosmos in our ultimate pursuit to unravel the meaning of the world and our role within it.

Chapter 6: Science, Philosophy and the struggle for reason

Our scientific and philosophical mind attempting to apply reason to existence

The journey taken by the human mind in its evolving maturity has been a source of inspiration throughout the thesis. In this section I attempted to display this journey in its progressive complexity, taking man and the cosmos from a primordial undifferentiated consciousness through to a dualistic alienation and back towards a redemptive synthesis and reunification of the individuated self within the universe.
Philosophy and science, these valuable and demanding pursuits of the human mind, emerged with the primary objective loosely described as the attempt to understand the universe as a whole. Through centuries of evolution, the compiled mass of complementary as well as contradictory theories moved beyond the object of the physical world and its scientific explanation encompassing the moral, aesthetic and spiritual consciousness of man. Man, through his development of philosophical and scientific thought, initiated the struggle to apply reason to existence. I perceived our philosophical and scientific thinking developing hand in hand, with each area provoking adaptation within the other. Our advanced consciousness of self became bound in a continuous cycle of reference, examination and attempts of independence with the otherness.

Starting from the existential beginnings of science in ancient astronomy and cosmology, I was drawn to the pre-Socratic philosophers / scientists who first attempted to analyse the world in a scientific way by attaching individual reason to it. During my research, the Pythagorean worldview, the notions of Heraclitus’ *Logos* and *Flux* as well as Anaxagoras’ *Nous* were very influential to my thinking. The Pythagorean worldview unified the spiritual and physical world, conceiving nature as a structured system ordered by mathematical forms and man’s understanding of this cosmic order showed his essence as intrinsically linked to that of the universe. Heraclitus saw the cosmos as an intelligent system regulated by *Logos*, a single intelligent order. He presented a unity in opposites and *Flux*, paradoxically, as a necessary condition of constancy. Anaxagoras proposed a universe constituted of an infinite number of seeds and postulated that matter was brought to motion by a primordial Mind (*Nous*); a notion that influenced greatly the philosophies of Socrates, Plato and Aristotle.

In this evolution of his mind, man was aiming towards a higher level of consciousness. In Socrates’ synthesis of *eros* and *logos*, his desire for truth was complemented by a powerful belief in the immortality of the soul and its longing for a reunification with an immortal cosmos. The divine and universal archetypes of the ancient past found in Socrates and Plato a renewed essence; an independent reality of
their own, accessible only by the mind through the supreme discipline of philosophy. This reality was put in opposition with the world of the senses, initiating dualism, the object / subject debate and the questioning of the validity of truth and experience. The Mind’s ability to penetrate and access this reality implied that they were both governed by the same intelligence, revealing a kinship between mind and cosmos. Aristotle, in contrast, employed reason in order to discover an inherent order within the empirical world, uniting logos with aitia (cause) and basing his scientific method on observation and deduction.

The dual legacy of Plato and Aristotle is ever-present in human reason. Their opposition has provided a unique synthesis, a guiding light, generating the independence and actualisation of our mind within the world. On the one hand we have the notion of a transcendental world order accessible to the mind through intellectual development, and on the other hand, the belief of a tangible knowable universe accessible through empirical observation. Their search for meaning in dialectical reference to the cosmos, revealed yet again a powerful boundary.

A defining factor in the evolution of thought in the West was the growing authority and pervasiveness of the Christian faith. With his Confessions and inspired by the Socratic and Platonic doctrines, Augustine of Hippo (354-430AD), was the first to conceive of the self as a private inner space, an inner world of human memory and thought, thus starting the Western tradition of inwardness. (Cary 2000) Man was now able to think of the world as merely external.

Though the Platonic doctrines were more readily associated with Christianity, it was Aristotle and his method that attracted the developing sciences. The Church needed to either counter or embrace the surge of scientific, independent thought. The influential philosopher and theologian, Thomas Aquinas (1225-1274) is credited for achieving a Christian interpretation of Aristotle’s thought by unifying it with the Platonic Ideas with God as catalyst, showing that faith and reason enriched each other; thus healing the rift that was taking place between the realm of reason and theology.
In the following centuries, the mind went through a series of staggering stages in evolution both in the scientific as well as the philosophical realms. I felt particularly drawn, however, to the paradigm shift that occurred in science as a direct result of Copernicus’ heliocentric planetary model. Though it is by no means the only unique moment in the evolution of the human mind, I chose this as a powerful example of the dialectical unity it portrayed in the scientific and philosophical realms and the revolution it instigated. Up until that point man was always assured of his role and importance as the centre of reference. Now he had robbed himself of his individuality leading him to an identity crisis that is still discernable today. In Descartes, the dichotomy between mind and matter, the thinking substance and the physical body, was established. In this climate, Kant’s critical philosophy attacked man’s remaining security; his ability to achieve knowledge.

I realised, however, that as in all other stages of our evolution, we were still driven by our need to belong. The shift in the balance provoked us, invited us to re-assess our standpoint, gradually leading us to a revolt against Dualism. The boundary principle is, indeed, a manifestation of this urge. Opposing Kant, Hegel saw the world as a single, unified coherent structure of thought. For Hegel, the knowing mind and the object known cannot be considered as two separate things; they are related. His ontological dialectics support the coexistence of thesis – antithesis, with synthesis as the interaction of two dialectically opposite definitions whose common denominator is their unbreakable unity.

The shift is discernable also in the paradigm shift that occurred in scientific developments of the 20th century. Crushing the Newtonian model, Modern Physics and especially Quantum Theory showed that there is no objective reality that the physicist can know and that man is an intrinsic ingredient of observations; an entity we are unable to separate from the phenomena. In fact, human consciousness, observation and interpretation seemed to have an inherent influence in the phenomena. This in a sense brought mankind back to the centre of reality. At this stage, I revisited the theory of everything and the anthropic principle, areas that had influenced my thinking during the Masters. These were enriched by David Bohm’s
insights into wholeness and implicate order in an unfolding/enfolding universe portrayed as an unbroken whole. Echoing Aristotle's formative and final causes, Bohm argues that life itself is enfolded in the totality and that even when it is not manifest it is somehow *implicit* to the totality, leading us to a coherent worldview of undivided wholeness.

It became evident to me that our scientific and philosophical mind is bound in a dialectical creative opposition. Our conceptualisations of the world can be seen as insights of our mind in its attempt to unravel the meaning of the cosmos. But through them it is as though the Universal Mind is revealing itself to us. We see this reference as the archetypal dialectic, the rebirth of man from the cosmic womb.

Throughout this chapter, the notion of boundary emerges in a variety of intensities, directly or indirectly, named or implied among the different philosophies. Our scientific and philosophical journey represents in itself a boundary between our environment and thought; a constant creative opposition. This suggests that the boundary has a powerful place in human thinking. It is present in our very essence, giving us insight into the order that defines who we are. The mind’s radical kinship with the cosmos and its role as the vehicle of the universe’s unfolding meaning is gradually revealed.

Man is now reaching towards a new synthesis with his world through a dialectical opposition that has taken him from the primordial undifferentiated consciousness through to the dualistic alienation and back towards a redemptive synthesis and reunification of the individuated self within the universal matrix. Finally, this creative force will be revealed as the archetypal *Eros*.

**Chapter 7: Architecture embodying the man – world boundary**

*Architecture as a fundamental manifestation of existence within the cosmos*

In this chapter, I have attempted to delve deeper into this unfolding dialectic of mind and cosmos as it is manifested in the realm of architecture. As already mentioned in
the preface, I could have chosen to address the boundary as it informs architecture in a variety of ways. Having already addressed it empirically during my diploma, I wanted to approach it from within. The range of architecture is immense. However, I have always felt suspicious of architecture that seems to attract us solely visually or that is based on a specific ideology. This kind of attraction can be powerful but I believe that its effect is fleeting and touches us only on the surface. I have always believed that this type of architecture ignores our potential, our thirst for mystery.

Neil Spiller (2010) sees in the obsessive search for new digitally emergent forms and gratuitous and seductive complex surfaces and structures in architecture, the danger in ‘forgetting’ the human element and subtracting it from the architectural product by focussing architectural discourse to issues of instrumentality. In our digitally driven world everything seems to be going faster and faster and we often neglect to pause and take in what we are inherently endowed to receive from the world and how deeply it can speak to us. Too often there seems to be a separation of body, mind and the world and we are the instigators of this separation. Opposing this trend, my thesis as a whole and this chapter on architecture in particular is in a sense a polemic for the other side, not a negation of current affairs, but the necessary other that can add to a creative tension.

I believe in an indissoluble bond between us and the world. I believe that we are not in any way different from it or above it, but that we belong to it in a part to whole relationship. The boundary concept reflects this creative union. During my research, I was drawn to the school of phenomenology as it addresses this inherent union and does not place man and his mind above our world. My choice of theoretical and architectural examples in this chapter reflects this. I have not intended, however, to include in my argument a negation of any particular school of thought and how it affects architecture. As I said before, the range of architecture is immense and I believe strongly that all human endeavours are valuable and have their own place in evolution. My aim for this section, however, is to reveal the nature of architecture as a fundamental manifestation of our existence within the cosmos and to distil the message and purpose of architecture, its timeless task. The intention here is to gain insight into why certain experiences of architecture seem to touch us in a deep and
unexpected way through to our very core, by awakening the intense memories of being in the world that well up in us as ‘involuntary memories’. (van Schaik 2002) I believe in architecture’s capacity to engage the boundary between man and the cosmos by inviting us to read a model of the world while at the same time endowing us with our own sense of self.

I have been influenced and inspired by various thinkers and architects whose insights in the domain of architecture as well as their creations truly reflect the boundary. I would probably single out Gaston Bachelard (1964), Merleau-Ponty (1962/1968), Juhani Pallasmaa (2005/2009), Georg Simmel (1909) and Martin Heidegger (1951) as the ones who have made the deepest impression on me. I have chosen to include their insights because I believe they reflect and enrich the concept of boundary.

In his celebrated analysis of the ‘house’, Gaston Bachelard (1964) attempted to distil a permanent message out of the transient notion of habitation, insisting that people need houses in order to dream and to imagine. He asserts that the house we were born in is physically inscribed in us, so much so, that whenever we read about or experience space we are transported to that particular, original experience of space that we first encountered. According to van Schaik (2002), Bachelard’s work continues to be compelling because it points towards an architecture that affects people by touching their own ‘lost’ knowledge and awareness. Bachelard (1964) sees the dialects of inside and outside as informing the nature of being, confronting man’s being with the world’s being. The nature of the concept of boundary reflects this challenge through the attraction of the other in order to define the self. Massumi urges that: “The equilibrium of the physical environment must be re-established, so that cultures may go on living and learn to live more intensely, at a state far from equilibrium.” (Massumi, quoted in Massey, 2005, p.160) He suggests that the unpredictable and essential transformation of being is felt before it is thought; reaching a critical boundary it emerges reborn through an immanent limit. In these thoughts, I could discern the universality of the concept of boundary. It is in the boundary that the event horizon is located, triggering a potential dynamic transformation.
In the following section, I will visit the insights of Maurice Merleau-Ponty as it informs the structure of the potentiality of our consciousness by bounding idea and phenomena. Merleau-Ponty (1962/1968) believed in the interdependence of thought and feeling, of flesh and idea and in the indissoluble bond between mind and world. He viewed our living body and the world as intertwined and pointed to a potentiality of consciousness which is reflected in this intertwining and which affects man unto the depths of his being by endowing him with a sense of self. For Juhani Pallasmaa architecture is the medium of existential and embodied experience and the boundary between the self and the world is identified by our interacting thinking senses. He believes that the embodied nature of architecture has the capacity to articulate our being in the world providing a confrontation with our own existential boundary and directing us to experience our existence with unique intensity. I will then proceed to search into the nature of the relationship between body and place, starting with Michel de Certeau’s (1984) rhetoric of walking, followed by Doreen Massey’s (1994) global sense of place. I will then move to Yi-Fu Tuan (1977), who identifies place as security and space as freedom, seeing the built environment, as a language that has the power to define and refine sensibility and to sharpen and enlarge consciousness. In his analysis of building, dwelling and thinking Martin Heidegger (1951) calls for man to learn to dwell poetically, maintaining that architecture gathers the world as the multifarious in-between, existing symbolically between earth and sky. Last but not least, Georg Simmel’s (1909) interpretation of the Door and the Bridge gives us further insight on the inherent connection and separation imposed by the human mind as it attempts to understand the world and the self within it.

In the following section, I have chosen to analyse architectural examples that display a deeply experiential and spiritual depth that reflects the boundary concept. The chosen works by Tadao Ando, Alvar Aalto, Carlo Scarpa, Steven Holl, Morphosis, Louis Barragán and Peter Zumthor will take us to a journey of body and mind, demonstrating the potentiality and directionality of architecture as a manifestation of our embodied and existential nature.
In this final stage, I have attempted to distil the message and purpose of architecture, its timeless task. Recognising the inherent dynamic between man and cosmos I will identify architecture as a medium through which the essence of man is allowed to penetrate towards the cosmos and the essence of the cosmos to penetrate towards man. Man seeks that which completes him, for the unifying other that urges and invites him to know. Architecture provides the stage for this drama to take place. Anchored in the place, merging our phenomenal and intellectual essence, architecture has this capacity to reattach man back to the world, to the place where he belongs revealing its nature as an existential manifestation of our being. As Pallasmaa so eloquently states: “The timeless task of architecture is to create embodied and lived existential metaphors that concretise and structure man’s being in the world. ... Architecture enables us to perceive and understand the dialectics of permanence and change, to settle ourselves in the world, and to place ourselves in the continuum of culture and time.” (Pallasmaa, 2005, p.71)

**Conclusion**

Challenging its primarily physical interpretation, this thesis examines the concept of boundary from its genesis, imbedded in the primary moment of the birth of human consciousness within the universe following it along its progressive complexity. These essential phases in our existence are manifestations of humanity’s gradual attempt to understand, adapt to and transform our world and ourselves within it. Through the evolutionary stages addressed in the thesis I have attempted to unveil the inherent creative dynamic between our mind and our world, unravelling the concept of boundary as a primary ontological force that drives, provokes and defines our thinking, consciously and subconsciously. The concept of boundary has provided the hidden thread, the ‘limited concept’, the seed that has guided me towards the building of this paradigm to unravel the mind’s fundamental kinship with the cosmos and its role as the vehicle of the universe’s unfolded meaning.

Architecture is ultimately revealed as a fundamental manifestation of our existence within the cosmos. This experience of becoming aware of our indissoluble
connection with the world, materialised in architecture, educates, stimulates and activates people to change in our modern environments, making us conscious of the forces that shape it, enabling the creation of a complex, integrated, contradictory and meaningful future. An architecture that upholds these conditions, that engages the boundary between man and the cosmos, is an architecture that is true to its nature as a fundamental manifestation of our existence. It is important to aspire to such architecture. The rediscovery of our self is dependent upon it.

Architecture exists in this boundary between earth and sky. Within this boundary the essence of man penetrates towards the cosmos and the essence of the cosmos penetrates towards man. Neither action, nor thought or sense is beyond or external to the world; we are bound as one. Man is here indeed revealed as inhabiting the boundary. It is through him, his body and mind united, that the universe is unfolded and architecture is the medium of this revelation.

The ontological holistic identity of the concept of boundary and its dynamic nature provides us with a powerful insight to achieve in our natural and urban environment a continuum of culture, as well as a realisation of a coherent world picture, where nature and man coexist in an interactive evolving equilibrium.
CHAPTER 1:
Genesis of the Primary Boundary as Man and the Otherness:
The emergence of Consciousness of Self within the Universe

Introduction

The first chapter of the thesis will address the concept of boundary from its genesis, imbedded in the primary moment of the birth of human consciousness within the universe. Here we will see how this almost sudden realisation of self, and thus of difference, sparked by a major redesign in the architecture of the mind, becomes experienced, lived and expressed.

For thousands of years our mind was divided up and dedicated to particular intelligences (social, natural, and technical) each focusing on solving problems related to particular aspects of survival. (Mithen 1996) The turning point of our evolution however, is suggested to have occurred because of this redesign in our mind where opposing thoughts from different intelligences in the mind merged to create the ability for symbolic thought leading to the creation of religion, language, art, science and eventually culture (Mithen 1996). The concept of the super-chapel of the mind where these opposing thoughts ‘meet’ will be put forward, showing how it was suddenly possible for mankind to think creatively. (Mithen 1996) The evolution of mankind glacially slow for thousands of years of our existence reached at that point an acceleration of change. (Johanson & Edgar 1996) The rise to consciousness can be witnessed in the unstoppable from then on creation of representations of the surrounding environment. For the first time we witness evidence of totemic thinking in art, the beginnings of religious beliefs in the form of the great goddess “mother-nature” as well as the first evidence of language. (Johanson & Edgar 1996)
Here, I came across the first and perhaps all consuming evidence of the concept of boundary. This powerful entity, the human mind, makes its first independent steps, realising its difference from the surrounding cosmos, yearning to reconnect with it. The realisation of consciousness of self seemed to imply otherness to an intimate degree, making the two unable to be thought without the other. (Ricoeur 1992) Realising difference brought to life the ever-present duality between us and the cosmos. Man and the otherness are now placed in a never-ending pattern of tension and opposition, provoking each other. Evidence of the emerging sense of self is revealed in early man’s growing attachment to material culture. (Hodder, in Huyssteen & Wiebe, 2011) Hodder, here, draws his inspiration from Çatalhöyük, a 9,000-year-old city in central Turkey, where he found evidence of the emerging self growing attached to things, in its attempt to seek a transcendental meaning.

Man's aspiration has since that early beginning always been to locate himself in the universe, to establish a link between his tangible environment and his consciousness. He and his natural environment are a unified whole, both parts of an undivided, ever-evolving structure, a universal mind. The consciousness that is shared and the consciousness of self are combined, united and become the materialisation of the boundary, of our existence within this dynamic structure.

1.1 Experiencing the first boundary

“One does not have to be especially spiritual to experience awe at the infinity of galaxies we can see in the night sky. Our human consciousness does not merely make possible the question Why? It insists that the question be asked. The urge to know is a defining feature of humanity: to know about the past; to understand the present; to glimpse what the future may hold. As Arnold Toynbee said of the impact of subjective consciousness on Homo Sapiens, ‘This spiritual endowment of his condemns him to a lifelong struggle to reconcile himself with the universe into which he has been born.’ The night sky is full of unanswered questions.” (Leakey, 1992, p.339-340)
1.1.1 Origins: Man and Otherness as Earth / Mother ↔ Early Man / Child

The dawn of mankind on earth can be seen in a similar light as the actual birth of a child. Having been a complete organism with our mother in a complementary symbiosis, a point comes when this whole departs on a new voyage. The child initiates his departure from this safe environment towards a journey into the unknown. The whole has split in two; the bond however, is never broken.

It was here that the identities of both became solidified. Early man engaged in an evolution sparked by a dialectically enriched existence. Realising this difference between himself and the surrounding cosmos early man initiated the birth of his own mind within the universal mind.

Looking through the immense stores of early anthropological clues, we become acquainted with the first initiation of our kind and the ‘drama’ that followed. Evidence suggests that severe global climatic changes occurred between 6 and 8 million years ago in Africa, causing ocean temperatures to drop. A dramatic shift occurred from woodland to grassland plant life, “about the time that the first hominid split off from its last common ancestor the African apes”. (Johanson & Edgar, 1996, p.27) Savannah grasses dominated the East African landscape, providing the stage for the unfolding drama of the birth of humanity. Early man departed from the safety and self-sufficiency of the forest to gradually engage himself in the mystery and danger of the savannah. The protecting canopy of the forest, this faithful provision of food and shelter was replaced by a vast starlit sky full of dangers and mystery.

For millions of years, our early ancestors chose this dual existence in the boundaries of the savannah and the tropical forests. During this double existence, the early humans developed some of the founding characteristics of our species; bipedalism, a carnivorous diet and the formation of societies. (Johanson & Edgar 1996) In the hundreds of thousands of years that followed early humans engaged in a series of
crystallisations of existence punctuated by sudden spurs of change. Their increasing brain size, their development of tools and the ever-growing dependence on living in groups, stand as evidence for their increasingly human identity. What caused these transformations, though?

1.2 **The prehistoric mind**

The dialectic between body and mind and between man and the surrounding cosmos becomes evident in the accelerated evolution of Early Humans during the Upper Palaeolithic (roughly between 40,000 and 10,000 years ago). This is the time during which an explosion of human cultural activities took place. Some assume that it was because “...our ancestors began to gain some mastery over nature” (Johanson & Edgar, 1996, p.102). The hundreds of thousands of years of early human evolution saw extreme variations in the natural habitat. However, this last period of the Ice Age also saw enormous fluctuations in temperature and was by no means an easy feat to master (Johanson & Edgar 1996). Still it was then that this cultural explosion occurred. According to archaeologist Steven Mithen (1996), it occurred simply because only then did the structure of the mind make it possible.

1.2.1 **The nature of the early mind**

The path that is suggested here brings to light a relationship between the development of the mind and the evolution of the mind. Mithen (1996) gives an account of the development of the mind of a child going through different phases. Firstly, the child develops a general intelligence database (e.g. basic survival skills). This stage is followed by an acceleration of proficiency in a variety of specific areas (e.g. motor skills, formation of sounds, acquisition of objects etc). Lastly, the child becomes able to use these perfected specialisations in a harmonious and complex unity (e.g. being able to refer to objects and recognise relationships).
Mithen (1996) then proceeds to relate these observations with the evolution of the human mind. The mind of our most primitive ancestors comprised of what could be represented as one chamber of general intelligence that applied fairly rigid rules to solve simple problems was similar to the intelligence seen in non-primates. The later branches of our past can be seen as consisting of multiple discrete chambers of intelligences, each dedicated to a specific domain of behaviour, with very little interaction between them. They comprised of social intelligence, natural history (hunting, geographical knowledge etc) and technical knowledge and generalised intelligence. According to Mithen (1996), these intelligences developed over the course of human evolution from our common ape ancestor to modern man. However, for much of this evolution they remained discrete entities, unable to interact.

Mithen (1996) refers to the Neanderthal mind as an example of a Swiss-army-knife structure. The Neanderthals lived in the particularly challenging glaciated landscapes of Europe and developed an impressive, though limited, range of stone tools. They used stone for tools (so using technical intelligence) but did not use bone or ivory for similar structures. This, he suggests, is because bone and ivory were dealt with by their natural history intelligence and they were therefore unable to conceive of them as tools. (Mithen 1996) The Neanderthals had an advanced natural history intelligence and a sophisticated understanding of their environment and the animals and plants within it, which allowed them to survive; however, they left no trace of art. “Natural history intelligence would have been essential for building mental maps of their environment – maps at vastly greater geographical scale than those used by chimpanzees”. (Mithen, 1996, p.145) Mithen describes these separated multiple intelligences using the model of a Cathedral. (more on chapter 3) “We can indeed think of the Early Human mind as a cathedral with several isolated chapels within which unique services of thought were undertaken, each barely audible elsewhere in the cathedral… Early Humans seem to have been so much like us in some respects, because they had these specialized cognitive domains; but they seem so different because they lacked a vital ingredient of the modern mind: cognitive fluidity.” (Mithen, 1996, p.164)
The next actor in the drama of human evolution, *Homo sapiens*, seems to have arisen by no direct result of some major behavioural change, at least not one that can be detected in the fossil record (Johanson & Edgar 1996). This generates the obvious question of why a modern anatomy preceded a modern behaviour, one of the key unanswered questions in paleoanthropology today: “Is it possible that the brains of early *Homo sapiens* were simply not yet wired for sophisticated culture? The modern capacity for culture seems to have emerged around 50,000 years ago, and with it, behaviourally modern humans who were capable of populating the globe.” (Johanson & Edgar, 1996, p.43) According to Mithen (1996), the physical changes that occurred created the possibility, the fertile ground for the mental redistributions that occurred later.

The rise to consciousness can be witnessed in the gathering speed with which the Early Modern Humans created representations of their environment; in technology, art, religion and the development of language. The primitive mind had been evolving for thousands of years, leading precisely to this point when the multitude of information that it has been gathering from the surrounding environment could suddenly be seen in an entirely different light. As humans developed, these intelligences began to integrate and interact, allowing knowledge and experience from one area to influence actions in another. (Mithen 1996) This interaction eventually produced the behaviours characteristic of modern *Homo sapiens-sapiens*. It is also this sort of interaction that, Mithen (1996) suggests, produced the art and cultural explosion of 30 to 40,000 years ago. An interaction of social, natural history and technical intelligences enriched with language produced the cave paintings and intricate carvings that distinguish us from the Neanderthals. Mithen explains this big bang of human culture as the time when “… the final major re-design of the mind took place. It is when the doors and windows were inserted in the chapel walls, or perhaps when a new ‘super-chapel’ was constructed… With these new design features the specialized intelligences of the Early Human mind no longer had to work in isolation.” (Mithen, 1996, p.174)
1.2.2 The super-chapel as boundary

Dwelling a while on the concept of this ‘architecture of the mind’, I found here some very interesting insights. In the same way that I saw humans in constant interaction with their surrounding environment, I could perceive the interactions of the makeup of their mind.

The existence of a super-chapel is very intriguing in the sense that it would explain our ability to think symbolically. Imagine a chamber where fragments of information from our social intelligence can interact with fragments of information from our natural history intelligence. (Mithen 1996) We can safely assume that humans depended and longed for human contact, but we can also assume that they would be perfectly capable of distinguishing a man from a lion. Symbolic thinking arose when these two thoughts became one; in this super-chapel the lion could have taken the shape of the man or the man the shape of the lion. (Mithen 1996) Here the earth with her seasons and never-ending circle of life and death can be visualised as a caring mother. It is precisely this type of thought-process that accelerated the acquisition of knowledge.

Mankind embraced the myriads of association in his mind, because they would provide him with more answers and subsequently lead him to more questions. He gradually broke through the barrier that was his early mind, divided and limited. This thought process is still with us today. In our daily lives we use symbolic thinking in order to understand something that escapes us. We visualise atoms as small universes, and electrons as clouds; our imagination lights up. (Mithen 1996) The flow of knowledge through our specialised intelligences, not only strengthens each one but it also binds them in a coherent whole. The unified oppositions within the mind is in fact the initiation of the boundary concept; an expression of unity.
1.2.3  The origins of culture: The birth of Language, Science (technology), Art and Religion

We find traces of social behaviour in a variety of living species. Not surprisingly social behaviour has always been a characteristic of humanity; in fact it is almost synonymous to it. Early humans organised themselves in societies, evolving from small groups that could be visually linked, to more complex and larger structures. The creation of societies came hand in hand with our increasing humanity.

It has been suggested that the brain was enlarged in order to be able to deal with recognising more than an immediate circle of fellow beings, or vice versa and language is claimed to have begun in order to support these expanding groups. (Johanson & Edgar 1996) Our early ancestors would have had to spend an unreasonable amount of time in grooming each other, in order to develop the relationships and trust that would be necessary to create and support a society of expanding size. Language, therefore, might very likely have first appeared as a social tool and was solidified through natural selection. (Johanson & Edgar 1996) We can assume that the individuals that could use utterances that transferred and used social information achieved a reproductive superiority within these small societies. Gradually, increasingly complex structures evolved, based on internal and external relations, governed by rules, performing a variety of functions, and enduring beyond the lives of their constituent members. These rules of contact solidified within these groups and enhanced a bond between its members that transgressed space-time.

The fact that these changes appeared almost simultaneously around the globe strengthens the argument that they were the result of nature and not nurture. These characteristics are universal and shared throughout the world; they include technological advancements, the development of language, artistic expression and perhaps more curiously religious beliefs. Their common denominator is the ability of the mind to think symbolically. (Mithen 1996) This proved an enormous advance. It enabled our now fully human ancestors to cope far more efficiently with the
eternal problems of getting enough food, selecting the most suitable mate and protecting themselves and their offspring.

The big bang of human culture can be first witnessed in the development of tools, which can be seen as a representation of the mind’s ability to visualise the future. According to Johanson & Edgar (1996), hunting replaced scavenging as a key activity and it became one that is almost synonymous with nearly every aspect of humanity. “Hunting took cognitive skills, prompted brain expansion; it took cooperation, possible only in more complex societies and perhaps it even took language to plan and conduct the hunt.” (Johanson & Edgar, 1996, p.90) Hunting large animals on a regular basis did not become an important element in human subsistence behaviour until the Upper Palaeolithic, beginning some 40,000 years ago. The earliest examples of tools were very skilfully made; they were, however, all purpose (Coon 2003). In a relatively short amount of time, individual tools were being created for a specific purpose, for specialised hunting and everyday use. “Weapons and tools could now be shaped according to designs dreamed up in the minds of the men and women who needed them. It was no longer just a matter of copying what had always been done.” (Coon, 2003, p.27) Tools like spears and arrows were now regularly used and designed according to the animals hunted; they were even decorated.

The explosion of types of tools created after an eternity of copying, according to Mithen (1996), indicates this change in the mind’s ability to use its different chambers. According to Johanson & Edgar, “[t]he tools of this latter period show extreme variety and innovation in raw material, design, and function, plus regional styles and other features suggesting a role for language in developing and disseminating these new forms.” (Johanson & Edgar, 1996, p.106) In fact, taking into account the physiological evidence of this period it seems unquestionable that language already existed.

As mentioned above, language probably first evolved as a social tool. According to Johanson & Edgar (1996), considered as a good adaptation, language would have
increased our reproductive fitness, assisting us in obtaining mates. “[Language] allows us to exchange potentially life-saving information about our physical and social environments. Language has a complex anatomy and can be considered to be as complicated an organ as the vertebrate eye, which serves a specific function ... It has been built into our biology as the most efficient and effective means to communicate our thoughts.” (Johanson & Edgar 1996, p.106-107)

The universally similar characteristics of language itself, according to linguist Steven Pinker (1994), led to the conclusion that language evolved as a specific adaptation. “Language, whether spoken or written, exists in all human societies today and existed in all known past societies. All of these languages possess complex rules of grammar, and certain non-functional, universal rules also hold across these languages. This suggests that the unifying force is not culture but nature, in the form of the human brain.” (Pinker, 1994, quoted in Johanson & Edgar 1996, p.106-107) According to Pinker, (1994) the potential to assimilate language is equal in all societies and is extended to the individual within the society. He goes on to express that a child from an early age is able to assimilate language naturally without the necessity of external input.

With the passing of time, the interaction of the intelligences in the minds of these early Modern Humans accelerated and language crossed the boundary of a purely social function towards a non-social reference point. They began now not only to think symbolically, but also to express their symbolic thoughts through language and simultaneously imposing, carrying and communicating a symbolic meaning on reality. (Pinker 1994) This new stage of linguistic ability can indeed be heralded as the ascent to full consciousness. Man was now conscious of his difference, thus giving birth to the modern mind.

What also appears around this time is art, paintings and engravings as well as portable carvings. And art, of course, is inherently symbolic. During this period, art made its appearance for the first time. The creation of art seems as the most astonishing and improbable event in human history. It could be that “... the
appearance of full-blown phonetic language as we think of it today, with its syntax and symbols, made this possible”. (Johanson & Edgar, 1996, p.106)

The millions of years of human evolution were suddenly culminated with an explosion of artistic creation, and this at a time when the climate was exceptionally challenging and unfriendly. Jacquetta Hawkes (1955) considers that the fact that art was born in these dire times displays an unequalled originality in mankind almost beyond reasoning. In her poetic words: “Suddenly out of this wilderness and the brain and being of man there sprang a noble art. We claim original genius for men and women who set out along well-worn tracks of human experience and take but one step further into the unknown. … It is as though a beggar wandered into a desert by night and returned bearing pearls, wine, and a lighted lamp.” (Hawkes, 1955, p.97) Taking inspiration from their surrounding environment these early artists painted and carved superb representations of what they experienced using a surprising array of materials such as manganese and haematite and ochre, bone and stone, antler and ivory. (Hawkes 1955)

figures 1.1-1.2: Powerful attempt at totemic / anthropomorphic thought. Lion-man ivory statuette from Hohlenstein-Stadel, southern Germany, height 28cm (ca. 30,000-33,000 years old). Source: Ulmer Museum Collection
As far as representational art is concerned, one of the brightest examples is also the earliest work of art known, the ivory statuette from Hohlenstein-Stadel in southern Germany, some 30,000-33,000 years old. (fig.1.1-1.2) This is a figure of a man or woman with a lion’s head carved from the tusk of a mammoth, a remarkable combination of technical expertise and powerful imagery. (Hawkes 1955) There can be little doubt that this is an attempt of totemic or anthropomorphic thought; or most likely both. We can perceive through time and space the effort of the artist to apply human characteristics to a revered animal (or vice-versa), in an attempt to unite with its symbolic strength. Man felt himself apart from his fellow animals but he admired and venerated their physical perfection, intuitively perceiving how it contrasted with the tormenting imperfections of his own physical strength and dawning mental life.

Thus armed with cognitive fluidity, early humans were able to view their environment in a new way. Surrounded by a vast starlit sky early man began seeing his environment in a different way. As in an epiphany the canopy of the night sky impressed him with its mystery and wonder urging him to feel gratitude towards this remarkable reality in which he was born. Man became suddenly aware in an entirely different way of the enormity of his environment and his own smallness, leading to the advent to religion, which is supported by archaeological evidence from around this time, about fifty thousand years ago. (Hawkes 1968) According to Hawkes (1968) it was our symbol-making capacity, which enabled us to organize ourselves in this new way. The survival-oriented existence was now enhanced by one in which imagery, innovation, ceremony, and ritual were interwoven in highly complex patterns. Through religion, early humans were attempting to cope with their intangible fears, anxieties, and mysteries, presented by the increased awareness of their own intellectual powers and consciousness. (Hawkes 1968)

During this time, we come across the first evidence of burials enriched with offerings of personal decoration. The fact that a very small percentage of the population is buried, has led to the conclusion that these people would present a special importance to their community, and would therefore be assumed to be priests or shamans. (Hawkes 1968) These people would be considered to have special powers
and act as mediums between the community and the forces of the earth. A belief in the afterlife could also have existed. We can look back in early art to capture some clues about this possible religion.

The wall paintings in the Great Hall of the Bulls at Lascaux (estimated to be 17,300 years old) are the most impressive of all Palaeolithic art. (fig.1.3-1.4) They extend on both sides of the vaulted walls of a sloping floored rotunda. The vast fresco, covering some twenty metres, is composed of three groups of animals: horses, bulls and stags. In fact these themes recur repeatedly in the different areas of this underground sanctuary. “The cavalcade of horses and bulls in Lascaux seem to be in motion, especially when viewed by the flickering illumination of an oil lamp. A mythical animal bearing two forward-jutting straight horns appears to command the performance. Some think it is a shaman draped in an animal skin.” (Johanson & Edgar, 1996, p.105) (fig.1.5)

figures 1.3-1.4: Art as the medium towards unification with the cosmos. The hauntingly beautiful cave paintings in Lascaux: The "Great Hall of the Bulls". (ca. 17,300 years old) Source: www.culture.fr/culture/arcnat/lascaux

figure 1.5: The “Deadman” Section in Lascaux: Possibly a shaman in trance symbolising man as part of nature. Source: www.culture.fr/culture/arcnat/lascaux
Apart from the example of semi-deification for humans, what is very clear is the power of the image of fertility represented by woman. In almost all societies, from the most primitive to the most finely civilised, woman is recognised as representing the earth. (Hawkes 1968) The appearance of woman as a symbol of fertility to be worshiped can be traced back to these early times. These mother-goddess artefacts have been referred to as Venuses. (Hawkes 1968)

The Venus of Willendorf, in Austria is one of the brightest examples. (fig.1.6) The entirely preserved figurine made of fine limestone is 11 cm tall and originally painted thickly with red colour. It shows a corpulent woman with stout hips, a voluminous belly and heavy breasts with a comparatively big head upon weak shoulders. The arms are just outlined and modelled resting on her breasts and the feet and the face are completely missing. On her inclined head a complicated hairstyle is designed made of parallel curls extending to the neck. Both wrists are decorated with ragged arm-rings. The absence of a face might relate to an attempt not to personify the art object but to give a holistic representation. (Hawkes 1968)

figures 1.6-1.8: Woman as the archetypal symbol of fertility. The lack of facial detailing suggests an attempt towards universality.
The “Venus of Willendorf”, Austria (ca. 25,000 years old)
Source: Naturhistorisches Museum, Vienna
The “Venus à la Corne”, Dordogne, France (ca. 27,000-22,000 years old)
Source: Aquitaine museum, Bordeaux, France
The Venus a la Corne (from Dordogne, France) consists of a bas-relief mother goddess figure, carved into the wall of a limestone rock shelter in Lascaux. (fig.1.7-1.8) The shelter sits under an overhang and looks out over the valley below. The site may have been a ceremonial centre. The body swells out towards the viewer from a convex block of limestone. Scholars date the figure to 27,000 – 22,000 BC. She is pictured carrying a bison's horn with a series of 13 lines, which have been linked to the moon or menstruation and would thus represent the thirteen days of the waxing moon and the thirteen months of the lunar year. (Hawkes 1968) This of course has enormous implications as it suggests that our early ancestors were thinking believers.

1.3 The emergence of consciousness of self

The question of the emergence of consciousness of self is ever intriguing. Has consciousness actually aided the adaptation of mankind? Unlike the tangible adaptations of language and bipedalism, it is unclear how consciousness of self would assist us in surviving. However, we must not reduce consciousness as the sum of our senses. It is much more than that. It is the foundation of our humanity, the birth of mankind.

1.3.1 Realising difference

The first step in the consciousness of self is the realisation of difference. The uniquely human phenomenon of self-awareness can be seen as the introspective / reflective ability of man to look within as if from outside. Similarly to Mithen (1996), Tattersall argues that the modern sense of self has its roots in our capacity for symbolic reasoning and depends on internalised mental representations of self, which can be dated back to the arrival of Homo sapiens. (Tattersall, in Huyssteen & Wiebe, 2011)
In the previous section, the emergence of art and religion provided insights into the beginning of a realisation of difference. Humans began thinking abstractly, they were now able to question not just see. This initial realisation of difference brought about the ever-present longing to belong. Instead of separating mankind from its environment, it reinforced its connection with it. The French philosopher Paul Ricoeur (1992) argues that memory can be seen as a gateway to the self and to personal identity through an implied narrative experience. The narrative dimension of human self-awareness and consciousness enables man not only to envision his motivation and course of action but also to empathise and identify with the other. (Ricoeur 1992) Ricoeur asserts that: “… [t]he selfhood of oneself implies otherness to such an intimate degree that one cannot be thought of without the other, that instead one passes into the other, as we might say in Hegelian terms.” (Ricoeur, 1992, p.3) Man worshiped the universe around him and its unfathomable power. He attempted to re-unite with it by constructing a model of the world in terms he could understand and relate to. He visualised himself as an animal in his attempt to unite with the beings that surrounded him. The countless frescos of hunting scenes, though primitive in the time of their creation display this narrative dimension of human self-awareness and consciousness as they portray a symbolic view of the experienced world with man at the epicentre.

Evidence of the emerging self in material culture

Symbolic reasoning is evident in its material representation, artistic or domestic, and man constantly engaged with it throughout his life. According to Hodder & Hudson (2003) in the Upper Palaeolithic, material culture was used to extend the mind, expanding the possibilities of information storage, thus building knowledge and establishing a deeper connection with the world. Identifying the embodiment of man in the world as being of paramount importance, they assert that “… [t]he self is continually forged and reforged through its relations to material culture.” (Hodder & Hudson, 2003, p.124) In his paper, An Archaeology of the Self: The Prehistory of Personhood, Ian Hodder goes further by exploring into the evolution of the relationship of the self and the world of things in order to reveal the changes this
relationship created in the notions of self. (Hodder, in Huyssteen & Wiebe, 2011) He asserts that as our relationship to things was directed more towards ownership, gift-exchange and sharing, “… the sense of self became more marked, both personally, in terms of bodily decoration and burial, and collectively, as in communal ritual enclosures.” (Hodder, in Huyssteen & Wiebe, 2011, p.56)

Hodder draws evidence from his findings from Çatalhöyük, a 9,000-year-old city in central Turkey. (Hodder, in Huyssteen & Wiebe, 2011) This period reflects a significant difference, a transformation in the way of life towards farming, settling and ownership. Hodder here suggests that as these people settled down, they formed an increased sense of self, moulding identities in complex webs of memories through their increasing entanglement with things. In their tightly built quarters, these people buried their loved ones in specific places under their house floors and later removed and circulated heads and body parts from these remembered places creating a sequence of memories through time. (Hodder, in Huyssteen & Wiebe, 2011) (fig.1.9-1.10) They kept mirrors, necklaces, beads and rings and worshiped figurines. These material symbols are not only personal possessions but also hold a transcendent meaning. They are of immense value and some are actually required in order to anchor religious ideas into the human mind and its place in the world. (Mithen, in Dunbar, Knight & Power 1999) Hodder argues that: “… humans define themselves through a continual to-ing and fro-ing, to and from things. … The more the self is dragged into things, the more it seems to seek for some transcendent meaning. …
The self tries to deal with the tension and contradiction of both being defined by and separate from things.” (Hodder, in Huyssteen & Wiebe, 2011, p.67) This constant tension and opposition first witnessed in the vast encompassing sky in the savannah, is now lived and embodied through the material representations of daily life and its rituals.

1.3.2 **Duality: Tension ↔ Opposition and the birth of boundary**

For millions of years our early ancestors were bound in a complete symbiosis with the world, evolving biologically within it in a glacially slow pattern when compared to the evolution of the world itself. The birth of mankind, initiated by the emergence of consciousness of self, provided a transformation of this symbiosis. The relationship between man and the cosmos did not seize to exist; it did, however, deepen in complexity.

The dawn of mankind saw a simultaneous eruption of technological and cultural advances around the populated world. The staggering speed of this evolution, as mentioned above, was triggered by the final redesign of the structure of the mind of the Early Humans. The now modern mind, with its interconnected chapels, enabled us to achieve a complex thought process. The internal dialogue within the chambers of the mind saw information existent or acquired in each chamber, provoking answers and adaptations in another. The storage of information in one became available in the other. Early Modern Humans displayed an ability for metaphors, for association and portrayed themselves with associational characteristics. Information about the world was now stored in art, religion and language, available to the next generation to transform and reinterpret.

The dual existence of man and the cosmos in never-ending dialogue with each other was now not only experienced and lived but also expressed, adding layers of richness to the relationship. The flow of energy from one to the other became dependent upon their difference. The greater the awareness of man about himself, the greater his
effort to explain the intriguing details of the universe that surrounded him and to relate them back to himself.

The pattern that becomes apparent in the dawn of mankind is the expression of the universal forces of tension and opposition. Before the emergence of consciousness of self, tension and opposition between man and his environment resulted in his biological evolution through the ages. (Mithen 1996) From the moment that man began to visualise himself within the environment, the awareness of the tension and opposition between him and the cosmos has transformed into a necessity, a provocation. Man, realising his existence within the system, is striving to provide answers to the meaning of his environment and his own role within it. The cosmos is constantly provoking him, inviting him, in his quest to reaffirm his existence within it. This pattern unfolds as an expression of unity; not a static unity but a transforming and constantly re-established unity.

This provoked pattern of unified tension and opposition is the core of the boundary concept.

**Synthesis: The Primary Boundary**

In this first chapter, I have attempted to lay down the foundation of the concept of boundary. The genesis of the boundary is revealed in the birth of human consciousness brought in an ever-lasting tension / opposition with the surrounding cosmos. This primary boundary is materialised in the very essence of the human mind and its evident potential even in its embryonic stages. The rise to consciousness and the realisation of difference placed man in the beginning of an all-consuming journey. From now on he will be forever engaged in a dialogue with his surrounding world, inviting and being invited by it within a unified dynamic structure. In the following stage, I will attempt to address how the mind first attempted at actualising its essence within this structure, by unravelling the Universe through knowledge.
CHAPTER 2:
The birth of knowledge in myth as an invitation to reunite with the cosmos:

Cosmology and myth as representations of boundary

Introduction

In the second chapter, I will attempt to delve deeper into this consciousness of self and how it evolved in complexity through a constant opposition with the environment. The aim will be to see how the boundary between man and the otherness has brought about the genesis of knowledge. Having already addressed the starting point in this process as expressed through duality, tension and opposition as the prerequisite for the evolution of our existence, I will unravel it further in its complexity as it is carried by the mind in the form of knowledge.

The first invitation / provocation for mankind to belong and re-affirm his seeming independence within the bounds of his surrounding environment is to construct it in thought. World-view is gradually developed of as a container of knowledge. The created world-view is translated primarily into creation mythology and supported by general mythology and accompanying religious thought. Mircea Eliade’s insights into the purpose of creation myths and their liturgical practice as vehicles for the transformation of ‘sacred time’ into ‘real time’ will show how a culture creates its own reality by binding itself to creation and thus ensuring its purpose, meaning and survival. By so doing a constant interaction with the surrounding cosmos is ensured and perpetuated, being constantly re-examined; the boundary is thus materialised.

Mankind builds his world-view, a knowledge system that future generations will be able to build on in order to feel as one with their otherness, in order not to feel naked and alone and to meaningfully belong to the evolving structure. The boundary between man and the universe is in this manner lived, stored and transformed in myth. The Babylonian cosmogonic myth of the Enuma elish will be addressed, as it
seems to manifest the structure of reality of a particular group of people and their place in that reality. Another example included here will be one of the oldest and most constant of creation world-views, that of the Indigenous Australians’ Dreamtime, where the boundary of space / time and physical / spiritual world are merged in a dynamic way as a materialisation of their environment. Following this I will attempt to interpret the messages of Greek Theogony. Chaos is here seen as one; an entity through which life (plurality) is created, leading to the boundary between Gaea (earth) and Uranus (sky) as the vehicles of life and its diversity. The story of the fall from grace, Adam and Eve driven away from the Garden of Eden provides us with yet another powerful example of mankind’s realisation of difference and need for independence, while at the same time yearning to belong and to re-attach himself to the otherness, in this case God.

Seeing as there seems to be a common driving force behind these mythical and religious expressions of humanity, the next step will be to identify these collective forces. The pervasive mythical themes of the Earth Mother, the Sacred Marriage, the suffering hero and life and death allegories will be addressed, as they are perceived in a variety of myths from different cultures. They provide the scripts for man’s dramatic search for belonging and his attempt to find solace in his encompassing universe, reinforcing the concept of boundary. The great Goddess (Isis, Snake Goddess, Athena, etc) as mother of all living beings and her essence as a genetic source through which man and cosmos are connected, will be put forward. The myth of the goddess of nature Demetra and her daughter Persephone’s abduction by Hades, the god of the underworld, as presented and worshiped in the ancient Greek mystery religions provide yet another example of the mother archetype and the boundary between life and death; the promise of eternal life. Finally, I will address the hero theme with the examples of Prometheus, the ancient Greek god and Gilgamesh, the Babylonian king. The myth of Prometheus and his gift of fire (knowledge) to mankind is seen here as the medium that initiated our independence from the gods, making us stronger in ourselves, however eternally bounding us to the otherness. Lastly, the story of Gilgamesh’s heroic acts reads as an attempt of these ancient people to try to come to terms with their changing environment and their role
in it. The city as a source of evil needing to be rebuilt and the forest as an untamed mysterious force to be conquered reflect the anguish of these people to attempt to regain a balance in their cosmological existence. These are of course not the only possible examples. The intention here will be to explore on how they invite and provoke us to realign ourselves in a dynamic equilibrium with our environment, our present, past and future existence as expressions of the boundary’s essential and collective nature.

Man’s collective nature will be addressed through the insights of Mircea Eliade and Carl Jung. According to Mircea Eliade, for these myth-creating men, nature was fraught with a religious value and their own natures were open to receive it and be part of it. This is strikingly contrasted to modern men who attempts to desacralise nature. Though the maturity of his mind pushes him to question his existence in a profane world, man is ultimately unable to escape his sacred nature. In fact his dual nature is essential for the creative opposition with the cosmos to be perpetuated. In my research, Jung and his psychological insights on the nature of the mind, the collective unconscious, the self-regulating psyche and archetypes, seem to support this claim. These ideas will be exposed as expressions of the boundary concept. The collective unconscious, archetypes as they appear in myth and the self-regulating psyche, as knowledge systems will be seen here as expressions of the boundary concept. According to Jung, myth and religion are needed in order to locate the self in the universe. Through mythology the barrier between man and nature is diminished, the boundary reinvents their connection. The mind for Jung is divided into pairs of opposites manifesting themselves as different aspects of the same personality, the objective and the subjective. He concluded that there is a myth-creating level of the mind common to all people of different times and cultures. This level of the mind he named the collective unconscious, the source of production of spontaneous mythological, cosmogonic notions and religious thought. He considered that this mythological material has a positive function in giving meaning and significance to man's existence. According to him, myth might be an attempt of the mind to create a better adaptation in the future. Archetypes evident in myth creation possess an immense emotional significance, necessary for human experience in its
cosmic significance. They are manifestations of the dynamic power of the boundary as vehicle of unification with the cosmos; they enable an adaptive and healing process linking man back to the universe. They invite and provoke us to realign ourselves in a dynamic equilibrium with our environment, our present, past and future existence, as expressions of the boundary’s essential and collective nature.

Jung’s insights into archetypes and the collective unconscious have taken the issue of the duality between body and mind to a very deep level, towards a boundary between spirit and matter. Jung conceived archetypes as being the mediators of the unus mundus, or unitary world. His concept of the self-regulating psyche also links the body and mind. Evident in the analysis of dreams, the unconscious side of the mind compensates the conscious adaptation of the mind. Human physiology is seen in the same light, describing the body as a self-regulating entity, a balanced mean, constantly sought, departed from as soon as achieved. These concepts are themselves a representation of the concept of boundary. For Jung, this reconciliation and balance leads to individuation, which is the individual's psychological development towards integration and wholeness. The self is a symbolised new centre, neither conscious nor unconscious but both.

2.1 Cosmogony: Creation Mythology, the primal knowledge structure

Man's skills, the defining power of language and a heightening of aesthetic ability as aspects of experience were strengthening his consciousness of himself and therefore making him able to visualise himself at the centre of his tangible and intangible universe. Within this consciousness, however, man’s experience -his knowledge system-, was still intrinsically connected to his environment. Man aspired to actualise his existence by building his newfound knowledge system within the surrounding creation. Religion as it is revealed in creation mythology will be seen as the materialisations of this.
2.1.1 Awakening of social and spiritual life

As seen in the last chapter, by formulating societies, man reinforced his foothold in the world. He was not weak and alone anymore. His own strength was multiplied by the relationships he formed, ensuring his survival and the continuation of his ancestral line. “These hunters had little sense of individual personal life; every man and woman was sunk deeply into the tribe and not only into the living tribe but all its dead ancestors and descendants yet unborn: there was unity between past, present, and future, natural and supernatural, image and physical reality.” (Hawkes, 1955, p.99)

In his book, The Sacred and the Profane, renowned historian of religions Mircea Eliade (1957) attempts to reveal the nature of religious man. He cites Rudolf Otto’s (1917) insights on the irrational aspect of religion in his book Das Heilige (The Sacred). The religious fear and awe-inspiring mystery that early man felt by the revelation of a divine power was like nothing human or earthly and made him sense his profound nothingness. (Otto, 1917 cited in Eliade, 1957) The sacred, according to Otto manifested itself as something ‘wholly other’, “… as a reality of a wholly different order from natural realities.” (Otto, 1917 cited in Eliade, 1957, p.10) For Eliade it is not the irrationality of the sacred that is interesting, but its opposition to the profane. “Man becomes aware of the sacred because it manifests itself, shows itself, as something wholly different from the profane.” (Eliade, 1957, p.11)

Early man created religion by worshiping the rain, the sun and the animals around him. Elements of his natural environment acquired in his eyes a sacred identity, their immediate reality was transmuted into a supernatural reality. (Eliade 1957) According to Eliade (1957), though, archaic man attempted to live as much as possible in the sacred or in close proximity to it, to participate in the sacred and saturate it with being. The sacred reality was for him bound to his physical reality. The cosmos is for archaic man a living cosmos and the mere life of the cosmos was proof for its sanctity. (Eliade 1957) “This is why, beginning at a certain stage of culture, man conceives of himself as a microcosm. He forms part of the gods’
creation; in other words, he finds in himself the same sanctity that he recognizes in the cosmos. It follows that his life is homologized to cosmic life; as a divine work, the cosmos becomes the paradigmatic image of human existence.” (Eliade, 1957, p.165)

Gradually archaic man’s belief system became more and more complex, building a conceptualised environment to explain his existence and basing his social behaviour on it. According to Coon (2003), the suspension of disbelief provided a social glue able to govern behaviour, resulting in the unification and differentiation of societies, which he considers an essential element of what we call culture. “Then, as now, a core element of religious belief and practice was the organized suspension of disbelief regarding specified impossible beings or happenings, which true believers insist do actually exist or did actually happen. … People who shared the same faith shared a special bond, and everyone else was an outsider.” (Coon, 2003, p.27) Thus, the creation of society and the creation of religion or mythology came hand in hand. That was man’s first achievement in solidifying his existence within the universe.

### 2.1.2 Creation myths as containers of collective knowledge: Myth and religion as expressions of locating the self in the universe

One of humanity’s first collective expressions was the development of creation mythology. In practically every known culture we find an attempt at an explanation of the origin of life in the surrounding cosmos. Creation mythology is founded as the core of early cosmology. Early man built his world-view around it. As the ‘view of all life’, a world-view is intended to provide a comprehensive interpretation or image of the universe and humanity in it. These early creative humans, though, produced this unconsciously. Regardless of their geographical positioning in the world, they were driven to formulate an answer to the most enduring questions of all: where did we come from and what is our purpose. The answers are as variable as the cultures that created them, but at their centre, the binding message is the motivation to belong.
According to Mircea Eliade, one of the greatest authorities on myth, symbol and ritual, it is impossible to understand the religion and style of a culture if we ignore its cosmogonic myths. (Eliade in: Bonnefoy, 1992) Studies of the myths throughout the world have shown that there are some common driving forces behind them. Similar and recurring elements and motifs arise in the backbone of the myths of the Indigenous Australians, North and South American natives and the peoples of Africa or Europe. In the creation myths of most cultures we see a variation from a single god creating the cosmos, to creation from abstract chaos. Many myths are concerned with cyclical destruction and creation (seasonal death and rebirth) (Kakridis 1986a). Themes of destruction and recreation, often from an earlier perfected world are also very common (Garden of Eden, Hesiod’s Golden Age etc). The mythological motif of the flood is found not only in early Christian mythology, but also ancient Greek myth (Noah and Deucalion). The origin of fire as a gift from the gods or stolen through cunning is another common motif.

Myths are central in the lives of a multitude of cultures and faiths. Regardless of the fact that there are a number of similarities that permeate creation myths across the globe, it is their particular differences that distinguish the cultures that have created them. The myth of creation has a symbolic meaning. Its narrative of the beginning of the world reflects the belief system of the particular community. The book of Genesis, for example, is a central referential factor upon which the entire Christian faith is based. Its necessity is paramount. One cannot think of any religion that does not start with an attempt to explain the creation of the world within that particular faith. Seeing that any culture was essentially based on the bounds of a wholly accepted religious structure, the extraordinary importance of creation myths and the subsequent mythical structures that followed becomes clear. Having closely examined creation myths and myths in general of any particular culture, scholars have concluded that they are the containers of a dense structure of symbols and codes that form the basis of that culture. Eliade (1954) suggests that there is a hierarchical importance in the body of mythology of a culture and it is the creation myth that serves as a model for all myths of origin.
The myths centred around the creation of the world tell of a sequence of fabulous events that took place at the beginning of time, reflecting a primordial history. (Eliade in: Bonnefoy, 1992) They are explanatory rather than expository. They are like a primitive form of science, purporting to account for the facts of the world as they appear to pre-scientific man ordering his experience of the world and making it more coherent. (Brockelman 1999) According to physicist and theologian Ian Barbour, the essential function of creation myths is to reveal a framework of larger significance in human experience. “Creation stories manifest the essential structure of reality and our place in it. They provide archetypes of authentic human life in accord with a universal order. They are recalled and celebrated in liturgy and ritual because they tell us who we are and how we can live in a meaningful world.” (Barbour referred in Brockelman, 1999, p.23) For these archaic people it was, indeed, essential not only to know ‘who’ they are but ‘how’ to live meaningfully in the world.

The creation myths thus bound the people who created them with their particular historical reality anchoring and orienting them in their world, allowing them to locate themselves in the universe. In Mircea Eliade’s words: “... [the creation] myths reveal that the world, man, and life have a supernatural origin and history, and this history is meaningful, precious, and exemplary.” (Eliade in: Bonnefoy, 1992, p.5)

2.1.3 The Myth of the Eternal Return: The re-enactment of ‘sacred time’ in the ritual dramatisation of the creation myth

Creation myths not only provide a model for the formation of other myths, they are also a model for non-mythic expression. (Kakridis 1986a) The structure implied in a creation myth can be seen translated in the definition of other cultural expressions (ritual expression, relationships, techniques, artefacts etc). The ritual dramatization of the creation myth becomes deeply imbedded into the life of the culture. It finds expression in the ritual of religious expression and lends it profound meaning and value. By re-enacting the dramatisation of ritual in everyday religious expression,
the participants re-affirm their primary identity as participants of their culture. (Kakridis 1986a)

In cultures were myth is still a ‘living thing’, portraying not fiction but the supreme truth that represents the reality of that culture, mythology constitutes a kind of ‘sacred history’. (Eliade in: Bonnefoy, 1992) In his book, The Myth of the Eternal Return, Eliade (1954) asserts that this sacred history is in fact preserved and transmitted through myths and it is repeated indefinitely by being periodically re-enacted in ceremonies and rituals. (Eliade 1954) Through this ritual repetition of mythical events archaic people relive the archetypes, these models of transcendental origin that were revealed to their ancestors at the beginning of time and in doing so they overcome the periodic return to chaos by summoning a resurrection. (Eliade 1954) The notion of time is indeed important here. The liturgical procession of a culture attempts to re-enact the most profound moment in its history, the creation of man and everything else that surrounds him. This re-enactment of ‘sacred time’, displaced in order to be experienced as ‘real time’ binds the culture even closer together as it offers the participants the possibility to experience its cosmogonic transcendental quality. (Eliade 1954)

According to Eliade (1957) in Babylon, the Enuma elish, the Poem of Creation was solemnly recited during the last days of the year and the first days of the New Year during the akitu ceremony. The timing of the re-enacting of the cosmogonic ritual is paramount, as the New Year implies “… starting time over again at its beginning, that is, restoration of the primordial time, the ‘pure’ time, that existed at the moment of Creation.” (Eliade, 1957, p.78) Eliade (1957) describes that the battle between the marine monster Tiamat and Marduk, who killed her and created the cosmos out of her dismembered body was staged by two groups of actors during the ceremony. (fig.2.1) Man was created from the blood of the demon Kingu, Tiamat’s chief ally. In participating in this ritual of rebirth, man therefore, plays a part in his own rebirth, re-enters sacred time and the circle of life can be eternally resumed.

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4 Eliade (1954) specifies his use of the word archetype as a synonym for exemplary model and not as a structure of the collective unconscious as it was used by C. G. Jung.
In the following stages of this chapter, I will attempt to decipher the nature of the boundary between man and cosmos as it is revealed in creation myth, or myth of origins, by drawing from a wide variety of examples.

2.1.4 “The Dreamtime” or “Dreaming” of Indigenous Australians: Boundary of space / time and physical / spiritual world

Even in modern times, there are cultures in which myth is still a ‘living thing’, not portraying fiction, as Eliade asserts, but the supreme truth that represents the reality of that culture. (Eliade in: Bonnefoy, 1992) An extraordinary example of this deep-rooted consciousness is also probably the earliest of creation myths, the so-called “Dreamtime” or “Dreaming” of the Indigenous Australians. According to Hume, in the Indigenous Australian cosmology, there was no doctrine of creation ex nihilo, the Dreaming, thus refers to a creative period or founding drama, but also an atemporal reality. (Hume, cited in Harvey, 2000)

The cosmological / cosmogonic system is lived to this day by the Indigenous Australians and it involves the landscape and its population as a whole.\(^5\) "Aboriginal

\(^5\) I would like to specify that I am not trying to create a homogeneous picture of the Indigenous Australian people. There is as wide a difference in their conceptions of the physical and spiritual
people believe that their Spiritual Ancestors have given social relevance to the landscape, imbuing it with their power and humanising it." (Clarke, 2003, p.15) In their cosmogonic model the Spiritual Ancestors created their environment through a series of heroic acts. These beings possess all human traits, vices as well as virtues and pleasures. Their substance is also multifaceted. They take the form of humans, animals or birds, but can also be conceived as atmospheric and cosmological phenomena. (Clarke 2003) The “Dreaming” is an exceptional example of creation myths as it is still used today as a way of life.

According to Clarke (2003), the Dreaming engages the circle of time in its totality including past present and future. “The Dreaming mythology provides Aboriginal people with answers to the great universal religious questions of humankind, concerning the origin, meaning, purpose and destiny of life.” (Clarke, 2003, p.16) For the Indigenous Australians, the precise time of their arrival in Australia is not a relevant issue. The ‘white man’ can date their origin to about 30,000 to 40,000 years. “Some art in Australia may be as much as 40,000 years old, and since it is still part of the Australian Aboriginal people’s way of life, it is the oldest continuous art landscape as there are language groups throughout Australia. In including this example here, I wish to call on the revered meaning that the landscape, earthly and heavenly, has had for these people and how their worldview binds them to the cosmos through their construction of sacred space.
For the Indigenous Australians their ‘arrival’ originated with the landscape. “To Aboriginal people a part of the legacy of the Dreaming Ancestors is in the landscape, and their association with the land is marked by sacred memorials or ‘sacred sites’. As the Ancestors travelled across the landscape, they left behind a trail that can be recognised by Aboriginal people in the form of mountains, waterholes, plant formations and other environmental and geographical phenomena.” (Clarke, 2003, p.18) The existence of these places in the environment, help the Indigenous Australians see and believe that these events did actually take place. They become the tangible link between the Dreaming and the People. (fig.2.4) “To Aboriginal people, sacredness is localised in the landscape, with most major geographical features to some extent related to the tracks of their Ancestors and the places they gave meaning to.” (Clarke, 2003, p.16) According to Hume, living Indigenous Australians are bound to land and spirit in a most complex way by their kinship to the Ancestors; they are the caretakers and guardians of the land. “Everything is interconnected in a vast web of sacredness.” (Hume, in Harvey, 2000)
landscape. (Clarke 2003) The different tribes have variations of the stories, since they live in diverse environments. So it arises that local identities are created while having a common denominator in the existence of the creators. Clarke (2003) gives an interesting account of the evolution of a tribe’s cosmogonic beliefs. He refers to the Pinturi people who in the 1940s moved hundreds of kilometres from their homelands around Lake Mackay west of Alice Springs to a northern mission settlement at Balgo in Western Australia. Through a man’s vision they were able to discover that one of their Dreaming Tracks passed underground and resurfaced in their new settlement. “The Pintupi here were able to discover aspects of their culture that were considered either lost or never before known, although always perceived as lying just under the surface of existing knowledge. The basic foundation was seen as having always been there, but until recently not yet found by Aboriginal people.” (Clarke, 2003, p.20)

In their mythology, the encompassing sky is also of dramatic importance and they refer to it as Sky World. It is the abode of the ancestral beings and spirits, but they also visualise it in the same terms as the earthly landscape. "The cosmic landscape was, to these Aboriginal people, populated with animal species that also occurred in their terrestrial landscape." (Clarke, 2003, p.28) Indigenous Australians believe that it is possible for humans to reach the Sky World and thus be rewarded with immortality. Philip Clarke (2003) refers to the magistrate, Edward J. Eyre, of the Murray River area of South Australia who in 1845 noted the myth of a mortal man named Monana, from the Adelaide area, who gained access to the Sky World and became an Ancestor: “[Monana] was one day throwing large spears in various directions, east, west, north, south; when, having thrown one upwards, it did not return to earth. He threw another, and another, and so continued throwing; each spear sticking fast to the former one until they reached the ground, and he climbed up by them to the sky, where he has ever since remained.” (Clarke, 2003, p.28)

Here, I have attempted to present how the Indigenous Australians have conceived a complex worldview that encompassed the whole of their known and unknown world, their past, present and future. This powerful conceptualisation has enabled them to
unite with their earthly landscape and the infinite sky above, making sense of the existence of the cosmos and their own existence within it.

2.1.5 The Earth Mother paradigm: The genetic source through which man and the cosmos are connected

A pervasive theme in creation mythology is the Mother Earth paradigm and is found across the world in countless forms. The primordial image of Mother Earth is closely bound to woman and vice versa. Woman’s fertility, her womb, her essence as nurturer and maintainer of life had, as seen in the previous chapter, provided from the beginning of time the link of man with the otherness. According to Eliade (1957), *Terra Mater* is considered as the bearer of all beings and man born of the earth is a universally disseminated belief. In some religions Mother Earth is capable of conceiving alone (parthenogenesis), whereas in others, cosmic creation is the result of a hierogamy between the Sky-God and Mother Earth. (Eliade 1957) The latter is the case in Ancient Greek Theogony.

- **Ancient Greek Theogony: from Chaos comes life, boundary of Gaea (earth) and Uranus (sky)**

The Ancient Greek Theogony begins with the void ‘Chaos’. In Ancient Greek religion and mythology, Chaos comes to represent a vacant and unfathomable space, the dark, silent abyss from which all earthly and divine things came into existence (Kakridis 1986a).

In Ancient Greek creation mythology, as in all myths, we come across a large variety of interpretations of the story. A myth is forever transformed through the ages and should be looked in collectively as a whole, with all its variations. Kakridis (1986b) portrays the different variations of the story. According to Apollodorus' version of the cosmogony, Uranus (Sky) was the first to emerge from Chaos and the first to rule over the whole world. With Gaea (Earth) they bore the Hundred-handed monster, the Cyclopes and the Titans. Uranus bound them and cast them into Tartarus (the
abyss). Gaea grieved at the destruction of her children and avenged Uranus. In the mythology of the Pelasgians, an aboriginal non-Greek people living in Greece before the Mycenaean period, Eurynome (order) rose out of Chaos and created all things. She separated the earth from the sky, created the great serpent Ophion, mated with him and thus gave birth to all existing things.

According to the earlier Hesiod’s Theogony (7-8th century B.C.), however, Gaea (earth) sprang from Chaos and became the mother of all things. She was worshiped as the primal goddess, the mother and nourisher of all things. Eros, the god of love, appears here as one of the oldest of the gods, born from Chaos and personifying creative power and harmony. With Eros as catalyst Gaea created Uranus (sky) and Pontus (sea). (fig.2.4) Her offspring by Uranus were the Cyclopes, the Hundred-handed Ones (the Hecatoncheires), and the Titans (Cronus, Rhea, Iapetus, Oceanus (Ocean), Hyperion, Themis (Law), Thea, Mnemosyne (Memory), Phoebe, Coeus, Tethys, and Crius). To Pontus she bore five sea deities. Uranus, afraid of the potential power of their children insisted that Gaea keep them locked up, preventing them from seeing the light of day. Growing within the bowels of their Mother Earth, the children caused Gaea great physical and emotional pain. Furious with Uranus for imprisoning her children, she helped them bring about his overthrow. Her boldest
offspring, the youngest Titan Cronus attacked and castrated Uranus. Additional offspring sprang from his blood; the Giants, the Erinyes (Furies), Meliae -- and most spectacularly, Aphrodite, who was born from the foam. For their treachery and crime, the Titans would later also be punished. Cronus, taking over as the ruler of the world, would later be overthrown by his own son Zeus.

In Hesiod’s Theogony, I could perceive the boundary principle through the importance given to tension and opposition as a prerequisite for creation. Eros represents this energy, the invitation to opposition that leads to the creation of the world. In the other version Eurynome (order) fulfils this action. Indeed, Chaos cannot exist alone. It is driven to create life as we are driven to understand it.

- **The Great Goddess as the mother of all living beings**

The powerful image of fertility represented by woman, already seen in the primitive form of the ‘Venuses’ of the Stone Age, survives throughout the ages and across the world. She is truly the primal archetype. The miracle of birth must have struck a chord at the deepest level of human consciousness. Woman became gradually identified with earth and fertility. The Stone Age cults prayed to her for the abundance of game. In the later evolution of mankind, she was called upon, to protect and multiply domesticated animals and to raise the crops. Her worship spread throughout the world. “In the religious myths of the Egyptians, Sumerians, and other ancient peoples as they emerge into history we can recognise the Goddess standing behind all later-comers to their pantheons. She was Hathor the Egyptian cow-goddess; she was the Sumerian Ishtar. Agricultural peoples assigned to her as lover and as son the young god who in his many guises dies in order to be born again, as the grain had to be buried in the darkness of the earth before it could sprout into new life.” (Hawkes 1955) Her image can be found again as a Goddess of Nature, in the Minoan snake Goddess and the ancient Greek Goddesses Athena and Demeter. (fig.2.6-2.9)
figures 2.6-2.9: The Great Goddess in her various disguises as mother of all living things: Ishtar- Hathor- Minoan Snakes Goddess- Athena. Source: Hawkes (1968)

“I am Nature,’ declared the great goddess, ‘the universal Mother, mistress of all the elements, primordial child of time, sovereign of all things spiritual, queen of the dead, queen also of the immortals, the single manifestation of all gods and goddesses that are. My nod governs the shining heights of Heaven, the wholesome sea-breezes, the lamentable silences of the world below. Though I am worshipped in many aspects, known by countless names, and propitiated with all manner of different rites, yet the whole round earth venerates me.” (Isis quoted in Flagg Cotterell, 2006, p.1)

This extract is taken from Lucius Apuleius’s novel The Golden Ass written during the 2nd century AD. In these words Isis reveals herself to her servant, coming to his aid as she would to all who worship her in Phrygia, Greece, Ethiopia, or the Orient. (Flagg Cotterell 2006)


The succession of the seasons, vegetation and the death of nature made a deep impression on the Minoan primitive man.\(^6\) The alternation of the feelings of joy and dread at the change of seasons, led to the personification of the basic elements in the

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\(^6\) Having long been interested in the wider expression of the Minoan culture, in Crete (2500-1500B.C.), I was driven to investigate it for the 4th Year dissertation: “Bronze Age Civilisations in the Aegean, the emergence of urban culture”. (Saridaki 1998) Evidence was apparent not only in its art and architecture, but also in its associated mythology and religion. Remarkable insight was offered through the study of religion, its relics and the associated myths, in the unveiling of the definition of this first European culture.
eternal drama. In man’s imagination, Nature took on the form of the Great Mother, while he saw vegetation as a Divine infant, a Young God, who is born, dies and is resurrected every year. (Christopoulos 1974)

The relation between these two deities is not very clear. Sometimes it appears to be the relation of lovers not always brought to consummation as the Young God dies a little before or a little after his marriage to the Goddess. Elsewhere, the Great Goddess seems to be the Young God’s mother, his sister or simply his companion. In these variations this divine couple also appears in the myths of the East, Egypt, Asia Minor and Greece and this helps us to form some idea of the apparently analogous religion of Minoan Crete, whose sacred texts have been lost forever. (Kakridis 1984b)

The expressions in the Minoan religion of the two forms, which nature assumes, sometimes venerable, terrifying and omnipotent, sometimes gentle, charming and full of kindness, is reflected in the identity of the Young God who dies, having also two natures. (Christopoulos 1974) He is at times the strong tamer of beasts, griffins and winged game, at others weak like a child or a flower (Hyakinthos). The Minoan Goddess also appears in many forms, almost as separate deities, but that is probably not the case. The Goddess is represented seated below her sacred tree, holding snakes in her hands, or with a large snake coiled around her beautiful body. The snake is the symbol of the infernal world or the ‘good spirit’, which protects the home. At the same time, perhaps, it is also the expression of the unpredictable, the abrupt and startling apparition of the supernatural. Doves flutter their wings on her shoulders, cheeks and hands, or seat on her head or lap. At times she is represented as the Kourotrophos the maternal Goddess who holds the Kouros, the Young God in her hands, as a divine infant. (Christopoulos 1974) (fig.2.10) Elsewhere, she brandishes a sword as a warlike champion of the Minoan Kingdom, or sails away on her boat to faraway lands as a protector of travel and commerce, the driving force behind the Minoan civilisation. Her union with the Young God always, however, ensures the continued circle of life in the eternal drama of Nature. (Christopoulos 1974)
The Cretan Bull

There are numerous references in the world’s mythology about the sacred union between the sexes. Sometimes the divine element is male sometimes it is female. At times it appears in the shape of an animal, representing an earthly connection. These myths outline the creative tension that exists between the sexes, a provoking existence and often a suffering existence. They reveal the importance of this tension, which seeks fulfilment.

The Minoan votary felt their deity as something mysterious, fleeting and intangible, appearing only for a moment in human shape or in the shapes of various sacred animals, such as a bull, a bird, a snake, a wild goat, or a young cow showing maternal tenderness to her calf. (Christopoulos 1974) This explains certain myths of historical times, which echo earlier beliefs. The legend of the marriage of the Queen-Goddess Pasiphae (the wife of King Minos of Knossos) with the Divine Bull, which leapt out of the sea, tells how she was spellbound by his beauty, transforming herself into a Cow in order to be united with him. The Greek legend of the abduction of Europa dazzled by the beauty of Zeus transformed as a Bull, also takes place in Crete, revealing its roots. (Christopoulos 1974) (fig.2.11)
The Bull, this vigorous, half-wild animal, originally had a practical function on Crete, the fertilisation and propagation of the herd that gives milk, meat and skins to the community. Soon, though, the Bull took on a deeper religious meaning and his erotic union became an important element in the supernatural, determining all natural fertility. As in the East, so in Crete the Bull is identified with the heavens and the sun, which fertilises the earth with rain and heat. At the same time the female figure, the Sacred Cow, is associated with the moon, whose shape is reminiscent of horns. Thus, the marriage of the Bull and the Cow is at the same time the marriage of the Sun and the Moon and in effect the representation of the surrounding world. (Kakridis 1986b)

The roles of the participants in this sacred marriage are played by the King and Queen of Knossos. The Greek name for the queen, Pasiphae, meaning “full of light”, shows exactly the connection of the queen-goddess with the moon. Her son, the Minotaur, a man with a Bull’s head, is called Asterion, because he, like his father, is identified with the starry heavens. (Christopoulos 1974) The Minotaur dies, and as the sacred Bull of Crete (the pre-eminently sacrificial animal), he is a ‘suffering god’, much as the ‘bull of heaven’ for the East and Apis, in Egypt are eventually killed.
Ariadne, the daughter of Minos, the moon and tree Goddess also dies every year, she too is a mortal figure like the Young God. (Christopoulos 1974)

- The Mystery Religion of Demeter, in ancient Greece: boundary between life and death and the promise of eternal life

figures 2.12-2.13: The allegory of death and re-birth in Nature: The Rape of Persephone by Hades the god of the underworld, Bernini (1622), Galleria Borghese, Rome. Source: www.theoi.com
The Return of Persephone to her mother Demetra, by Frederic Leighton (1891). Source: www.theoi.com

The drama of nature, the death of living things in winter and the celebrated rebirth in the spring is the core theme of the myths surrounding Demeter, the ancient Greek goddess of nature. Demeter, the daughter of the Titans Cronus and Rhea and sister of Zeus, was the patroness of agriculture. The most renowned mystic religion of the Greek antiquity is dedicated to her, the Eleusinian mysteries. She was Ceres, the Roman goddess of the corn and was also identified sometimes with the Egyptian Isis and the Phrygian Cybele (Kakridis 1984b). The rape and abduction of her beloved daughter, Persephone by Hades, god of the Underworld, according to the myth drove her almost to insanity. (fig.2.12) “Demeter sought her daughter all over the world, fasting, with hair untied, and carrying torches, and the earth became barren as a result of her neglect. To appease her, the gods ordered Hades to release Persephone for part of the year.” (Howatson 1989, p.177) Joyful to regain her daughter, Demeter
made the earth bloom again; an act announced every year with the coming of spring. (fig.2.13)

This myth is interpreted as an allegory of nature. Persephone must descend like seed into the earth so that the new corn may germinate. But it reflects much more than that. Demeter and Hades are seen here as two opposing forces of the ancient Greek world. One was involved with creation, the sustaining of nature and the other with destruction, in other words Life and Death. The existence of Persephone, is seen here as the regulator of the two. She is in fact the boundary. Through her, the forces of life in nature personified by her mother, are allowed to die in order to be reborn stronger than before. Persephone personifies death and life in her person, but also the necessity of the two.

The beginnings of the religious mysteries are also portrayed in this myth, as cited in Howatson (1989). In her wanderings Demeter came to Eleusis where, in the guise of an old woman, she was hospitably received by the king, Celeus, and his wife Metaneira, and tended their newborn son Triptolemus. She was discovered holding the child in the fire, to make it immortal by purging away its mortality as a gesture for the kindness and hospitality she received. At first shocked, the royal couple were appeased as Demeter revealed her divinity, and ordered that rites, known thereafter as the Eleusinian mysteries, should be instituted at Eleusis in her honour. It was also at Eleusis that Persephone was restored to her. Triptolemus was sent about the world teaching the art of agriculture, thus fulfilling his role as the mediator between mankind and the divine.

2.1.6 The Hero paradigm mirroring mankind’s struggle for survival

Another recurrent theme in myth is that of the suffering hero, giving insight not only to the physical but also mostly to the emotional experience that the protagonist is put through. The hero usually has to surpass his abilities in order to achieve his goal; in a way mirroring mankind’s struggle for survival or a child’s progress from infancy to maturity. Hero myths can, thus, be regarded as expository rather than explanatory
creation myths, giving shape, form, and often artistic expression to emotional experience. Similarly to the creation myths, however, they too tend to order experience making it more coherent. In this section I will visit the myths of Prometheus, the ancient Greek god, the Christian myth of the Genesis and Gilgamesh, the Babylonian king. (fig.2.14-2.15)

![Prometheus and the gift of fire / knowledge to man](figures 2.14-2.15: The suffering hero and the struggle for survival: Prometheus, in eternal punishment for having gifted mankind with fire, is chained to a rock and tortured by an eagle. Source: www.theoi.com)

The Babylonian King Gilgamesh as the hero who attempts to come to terms with his 'savage' and 'civilised' nature. Source: www.theoi.com

- **Prometheus and the gift of fire / knowledge to man**

Prometheus, like Demeter, is also portrayed as a god that gifted man with knowledge. As cited in Kakridis (1984b), this ancient Greek god, a Titan, is said to have sided with Zeus in his struggle to overthrow his father Cronus in order to rule the heavens and thus became his chief advisor. After his success and as an acknowledgement of their support, Zeus gifted all the gods with fitting powers but neglected to bestow any gifts to the mortals. Prometheus was displeased, as he loved the human race and strongly opposed Zeus in his decision. He went so far as to trick the gods, steal the fire from them and present it to mankind. Other versions of the myth even go as far as having Prometheus teach the -until then- primitive man, how to work the earth, read the stars and work with metals. Zeus became furious with Prometheus for disobeying him by stealing the fire and bound him to Caucasus.
There, he was supposed to be eternally tortured by an eagle that came daily to eat his liver. Since Prometheus was immortal, his body would heal overnight, ready for the torture to be repeated the next day. The myth ends with Prometheus’s release by Hercules. Zeus is not opposed to the release; he does however give Prometheus a ring made from the rock he was bound on, as a symbol of his eternal imprisonment.

The myth of Prometheus’s sacrifice and subsequent punishment for his gift to humanity appears in many versions in world mythology. The gift of fire (knowledge) to mankind can be seen here as the medium that initiated our independence from the gods, making us stronger in ourselves. The ring however, symbolises that like Prometheus, we are eternally bound to the otherness.

- **The Garden of Eden and the Original Sin:**
  - the tree of knowledge as invitation to opposition, with man fulfilling his destiny of independence

The Christian myth of creation gave mankind dominion over it as well as the duty to praise God's handiwork. After creation, God’s orders to Adam were: ‘Be fruitful, and multiply, and replenish the earth, and subdue it: and have dominion over the fish of the sea, and over the fowl of the air, and over every living thing.’ Adam was given dominion on every tree and plant that gave fruit: 'To you it shall be for meat.' Eden or the Garden of Eden symbolised the first home of mankind. According to the Sinclair (1993), Eden, often called Paradise, is symbolic of eschatological fertility and bounty.

The serpent is said to have tempted Eve to taste the fruit from the forbidden ‘tree of knowledge of good and evil’, in order to make them equal to God. The orders to Adam and Eve changed after their fall from grace. “Eve would now suffer in childbirth and be ruled by her husband. Adam would toil in the field as a farmer and would labour from childhood until death. The only gifts that God gave the first man and woman before driving them forever from His Garden were coats of animal skins rather than their chosen aprons of leaves. They would have to live as hunters and
herders to clothe themselves as well as tillers of the soil to get their bread. Their first two sons, Cain and Abel, were a ploughman and a shepherd.” (Sinclair, 1993, p.18)

The Christian cosmology centred in one god can be seen in different ways according to the definitions of each of the sub-religions. It has always been intriguing to me to reflect over the existence of the tree of knowledge of good and evil that is said to have existed in Eden. The Original Sin can be thought both as a gift as well as a punishment. Humanity initiated their release from the bounds of innocence, and their subsequent efforts were to rediscover this precise connection with the creator. This is a very similar definition to the rediscovery of knowledge in the Universe by early man; his state of innocence was transformed by his emerging mind, his ability to choose his destiny multiplying the layers of connection between them. (fig.2.16-2.17)

![Image](source.png)

figure 2.16-2.17: The original sin instigating independence with man from then on attempting to rediscover the connection. The Creation and the Fall, on the ceiling of the Sistine Chapel (1508–1512), Michelangelo. Source: www.theoi.com
The epic of Gilgamesh: boundary between tamed and untamed forces

Having started our journey through myth in Babylon and the *Enuma elish*, the *Poem of Creation*, it is quite fitting to end with an epic poem from one of the most ancient civilisations of the world. The Babylonian civilisation was the first to experience the relatively abrupt change of way of life after the agricultural revolution. The sudden proto-urban life had an extraordinary effect on the lives of the Mesopotamian people. (Mumford 1966) The agonising fight of ‘civilised’ man against ‘wild’ man and his effort to recapture the balance is portrayed in the epic of Gilgamesh. This epic, composed early in the second millennium B.C. is among the most ancient of the written myths and the first to deal with the attitude of ‘civilised’ men to savages, trees and wild beings. “The popularity of the epic was partially due to the fear felt by these ancient wealthy cities for the nomads of the Arabian deserts and for the mountain tribes to the north.” (Hawkes, 1955, p.158) King Gilgamesh, the mortal offspring of a god and a mortal, was portrayed as the great builder of the walls and temples of Uruk. In myth, he goes into the depths of the dark forest to fight with evil and bring back cedar wood for the temples. In his person, both the ancestral hero and the forgotten conflicts of primitive life are united.

As cited in Hawkes (1955), the epic begins with Gilgamesh's encounter with a wild man, Enkidu, who is innocent of humankind and knows nothing of cultivation. He lives with the beasts and his body is covered with hair. He is in total communion with nature. Gilgamesh sends a woman to him and Enkidu stays with her for a while but when he returns to the beasts they refuse him. He gives up his former life, learns to eat bread and drink wine and becomes a shepherd. After challenging Gilgamesh, who wrestles with him in the city and defeats him, he becomes his beloved companion. Gilgamesh dismayed by the evils of the city, decides to destroy the source of evil, portrayed by Humbaba, the giant of the distant cedar woods. “Gilgamesh is full of Mesopotamian melancholy. In the city, he says, man dies with despair in his heart. He must go out and kill the source of all human evil and cut down the cedar trees for the rebuilding of the city.” (Hawkes, 1955, p.165) Enkidu, aware of the greatness of the forest, tries, unsuccessfully, to dissuade his friend.
The entrance to the forest, depicted as a perfect gate of cedar wood, becomes the first obstacle. Enkidu, still wild in his heart cannot bring himself to destroy it. Gilgamesh encourages him to open it and the two proceed hacking down the trees. The fight with the giant is a terrible one but Humbaba is at last delivered to Giglamesh tied up. He begs him for mercy saying that he is just a force of nature like Enkidu, that he is chosen by the gods to be the keeper of the dark forest. If he is freed, he will become Gilgamesh's servant, he will cut down the forest and build a palace from the cedar wood. Gilgamesh, though, instead of choosing to contain evil by sparing him, unleashes it, hacking the giant in pieces. “Although their victory allows them to fell the forest and clear the roots as far as the Euphrates - thus creating the fields and building materials for Uruk - yet the wrath of the gods at the death of Humbaba makes them give the giant's fire to the barbarians, to the lion, to the wilderness, to the daughter of death.” (Hawkes, 1955, p.171)

The epic continues with the death of Enkidu. At the start of the epic, Giglamesh was seen to accept the necessity of death for himself, by arming himself against it with the hope of winning an immortal name, and in a sense immortality. Now, encountered with the death of his companion he is shattered. Giglamesh, unable to contain his sorrow becomes a beast himself, letting his hair grow, wandering in the wilderness and eating the raw flesh of animals. He has, in fact, become one with the natural world he tried so hard to deny. He tries to find the secret of immortal life, but when he finds it he loses it to a snake. At the end of the epic, he reaches the underworld to find Enkidu, but instead discovers that death is the fate of all men, himself included. This timeless anguish of the soul at the prospect of death is here beautifully expressed.

“Gilgamesh, whither are you wandering?
Life, which you looked for, you will never find.
For when the gods created man, they let
Death be his share, and life
Withheld in their own hands.
Gilgamesh, fill your belly
Day and night make merry,
Let days be full of joy,
Dance and make music day and night.
And wear fresh clothes,
And wash your head and bathe.
Look at the child that is holding your hand,
And let your wife delight in your embrace.
These things alone are the concern of men.”

(quoted in Hawkes, 1955, p.180)

According to Jacquetta Hawkes (1955), it is fitting for this epic to end in uncertainty. The hero displays all that is noble in response to the predicament of death. He fights against it but accepts the inevitable. The drama of the lives of these people, who created a new direction in the global human culture, was indeed immortalised through this myth. “Their ingenuity had created writing, our curiosity took us back to read it, and so across the span of nearly four thousand years minds meet, feelings mingle. Perhaps after all Gilgamesh has had success of a kind in his heroic quest.” (Hawkes, 1955, p.180)

The Epic of Gilgamesh is primal in the examination of the relationship between the savage and the city. It is the source of many of Europe's myths, it derives from the most ancient of urban civilisations, and it has an unrecognised power in folklore, psychiatry and even anthropology. “The archetypes of Gilgamesh deal with the confrontation of the forest with the city, of the tree and the animal with humanity, of primitive man with urban man, of a hunting culture with a farming culture, of anarchy with authority, of instinct with self-control, and of the natural with the social.” (Sinclair, 1991, pp.5-6)

The mythological background of this epic is grounded on the transformation of Mesopotamia to an urban culture. The struggle to transgress ‘savagery’ in order to achieve ‘domestication’ is depicted in this primary legend of man’s slow change
from a forest hunter to an urban dweller. The hero of the epic, attempting to battle with what he thinks is the source of all evil, comes to realise that evil is part of life itself. When the heroes are offered the choice to contain evil, they themselves, revert to it and by doing so, they unleash it. Man here is seen to follow the full circle of life. After destroying nature, he becomes bestial himself, reverting back to nature. As his companion, Enkidu represents Gilgamesh's free and natural self and only combined with him is Gilgamesh a whole man. “The legend suggests that no city man is wholly happy when he has lost the wilderness and the forest and contact with nature. The savage lies both outside the walls and within the yearnings of the ruler and the people of the city. Urban man dies with despair in his heart, unless he can range elsewhere.” (Sinclair, 1991, p.6) Finally he overcomes the reversion to bestiality by trusting the strength of his culture. “He has created civilisation from savagery, reverted to the animal and then returned to his culture because of the wisdom of a philosophy that can reconcile him with the impermanence of life.” (Sinclair, 1991, p.6)

The story of Gilgamesh’s heroic acts reads as an attempt of these ancient people to try to come to terms with their changing environment and their role in it. The city as a source of evil needing to be rebuilt and the forest as an untamed mysterious force to be conquered reflect the anguish of these people to attempt to regain a balance in their cosmological existence. This myth can be seen as a warning, an awakening, an attempt to educate the people of that time to their dual existence and the inevitability of being bound to their ‘savage’ identity.

### 2.2 Man’s dual nature binding him to the cosmos: the sacred and the profane

In the last few examples, I could perceive a differentiation in the understanding of the self. Man is becoming aware of the struggle for survival and its meaning in his growing maturity. He still yearns to find solace in the encompassing universe and his suffering is the means to achieve a reunion with the other. In this section, the
intention is to visit the insights of historian of religions Mircea Eliade and psychoanalyst Carl Jung in order to delve deeper in the religious nature of man as it is bound with his profane nature.

2.2.1 Mircea Eliade’s insights on the sacred and the profane: Man unable to escape his dual nature

As we saw early on in the chapter, Rudolf Otto, in his book *Das Heilige* (The Sacred), describes the irrational aspect of religious fear and awe-inspiring mystery that man feels by the revelation of a divine power. (Otto, 1917 cited in Eliade, 1957) This feeling of the sacred is distinctive because it manifests itself as something ‘wholly other’, “… as a reality of a wholly different order from natural realities.” (Otto, 1917 cited in Eliade, 1957, p.10) Eliade drew inspiration from Otto’s insights but went further forward with this concept by asserting that it is not the irrationality of the sacred that is interesting, but its opposition to the profane. “Man becomes aware of the sacred because it manifests itself, shows itself, as something wholly different from the profane.” (Eliade, 1957, p.11)

In his book, *The Sacred and the Profane*, Eliade (1957) attempts to reveal the manifestation of the sacred in the nature of religious and nonreligious man. For religious man (*homo religiosus*) as we have seen in the case of archaic man, the sacred is imbedded in his reality; it transcends this world but it manifests itself in this world thus sanctifying it, making it real. He sees the sacred as saturated with *being* and thus attempts and desires to participate in this absolute reality as much as possible. Modern man, however, according to Eliade (1957) has attempted to gradually ‘desacralise’ his world by attempting to rationalise everything around him, but has not entirely achieved it. There are several traces of the sacred imbedded in our daily lives. These include the deeply significant transitions in human modes of being still discernable in our modern cultural experience such as birth, puberty, marriage and death, which relate to rites of passage as well as our celebration of the New Year. Eliade suggest that even what we might consider mundane states of mind or experiences, such as the close connection one feels about their birthplace, the
‘dream factory’ of the cinema and even reading a novel have a mythological function as through them “… modern man succeeds in obtaining an ‘escape from time’ comparable to the ‘emergence from time’ effected by myths.” (Eliade, 1957, p.205)

As seen so far, for religious man, nature is never only natural, but always fraught with a religious value. Eliade (1957), however, suggests that no modern man, however irreligious, is entirely insensible to the charms of nature. Through his unconscious, though, modern unreligious man still clings to the sacred in his life by being presented ceaselessly with innumerable symbols, each able to transmit a particular message. According to Eliade and Carl Jung, as we will see later, these unconscious messages have a particular mission to accomplish, as they are able “… to ensure or re-establish the equilibrium of the psyche.” (Eliade, 1957, p.211) In this way, even they who proclaim themselves as being residents of an entirely profane world are unconsciously still nurtured by the memory of the sacred. (Eliade 1957)

Eliade (1957) goes on to claim that religious man is open to the world, he is never alone, as part of the world lives in him: “An existence open to the world is not an unconscious existence ‘buried in nature’. Openness to the world enables religious man to know himself in knowing the world – and his knowledge is precious to him because it is religious, because it pertains to being.” (Eliade, 1957, p.167) Perhaps this is the most important point: retaining an openness to the world and one’s own nature, upholding the boundary between us and the other. In seeing the sacredness of the world modern man would be able to see the sacred in himself, without needing to call it religious.

In my opinion it is important to embrace all dimensions of human existence. It is impossible for modern man to deny his need to live in a profane world. The maturity of his mind has led him to question his existence.\(^7\) He has created a distance between himself and the cosmos. The traces of the sacred, however, have not entirely vanished and they still pull him, inviting him to reveal the mystery of the cosmos and achieve an understanding of self. Our dual nature is essential for the opposition to be

\(^7\) More on this on chapter 6.
perpetuated. This tension, this opposition that reveals the boundary has changed. The nature of the relationship with the cosmos is changed. It is irrelevant to yearn for the archaic time, it is however, necessary to embrace our new being and to consciously or unconsciously seek the other. The evolution of our mind has made this possible. In the following section, I will try to delve deeper into the nature of the unconscious by visiting Carl Jung’s insights on the myth creating nature of the mind.

2.2.2 Carl Jung’s insights on the myth creating nature of the mind as an adaptive / healing process

The field of psychoanalysis has given a very intriguing insight into myth by examining the myth-creating nature of the mind. Sigmund Freud drew parallels between the interpretation of myths and the interpretation of the contents of dreams. He famously used the Oedipus myth to understand human sexual development. He believed that dreams, like myths, do not represent the world in a real way but that they are universal aspects of the human condition, symbolic reflections of unconscious and repressed fears and anxieties whose origin could be traced to childhood. (Dant 2003) The psychoanalyst Carl Jung, however, gave more status to dreams and myths by stating that there is an inherent tendency in all people to form certain of the same mythic symbols. (Flagg Cotterell 1986) “For the greatest mythical tales make a direct appeal to the unconscious; they work through intuition. Their power is the flash of insight that illuminates the narrowness of matter-of-fact explanation and compels the intellect to acknowledge the need for a more adequate understanding. Myths possess an intensity of meaning that is akin to poetry.” (Flagg Cotterell, 1986, p.1)

As seen throughout the previous sections, there seems to be a similar grain of thought that permeates all human societies, whether in the past or the present and regardless of their physical positioning in the world. Throughout man’s earliest awakened appearance in the world there exist some similar reference points, relating to knowledge that he has tried to tackle. The production of myth and the earliest clues of emerging religion have been a prerequisite in any creation of society. In fact they
are the medium, the binding glue for the survival of any given society. The organisation of societies came hand in hand with the creation of mythological religions. People in these early groups made conscious decisions not only to create these religions but also to abide to them. Their survival as groups depended on the strength of these conceptualisations. The stronger their belief system, the more able they were to oppose external forces. Their belief system dictated the strength of their identity. The individual members of these societies enjoyed the benefit of this social glue, by living the belief system not just following it.

An example of this lived religion, are the Pueblo Indians of New Mexico, referred to by Carl Jung. (Storr 1990) During his visit to New Mexico, Carl Jung discovered that these Indians believe that the Sun is their father. In Jung’s words ‘they lived the myth’ in such an extent that they believed that by practising the rites of their religion, they assisted the sun in performing his daily journey across the sky. (Storr 1990) “By punctiliously performing these rites, they are thus benefiting the whole world; and, if they were foolish enough to neglect them, ‘in ten years the sun would no longer rise. Then’, Jung’s informant went on, ‘it would be night forever.’ Jung’s comment on this is as follows: ‘I then realized on what the “dignity”, the tranquil composure of the individual Indian was founded. It springs from his being a son of the sun; his life is cosmologically meaningful, for he helps the father and preserver of all life in his daily rise and descent.’ If a myth can give life dignity, meaning and purpose, it is serving an important positive function. Even if it is not objectively true.” (Storr, 1990, pp.32-33)

Carl Jung was deeply impressed by these encounters and drew inspiration from them to form his professional insights. His extensive clinical experience provided him with a wide variety of subjects to draw conclusions from. He became increasingly impatient with the conventional diagnostic categories of psychiatry and advocated that for him, there was a continuum existing between ‘normal’, ‘hysterical’ and ‘schizophrenic’. (Storr 1990) In his view, all human beings were divided selves. “Indeed, it might be said that Jung came to the conclusion ‘that everyone possesses his own ‘delusional system’, although he did not use this terminology. He would
rather have said that every man needs a myth by which to live, and that if he does not appear to possess one, he is either unconscious of it, or else sadly alienated from the roots of his being.” (Storr, 1990, p.34)

Jung’s appraisal of delusional systems as subjective myths which happened to be at variance with the external reality of the world led him to make comparisons of psychotic delusions and fantasies with the myths and religious systems of other peoples and other historical periods and managed to find many similarities. (Storr 1990) Antony Storr (1990) describes how Jung came to consider myth as ‘adaptive’, comparing a schizophrenic’s attempt to create a world system which enabled them ‘to assimilate unknown psychic phenomena and so adapt themselves to their own world’ to the myths of primitive people seen as devices that enabled them to better adapt to their world. He received experimental revelations that there was a substratum of mind common to all men, which was the source of mythological, cosmogonic notions. This mythological material thus had a positive function in giving meaning and significance to man’s existence, an action that was not compensatory, but also prospective and forward-looking in its application. He insisted that a myth might be an attempt on the part of the mind itself at self-healing, at creating a better adaptation in the future. (Storr 1990) Unlike Freud, he advocated that not all dreams, fantasies and similar material could be interpreted in terms of the subject’s infantile past and that the creative energy of the mind (the libido) was not only sexual. (Storr 1990)

Cited in Stevens (2001) is an often-used example referred to by Jung: the case of a man that insisted that when he looked at the sun, he could see its phallus. The man declared that if he were to move his head from side to side, he would see that the sun’s phallus moved too, and that was the origin of the wind. Jung pointed out that this ‘delusion’ is part of the liturgy of the cult of Mithras and a rather unlikely coincidence. In fact, it seemed intrinsically likely to Jung that, whatever parts of the mind may be considered responsible for producing dreams, visions, myths, and religious ideas, should function rather similarly in different parts of the world and at different periods. (Kakridis 1986a)
Archetypes and the collective unconscious: mediums of collective knowledge

The mind for Jung is divided into pairs of opposites manifesting themselves as different aspects of the same personality, the objective and the subjective. He concluded that there is a myth-creating level of the mind common to all people (psychotic and normal) and of different times and cultures. (De Laszlo 1993) This level of the mind he named the collective unconscious, the source of production of spontaneous mythological, cosmogonic notions and religious thought. He considered that this mythological material has a positive function in giving meaning and significance to human existence. According to Jung, myth might be an attempt of the mind to create a better adaptation in the future. Archetypes, evident in myth creation, possess an immense emotional significance, necessary for human experience in its cosmic significance.

Jung attempted to distinguish between what he termed the archetype-as-such and the archetypal images, ideas, and behaviours that the archetype-as-such gives rise to. It is the predisposition to have certain experiences that is archetypal and inherited, not the experience itself. Archetypes, he said, are not inherited ideas but inherited possibilities of ideas. In his own words: “We must constantly bear in mind that what we mean by "archetype" is in itself irreprestentable, but has effects which make visualizations of it possible, namely, the archetypal images and ideas. We meet with a similar situation in physics: there the smallest particles are themselves irreprestentable but have effects from the nature of which we can build up a model.” (Jung quoted in Stevens 2001) The French molecular biologist and Nobel Laureate Jacques Monod reached an identical conclusion: “Everything comes from experience, yet not from actual experience, reiterated by each individual with each generation, but instead from experience accumulated by the entire ancestry of the species in the course of its evolution.” (Monod quoted in Stevens, 2001, p.54)

Whenever a phenomenon is found to be characteristic of all human communities, it is
an expression of an archetype of the collective unconscious. Such phenomena most likely exist due to both archetypal determinants as well as cultural diffusion. According to Anthony Stevens (2001), though, the likelihood is that those phenomena, which are archetypally determined, will diffuse more readily and more lastingly than those that are not. “Behavioural characteristics such as maternal bonding, dominance striving, sexual mating, and home building satisfy three critical biological criteria, namely, universality, continuity, and evolutionary stability, and as such are liable to be archetypally based, giving rise to typical psychological experiences as well as typical patterns of behaviour in all human communities wherever they exist.” (Stevens, 2001, p.56)

The premise of archetypes is one that leads to one of the most discussed problems of our time. Is knowledge learned or innate? Is all adaptive behaviour the result of learned experience? The existence of an internal ‘blueprint’ is evident and widespread throughout the animal kingdom. Looking back through the evolution of our species I came across a multitude of insights into the undisputable existence of a collective knowledge system. Much of the thesis so far has hinted towards it. These innate predispositions are indeed the glue that binds us with our surrounding universe. It is them that provide the conscious or unconscious link with our being and that trigger us to know. Jung advocates this standpoint when he writes: “There is no human experience, nor would experience be possible at all, without the intervention of a subjective aptitude. What is this subjective aptitude? Ultimately it consists in an innate psychic structure, which allows man to have experiences of this kind. Thus the whole nature of man presupposes woman, both physically and spiritually. His system is tuned in to woman from the start, just as it is prepared for a quite definite world where there is water, light, air, salt, ... The form of the world into which he is born is already inborn in him as virtual images, as psychic aptitudes. These a priori categories have by nature a collective character; they are images of parents, wife, and children in general, and are not individual predestinations.” (Jung quoted in Storr, 1990, p.49-50) Jung studied myths of various cultures extensively and in his works provided a multitude of parallels of these images of archetypes. The most well known of these archetypes were the animus - anima, the mother and
Jung believed in the innate structure that drives man to seek woman and vice-versa. (De Laszlo 1993) They complement each other in a fundamental way. His research on the animus-anima archetypes revealed a representation of a person’s experience of the opposite sex. It is a personification of our personality that is opposed to the conscious ego, displaying attributes of the opposite sex. (De Laszlo 1993) Being in love opens a door of a world of feeling and emotion. The anima is seen as a link with the otherness, a link between the conscious and unconscious. For Jung it is immensely important not to be overwhelmed by the animus or anima. The opposition to it must be retained and perfected. He affirms that we should not try to be our opposite but rather to seek the creative tension that will make us strong enough to withstand our other. (De Laszlo 1993) In my chosen examples of myths, I came across the sacred union of the sexes. The powerful image of fertility represented by woman, as seen, survives throughout the ages and across the world. The image of the mother, earthly or divine, reflects a truly primal archetype. The hero archetype, also evident in the visited myths, provides a powerful insight into the journey of man in reference to the cosmos and his own individuation.

- **Boundary between body and mind: the unus mundus and the self-regulating psyche linking the mind and the world**

Jung’s thinking and insights into archetypes and the collective unconscious triggered the beginning of a re-examination in the theory of knowledge; his hypothesis of the archetype in fact transcending the nature-versus-nurture debate and healing the Cartesian split between body and mind. (more in chapter 6) The archetype according to Jung, possesses a fundamental duality: it is both a psychic structure and a neurological structure, both ‘spirit’ and ‘matter’, and Jung came to see it as the essential pre-condition of all psychophysical events. “[T]he archetypes are as it were the hidden foundations of the conscious mind, or, to use another comparison, the roots which the psyche has sunk not only in the earth in the narrower sense but in the world in general.” (Jung quoted in Stevens, 1993) He proposed that archetypal
structures are not only fundamental to the existence and survival of all living organisms but that they are continuous with structures controlling the behaviour of inorganic matter as well. (Stevens 1993) The archetype is not to be conceived, therefore, as merely a psychic entity but rather as the bridge to matter in general.

At the time being, it is of course impossible to prove that archetypes exist in the inorganic world linking our mind with our body. It is however, an intriguing idea, one that could help us see our surrounding world with different eyes. “It was this "psychoid" aspect of the archetype that was taken up by the physicist Wolfgang Pauli, who believed it made a major contribution to our ability to comprehend the principles on which the universe had been created. Since archetypes precondition all existence, they are manifest in the spiritual achievements of art, science, and religion, as well as in the organization of organic and inorganic matter. The archetype thus provides a basis for a common understanding of data derived from all sciences and all human activities -not least because of its implications for epistemology, the study of knowledge per se.” (Stevens, 1993, p.13)

According to Stevens (2001), Jung visualised a world order that links us, body and soul, in a fundamental way to the surrounding creation. Archetypes are the boundaries to the otherness, they mediate between us and the world inviting us to question it, understand it, learn from it and ultimately reconnect with it. “To describe this unitary dimension, Jung resurrected the ancient term unus mundus, or ‘unitary world’ - the eternal ground of all empirical being. He conceived archetypes to be the mediators of the unus mundus, responsible for organizing ideas and images in the psyche as well as for governing the fundamental principles of matter and energy in the physical world. Pauli argued that by conceiving archetypes in this way, Jung had discovered the ‘missing link’ between the physical events (which are the legitimate study of science) and the mind of the scientist who studies them. In other words, the archetypes that order our perceptions and ideas are themselves the product of an objective order, which transcends both the human mind and the external world. At this supreme point physical science, psychology, and theology all coalesce.” (Stevens, 2001, pp.56-57)
Whether or not one is persuaded by Jung's application of archetypal theory to the more esoteric areas of human experience, it is hard to deny that it is an idea with profound implications. If, as Jung believed, archetypes pre-condition all existence then they must be manifest in the spiritual achievements of art, science, and religion as well as in the organisation of organic and inorganic matter, and can provide a standpoint capable of transforming our understanding of all these phenomena, and progress into exploring the mysterious relationship between the body and the mind.

Jung’s insights into archetypes and the collective unconscious have taken the issue of the duality between body and mind to a very deep level, towards a boundary between spirit and matter. His concept of the self-regulating psyche also links the body and mind. Evident in the analysis of dreams, the unconscious side of the mind compensates the conscious adaptation of the mind. Human physiology is seen in the same light, describing the body as a self-regulating entity, a balanced mean, constantly sought, departed from as soon as achieved. As human beings, sensation, thinking, feeling and intuition are the tools that lead us to function. According to Jung, sensation tells us that something is, thinking tells us what something is (perception / judgement), feeling tells us what something is worth to us (value) and intuition shows us the possibilities of things rather than their present existence through time. (De Laszlo 1993) Jung has indicated the interrelation of these issues as oppositions between reason and emotion, by stating that thinking is opposed to feeling and sensation is opposed to intuition. Man is flesh and spirit, reason and emotion, saint and sinner. The energy of his mental functioning has sprung from the tension between these opposites. The self is the product of this complex knowledge system, which includes our own evolutionary conceptual thought within it.

These concepts are themselves a representation of the concept of boundary. For Jung, this reconciliation and balance leads to individuation, which is the individual's psychological development towards integration and wholeness. The self is a symbolised new centre, neither conscious nor unconscious but both.
Synthesis: The birth of knowledge

Following the rise to consciousness, in this second chapter I have become engaged with the man’s initial attempts at actualising his essence within the structure by unravelling the Universe through knowledge. In the opening stages I addressed cosmology – worldview as a knowledge system, one that enables man to construct his environment in thought leading to a collective mind in societies. The connection between man and cosmos deepens in complexity and it is carried by the mind in the form of knowledge. In the shape of knowledge the universe is gradually revealing itself to man, inviting him to ask the fundamental and universal question: where did we come from? In cosmology man attempts to answer this question by reinstating himself within the structure; a constant interaction with the surrounding cosmos is thus ensured and perpetuated. Through myth he dissolves his self-initialised separation and erases the barrier between himself and the cosmos. The boundary between man and the universe is in this manner lived, stored and transformed in myth.

A collective nature in the mind is becoming evident across cultures. According to Eliade and Jung, the myth-creating level of the mind reveals a collective unconscious, which in its turn reveals that our mind is still nurtured by the memory of the sacred. Its paramount importance is that it provides an invisible blueprint through which the mind finds its way back to the source, giving meaning and significance to man’s existence. Archetypes, revealed as the governing agents of myth creation, possess an immense emotional significance, necessary for human experience in its cosmic significance. Through these channels, knowledge of the world is revealed and reinterpreted exposing them as manifestations of the dynamic essence of the boundary, this vehicle of unification, integration and wholeness.

This apparent collective essence of knowledge, however, raises the question of the essence of knowledge as learned or innate, and this will be addressed in the following section.
CHAPTER 3:  
Knowledge as state or/and process  
Boundary between innate and experiential knowledge

Introduction

Having already seen the existence of boundary in the creation of world-view and the dynamic role and sacred nature of the collective unconscious. I will continue by exploring into the nature and make-up of the mind. The intrinsic relationship between man and the environment as it is manifested in the architecture of our mind and the nature of knowledge gradually unfolds revealing a boundary between innate and experiential knowledge as a constantly provoking relation that expresses unity in dynamic transformation. The concept of boundary will be shown to drive and influence our observations into our close natural environment as well as the universe because of its unconscious existence within us. By exploring into the innate adaptations of our mind, I will show that they were created in order to help us record a model of the world within ourselves, enabling us to cope with the demands of our existence.

After an introduction on cognitive theories I will begin to unravel the architecture of the mind and the nature of knowledge from the viewpoint of boundary through the concept of perception and cognition. (Neisser 1976)

Perception is revealed not as a series of isolated, unrelated events we encounter but as a continuous process producing continuous change in the perceiver. The perceiver brings a prior structure to each act of perception. He is creating and constantly updating a model of the world and of himself in the world. (Neisser 1976) Our perceptual capacities evolved to coincide with the structure of the world as we find it, because perception evolved in the service of effective action for survival. Perception evolved from the organisation of action, which led to the evolution of communication and in effect the evolution of language. Perception is our link with
the otherness, the external world transferring information to the human mind. The environment is our ultimate 'other', our opposition towards creating a unified whole. Here, we become the boundary. Opposition is the prerequisite for the creation of meaning, for identity to become present and for the mind, our inner world to unveil its fundamental connection with the universal mind. Through sensing, we receive information from the world and we interpret this information and in effect the environment.

Cognition is revealed as our mental store, which enables the perceptual process to take place, allowing information and knowledge to be interpreted. (Neisser 1976) It is a store that provides knowledge to perception making us able to re-cognise things, by storing their representation in our minds. Cognition thus provides recall. The mind, though, stores information / knowledge in our cognitive structure not only from experience but also from our genetic make-up, from the universal mind. This knowledge is not static; it is over-simplistic to consider knowledge as just a stored entity in the mind. It is also a quality inherited; a driving force towards movement and transformation. There is an order in the universe and the source for knowledge comes from that order. We have inherited from it our tendency towards acquiring knowledge, creating and revealing meaning and values.

The boundary between perception and cognition becomes clear as they are seen to be two interrelated functions of our existence. They become permeated by each other; they cannot be considered separated from each other, thus giving rise to a unified system of thought. (Ujam 1987) An introduction of Dr. Faozi Ujam’s insights into Cosmogonic and Experiential schemata will follow. (Ujam 1987) These schemata will be exposed as boundary representations enabling the unity between perception and cognition, linking us with our conceptualisations of the otherness.

The evolutionary forces of Refuge and Prospect (Appleton 1975) and Mystery and Coherence (Kaplan 1977) as examples of experiential / evolutionary schemata will be here put forward as expressions of the boundary, enabling our existence by providing us with a subconscious knowledge structure through which we can relate
with our surrounding environment. Insights into Personal Construct Psychology theory will reveal yet another manifestation of the boundary in a tangible example of the complex distinction of constructs created by the human mind in its attempt to construct a model of the world. Their importance lies in the use of distinction and as a result tension / opposition, in order to achieve understanding, since the meaning of phenomena is proven to depend on the construct.

In this section, I will attempt to show how experiential and non-experiential (cosmological) knowledge exists within us as a unified whole in dynamic transformation, an expression of the concept of boundary. By constructing the universe through knowledge, man is seen as endowed with the ability to reunite with it. His knowledge is exposed as stemming from an apparent universal order. Exploring into the nature of knowledge and the architecture of our mind, the inherited tools that enable us to visualise, live, create and transform our existence within and in constant reference with our environment are found to be deeply binding man with the cosmos physically and spiritually. Gradually, the primary implication of the concept of boundary in this dynamic relationship is revealed. I will, here, attempt to expose that this relationship goes beyond that of one and other towards part to whole and in effect to reveal the mind’s fundamental kinship with the cosmos.

3.1 **Insights into the nature of the mind and the meaning and acquisition of knowledge**

Reflecting on the previous stages of the research, it became clear to me that there is a source of unconscious knowledge that we all possess not only from the moment we were born but also from the moment humanity was born, and that we carry with us in each act of our existence. Within our myths, art and religion, there is evidence of thousands of years of evolutionary, experiential and cosmological knowledge. The early mythological and cosmogonic interpretations of the universe became a driving force for the evolution of the mind. In this section, I will tackle the wealth of attempts made to unravel the architecture of the mind.
Throughout history, people have been inspired to investigate into the nature of the mind and its ability to construct reality and to store and recall information. As seen in the previous chapters, the evolution and nature of the mind and the emergence of a self-conscious mind can be seen as knowledge structures. What is important, though, to tackle in this section is precisely the nature of this evident collective knowledge that we seem to share with the rest of humanity as well as its purpose and function. They will be re-interpreted through their inherent essence as expressions of the boundary.

### 3.1.1 The architecture of the mind: cognitive theories

As a starting point, we must address Antony Stevens’ (1993) insights on a few notions that can clarify what we mean by knowledge. The terms Gnosis, Sophia and Episteme; all originating from the Greek language provide us with valuable insight on the much-discussed subject of the nature of knowledge. In Greek, gnostikos is the one who knows and Gnosis is knowledge, Sophia, however, is wisdom. Episteme is a composite word and comes from the verb istame, which means to stand, and the adverb epi. These two combined produce Episteme that can be literally translated as ‘to stand above’ and figuratively ‘to be master of’. “The early Christian sect of Gnosticism … held that gnosis (knowledge), must be distinguished from sophia (wisdom) and episteme (general knowledge), since gnosis differs from other kinds of knowledge: it is derived not from ordinary sources or via the senses but directly from God through special revelation.” (Stevens, 1993, p.9) Whether or not religious connotations need to be placed as related knowledge is a secondary matter.

When one first approaches the issue of knowledge, the most common response is to refer to it as a gradual process that begins at birth and follows the individual throughout life. Every sound, touch or taste is recorded throughout our lifetime enriching what many refer to as an ‘empty vessel’ or ‘sponge’. Though it is true that our senses provide us with a wealth of information to store, can we truly say that our mind is an empty vessel ready to be filled as a result of every new experience we
stumble upon? Of course, few share this extreme empiricist view. Indeed, the truly remarkable characteristic of the human mind is not its ability to store but to create. How do we then go about researching the nature and structure of knowledge? How does the mechanism of perception work? How are we able to recognise the multitude of phenomena that we encounter throughout our lifespan?

- **the mind as a computer**

  Jean Piaget, a leading psychologist, whose work focused on child psychology, saw the mind as a computer. (Sturrock 1979) According to his theories, the mind functions in the same way as a computer. It runs a small set of *general-purpose* programs that control the entry of new information into the mind. These programs then restructure the mind, a process that follows a series of developmental phases. Though his ideas have been influential, during the last 20 years psychologists have been searching for new insights.

- **the mind as a Swiss army knife**

  A new type of analogy for the mind was introduced; that of a Swiss army knife, indicating the multitude of *specialised* domains within the mind. Many have adopted terms to describe this specialised nature of the mind including: terms such as ‘modules’, ‘cognitive domains’ and ‘intelligences’ to describe each of the specialised devices. (Mithen 1996)

  Another influential figure to arise since the early 80’s is psycholinguist Jerry Fodor. In his book *The Modularity of Mind*, Fodor (1983) believes that the mind should be split in two parts revealing a two-tier architecture. The first he calls *perception*, or *input systems*, and the second *cognition*, or *the central systems*. Their respective architectures are very different; input systems are like the blades of a Swiss army knife and he describes these as a series of discrete and independent ‘modules’, such as sight, hearing and touch. He includes language as one of these input systems. According to Fodor (1983) input systems are encapsulated, mandatory, fast operating
and hard-wired. He calls them stupid, in contrast with cognition, which is the ‘smart’ central system. This is where those mysterious processes happen, known as ‘thought’, ‘problem solving’ and ‘imagination’; it is where ‘intelligence’ resides. Fodor (1983) argues that we know almost nothing about how the central systems work, other than that they have a series of features which are the opposite of the input systems: they operate slowly, are non encapsulated and domain neutral. The processes of thought and problem solving become possible through the integration of information from all input systems as well as the central function, which is being internally generated. Unlike perception, the processes of cognition cannot be related to specific parts of the brain. Fodor (1983) affirms that cognition has no architecture at all, or at least its architecture will always remain hidden from us. The fundamental character of cognition is that it is holistic, the exact opposite of perception, which is dedicated to dealing with one specific type of information alone. And this is what Fodor (1983) sees as the most puzzling feature of cognition: ‘… its non encapsulation, its creativity, its holism and its passion for the analogical’.

An important feature that Fodor (1983) assigns to the input systems is that they have only limited information from the central systems. This, for Fodor, is a crucial architectural feature; for it means that the knowledge possessed by any individual has a limited, perhaps even marginal, influence on the way they perceive the world. The idea that cognition only marginally influences perception runs counter to the relativist ideas of the social sciences.

During the 90’s, a team of evolutionary psychologists, Cosmides and Tooby (1992), came up with yet another proposal for the Swiss army knife structure of the mind. Their proposal took reference from research of the possible evolution of the mind throughout the transition of our early ancestors to modern humans. (Tooby & Cosmides 1992) They suggested that the mind is split into a multitude of specialised domains each concentrating only on completing a particular task. Each of these specialised domains evolved and was therefore designed by natural selection. What is special with them is that they are content rich. Not only are they innate and already existing in the mind at birth, but they are also enriched with a system of
rules, a pre-existent structure that enables us to use them. Their theory is generally based on the ‘poverty of the stimulus’ argument. It is practically impossible to explain the rapidity with which children for example accumulate language if we are not ready to accept that there must be a pre-existent structure within their mind, meaning that their minds would have to be pre-programmed to assimilate it. They extend this to all domains of life leading to a multitude of modules: “A face recognition module, a spatial relations module, a rigid objects mechanics module, a tool-use module, a fear module, a social-exchange module, an emotion-perception module, a kin oriented motivation module, an effort allocation and recalibration module, a child care module, a social inference module, a friendship module, a semantic-inference module, a grammar acquisition module, a communication-pragmatics module, a theory of mind module, and so on!” (Tooby & Cosmides, 1992, p.113) This incomplete but also long list of modules developed as a result of natural selection leaves us questioning how it could be otherwise.

- **the mind as a cathedral: cognitive fluidity and the super-chapel**

Steven Mithen (1996) disagrees with Cosmides & Tooby’s type of theorisation about the architecture of the mind, in that it fails to explain the creative part of the mind, which is what Fodor (1983) described as the passion for the analogical. Mithen (1996) refers to the argument of evolutionary selection used by Cosmides & Tooby to show its weakness: A human with an ability to think symbolically would have been quickly selected against when compared to a human with exceptional hunting skills. Mithen (1996) believes that the ability of totemic thought and of imagining ourselves as being related to a bear would surely give us no advantage when faced by someone with an advanced tool-use module. But is that really true? Below we can see the diagrammatic reference of Mithen’s theory on the evolution of the architecture of the mind. (Mithen, 1996, p.72) (fig.3.1)

**phase 1**: Minds with a ‘nave’ of general intelligence.
The ‘door’ represents the passage of information from modules concerned with perception.
**phase 2**: Minds with a ‘nave’ of general intelligence and multiple ‘chapels’ of specialised intelligences.

It remains unclear how language is related to the other cognitive domains. It is assumed that minds of this phase were of people living by hunting and gathering.

The three ‘chapels’ are social, technical and natural history intelligence.

**phase 3**: Minds with a ‘nave’ of general intelligence connected with the multiple ‘chapels’ of specialised intelligences.

These represent minds of people living by hunting and gathering. For those with other lifestyles, it is likely that other types of specialised intelligences would develop, although social and linguistic intelligence are likely to be universal.

![figure 3.1: The evolution of the architecture of the mind. Source: (Mithen, 1996, p.72)](image-url)

Mithen’s proposal, takes us almost full circle to the architecture of the mind that Jerry Fodor (1983) suggested. The one essential difference, however, is his insistence of the unencapsulation of the specialised intelligences. Going back to the first chapter of this thesis and the first act of the human existence, I put across the term ‘super-chapel’ used by Stephen Mithen (1996) to describe his version of the
architecture of the mind. In his theory, he describes how the mind evolved through our prehistory from a mind separated in distinct ‘intelligences’ to a mind of ‘intelligences’ interconnected through a central chamber. This chamber he described as the place where symbolic thought is born. In this chamber, fragments of information from our social intelligence can interact with fragments of information from our natural history intelligence. In this super-chapel the lion could have taken the shape of the man or the man the shape of the lion. Here, the earth with her seasons and never ending circle of life and death can be visualised as a caring mother. This thought process is still with us today. In our daily lives we use symbolic thinking in order to understand something that escapes us. We visualise atoms as small universes, and electrons as clouds, or a child can interact with a pet or a doll as if it were an equal person.

Our ability to think in this way according to Mithen (1996) is due to what he termed as cognitive fluidity. And it is precisely this type of thought process that accelerated the acquisition of knowledge. Knowledge about the world was now stored in art, religion and language, available to the next generation to transform and reinterpret.

In Mithen’s approach, the internal dialogue within the chambers of the mind sees information existent or acquired in each chamber, provoking answers and adaptations in another. The storage of information in one, suddenly became available in the other. Mankind embraced the myriads of association in his mind, because they would provide him with more answers and subsequently lead him to more questions. He gradually broke through the barrier that was his early mind, divided and limited. The flow of knowledge through our specialised intelligences, not only strengthened each one but it also bound them in a coherent whole, causing the relationship between man and the cosmos to deepen in complexity. The unified oppositions within the mind is a materialisation of the boundary concept, an expression of unity transforming and being transformed by our surrounding cosmos in perpetual reference to each other.
3.2 **Knowledge as state or/and process:**

**Boundary between perception and cognition**

**constantly provoking relation**

The question about the nature of knowledge becomes important. Here, an effort will be made to show how knowledge is detached from epistemology and seen as it is revealed through perception and cognition. In this section, I will delve deeper into perception and cognition, two intriguing mechanisms of our humanity that provide the link to our environment and knowledge.

Philosophical and scientific interest in perception and cognition has developed largely from questions about the sources and validity of human knowledge. The question of whether a real, physical world exists independently of human experience and, if so, how its properties can be learned and how the truth or accuracy of that experience can be determined, is a very old one. This has brought us to the question of innate knowledge, of whether or not all experience originates through contact with the physical world, through our sense organs. Without denying that learning can play some role in perception, many theorists have taken the position that perceptual organisation reflects innate properties of the mind itself.

In the following section, I will delve into the notions of perception and cognition in an attempt to unravel how their structuring principles embody the boundary principle, revealing the source of innate knowledge. The main insights presented here are greatly influenced by a number of leading thinkers in the field of psychology such as Ulric Neisser and James Gibson, as well as by a number of PhD seminars between 1999 and 2003 given by Dr. Faozi Ujam in the Edinburgh College of Art, where he presented his own reflections concerning the nature of the mind and the evolution of knowledge.
3.2.1 Thoughts on Perception:
Sensing, perceiving and interpreting the otherness

One thing that characterises all living beings is our ability to perceive the external world through our senses. These tell us not only about our position in the world but convey a multitude of essential life-defining information. Perception has been described as the process whereby sensory stimulation is translated into organised experience. According to Peirce, this experience (or percept) is the joint product of the stimulation and of the process itself: "The immediate object of all knowledge and all thought is, in the last analysis, the Percept". (Peirce 1960)

Practically since the initiation of Greek philosophy, the nature of perception has been one of the most debated questions of human existence. The question has, throughout the ages, been formulated in different ways, which can be summed up as “How can we know that what we experience is real?” The distinction of appearance and reality has been at the same time intriguing but also damaging; damaging in the sense that it creates an unnecessary division between us and our environment and forces us to challenge our most basic natural characteristic; that of the experience of the world that surrounds us.

Striped of the certainty that our senses provide us, we are in danger of losing our identity. We have been told to think that colours are nothing other than a quality of light; they are constituted by a subsection of wavelengths of a particular frequency falling within the light section. When we are looking at train-lines in the distance, they seem to us to join in the horizon. Our eyes provide us with this information, but we instinctively know this to be untrue. When viewing an object we can never say that we are able to see it in its entirety. Looking at a table in a room, our direct vision picks up only a section of its surface, but we are aware of the table in its totality; we visualise it as such in our mind. In addition, heat is not a constant quality of an object. It is nothing but the energy of motion of the molecules of an object. It increases as the molecules begin to move more rapidly and collide more violently. Looking at the stars in the night sky, we can see millions of shining objects. But the
physicist will tell us that what we see is light waves of a far away star that were emitted perhaps thousands of years ago. The star itself might not even exist anymore.

Many questions arise. Can we say that perception is identical with sensation? Is the act of sensation to be distinguished from the object of sensation? How can we perceive whole objects in our perceptual field if perception is no more than what we experience directly with our senses? Are sensations, such as colours and shapes and sounds, picked up by the senses, or are they created internally by the perceiver, raising the question of what is 'objective' and what 'subjective'? Can the mind be regarded as essentially isolated from the physical world? How can we then trust what we experience around us? The physicist and philosopher will have us believe that we cannot truly know the external world, that we cannot make an irrefutable model of our cosmos with undeniable certainty.

Even though it is very difficult to demonstrate empirically that sensing and perceiving are indeed different, many philosophers and psychologists have commonly accepted the distinction as fundamental. One commonly offered basis for distinction is the notion that perceiving is subject to the influence of learning while sensing is not. However, a widely accepted way of distinguishing between them is more physiological. Sensations are identified with neural events occurring immediately beyond the sense organ, whereas perception and percepts are identified with a deeper activity in the nervous system, at the level of the brain. (Neisser 1976) This assignment of anatomical locations to sensory and to perceptual processes seems consistent with psychological criteria. But what does it tell us about the mind and its structuring principles and the nature of the external world?

What are known in perception are the events within ourselves that connect us with our surroundings. This is the general view taken by the astronomer Sir Arthur Eddington (1882-1944) as quoted in Joad (1957). The external world was for him not something that we perceive, but that we construct from messages that reach us. The mind, he says, weaves an impression out of the stimuli travelling along the
nerves to the brain. Our knowledge of the external world seems then to result from a long chain of messages, which have travelled through intricate lines of communication. To quote Sir Arthur Eddington: “… there is one kind of knowledge which cannot pass through such channels – namely, knowledge of the intrinsic nature of that which lies at the far end of the lines of communication.” (Eddington quoted in Joad, 1957, p.36) This knowledge, is direct knowledge of something as it is in itself, it is knowledge of the mind. He argues that the “[m]ind is the first and most direct thing in our experience. All else is remote inference.” (Eddington quoted in Joad, 1957, p.36) In contrast, therefore, to the indirect nature of the knowledge of the external world, there comes the very direct, immediate and certain knowledge of the mind’s knowledge of itself. (Eddington cited in Joad, 1957, p.36)

Neisser (1967) identifies two main theoretic grains of thought concerning perception. The first deals with perception as it is characterised by sensory information delivered by stimuli, while the second refers to perception as it is influenced by relevant past experience stored in the brain. The second school in fact brings perception closer to cognition. It includes the action of interpreting what we sense, linking us with the surrounding world.

Ulric Neisser’s volume titled Cognitive Psychology (1967) marks for many the full emergence of the discipline of cognitive psychology. He has written some penetrating comments on the issue of perception and cognition. He has argued that discussions of the object of concept are bound to be misleading. The suggestion that the function of perception is only able to inform us about things as mere objects, does not represent the whole truth. In his opinion, in the normal environment most perceptible objects and events are meaningful and these meanings can be, and are, perceived. Most intriguingly these perceptions of meaning often seem very direct since we become aware of the meanings without seeming to notice the physical details that provide evidence for them. According to Neisser (1967) this aspect of perception has long been a theoretical stumbling block for psychology and he states that, if the meaning must be supplied by the perceiver after he has registered the stimuli, “why, then, do introspective reports suggest that the meaning is available
first, and the stimulus details later, or not at all?” In his book Cognition and Reality, Neisser (1976) suggests that perception of meaning depends on the schematic control of information pick-up.

According to Neisser (1976), perceiving is the basic cognitive activity out of which all others must emerge. “Even more important, however, is that perception is where cognition and reality meet. I do not think the nature of that encounter is well understood by most psychologists. The prevailing view of it tends to glorify the perceiver, who is said to process, transform, recode, assimilate, or generally give shape to what would otherwise be a meaningless chaos. This cannot be right; perception, like evolution, is surely a matter of discovering what the environment is really like and adapting to it.” (Neisser, 1976, p.9) This however is not the whole story. Neisser refers to James J. Gibson’s (1966) proposed theory of perception in which mental events play no role at all, seeing the perceiver as someone who directly picks up the information that the world offers him. For Neisser this Gibsonian view of perception seems inadequate because it offers little insight on the perceiver’s contribution to the perceptual act. “There must be definite kinds of structure in every perceiving organism to enable it to notice certain aspects of the environment rather than others, or indeed to notice anything at all.” (Neisser, 1976, p.9) He therefore goes on to resolve this by treating perception as an activity that takes place over time. During this time he suggests that the perceiver’s anticipatory schemata can come to terms with the information offered by his environment. “Perception does not require remembering in the ordinary sense, but it is an activity in which both the immediate past and the remote past are brought to bear upon the present.” (Neisser, 1976, p.10)

In a sense the perceiver brings a prior structure to each act of perception and that this act of perception has direction.

3.2.2 Thoughts on Cognition:
Our knowledge store providing structure to perception

According to Neisser (1976), it is cognition that offers this prior structure to perception. Cognition is our mental store, which enables the perceptual process to
take place, allowing information and knowledge to be interpreted. It is a store that provides knowledge to perception making us able to *re-cognise* things, by storing their representation in our minds. Cognition thus provides recall.

Cognition is the process involved in knowing, it is the act of knowing. In Neisser’s words: “Cognition is the activity of knowing: the acquisition, organization, and use of knowledge. It is something that organisms do and in particular something that people do.” (Neisser, 1976, p.1) It includes all the processes of consciousness by which knowledge is accumulated, such as perceiving, recognizing, conceiving, and reasoning. Philosophers have debated questions about the nature of cognition and the relationship between the knowing mind and external reality since antiquity. The development of cognition has also been subjected to many viewpoints and interpretations. A typical interpretation of cognition according to R. Arnheim (1970) refers to the intelligence activity; cognition is the action of creating concepts, accumulating knowledge, connecting, separating and inferring to be found at a higher function of the mind. (Arnheim, 1970, cited in Masaud 1996, p.194)

John Flavell (2001) writing about the nature of cognition, insists that it is neither possible nor desirable to define it and limit its meaning in any precise or inflexible fashion to the ‘intelligent’ process and products of the human mind. This image, he added, includes much higher mental-process types of psychological entities as knowledge, consciousness, intelligence, thinking, imagining, creating, generating plans and strategies, reasoning, inferring, problem solving, conceptualising, classifying and relating, symbolising, and perhaps fantasising and dreaming. Mental processes habitually intrude into virtually all human psychological processes and activities and consequently there is no really principled place to stop. According to Flavell (2001), processes including ‘thinking’, ‘perceiving’, ‘remembering’ are complexly interwoven with one another. They cannot be considered separately as the play a vital role in the operation and development of every other process, affecting it and being affected by it. “What you know affects and is affected by how you perceive; how you conceptualise or classify, this influences the way you reason about them, and vice versa. The human mind is a very highly organised device. It is
not a collection or aggregate of unrelated cognitive components, but rather a complexly organised system of interacting components.” (Ujam, 1987, p.107)

3.2.3 Boundary between perception and cognition towards a unified structure: the otherness inviting us to unite with it

Since we cannot separate our mental processes from each other we need to search into how perception and cognition are related. Some thinkers have viewed perception and cognition as opponents in need of each other but essentially different. Others refer to cognition as an indirect perception. Although many studies insist on dividing the cognitive process, a general point of agreement can be that in order for mankind to cope with the world our mind must gather information from our surrounding environment and must then process it. “There is an agreement among most studies of perception, that before making any evaluation, judgement, decision, or any choice about the environmental objects, people must in the early stages perceive them. Perception then “comes to be the first essential mechanism linking people and environment, since one must perceive problems and opportunities before they can be evaluated.” (Rapoport, 1977, quoted in Masaud, 1996, p.201) Neisser (1976) suggests that perception and cognition are both parts of one unique cycle, ‘a continuous and cyclic activity’ and that the cognitive and perceptual processes are successive, affecting each other with the stimulus playing the initiator in the cycle of perception. Faozi Ujam’s view is that they occur simultaneously; perception and cognition are related and interdependent, providing a unified system. (Ujam 1987)

According to Neisser (1976), perception is a continuing interaction with the social and natural environment. "The perceiver engages in an act which involves information from the environment as well as his own cognitive mechanisms. He is changed by the information he picks up. The change is not a matter of making an inner replica where none existed before, but of altering the perceptual schema so that the next act will run a different course." (Neisser, 1976, p.57) In this continuous process of perception, the perceiver is creating and constantly updating a model of the world and of himself in the world. “Although perceiving does not change the
world, it does change the perceiver. (So does action, of course.) The schema undergoes what Piaget calls ‘accommodation’, and so does the perceiver.\textsuperscript{8} He has become what he is by virtue of what he has perceived (and done) in the past; he further creates and changes himself by what he perceives and does in the present. “Existence precedes essence,” as the existentialists say. Every person’s possibilities for perceiving and acting are entirely unique, because no one else occupies exactly his position in the world or has had exactly his history.” (Neisser, 1976, p.53)

Neisser (1976) applied his ideas in the perceptual cycle diagram, arguing that the essence of perception is an active cycle of cognitive activities, which are responsible for making sense of our experiences. (fig.3.2) “The essence of the perceptual cycle is that the perceiver is actively involved in construing a dynamic understanding of the world, and that this understanding is changing all the time. … Because of this, perception changes all the time, and no two perceptual acts can ever really be exactly the same.” (Hayes, 2000, p.59)

\textbf{figure 3.2: Neisser’s perceptual cycle diagram where perception is seen as a gradual, constructive process.} Source: (Hayes, 2000, p.59)

\textsuperscript{8} More on schemata and Piaget in the following section.
According to this model, the perceiver has a schema or expectation for what belongs in a scene, which is subsequently modified by the information he receives from the environment. Guiding his attention, the schema will allow the perceiver to pick up more information from the scene. As the perceiver gains more experience, he will proceed in adjusting the schema and his attention accordingly for the cycle to begin again. (Hayes 2000)

Perception can thus be seen not as a series of isolated, unrelated events we encounter but a continuous process producing continuous change in the perceiver and seems to depend on the skills and experience of the perceiver; on what he knows in advance. “Perceiving is not the only activity that depends on spatial and temporal continuities. ... At each moment the skilled activity depends on the existing state of affairs, on what has gone before, and on the plans and expectations of the performer.” (Neisser, 1976, p.51)

During a study trip to Tuscany, our tutor, Dr. Faozi Ujam had been repeatedly expressing his longing to be in the Piazza Anfiteatro, in Lucca, with its medieval buildings erected onto the foundations of a Roman amphitheatre. (fig.3.3-3.4) This was a place that had struck a particular chord in his soul when he first entered it and was looking forward to recapturing the feeling. Finally the day came when we arrived in Lucca, early on a Sunday afternoon. The Piazza Anfiteatro was deserted and the winter sun was casting long shadows on the stones. I noticed an intense disappointment on my tutor’s countenance. He was utterly shattered. He later told us that when he first visited the Piazza Anfiteatro, he had been unaware of its form and was startled by the enclosure. There was a market at the time so the piazza was full of people conversing, children running, the smell of food and general merriment. All these encounters imprinted in him a particular character and association for that place. It was, thus, overwhelming to be faced unexpectedly with an entirely new perceptual cycle when perceiving the sombre piazza we encountered. This example, indeed, shows us the uniqueness of the perceptual cycle. It is impossible to duplicate, because our perception of the world is intricately dependent not only on the series of stimuli that are related to that particular moment, but also our own
specific nature and cognitive state at the time. The experience changes us completely and so the otherness invites us to form a different journey. Indeed, "[e]xperience is remoulding us at every moment, whilst we think, our brain changes." (James, 1950, p.234) In Allott’s words: "What is thus true of another's thought is equally true of the perception of the outer world in general ... to perceive the universe we must construct it in thought." (Allott 1994)

figures 3.3-3.4: The uniqueness of a perceptual cycle, changing the perceiver with each experience. The sombre Piazza Anfiteatro, Lucca, Italy. Sources: www.trekearth.com, www.lerocchine.com

- Condensing thoughts - boundary

From the insights of these thinkers it can be deduced that cognition allows the perceiver to bring a prior structure to each act of perception. Cognition can therefore be seen as a broader term, which includes perception. “It is associated with psychological processes by which human beings obtain, store, use and operate upon information. It consists of sensing, perceiving, remembering, deciding and other types of psychological processes and is intimately related to experience.” (Masaud, 1996, p.205-206) The perceiver is creating and constantly updating a model of the world and of himself in the world.

Our perceptual capacities evolved to coincide with the structure of the world as we find it, because perception evolved in the service of effective action for survival. Perception evolved from the organisation of action, which led to the evolution of
communication and in effect the evolution of language. Perception is therefore our link with the otherness. The external world is constantly transferring information to the human mind, inviting it to react. The environment is our ultimate ‘other’, our opposition towards creating a unified whole in dynamic transformation. Man is inherently deeply bound with the cosmos. The relationship goes beyond that of one and other towards part to whole. Our mind is revealed as the boundary. Our human nature is interpreted as inhabiting the boundary; indeed we are the manifestation of boundary, we inhabit the boundary with our very being. Opposition is the prerequisite for the creation of meaning, for identity to become present and for the mind, our inner world to unveil its fundamental connection with the universal mind. Through perceiving we receive information from the world and we interpret this information and in effect the environment.

The mind, though, stores information / knowledge in our cognitive structure not only from experience but also from our genetic make-up, from the universal mind. This knowledge is not static. It is over-simplistic to consider knowledge as just a stored entity in the mind. It is also an inherited quality, a driving force towards movement and transformation. There is an order in the universe and the source for knowledge comes from that order. We have inherited from it our tendency towards acquiring knowledge, creating and revealing meaning and values. Signs received from our environment are only meaningful in the context of the total organisation of the individual's knowledge-structure and of the total relevant environment as perceived by the individual.

But how can such a model of the external world be recorded within us? In the next chapter, I will address the concept of cognitive schemas in order to reveal the answer. As conveyed by Merleau-Ponty in his Phenomenology of Perception (1962): "Every external perception is immediately synonymous with a certain perception of my body. ... The theory of the body schema is, implicitly, a theory of perception." (Merleau-Ponty, 1962, p.206)
3.3 **Schemata as manifestations of the boundary between perception and cognition**

Neisser (1976) defines cognition as the skill of dealing with knowledge and such knowledge comes from the environment. The mind developed to cope with the offered information. But he differs from Gibson (1966) in that he argues in favour of directionality of exploration by the organism. Organisms, including humans are not completely passive in the hands of the environment but have somehow evolved into creating cognitive mediums that enable them to search, recognise and assimilate information. Neisser (1976), going specifically against Gibsonian principles has found it necessary to introduce the notion of schemata. In his own words, he proposes that “[T]he perceiver has certain cognitive structures, called schemata that function to pick up the information that the environment offers. This notion is central in my attempt to reconcile the concepts of information processing and information pickup, both of which capture too much of the truth to be ignored. In addition, it offers a connecting link between perception and the higher mental processes.” (Neisser, 1976, p.xii)

3.3.1 **Schemata:**

**Innate cognitive structures linking us with the otherness**

There seems to be no better definition than the one given by Neisser (1976): “A schema is that portion of the entire perceptual cycle which is internal to the perceiver, modifiable by experience, and somehow specific to what is being perceived. The schema accepts information as it becomes available at sensory surfaces and is changed by that information; it directs movements and exploratory activities that make more information available, by which it is further modified. From the biological point of view, a schema is a part of the nervous system.” (Neisser, 1976, p.54) Indeed, Neisser (1976) goes so far as to claim that there must be entities within the brain itself whose activities account for the modifiability and organisation of the schema, such as assemblages of neurons, functional hierarchies, fluctuating electrical potentials etc. He believes that these activities are somehow
interrelated, overlapping in varying ways and providing for a host of different kinds of ‘information storage’.

The schemata ensure the connection between us and the world both in the neural as well as on the psychological level. Perceptual schemata functions as blueprints, they lead us, driving us subconsciously. The schema in a sense determines what is perceived. Neisser (1976) insists that perception is inherently selective. For information to be picked up there must be a developing format ready to accept it. Information that does not fit in this format goes unused. But that is only half the story. The schema itself is not a stable, constant entity. It is in itself a transformable entity. “The information that fills in the format at one moment in the cyclic process becomes a part of the format in the next, determining how further information is accepted. The schema is not only the plan but also the executor of the plan. It is a pattern of action as well as a pattern for action.” (Neisser, 1976, p.56) The development of schemata represents and enables the process of accommodation and assimilation advocated by Swiss psychologist Jean Piaget (1969).

Piaget (1969) viewed cognitive adaptation in terms of two basic processes: assimilation and accommodation. Assimilation is for Piaget the process of interpreting reality in terms of a person's internal model of the world based on previous experience whereas accommodation represents the changes one makes to that model through the process of adjusting to life's experiences. (Piaget 1969) These two processes are inherent. In assimilation, all the different experiences throughout the course of our lives is gathered, while in accommodation there occurs a readjustment of the new items of information received from our environment making it fit in with our inherent structure and with the background of experiences we already possess. These two functions, much in the same way as perception and cognition, are tied together ensuring our ability to relate and reorganise ourselves in our surrounding environment, enabling adaptation.

We can assume that in our lifespan we will encounter countless new experiences where the information received will be either additive or would lead to a
modification of our past knowledge. According to P. F. Smith, “The process of building up the matrix of memory is far from being constant, and the basic schemata of memory are enriched by detail.” (Smith, 1974, quoted in Neisser, 1976) Observing children and how they adapt their perception of the world is valuable to the understanding of schemata. A child for example, at some early point of its life will come across the concept of an animal. Visual and auditory cues from the parents showing an image of a cow and making the sounds a cow would make, or the actual experience of seeing a cow in a farm, will help the child form the schema of a cow in its mind. When this child encounters a horse for the first time, however, it might see in it a cow since it too is a large animal with four legs and a tail. When the child has had enough cues from its environment, however, it will be able to distinguish the differences between cow and horse. The child, thus, will in time have made a different schema for a horse and later still will be able to distinguish categories in this schema and realise the difference between a horse and a pony.

However, we should avoid the connotation that there is a final, constructed product in the perceiver’s mind, that we see internal representations rather than real objects. Neisser (1976) clarifies that by constructing an anticipatory schema, the perceiver engages in an act that involves information from the environment as well as his own cognitive mechanisms. “[The perceiver] is changed by the information he picks up. The change is not a matter of making an inner replica where none existed before, but of altering the perceptual schema so that the next act will run a different course. Because of these changes, and because the world offers an infinitely rich texture of information to the skilled perceiver, no two perceptual acts can be identical.” (Neisser, 1976, p.57)

Neisser (1976) describes the schema more as a genotype rather than a phenotype. He explains that the schema enables the possibility for development along certain lines, but the precise nature of that development is determined only by interaction with the particular environment. It would be considered a mistake to identify the schema with what is perceived as it cannot be separated from the perceiver. In a sense the creation of a schema is a two-way street. The perceiver is transformed at the same
time as the schema is transformed. Each schema therefore is adjusted, refined and in effect recreated. “The schema accepts information as it becomes available at sensory surfaces and is changed, re-evaluated, or checked by the new information. It ensures the continuity of perception over time. Because schemata are anticipations, they are the mediums by which the past affects the future. Moreover, the information already acquired determines, to some extent what will be assimilated next as new information ... The schemata begin with the exploration of the environment, the coding of information and the gradual filling in of details. As a result, information is re-evaluated and schemata are modified.” (Masaud, 1996, p.213) The role of the schema, therefore, is of paramount importance in the ongoing activity, which relates us to our environment.

A person has become what he is by virtue of the knowledge he has accumulated in his lifetime through his surrounding physical and cultural world. He has and still keeps creating and adapting himself in an ongoing process. New experiences will modify his schemata and make them unique to his person. George Kelly, in his book *The psychology of personal construct* (1955), argues that each experience as it is absorbed by us, is interpreted in the light of our own previous personal experiences, creating our own sense of the environment, making each person able of being his own scientist. In this sense, schemata are bound to our personal parameters, representing a process where people shape, reconstruct and organise the environment into a meaningful personal pattern. These personalised schemata are manifestations of our diverse constructs in how we perceive and cognise our environment, endowing it with meaning.

The manner through which the schemata bind us to our environment is very intriguing. In a sense the schema is a manifestation of the boundary. It is an internal process that links our being with our surrounding world. It provides the blueprint, the map to help achieve this connection and it changes us in the process, allowing us to change the way we perceive the environment in an unending cycle of reference.
In the following section, I will look further into Faozi Ujam’s (1987) insights into schemata and how they can be seen to provide a link with our universal existence.

3.3.2 Distinguishing between ‘experiential eco/cultural schemata’ and ‘non-experiential cosmocognitive schemata’

In his PhD thesis, Faozi Ujam attempted to demonstrate “... the processes in which cosmological, ecological and cultural forces set out the cognitive structure and its interpretations of the environmental actions.” (Ujam, 1987, p.134) According to Ujam, questions on the origin of the cognitive process will lead us to define our perceptual knowledge of objects, events and space either as part of our biological nature (nativism) or as a product of years of nurture (empiricism). According to Ujam (1987), it is possible to identify two different types of schemata: ‘experiential eco/cultural schemata’ and ‘non-experiential cosmocognitive schemata’.

‘Experiential eco/cultural schemata’ exist and vary among different groups and they are based on experiential knowledge based on physical and non-physical factors. According to Rapport (1977), schemata depend on a classification process and are related to preference and evaluation of particular places, groups and symbols affecting behaviour and relating it both to preference structure as well as spatial schemata.

Cognitive structure is seen as a determining factor of the creation of meaning as it relates to preference, the understanding and evaluation of the environment and its transferred messages. According to Neisser (1976), in the normal environment most perceivable objects and events are meaningful. They afford various possibilities for action, carry implications about what has happened or what will happen, belong coherently to a larger context and possess an identity that transcends their simple physical properties. As seen so far, cognitive schemata assure the continuation of perception over time. Because they are anticipations, they are the medium through which the past affects the future. The information that is already acquired (experience) results in changing the schema and therefore determines what will be
picked up next, making experience a vital ingredient of the cognitive process. Ujam (1987), however, attempts to answer how it is possible to explain those instances when perception occurs without the assistance of experience. “How is it possible to explain the relative similarity of reactions to the effects produced by objects and events which people of various temporal and spatial belongings perceive? Is it possible to fall back on inborn biological factors to provide the answer?” (Ujam 1987)

According to Ujam (1987), there exist particular perceptions of objects and events, which imply universal effects on different people and which are found to be more associated with the whole of cosmic features. These perceptions occur with striking immediacy and require minimum information, which is not necessarily stored in the brain or acquired by experience. “Beyond both the flow of an object’s information and stored experience, beyond the effects of variability of cultural schemata and historical events, lie permanent and innate cognitive equipment (schemata) inborn with all organisms. They act universally and their characteristics stem from the very fact that all objects and organisms are of the same essence.” (Ujam, 1987, p.128)

Ujam suggests the term non-experiential ‘cosmocognitive’ schemata to refer to the schemata that mankind has been innately credited with. “There is inborn equipment of a prior nature that bears no actual dependence on sensory information or acquired knowledge by experience. ... Unlike all other schemata, these schemata, when in their normal functioning status, do not involve specific mental processes such as imagining, problem solving and they most certainly do not involve remembering personal emotions or a feeling of familiarity.” (Ujam, 1987, pp.137-138)

The message attempted to be conveyed is that “… cosmocognitive schemata were, and still are, the process of selecting for the culturally and ecologically different peoples of the world, the same non-experiential information about themselves and equally about their cosmic surroundings as one essence. Indeed, these schemata direct human perception towards uniform behaviour and prompt various individuals to respond to natural phenomena in similar ways.” (Ujam, 1987, p.141)
The very nature of cosmocognitive schemata brings them to a very close and substantial relation to the universe and they are both bound to the same laws and systems. “Conceptually, thereafter, cosmocognitive schemata represent that one system – they are the point at which both organism and the universe meet and hence represent its extension to space and time.” (Ujam, 1987, p.138) They offer a plausible explanation of the concept of time, we could say that they are responsible for the perception of the ‘universal time’. They represent the natural balance within a time of rapid change and refer to the long-term changes that have occurred to us during our evolution. They ground us back to our roots.

We are unable to explain and understand the feeling of security that a blazing fire provides us with, especially when compared to an electrical one. “Also ambiguous is that aesthetical impact on perception of a wall which exhibits the native qualities of brick or stone or has been ‘enhanced’ by the colour of some climbing plant. It is almost entirely true that all kinds of people would cognitively respond to the earthy smell which follows rain in quite a similar way.” (Ujam, 1987, p.144) The same applies to scenes that comprise water in its many forms, sea, rivers, and lakes. Ujam’s argument is that a sort of communication of cosmological nature takes place immediately between the individual and the world. He suggests that there is a reference between cosmocognitive schemata and the principles of the Gestalt school of psychology, citing Eysenck’s statements that gestalt laws of perceptual organisation make reasonable intuitive sense, but they are obviously descriptive statements possessing little or no explanatory power. He finds one implication of the Gestalt approach as “most relevant to the condition within which a perception of objects or events belong to the natural phenomena and universal ecosystems” and it is “that which suggests that the ‘whole’ may be perceived before the parts comprising that whole.” (Ujam, 1987, p.149) This whole includes us and our surrounding world as a unified living system. Our surrounding world consists of interlocking systems that bind the living and the non-living entities in a mutually interdependent whole. The cosmocognitive schemata represent the glue that
connects us back to the cosmos. They are the mediums through which we can securely embrace our cosmic identity.

### 3.3.3 Schemata as manifestations of boundary enabling the unification of perception and cognition, linking us with our conceptualisations of the otherness

As already seen, schemata account for how an individual gathers and constructs the available information from the environment. We select information from the environment based on the anticipatory process that schemata generate, perceiving only what we know how to look for. The schema is co-responsible for our adaptive behaviour while it ensures the perpetuation of the cognitive processes. At every instant the individual constructs anticipations of information enabling it to pick them up when they become available. Once picked up this information may in turn result in a change of the original schema directing further exploration of the environment. Perception and cognition are engaged in a perpetual cycle; from schemata directing perception to pick up information, to cognition accommodating and storing the information, to schemata being modified in order to enable the next cycle.

Schemata determine in many ways what is perceived and seem to guide the collection of new information by selecting those that are relevant for each situation. As already seen though, this is not the whole truth. This categorisation process depends both on our personal as well as our genetic memory. Certain structures of our cognitive processes are innate and not learned and function without even needing the presence of perception. Neisser argues that “... there can never have been a time when we were altogether without schemata. The newborn infant opens his eyes onto a world that is infinitely rich in information: he has to be ready for some of it if he is to engage in the perceptual cycle and become ready for more... The ancient platonic idea that all knowledge is innate seems entirely inadequate to the changing human condition.” (Neisser, 1976, p.631) According to Neisser (1976), the worlds in which we have lived are not so different after all and the initial schema equipped each
person to notice some of the same things. Schemata can thus also be called universal representing both the shared and the individual experience of the world.

The conscious birth of mankind and in extension the birth of boundary can be easily discerned when regarding the link between mankind’s innate disposition to nature, evident in his ‘cosmocognitive knowledge’, and his ‘learned’ experiential knowledge. This knowledge shares an impact on how we organise and perceive our environment. As already seen, the cognitive process appears to be a very dynamic process in which our current state is constantly reaffirmed and transformed during our interaction with our environment. This cyclical process explains how the mind filters the abundance of information that it is being offered. Between perception and cognition there exists an evident and direct relation leading to the transformation of the perceiver. The individual, therefore, becomes the cognitive processes it engages in. The orientating schema, as a cognitive map, guides the individual through the surrounding environment, through its physical as well as symbolic manifestation.

Schemata, both the cosmocognitive as well as the eco/cultural schemata are seen as an expression of boundary, a representation of the intricate interdependence between perception and cognition. Through them the individual is able to perceive, evaluate and transform his environment and himself within it. They are the key to unlocking the secrets of the surrounding cosmos, by occupying the threshold between the spatial and the semantic existence enabling the perpetuation of the cognitive process. Perception of meaning is thus ensured. Mankind is unconsciously using what our human and cosmic identity has endowed us with in order to reveal the meaning of our world and our place within it.

3.4 Evolutionary forces in environmental psychology as expressions of boundary

Rachel and Stephen Kaplan (1977-1979-1982), leading figures in the area of environmental psychology, have researched and developed a system of thought
concerning the environmental preference of humans. Their insights on our interaction with the environment as well as those by Jay Appleton (1975) will be put forward in this section of the thesis to demonstrate the function of the environment as an invitation to opposition, leading to a presentation of the reasons that lead us to prefer some environments above others. The purpose of this section is meant to reinforce the importance of the creation of schemata and our dependence on them as mediums for the creation of meaning within our surrounding cosmos.

3.4.1 Environmental preference as an effortless cognitive process

As seen so far, humans have evolved and thrived in a world of uncertainty and difficulty. The nature of our humanity has led us to formulate and expand schemata that would help us to make sense of the environment and our role within it. The driving force is our ever-present longing to comprehend the cosmos and to reconnect with it. According to Kaplan & Kaplan (1977) we form representations of the recurring patterns that we experience in order for them to help us and make it possible for us to see clearly even when the available information is unclear. These representations are assembled into large networks; cognitive maps that permit prediction, anticipation and even planning.

An interesting area of research within perception is Gibson’s insights into ‘affordances’. According to Gibson (1977), an affordance refers to what a perceived object or scene has to offer to the individual perceiver in question. “Perception is viewed as not merely dealing with the information about the environment, but also yielding information about what the possibilities are as far as human purposes are concerned.” (Gibson, 1977, quoted in Kaplan, 1979, p.241) Stephen Kaplan (1979) expanded the views of affordance further towards showing how the perceptual process is inextricably connected with human purposes and human preferences, structuring them in a matrix of thought. According to his research, the ability to judge on preference is neither random nor idiosyncratic. An organism must prefer those environments in which it is likely to thrive and satisfy its needs and must likewise dislike these environments in which it is likely to function ineffectively or
be handicapped or harmed in any way. This in addition does not infer that we are aware of our needs, it does however infer that we have unconsciously throughout our evolution devised ways through which we can optimise the chances of our survival. (Kaplan 1979) In their essay *The experience of the environment*, Kaplan & Kaplan (1977) quote William James’s (1892) observation that “the best attention is effortless”. In their words: “Such environments, where the management of information seems to take care of itself, where attention is, as it were, inherent in what one is experiencing, are likely to be preferred. If this is the case, one would expect certain contents and certain processes to contribute to preference.” (Kaplan & Kaplan, 1977, p.300)

Kaplan (1982) stresses the importance of preference in the environment, differentiating it from its usual superficial connotations that link it to the decorative. In his opinion, aesthetics should not be trivialised but should be considered as a functional and basic underlying aspect of our mind. For Kaplan (1982) preference judgements are not antithetical to aesthetics; they are rather seen as providing a powerful tool for understanding the patterns underlying what we consider to be aesthetic. His work is based on a body of research in environmental preference that attempts to incorporate an evolutionary perspective on the cognition - affect relationship. According to Kaplan, “... preference guides behaviour and learning. Preference fosters the building and use of cognitive maps. Environmental preference is the outcome of what must be an incredibly rapid set of cognitive processes that integrate such considerations as safety, access, and the opportunity to learn into a single affective judgement.” (Kaplan, 1982, p.63)

### 3.4.2 Insights into the evolutionary forces of Refuge - Prospect and Mystery - Coherence

Kaplan (1979) identifies two underlying purposes that influence people’s lives and have an impact on the long-term potential of the individual and that contribute to preference of an environment; these purposes are ‘making sense’ and ‘involvement’. “*Making sense* refers to the concern to comprehend, to keep one’s bearings, to
understand what is going on in the immediate here and now and often in some larger world as well. Involvement refers to the concern to figure out, to learn, to be stimulated.” (Kaplan, 1979, p.242) Involvement can also come from features that are not actually present but are suggested or implied.

Kaplan (1979) suggests that if making sense and involvement are indeed pervasive purposes for humans, then environments that support these purposes should be preferred. In order for an environment to support these purposes it should afford something that would lead us to a successful interaction with the environment. According to Kaplan (1979), we are inclined to prefer the environments that are easier to characterise and offer us affordances that increase our sense of comprehension. At the same time he suggests that involvement is equally important and bound to making sense. In contrast or rather in combination with making sense, involvement suggests that we tend to prefer complex environments that challenge us, inviting us to think and calling on our capacity to understand.

o Preference matrix

<table>
<thead>
<tr>
<th>level of interpretation</th>
<th>making sense</th>
<th>involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>the visual array</td>
<td>coherence</td>
<td>complexity</td>
</tr>
<tr>
<td>three-dimensional space</td>
<td>legibility</td>
<td>mystery</td>
</tr>
</tbody>
</table>

(table from: Kaplan, 1979, p.245)

The table above illustrates Kaplan’s ‘Preference Matrix’ and how he has attempted to group the areas of making sense and involvement. In their reactions to the visual environment, people seem to relate to the information they pick up in two ways: in reference to the two-dimensional visual array or picture plane and in reference to
three-dimensional space. (Kaplan 1979) The first is as though the environment is presented as a flat picture and the second an unfolding space.

- **the visual array: coherence and complexity**

  *Complexity* (or even diversity and richness), according to Kaplan (1979), is placed under the involvement component on the table as it is considered a primary determinant of aesthetic reaction. *Coherence* is the making sense component and it refers to what makes it possible to organise the field, to divide it into units for which one already has appropriate representations. The greater the complexity of a scene the greater the challenge, the invitation presented for man to structure and organise it in a way that will make it coherent. Kaplan (1979) suggests that for an environment to be involving it must offer some sort of complexity or diversity, meaning that it would have to provide a sufficient number of representations to fill the mind and to insure that the focus will not be misplaced. He affirms that, the role of sense-making or coherence is called for in an unconscious manner in our daily lives serving the development of our schemata and their structuring into cognitive maps.

- **the three-dimensional space: legibility and mystery / refuge and prospect**

  The three-dimensional array is a more involving area. “Landscapes are three-dimensional configurations, and it was in that third dimension that our ancestors functioned or failed to function, survived or perished.” (Kaplan, 1979, p.244) The evolutionary importance of space is undoubted. According to Kaplan, throughout our evolution the perception of three-dimensional space and its implications was a paramount necessity for survival. The surrounding environment offered us information of both opportunities as well as dangers. Kaplan (1979) refers to the work of the British geographer Jay Appleton in regards to these evolutionary forces and their influence on preference. In his work The Experience of Landscape, Appleton (1975) introduced the terms *prospect* and *refuge*. These two terms refer to the above-mentioned offer of opportunities and danger. The informational
opportunities are called prospect, which refers to having a grand view/overview of the landscape and refuge refers to having a place to hide where one can see without being seen. (Appleton 1975) The fact that we seem to prefer landscapes that portray these elements stresses the importance of informational advantage, as well as our dislike of informational disadvantage in terms of our preference in our environment.

Kaplan (1979) has attempted to take these insights further by proposing the term mystery as the element, which plays a big part in our preference of three-dimensional space. “One of the most striking aspects of people’s reaction to landscapes that suggests a three-dimensional interpretation is their preference for scenes where it appears as though one could see more if one were to ‘walk into’ the scene...”. (Kaplan, 1979, p.244) The added value of Kaplan’s term mystery and the reason why it should be distinguished from surprise is that it involves not the presence of new information but its promise. The road, turning round a bend and disappearing, is the classic example of a promise of more information. According to Kaplan (1979), “[m]ystery embodies the attraction of the bend in the road, the view partially obscured by foliage, the temptation to follow the path ‘just a little farther’.” Scenes that reflect mystery are not only characterised by the promise of information but also by continuity, as there is a connection between what is seen and what is anticipated. There is a suggestion of new information and its character is implied by the available information. Through this, a level of control and a longing for knowledge become apparent. There is “… a sense of control, a sense that the rate of exposure to novelty is at the discretion of the viewer. A scene high in mystery is one in which one could learn more if one were to proceed farther into the scene. Thus one’s rate and direction of travel would serve to limit the rate at which new information must be dealt with. For a creature readily bored with the familiar and yet fearful of the strange, such an arrangement must be close to ideal.” (Kaplan, 1979, p.244)

Kaplan (1979) wishes to clarify that mystery does not necessarily imply ambiguity and incoherency; it does imply uncertainty but the uncertainty here is contained and bounded since we are able to anticipate up to a degree what happens next. “Mystery arouses curiosity. What it evokes is not a blank state of mind but a mind focused on
a variety of possibilities, of hypotheses of what might be coming next. It may be the very opportunity to anticipate several possible alternatives that makes mystery so fascinating and mind filling. The human capacity to respond to suggestion is profound.” (Kaplan, 1979, p.244) According to Kaplan (1979), mystery is an example of the intimate relationship between preference and cognition. Mystery is not a surface property on the picture plane; it invites us to interpret the three-dimensional properties of space. The observer has to decide whether it is possible to enter the scene and to move along it. Lastly, the critical issue of the invitation is to determine whether the observer is likely to learn anything by moving through the scene, in a rapid and unconscious cognitive process.

Appleton’s (1975) refuge concept concerns safety in the context of space. From an information perspective, however, refuge encompasses much more than safety. According to Kaplan (1979), refuge parallels closely the making sense side of the preference matrix as it appears to us in the three-dimensional space and he has chosen the term legibility to represent it. In the same way as mystery, legibility entails a promise, but in this case the promise is not of the opportunity to learn, but to function. It is concerned with interpreting the space, with finding one’s way and indeed with finding one’s way back. It deals with the structuring of space, with its differentiation, with its readability. In Kaplan’s words: “Legibility concerns information that enhances comprehension. The inferred or predicted aspect suggests a concern with being able to continue to comprehend the environment, or in other words, to remain oriented in space.” (Kaplan, 1987, p.11) In a sense it is like coherence, which deals with the organisation of the picture plane. Legibility deals with the organisation of the ground plane – the space that extends from the foreground to the horizon. “Just as Coherence allows one to predict and orient within the picture plane (the array that is before one), Legibility concerns the inference that being able to predict and to maintain orientation will be possible as one wanders more deeply into the scene.” (Kaplan, 1987, p.11) To sum up, we see that coherence concerns the conditions for perceiving, whereas legibility concerns the conditions for moving within the space. Mystery, on the other hand, is an indication that there is the possibility of exploring, of extending one’s cognitive map.
and Legibility is a kind of reassurance that the informational environment yet to come will be manageable.

The assumption for these areas so far, from an evolutionary perspective is that environmental preference has an adaptive role; it aids our survival and prosperity. For this to be the case, preference should offer us a direct benefit. Kaplan (1979) suggests that in addition to the acquisition of information preference also influences performance. It is a factor in pulling the individual towards a preferred direction affecting what they do in a particular situation, aiding them in the acquisition of skills and knowledge, guiding behaviour and learning.

One can say then that these evolutionary forces are in place in order to preserve and encourage our interaction with the environment. Through them we are able to comprehend and anticipate the environmental conditions that surround us as we are drawn to know them more intimately. Given that they are part of our genetic make-up, they must have been created within us by the constant association with the environment. I began to envision them as triggers of unity with the otherness, enabling and reinforcing existence. The promise for clarity and continuity that they offer and the invitation that they spark within us to know more in order to belong, is truly a clear expression of the boundary concept and how it embodies our existence within the world.

3.5 **Insights into Personal Construct Theory and the role of constructs as expressions of boundary**

In this section, I will attempt to go further than environmental forces towards revealing our capacity to construe the world, by exploring into Personal Construct Theory. George Kelly (1955) published his major two-volume opus entitled *The Psychology of Personal Constructs*, as a culmination of more than twenty years clinical and theoretical pioneering work in psychology. His theory has been widely influential and many people have been inclined to read into it their own theories and
expectations making it difficult to appreciate its radically distinct nature. Personal Construct Theory does not depend upon solid assumptions about the inherent nature of the universe, or upon fragments of truth believed to have been accumulated. It is developed as a notion about “... how man may launch out from a position of admitted ignorance and how he may aspire from one day to the next to transcend his own dogmatisms. It is a theory of man’s personal inquiry – a psychology of the human quest. It does not say what has or will be found, but proposes rather how we might go about looking for it.” (Kelly, 1966, p.1)

Kelly’s theory arose from the process of writing a handbook on psychology. He quickly realised the futility of trying to tell the reader merely how to deal with clinical problems when the why was more intriguing and thus set forth in writing about the whys. He took distance from his clinical experience and started again at the level of system building. He set out with the aim of integrating the four different disciplines of the historian, the philosopher, the scientist and the clinician and took as his theme the idea that “... man can enslave himself with his own ideas and then win his freedom again by reconstruing his life”. (Kelly, 1955, p.21)

3.5.1 ‘Constructive alternativism’ as Kelly’s worldview

George Kelly based his theory on what he called ‘constructive alternativism’. He did not adhere to the stimulus – response notions (questioning – answering) and motivation, going as far as to say that his theory should be portrayed either as ‘all-out dynamic or all-out non-dynamic’. (Kelly 1966) Instead, Kelly emphasised man's capacity to construe the world as opposed to merely responding to it. He believed that the world can only be known through our constructions of it and therefore our behaviour bridges the gap between our constructions (mapping of the world) and the world itself. His theory sets out with the assumption that the world is in a state of continuous movement and change. For Kelly (1955), the universe is integral, functioning as a single unit where all its parts are precisely inter-related. The idea that the universe is in a state of continuing flux dates from approximately 500 B.C. in the works of Heraclitus, a pre-Socratic philosopher who is credited with saying that
you ‘cannot step twice into the same river, for fresh waters are ever flowing in upon you’. In Kelly’s words: “Constructive alternativism stresses the importance of events. But it looks to man to propose what the character of that import shall be. The meaning of an event –that is to say, the meaning we ascribe to it– is anchored in its antecedents and its consequents. Thus meaning displays itself to us mainly in the dimension of time.” (Kelly, 1966, p.3)

According to Kelly (1955), we live in two worlds, one that exists outside our human understanding and secondly one that is represented in our mind in the form of representations or constructs as an interpretation of this primary world. The meaning of the word 'construct' refers to this interpretation or translation. The process of construing the world is according to Kelly a very personal one. We can only know the primary world through our interpretations of it, and therefore we can never get free of our interpretations in order to see it directly. The world in this sense exists only in reference to us. Our constructions are merely interpretations of events, and as such are matters of opinion and not matters of fact. “The main implication of this philosophical position is that all constructions of ‘reality’, being human interpretations, must be relative rather than absolute and therefore must be subject to eventual revision or replacement. At best, we hope to successfully approximate to this ‘primary reality’. In taking this position, Kelly wanted to emphasise the uniquely personal way in which each human makes sense of his experiences in the world.” (Kenny 1984)

His theoretical framework, however, wishes to avoid a mind-body dichotomy. “Kelly wanted to keep in view the sense-making enterprise of the whole organism. He wanted to avoid the fragmentation of the whole human into all the usual psychological pigeonholes and he thus created a theory, which attempted to avoid arbitrary compartmentalisation. However, neither did he want to take recourse in the type of bland holism, which refuses to make explicit distinctions. The only way he could escape this 'fragmental' vs. 'holistic' dichotomy was to be constructive. Kelly

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9 More in chapter 6.
meant 'constructive' in both senses of the word, namely, constructive vs. destructive and constructive in the sense of inventing something completely new.” (Kenny 1984)

3.5.2 ‘Anticipation’, the fundamental postulate of PCP leading to construction

Kelly's generative principle for PCP (Personal Construct Psychology) is expressed in his one, and only, postulate: "Fundamental postulate: a person's processes are psychologically channelized by the ways in which he anticipates events". (Kelly, 1955, p.46) The purpose of this postulate was to be a viewpoint from which to understand human behaviour as not imputed to an underlying physiological or psychological reality and a starting point from which one could understand, and modify their behaviour.

Kelly (1955) acknowledges that the notion of anticipation, as the fundamental generator of psychological processes, comes from Dewey (1910): “Every biological function, every motor attitude, every vital impulse as the carrying vehicle of experience is thus a priorily regulative in prospective reference; what we call apperception, expectation, anticipation, desire, demand, choice, are pregnant with this constitutive and organizing power. In so far as 'thought' does exercise such reorganizing power, it is because thought is itself still a vital function.” (Kelly, 1955, p.212) He states that the term anticipation subsumes both prediction and control, which are for him the primary objectives of science, thus encompassing action. In their paper Personal Construct Psychology and the Cognitive Revolution, Gaines & Shaw (2003) remark that “Kelly's exemplars of 'prediction' show that he gives it broader connotations than usual, of being prepared for possible eventualities, rather than of necessarily expecting that they are likely to occur, and of imagining and creating new eventualities that had not previously been instantiated.” (Gaines & Shaw 2003) Indeed, in anticipating the world, Kelly saw all people as 'personal scientists'.
The mind attempting to construct a model of the world

Kelly’s (1955) fundamental postulate is followed by careful definitions of each of its major terms, and by eleven corollaries, which amplify the system by stating certain propositions, which, in part, follow from the postulate and, in part, elaborate it in greater detail. Kelly (1955) summarised the aspect of anticipation of his theory in the Construction Corollary, which states that a person anticipates events by construing their replications. This corollary emphasises the abstraction process whereby we create meaning for ourselves in the world. In his words: “By construing we mean 'placing an interpretation': a person places an interpretation upon what is construed. He erects a structure, within the framework of which the substance takes shape or assumes meaning. The substance which he construes does not produce the structure; the person does.” (Kelly, 1955, p.50)

Kelly saw people as driven by the need to cope with coming events in the world and all other aspects of behaviour as deriving from this. “A person's processes, psychologically speaking, slip into the grooves which are cut out by the mechanisms he adopts for realizing his objectives.” (Kelly, 1955, p.49) These grooves provide templates for construing events, which he then termed ‘personal constructs’. “Man looks at his world through transparent templates which he creates and then attempts to fit over the realities of which the world is composed.” (Kelly, 1955, pp.8-9) “[w]e consider a construct to be a representation of the universe, a representation erected by a living creature and then tested against the reality of that universe” (Kelly, 1955, p.12) and “only when man attunes his ear to recurrent themes in the monotonous flow does his universe begin to make sense to him”. (Kelly, 1955, p.52)

Construing: anticipation, invitation and the boundary

Looking at PCT (Personal Construct Theory) with the boundary notion in mind, I began to discern that these human qualities of anticipation, prediction and control are indeed some of the tools that guide our physical and spiritual existence making us genetically prepared to function.
Throughout Kelly’s writings I came across what he terms ‘the language of hypothesis’; our constructions reflect what Kenny (1984) calls an ‘invitational mood’ where we are invited to wonder what happens next. According to Kenny (1984), the importance of this tactic is twofold: “… (1) it allows us momentarily to suspend our beliefs and wonder what else might replace them, and (2) it detaches us from the events immediately present (and pressing) and orients us toward the future in that we are encouraged to anticipate or predict what follows next if our current hypothesizing is valid.” (Kenny 1984) This is meant to reflect Kelly’s words: “When we place a construction of our own upon a situation, and then pursue its implications to the point of expecting something to happen, we issue a little invitation to nature to intervene in our personal experience.” (Kelly, 1966, p.4) When our predictions and anticipations are false we actively seek to remedy the construct that failed us. When they seem to be correct there remains always in our minds the possibility that another construction might in the future provide us with a better understanding. This bounds us to the notion of movement and transformation.

In Kelly’s (1955) theory, the universe is conceptualised as an unbroken whole and all events are connected ultimately in the fourth dimension of time, pointing out that "… time provides the ultimate bond in all relationships". (Kelly, 1955, p.6) Life can only make sense along the dimension of time through the interplay between the ephemeral and the constant. We are invited to discover the similarities and differences among the different events that occur in our lives construing their similarities and contrasts as we go along. For Kelly (1955) the nature of constructs involves a similarity and a difference and a notion of being defined through their relations to a network of constructs. This is a process in essence central to the diachronic notion of boundary.

- **Person as scientist**

Kelly (1955) preferred to see the individual as a scientist believing that not only the professional scientist seeks to predict and control the universe and the flow of events
in which they are involved but that we all share this aspiration. We all have expectations, anticipations, hypotheses to test and experiments to conduct.

According to Kelly (1955), a good scientist tries to bring his constructs up for test as soon as possible, without hesitating to experiment because he dreads that the outcome of the experiment will place him in an ambiguous position where he will no longer be able to predict and control. He goes on to quote C.S. Peirce: “… [the] scientific spirit requires a man to be at all times ready to dump his whole cartload of beliefs; the moment experience is against them. The desire to learn forbids him to be perfectly cocksure that he knows already”. (Peirce, 1878, quoted in Kelly, 1955, p.46)

Kelly (1955) viewed that our theoretical notions are personal inventions rather than scientific discoveries. According to Kenny (1984), Kelly contrasted sharply with the conventional idea that scientists somehow ‘discover’ or ‘uncover’ pieces of absolute truth that are there waiting to be found as if the world was an ‘abandoned monument’. The philosophical background of constructive alternativism forces us to recognise the individualistic nature of construing and Kelly embodied this in his Individuality Corollary, which states that "… persons differ from each other in their constructions of events". (Kenny 1984)

### 3.5.3 Experience and Change: ‘Permeability’ of a construct as a guiding tool within experience

Evident throughout Kelly’s theories is the emphasis he gives to sense-making as the highest human endeavour. He sees humans as scientists seeking for construct systems that will correspond increasingly better with the changing flux of experience. For Kelly (1966) this does not mean that we are only seeking certainty but that, by attempting to accurately anticipate future events, we become able to relate ourselves to them effectively.
Kelly (1966) also emphasises the individualistic nature of construing in his 'personal' construct theory, meaning that we differ not only in the way we construct events but also in the way we organise our constructs. What we share, however, is that our natures are driven to a constant series of constructions and their reassessment. (Kelly 1966) These he summarised in the Organisation Corollary which states that: “Each person characteristically evolves for his convenience in anticipating events, a construction system embracing ordinal relationships between constructs” (Kelly, 1966, p.12) and his Experience Corollary which states that: “A person's construction system varies as he successively construes the replications of events.” (Kelly, 1966, p.17)

The Experience Corollary needs to be seen in closer detail in order for us to understand how our construct systems evolve. Kelly's view of human learning and its limitations is put forward in terms of the notion that you can learn only what your framework is designed to allow you to see in events. (Kelly 1966) You must have a question in order to perceive an answer - hence the problem with education where teachers are providing answers to questions which the children have not asked. According to Kelly, reconstruction, which is based upon experience, can be seen as a process comprising of five phases: “anticipation, investment, encounter, confirmation or dis-confirmation, and constructive revision”. (Kelly, 1966, p.18) These, of course, are followed by new anticipations, as the subsequent cycle of experience gets under way. In Kelly’s words: “At the end of an experiential cycle one not only has a revised construction of the events he originally sought to anticipate, but he has also a construction of the process by which he reached his new conclusions about them.” (Kelly, 1966, p.1) This will give him the precedent by which to take account of the effectiveness of his construction process.

‘Permeability’ is put forward as the central concept that describes the construct systems’ ability to accommodate changes. According to Kelly (1966), a construct, which is permeable, is one, which has a good degree of elasticity or resilience and therefore the capacity to encompass new events. A permeable construct will allow one to add new experiences to those, which the system already includes; whereas an
impermeable construct is one, which will reject new events based on their unfamiliarity. These notions are summarised in his Modulation Corollary which states that: “... the variation in a person's construction system is limited by the permeability of the constructs within whose ranges of convenience the variants lie.” (Kelly, 1966, p.19) Kelly, here goes on to clarify that what is meant by permeability is not a construct's plasticity, or its amenability to change within itself, but its capacity to be used as referent for novel events and to accept new subordinate constructions within its range of convenience; in other words as a guiding tool within experience. Only then can we talk of boundary and not barrier. Kelly (1966) indicates the clinical uses of PCP, seeing how a patient who remains stagnant in his constructs, not allowing them to change, will in effect exclude all new experiences that the world might offer him. Permeability is indeed a central notion in the boundary concept.

3.5.4 Attempting to explain the nature of a construct: Dichotomy and distinction / Geometry of Psychological Space / Choice

Kelly (1966) insists that neither our constructs nor our construing systems come to us from nature. They come from our nature. This is implied in the epistemological implications of his constructive alternativism. “We cannot say that constructs are essences distilled by the mind out of available reality. They are imposed upon events, not abstracted from them. There is only one place they come from; that is from the person who is to use them. He devises them.” (Kelly, 1966, p.13) What we can surmise from this is that it is in our own nature to seek to construe and this is a personal act but one that is common to us all. So what exactly are these constructs then?

As outlined in his Dichotomy Corollary, “… a person's construction system is composed of a finite number of dichotomous constructs.” (Kelly, 1966, p.12) Kelly upholds that human thinking is essentially dichotomous and that each construct comprises similarities and contrasts with its meaning created by the tension of the opposing poles. In this, he reflects the theories of opposites by Heraclitus who
promotes the concept of unity in diversity and difference in unity. (Kenny 1984) According to Kelly (1966), constructs are reference axes upon which one may project events in an effort to make some sense out of what is going on. The ‘construct axes’ work as guidelines helping us to locate events, including those that have not occurred yet, helping us therefore to understand and anticipate them. “A construct is the basic contrast between two groups. When it is imposed it serves both to distinguish between its elements and to group them. Thus the construct refers to the nature of the distinction one attempts to make between events, not the array in which his events appear to stand when he gets through applying the distinction between each of them and all the others. ... The construct, of itself, is the kind of contrast one perceives and not in any way a representation of objects.” (Kelly, 1966, p.13)

Even though constructs neither represent nor symbolise events, they do enable us to cope with them by helping us to place them in arrays or scales. In order to explain this, Kelly (1969) introduced the notion of ‘psychological space’ to describe a region in which we place and classify events of our experience. This is not a pre-existent space but one that comes into being through the process of construing events throughout our lives.

In his paper *A Mathematical Approach to Psychology*, Kelly (1969) puts forward this notion of our psychological space as a geometry of dichotomies with each dichotomy having a differentiating, as well as integrating function. According to Kelly (1969), each one of us intervenes in our world by interposing a difference between incidents that would otherwise be imperceptible to us because they are infinitely homogeneous, and by doing so we simultaneously ascribe integrity to incidents that are otherwise imperceptible because they are infinitesimally fragmented. Our psychological space is a space without distance where each axis of reference represents only one distinction and each angle represents the relationship between personal constructs and incidents to which the constructs are applied. (Kelly 1969)
Figure 3.5 attempts an estimation of Kelly's notion of psychological space. The horizontal axis of reference is the construct, defining a group of planes orthogonal to it that divide the space. In Kelly’s words: “To catch a glimpse of psychological space we may imagine a system of planes, each with two sides or aspects, slicing through a galaxy of events.” (Kelly, 1966, p.14) The construct, as a horizontal axis is the basis of making the distinction. Each construct involves two poles, one at each end of its dichotomy. The elements associated at each pole are like each other with respect to the construct and are unlike the elements at the other pole. (Kelly 1955) Shaw & Gaines (1992) note that the range of convenience (seen in figure 3.5) captures the notion of relevancy and the distinction within it, thus generating a natural opposition.

**figures 3.5-3.6:** The geometry of psychological space as the region in which we place and classify events of our experience (dichotomy and scale). Source: Shaw & Gaines (1992)

Kelly (1966) in his Range Corollary warns that only part of the space that is divided is used in placing events. “A construct is convenient for the anticipation of a finite range of events only. A personal construct system can hardly be said to have universal utility. Not everything that happens in the world can be projected upon all the dichotomies that make up a person's outlook. ... The geometry of the mind is never a complete system.” (Kelly, 1966, p.16) The mind though is constantly invited to attempt to complete the system. As seen in figure 3.6, with successive
applications of events the individual will be able to create a scale with a great number of differentiations along the way.

Vincent Kenny, in his article ‘An Introduction to the Personal Construct Psychology of George A. Kelly’ (1984) discusses the clinical uses of PCP. He stresses particularly how the dichotomy corollary can guide the clinician to seek the hidden contrasts, which the patient is unable to see. What is important is to assess how we go about forming our constructs. “[where] you place yourself along the construct dimension is not nearly so important as the fact that you have evolved that particular construct in the first place. Once you have it in your repertoire you are bound to find yourself somewhere within it. Here we find this tension between constructs being alternatively liberating or imprisoning. We are faced with a choice each time we come to consider applying a particular construct to current events.” (Kenny 1984)

According to Kenny (1984), many patients who seek therapy present bipolar construct choices that are all negative. The anorexic that fears being obese or the manic client who fears being depressed again are such examples. While forming our constructs we are abstracting and patterning recurrent themes selected on the basis of certain discriminations that we have made. In the clinical environment, we often see people who are imprisoned by their constructs, since their prescribed behaviour for is out of key with other peoples’ behaviour. Kenny (1984) gives the example of the person who says “everyone hates me”. This person has a clear prescription of how he intends to act in relation to ‘everyone’. His expectations may act as a self-fulfilling prophecy and when confronted by someone who does not hate him, his constructs prescribe that he must act in a way to elicit hate from the ‘non-hating’ person.

The manner by which we see events is important. We can see someone as good or bad, something as interesting or boring, attractive or ugly, important or trivial. We make a conscious choice and our anticipations help us place that particular event in the relevant pole. In his Choice Corollary, Kelly (1955) summarised the aspect of his theory, which indicates that choices are not made randomly but are intended to
enhance our future anticipations. “A person chooses for himself that alternative in a dichotomized construct through which he anticipates the greater possibility for extension and definition of his system.” (Kelly, 1966, p.15) The clinical patient experiences a double bind, meaning that in an event he would be unable to make a constructive elaborative choice. According to Kenny (1984), a major strategy that people employ, to maximise the chances of their anticipations being accurate, is that of being inconsistent. “We like to hedge our bets where possible and to do this we may employ anticipations which don't seem very consonant with one another when laid side by side.” (Kenny 1984)

According to Kelly (1966), we are bound to our constructs by how successful they have been. We become dependent on them and as a result we are driven to make choices that promise to develop their usefulness. In his words: “Developing the usefulness of a construction system involves as far as I can see, two things: defining it and extending it. One defines his system, by extension at least, by making it clear how its construct components are applied to objects or are linked with each other. He amplifies his system by using it to reach out for new fields of application. In one case he consolidates his position and in the other he extends it.” (Kelly, 1966, p.15)

3.5.5 Constructs as representations of boundary guiding us in our search for the meaning of our existence

Personal construct theory represents organisation and structure as opposed to content. It tells us not what to think but rather how to go about understanding what we think. I have, up until now, attempted to highlight some of the most intriguing aspects of Kelly’s Personal Construct Theory, in order to be able to more clearly approach what is meant by a construct. To construe means essentially to translate reality into our personal terms and therefore by ‘constructing reality’ we are in a sense inventing it. According to Kenny (1984), by making such inventions of reality we free ourselves from the ‘here and now’ of the endless present of our animal relatives, but we are concurrently trapped in the anticipation of the future and the construction of the recurrent themes of history.
Kelly’s theory reflects process versus stasis. It visualises the universe as being in a state of endless flux and the person constantly in a state of active and controlled process of construing itself, guided by a flexible but structured network of pathways or channels created by a person's constructions. The purpose of a construct is not to simply relate reality to us, but it guides us to perceive it in the best possible way, setting our minds along certain channels to the exclusion of others. Even though Neisser (1976) has never quoted Kelly’s writings, Kelly does seem to abide to the constructivist stance to perception noting that “… the central assertion is that seeing, hearing and remembering are all acts of construction…” and “…all perceiving is a constructive process…” (Kelly, 1966, p.95) Schemata reflect the same notion of anticipation as constructs. In fact, Gibson’s affordances could be seen as following the same line of thought as Kelly’s constructs as they are imbedded in the environment and also support human interaction with that environment, in a manner consistent with a wider interpretation of constructivism. (Shaw & Gaines 1992)

Constructs are revealed as guiding tools and their creation is revealed as an inherent ability of our mind, enabling us to visualise, live, create and transform our existence. As seen so far, a construct reflects an anticipation or prediction of a future event and facilitates us in our pursuit to making accurate decisions and improved representations of future events. Anticipation is not an end in itself; it is a means to an end. It gives us a degree of control, enabling us to anticipate actual events as opposed to imaginary events, anchoring our psychological processes firmly in lived experience. It is as though man issues an invitation to the surrounding cosmos to validate or invalidate his anticipation and the cosmos in its turn invites him to discover the similarities and differences among the different events that occur in his life, construing their similarities and contrasts as he goes along. The constructs he creates then act as powerful dictates in his daily life, guiding him at every turn and reflecting this powerful invitation to seek meaning.

Personal Construct Theory presented me with a variety of insights as to how the mind seeks for boundary in order to guide our existence. The dichotomous essence
of human thinking, presented through PCT, is reflected within the structure of the construct itself. For Kelly the nature of constructs involves a similarity and a difference and a notion of being defined through their relations to a network of constructs; a process in essence central to the diachronic notion of boundary. I saw the construct comprising of similarities and contrasts, with its meaning created by the tension of the opposing poles. Kelly’s writings present the construct as the basic contrast between two groups serving both as a guide for distinguishing between its elements, as well as for grouping them. The nature of this distinction central in the working of our minds, recalls tension and opposition, a central notion to the concept of boundary. In building his theory, Kelly (1955) reflects the theories of opposites by Heraclitus who promoted the concept of unity in diversity and difference in unity and which I will also visit later on in the thesis.  

Through the act of construing, the mind is attempting to construct a model of the world. Man places an interpretation upon what is construed whereby he creates meaning for himself in the world. He is erecting and constantly updating a structure within whose framework his experiences take shape and assume meaning. The permeability of his constructs ensures the system’s ability to transform itself, to accommodate change, preventing him from remaining stagnant in his constructs. Permeability is indeed a central notion in the boundary concept; only then can we talk of boundary and not barrier. By allowing our constructs to change we are opening ourselves to all the new experiences that the world might offer us, thus securing the constructs’ essence as transformable guiding tools within experience.

Synthesis: Constructing the universe through knowledge

Throughout the third chapter, I have attempted to explore into the nature and make-up of the mind. I have slowly unravelled the intrinsic relationship between man and

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\(^\text{10}\) More in chapter 6.
the environment as it is manifested in the architecture of our mind and the nature of knowledge.\textsuperscript{11}

The essence of the boundary concept, the notions of distinction, tension, opposition, invitation and transformation make their appearance again as central notions of the structure and nature of our mind. As seen in the thesis so far, it seems that man is inherently driven or endowed to seek for boundary in his attempt to create and transform the meaning of his existence within his surrounding cosmos leaving him with a sense of coherence and unity in the wilderness that is his mind.

Innate and experiential knowledge is throughout this chapter revealed as a constantly provoking relation that expresses unity. The boundary between perception and cognition becomes clear as they are seen to be two interrelated functions of our existence, permeating each other. Perception is seen as providing the link with the otherness while cognition providing the guideline that allows its interpretation. Schemata (whether experiential or cosmogonic), evolutionary forces and constructs are revealed as the blueprints that guide us in this process of reference with our environment. These innate adaptations of our mind are created in order to help us record a model of the world within ourselves, enabling us to cope with the demands of our existence.

The environment is our ultimate 'other', our opposition towards creating a unified whole. Here, we inhabit the boundary. Opposition is the prerequisite for the creation

\textsuperscript{11} The realm of cognitive science and environmental psychology is immense. The study of the nature of knowledge is a work in progress and several of the subjects I have chosen have been disputed or revised. In cognitive science it is currently attempted to merge insights from different disciplines such as neuroscience, psychology, linguistics and computer science in an effort to achieve a deeper understanding of the human mental process. An exciting new direction in cognitive science, taking inspiration from the philosophy of science, is that of emergence, “the arising of novel and coherent structures, patterns and properties during the process of self-organisation in complex systems.” (Goldstein 1999) According to McClelland (2010) symbols and the processes that operate on them can be seen as approximate characterisations of the emergent consequences of sub- or non-symbolic processes, and a wide range of constructs in cognitive science can be understood as emergents. Environmental psychology has also evolved from person-environment to group-environment transactions and is also including cross-paradigm research with other fields. My intension in this section has not been to provide the right theory, but to examine the intrinsic relationship between man and the environment as it is manifested in the architecture of our mind and the nature of knowledge in order to reveal it as a unified whole in dynamic transformation.
of meaning, for identity to become present and for the mind, our inner world to unveil its fundamental connection with the universal mind. Innate and experiential knowledge exists within us as a unified whole in dynamic transformation. The mechanisms of our mind, these inherited tools enabling us to visualise, live, create and transform our existence within and in constant reference with our environment are revealed as the agents of the mind’s fundamental kinship with the cosmos.

Constructing the universe through knowledge, man is endowed with the ability to reunite with it. Knowledge is thus exposed as stemming from an apparent universal order. From this order, man has inherited his tendency towards acquiring knowledge, creating and revealing meaning. In the following stage, I will attempt to delve deeper into the nature of this universal order as it is expressed in the concept of structure and manifested on language.
CHAPTER 4:
Structure and the nature of Language

Introduction

While researching for the previous section, I was left with a realisation of coherence, a unity that exists in our relation with our surrounding world, created by the nature of our mind. This realisation directed me towards structuralism, a school of thought, which seems to ‘bind’ everything together through relation. Although it is contested by many, the questions it brings forth are very valid, enduring and worthy of examination, since they can offer us valuable insight into the nature of our relation to the world. In the fourth chapter, I will attempt to reveal how this dynamic unity that implies the boundary is expressed in the concept of structure and more specifically on language.

Jean Piaget’s (1958) definition of structure, which implies wholeness, transformation and self-regulation will be addressed first. Structuralist thinking seems to ‘bind’ everything together through relation, meaning that entities have no independent existence outside the structure. In our daily lives we are driven to perceive relationships rather than entities, implying an expression of boundary. Giambattista Vico’s ‘sapienza poetica’ (1725) or poetic wisdom will be addressed next as it provides an explanation of the inherent nature of mankind’s intuitive response to the environment. Vico affirms that man creates himself by constructing his reality intuitively, giving structure to his environment. Man is thus an intuitive structuralist.

I will continue to unravel the concept of unity, which permeates structuralism, as it is expressed in the realm of language. I will begin with Ferdinand de Saussure (1906-1911) whose influential theories demanded that language should be seen as a gestalteinheit, a unified entity that implies both the synchronic and the diachronic. He delved on the duality between langue and parole (the structure of language and spoken language), as well as between the signifier and signified to draw attention to
the dialectic unity between our concepts of elements and our expressions of them. Opposing views on the interpretation of language by Michel Foucault will also be put forward.

In his book The Order of Things (1966), Foucault uses the archaeological treatment in order to show how the being of language varied over time and the effect this had in the profound kinship of language with the world. He identifies that, throughout history, paradigm shifts occurred, making it possible for man to challenge the origin of his ideas. Attempting to question its limits, Foucault supports the notion of a self-referential language, emancipating it from thought and experience and shifting its study from signification to the sign. I believe, however, that even in the form of a negation of reference, as seen in Foucault, this reference reflects an underlying unity that is transcendental. It is a process of revelation through transformation, revealing in Foucault a pursuit to find that, which in all its complexity will remain beyond our reach. Perhaps our evolved human nature secretly enjoys this torment, precisely because it keeps inviting us back to search for more, revealing the other in a journey without end.

Insight into the inherent nature of language will be deepened by revealing the innate structures of knowledge and the ‘architecture’ of language as one of its expressions revealed in theories developed by Noam Chomsky (1972). The human element is revealed as the catalyst, the boundary. It is through us, through our conceptualisations and symbolism that this unified entity exists and lives on transforming itself. Our mind has the ability to transcend the rules of language through the use of symbolisation and metaphor, crossing the realm of an otherwise logical structure. In our use of metaphor we bring forth a sense of language’s hidden strength that stirs our deepest emotion, linking us not only with our conceptualisations of our daily world but also with the deeper element of our soul and the nature of our humanity.

I will proceed with an attempt to establish a connection between language and anthropological structures. Firstly, I will approach the Sapir-Whorf (1921/1956)
hypothesis of linguistic relativity to show how they perceived language as the predominant factor of how one perceives the world. Secondly, I will put forward the insights of Claude Lévi-Strauss (1949) who studied anthropological phenomena as systems; the systems of kinship, myth and totemism. He shared Vico’s point of view of poetic wisdom, that mankind unconsciously creates himself within the cosmos, naming it untamed thinking. He tried to support this by interpreting human structures by using insight into language. Lévi-Strauss (1972) saw myth also as knowledge imbedded in its intricate structure. He advocated that myths should be studied both synchronically and diachronically. Lévi-Strauss’s (1962/1966) untamed thinking and totemic thought provide yet another insight into the dialectic between man and the environment, through the analogies of difference of nature and character between social groups discernible even today. Jacques Derrida’s critique of Lévi-Strauss’s ethnography through his insights into structure, sign and play will further deepen the discussion.

Derrida (1978) scolds Lévi-Strauss for choosing to establish the opposition between nature and culture as a methodological instrument while at the same time making it impossible to accept this opposition. Derrida believes that placing nature and culture in opposition is limiting, arguing that we need to concentrate more on interpreting interpretations than interpreting things. (Montaigne, cited in Derrida, 1978) Derrida visualises a structure as limited by a fixed centre imposed on it, himself yearning for a rebirth, for the appearance of a new structure without origin, without truth, but with play and difference, unnameable, formless and even terrifying. (Derrida 1978) In our evolved state of mind, however, I believe that the act of interpreting the interpretation provides us with the means to challenge the relationship and set in motion the binding invitation that the universe extends us. The boundary, in Derrida’s terms, could be considered as the centre of the structure, not in a physical sense, but as a metaphysical entity that instead of limiting the structure it opens it up and demands its transformation.

The attempt in this chapter will be to come closer to seeing the totality, the expressed unity between us and our environment. The characteristics of boundary (invitation
towards tension and opposition, definition, dialectic unity and transformation) are easily discernable in the concepts of structure, providing a way of seeing the boundary’s inherited existence as a driving force in our world.

4.1 Introducing the concept of structure

In this section we will attempt to reveal the dynamic unity of man and environment through the concept of structure. We will see how structuralist thinking ‘binds’ everything together and how perceiving relationships rather than entities that have no independent existence outside structure leads us again to an expression of boundary.

4.1.1 Jean Piaget’s and Ludwig von Bertalanffy’s definitions of structure and system: wholeness, transformation and self-regulation

In his book *Structuralism*, Piaget (1958) has made an attempt at a definition of what is a structure. He argues that structure can be observed in an arrangement of entities, which embody the fundamental ideas of wholeness, transformation and self-regulation. With wholeness, a sense of eternal coherence is meant. According to Piaget (1958), a structure is not a composite of different entities independent from each other, but it represents a set of intrinsic laws that govern it and that determine the nature of the constituent parts as well as the nature of the structure. The entities that compose the structure have no independent existence outside it or separated from it, providing the structure with its identity in the same moment as the structure provides them with an existence. (Piaget 1958) Furthermore, Piaget (1958) states that a structure is not static and that the laws that govern it are not only structured but also structuring, making this is a fundamental element of structure. Further in the thesis, language will be presented as a good example of a transformable structure. Lastly, a structure is self-regulating according to Piaget (1958), in the sense that the laws and transformations that bring its existence to life are in place in order to seal off the system from reference to other systems. There is, however, another point of
view; that of renowned Austrian biologist’s Ludwig von Bertalanffy who in his General Systems Theory (1968) advocated open systems instead of closed ones and defined systems as elements in standing relationship. Bertalanffy’s (1968) General System world-view supports the joining and integrating of the web of relationships, which create the emergent properties of the whole. The value of General Systems Theory is the realisation of the wholeness that cannot be seen in the parts. I believe that there is a case to be made about structure as an open system.

4.1.2 Perceiving relationships rather than entities

Structuralism is portrayed as being the result of a historic shift in perception, which crystallised in the early 20th century. It first appeared in the field of physical sciences and spread through to a number of other fields such as linguistics and anthropology. (Sturrock 1979) This new perception involved the negation of the world as consisting of individual objects whose identity and characteristics can be examined independently. Sciences instead focused on examining relationships (i.e. quantum physics), with the relationship between the observer and the observed gaining a particular primacy. (Sturrock 1979) This led to the realisation that the relationship between observer and observed is indeed the only possible perceived reality, the only thing that can be observed. The existence of the observer entails an inherent bias, which in its turn means that the observer is in fact participating in the creation of what he observes.12 (Hawkes 2003)

As a consequence, according to Hawkes (2003), the true nature of things is to be found in and dependent on the relationships, which we construct and then perceive between them and not in the things themselves. “In short, the full significance of any entity or experience cannot be perceived unless and until it is integrated into the structure of which it forms a part.” (Hawkes, 2003, p.7) Terence Hawkes (2003) identifies the ultimate quarry of structuralist thinking as being the unveiling of the permanent structures of the mind, quoting what Fredric Jameson (1972) has described as “an explicit search for the permanent structures of the mind itself, the

12 I will address these implications further in chapter 6.
organizational categories and forms through which the mind is able to experience the world, or to organize a meaning in what is essentially in itself meaningless”. (Jameson, 1972, quoted in Hawkes, 2003, p.7)

4.1.3 Giambattista Vico’s Sapienza Poetica (poetic wisdom):
Man as natural structuralist in his intuitive and creative response to the environment

In his book ‘Structuralism and Semiotics, Terence Hawkes (2003), refers to the distinguished Italian jurist Giambattista Vico who in 1725 published a book called The New Science. The new science that Vico suggested was a science of human society; its model being the ‘natural’ science of such men as Galileo, Bacon and Newton, and its goal was the construction of a ‘physics of man’. “The master key of the new science lay in Vico’s decisive perception that so-called ‘primitive’ man, when properly assessed, reveals himself not as childishly ignorant and barbaric, but as instinctively and characteristically ‘poetic’ in his response to the world, in that he possesses an inherent ‘poetic wisdom’ (sapienza poetica) which informs his responses to his environment and casts them in the form of a ‘metaphysics’ of metaphor, symbol and myth.” (Vico, 1725, quoted in Hawkes, 2003, p.2) His responses to reality were ultimately cognitive as “... they embody, not ‘lies’ about the facts, but mature and sophisticated ways of knowing, of encoding, of presenting them. They constitute not mere embroidery of reality, but a way of coping with it. In Vico’s own words: “It follows that the first science to be learned should be mythology or the interpretation of fables; for, as we shall see, all the histories of the gentiles have their beginnings in fables”, myths can thus be seen to be “civil histories of the first peoples who were everywhere naturally poets.”” (Vico, 1725, quoted in Hawkes, 2003, p.2)

According to Hawkes (2003), Vico’s point of view was that all myths actually had their grounding on the generalised experience of ancient peoples, and they represent these peoples’ attempts to impose a satisfactory, graspable, humanising shape on it. In Hawkes’ words: “That shape, argues Vico, springs from the human mind itself,
and it becomes the shape of the world that that mind perceives as ‘natural’, ‘given’ or ‘true’. This establishes the principle of *verum factum*: that which man recognizes as true (*verum*) and that which he has himself made (*factum*) are one and the same. When man perceives the world, he perceives without knowing it the superimposed shape of his own mind, and entities can only be meaningful (or ‘true’) in so far as they find a place within that shape.” (Vico, 1725, cited in Hawkes, 2003, p.3)

We can surmise therefore that Vico places man in the centre of his new science. In his view men are revealed as having created themselves and that “… the world of civil society has certainly been made by men, and that its principles are therefore to be found within the modifications of our own human mind.” (Hawkes, 2003, p.3) Vico, thus, sees man as a maker and a poet; ‘poetis’ being the Greek word for maker / creator. According to Hawkes (2003), Vico goes on to examine the ‘poetising’ process and reaches the conclusion that man not only did not create societies and institutions in his own image, but these in the end created him. “That is, man constructs the myths, the social institutions, virtually the whole world as he perceives it, and in so doing he constructs himself. This making process involves the continual creation of recognizable and repeated forms, which we can now term a process of structuring. Vico sees this process as an inherent, permanent and definitive human characteristic…” (Hawkes, 2003, p.4) Vico’s insights are probably the first attempt made at recognising in the human mind not only its ability but also its necessary and permanent function as a structuring creative mechanism.

The concept of boundary also shares this genetic background. What will gradually be shown is the necessity to reveal mutually conditioned elements of the global system rather than short-sightedly concentrating on self-contained essences. Only then can we achieve poetic wisdom and re-connect ourselves to the matrix of the universal mind. The human element is central in this process. Our existence is essential in producing and processing the interconnection between what we see and what we understand, the image and the sign. Without the existence of this ‘anthropic principle’, the two would never meet and meaning would not be created. Man is slowly revealed as being the boundary.
Hawkes (2003) describes this gift of *sapienza poetica* as the gift of structuralism which manifests itself within us as the capacity and the necessity to generate myths and to use language metaphorically in order to deal with the world not directly or literally, but poetically. Structuralism is the principle, which informs the way all human beings always live. Being human, he claims, is to be a structuralist. It is, therefore, appropriate to continue with examining language and anthropology, two areas that greatly influenced structuralism, as they are of primary importance in unravelling the permanent structures of the mind.

### 4.2 Insights into the unconscious structure of Language

Throughout this section, an attempt will be made to unravel the nature of language through the insights of a collection of thinkers. The intention here is to continue to unravel the concept of unity -emerged through relationships- evident in structuralism, as it is expressed in the realm of language. The concept of boundary becomes enriched by delving deeper into the nature and innate structure of language and the manner through which it binds us to our surrounding environment.

#### 4.2.1 Ferdinand de Saussure: Language as a unified entity

Many refer to the father of structuralism as being Ferdinand de Saussure (1857-1913), a Swiss linguist whose innovative work forms the base of most contemporary structuralist thinking. His notable contribution lies in his rejection of language as comprised of separate units (words) that possess a separate meaning while the whole exists in a historical (diachronic) dimension. His view conveyed in his *Cours de Linguistique Générale* lectures to students at the University of Geneva between 1906 and 1911 presents the argument that “… language should be studied, not only in terms of its individual parts, and not only diachronically, but also in terms of the relationship between those parts, and synchronically: that is, in terms of its current adequacy.” (Hawkes, 2003, p.8-9)
Saussure proposed that language should be studied as a *Gestalteinheit*, a unified ‘entity’ and that it is complete at every moment in time. He draws a dialectical distinction between two fundamental dimensions of language: *langue*, as the abstract language system and *parole*, as speech. The two cannot exist apart of each other. *Langue* represents the abstract set of rules that enable the manifestation of *parole*. Mankind has been creating language practically since the beginning of his conscious existence. Every culture shows the ability to create a structure of signs and to relate it to a vast variety of meanings. Saussure advocates that what is natural to mankind is not the ability of oral speech but in fact the ability to construct a language, i.e. a ‘system of distinct signs corresponding to distinct ideas’. (Hawkes 2003) “*Parole,* it follows, is the small part of the iceberg that appears above the water. *Langue* is the larger mass that supports it, and is implied by it, both in speaker and hearer, but which never itself appears.” (Saussure, quoted in Baskin, 1959, p.10).

Going back to Saussure, it is important to address the distinction between *langue* and *parole*. By doing that, I will attempt to unravel the significance of relationships, as any ‘entity’ will be shown to derive its ‘significance’, its ‘identity’, from its relationship with other ‘entities’.

*Parole* provides insight into the sounds that the human voice makes which define our understanding of language. Hawkes (2003) gives an often-used example of phonemic difference in the English language in the words *kin* and *tin* and *call* and *coal*. In the first case, we can recognise a distinct difference in the sounds of the words that also translates to a difference in their meaning. In the second case, this difference is much more subtle and only clearly evident to a native speaker. According to Hawkes (2003), in the case of *call/coal*, the synchronic structure of the language provides the definitive meaning. It is the relationship of the word within the sentence it is used in that makes its meaning clear. In the case of *tin/kin*, this is of course also true, however, the distinction is already evident and does not need the
synchronic existence of the sentence to reveal its meaning. What we encounter here is a fundamental structuring principle. In short, without difference there can be no meaning. In both cases we are faced with a pattern of difference; a structure within the language that makes it possible for us to differentiate between meanings. This structuring principle can appear both as an evident difference as well as an implied one. Hawkes (2003) calls this structuring principle, which makes language meaningful, as ‘systematic’: “...‘systematic’ because, by the same token, we feel ourselves to be in the presence (and in the grip) of a firmly rooted and overriding system of relationships governed by general laws which determine the status of each and every individual item it contains. Such a system, encountered even at this primary level, can properly be termed structural. It is perceived as a synchronic phenomenon. And since it occurs at the very moment when language emerges as speech, the phonemic principle, which animates it, can be said to be a (if not the) fundamental structural concept. The notion of a complex pattern of paired functional differences, of ‘binary opposition’ as it has been termed, is clearly basic to it.” (Hawkes, 2003, p.12)

This binary opposition is indeed one more materialisation of the primary opposition between man and the cosmos and is at the centre of creation of knowledge, through the creation of meaning. It is revealed again as a fundamental characteristic of the nature and function of the mind. In Hawkes’s words: “It is an operation which creates structures.” (Hawkes, 2003, p.13)

- **Words as linguistic signs:**
  - the signified, the signifier and the cultural code

According to Sturrock (1979), a common denominator for a wide spectrum of structuralists from the universalists (Lévi-Strauss and Lacan; concerned with the operations performed by the mind) to the relativists (Barthes, Foucault and Derrida; concerned with the evolution of thought and its implications) is what emerges from Saussure’s work, termed the Lexicon of Signification. Barthes in his *Critical Essays* in 1964 remarks that: “It is probably in the serious recourse to the lexicon of
signification ... that we must finally see the spoken sign of structuralism.” (Barthes, 1964, quoted in Sturrock, 1979, p.5) Structuralists depend fundamentally on Saussure’s insights into the nature of the basic unit of any language: the linguistic sign. In his approach, any word is a sign and language functions as a system of signs.

Saussure analysed the sign into its two components: a sound or acoustic component, which he called the signifier (signifiant in French), and a mental or conceptual component he called the signified (signifié). The signified is not a thing but the notion of a thing, what comes into the mind of a speaker or a hearer when the appropriate signifier is uttered; the signifier being the meaningful sound of a word for spoken language and the meaningful mark inscribed for written language. (Sturrock 1979) Whereas the signifier is the material aspect of language, the signified is the mental aspect, the neural event. These two aspects of language, the signifier and the signified cannot exist without one another; they are inseparable. No concept can exist if it has not found expression in the human mind. They achieve substance and meaning through the human mind, unifying our experiences and enabling us to make sense of the world.

Sturrock (1979) takes this argument further to the creation of signs as cultural events. Food, water, trees, flowers, the sun, the shadow, a scarf; are all objects enriched with meaning. They obtain a different meaning depending on the culture that experiences them and creates their signification. They become not just signs but codes, cultural codes, “… a channel of communication linking the two parties …” (the natural and cultural significance) “… to any such cultural transaction …”. (Sturrock, 1979, p.7)

Both in the case of the tension between the signifier and the signified and the cultural code as a channel of communication, I could discern expressions of the boundary concept. Man is provoked and encouraged by his environment and the structure of his mind to process and express his surrounding world. He becomes entwined in this unending process of making sense of his existence by attempting to make it tangible
through language. Language in its turn provides him the blueprint to make sense of this process. Its own structure reveals the working of his mind.

- The synchronic and diachronic nature of language

Saussure’s advocated intention was not to study speech, but to study language. According to Sturrock (1979), this distinction emerges as one between a structure and an event; between abstract systems of rules and the concrete, individual happenings produced within the system. The relation between one and the other, and the question of which should take precedence - do structures precede events, or events structures? - has been much debated. Saussure also advocated a distinction between the synchronic and the diachronic axes of investigation. He was, himself, concerned with a synchronic examination of language. For him, at every point in time, language formed a complete system. However, it is my opinion that both investigations should take place simultaneously. By attempting that, we would be creating a grid of systems that would be connected horizontally as well as vertically; that is to say with historic depth as well as with a contemporise reference.

A major linguistic insight of Saussure’s was the arbitrary nature of language; stating that the linguistic sign is arbitrary. (Hawkes 2003) The signifier is arbitrary inasmuch as there seems to be no logical connection between, for example the word tree and the physical existence of a tree. (Hawkes 2003) In French the word for tree is arbre. If the signifier were not arbitrary, it would be the same across all languages. According to Hawkes (2003), it is this arbitrariness of the linguistic sign, which protects it from change. However unreasonably, the sign simply exists and it is the structure of the language that supports it. “In fact, the very arbitrariness of the relationship between signifier and signified that makes language conservative in nature also serves to guarantee the ‘structural’ nature of the system in which it occurs in precisely the terms put forward by Piaget. Language is self-defining, and so whole and complete. It is capable of a process of ‘transformation’: that is, of generating new aspects of itself (new sentences) in response to new experience. It is self-regulating. It has these capacities precisely because it allows no single, unitary
appeals to a ‘reality’ beyond itself. In the end, it constitutes its own reality. In other words, language stands as the supreme example of a self-contained ‘relational’ structure whose constituent parts have no significance unless and until they are integrated within its bounds.” (Hawkes, 2003, p.14)

In Saussure’s words: “Language is a system of interdependent terms in which the value of each term results solely from the simultaneous presence of the others.” (Saussure, quoted in Baskin, 1959, p.114) If all aspects of the language are thus ‘based on relations’, two dimensions of these relationships must assume particular importance. The two dimensions of the linguistic sign that Saussure presents, the syntagmatic (or ‘horizontal’) relations, and its simultaneous associative (or ‘vertical’) relations, make language a complete structure. (Hawkes 2003) Therefore, the value of any linguistic entity is finally and wholly determined by its total environment, be that synchronic or diachronic.

Saussure’s concludes that language is composed of flexible parts. In his own words: “Language is a system not of fixed, unaltered essences but of labile forms. It is a system of relations between its constituent units, and those units are themselves constituted by the differences that mark them off from other, related units. They cannot be said to have any existence within themselves, they are dependent for their identity on their fellows.” (Saussure, quoted in Sturrock, 1979, p.10)

Saussure’s famous summation that “language is a form and not a substance” is found as a conceptual and vital core of structuralism. (Saussure, quoted in Baskin, 1959, p.122) “[Language] is a structure which has modes, rather than an aggregate of items which has content. And since this self-regarding, self-regulating form constitutes our characteristic means of encountering and of coping with the world beyond ourselves, then perhaps we can say that it constitutes the characteristic human structure. From there, it is only a small step to the argument that perhaps it also constitutes the characteristic structure of human reality.” (Hawkes, 2003, p.16)
4.2.2  Michel Foucault on the Archaeology of Language

At this stage, it would be interesting to visit an approach on language that differs in essence from Ferdinand de Saussure’s. As mentioned above, Saussure viewed language as a synchronic system of related elements that were only significant within the structure. French philosopher Michel Foucault (1926-1984), questioning its limits, supports the notion of a self-referential language, emancipating it from thought and experience and shifting its study from signification to the sign. (Djaballah 2008) Foucault is notoriously indirect in his explanation of his intentions; however, in his Archaeology of Knowledge (1971) he reveals his attempt to “… free the history of thought from its subjection to transcendence.” (Foucault, 1982, p.203) This of course goes quite against the grain of structuralist thinking as well as the backbone of this thesis. It does not, however, negate it. In his book The Order of Things (1966), Foucault seems to be himself searching for the transcendental, or at least a way to understand the why and the how of our need to look for origins. As I will present in chapter 6, it is precisely this constant back and forth movement between man and his surrounding environment that makes their relationship so rich. It is man’s ability at independent thought and his constant attempt of escape that invites the universe back as a reference. The concept of boundary refers to this dynamic interaction. As seen from the beginning of the thesis, since the birth of consciousness of self, man has had to constantly re-adjust the way he sees himself in the world. I believe that even in the form of a negation of reference, as seen in Foucault, this reference reflects an underlying unity that is transcendental. It is a process of revelation through transformation.

In his book The Order of Things (1966), Foucault shows extraordinary insight in the workings of the mind in his archaeological treatment of the human sciences, by making at the same time a direct link with the evolution of language. According to Gutting, Foucault in The Order of Things sees language in a historic-ontological presence, which is quite different than the viewpoint he uses is The Archaeology of Knowledge (1971), where “… he is trying to construct a general approach to the history of thought that does not presuppose the centrality of the phenomenological
subject.” (Gutting, 2005, p.18) However, the issue is not about which is the right theory, but how one can use it. In The Order of Things (1966), Foucault uses the archaeological treatment in order to show how the being of language varied over time. For Foucault, thought and knowledge are seen as systems, or rather discursive formations, that are not governed by logic, but operate beneath individual consciousness, defining and controlling how one thinks in a given period. (Gutting 2005) He chose three exemplary periods in human evolution: the Renaissance, the French Classical Age (from Descartes to Kant) and the Modern Age.

According to Foucault (1966), during the Renaissance representation was simply identified with thought; to know was to represent so ideas were the unproblematic vehicles of knowledge. From this he equated that language could have no fundamental role in knowledge, that it was “… set down in the world and formed a part of it, both because things themselves hide and manifest their enigma like a language and because words offer themselves to men as things to be deciphered.” (Foucault, 1966, quoted in Gutting, p.17) However, with Kant, who asserted that ideas / representations were the product of the mind, a paradigm shift occurred and it suddenly became possible for man to challenge the origin of his ideas. (Gutting 2005) The implication this had for language was enormous. Language was now a separate ontological realm, distinct from the world it described: “The profound kinship of language with the world was … dissolved … Discourse was still to have the task of speaking that which is, but it was no longer to be anything more than what it said.” (Foucault, 1966, quoted in Gutting, 2005, p.17)

Entering the modern period, there comes another shift that according to Foucault (1966), partly brings language back as part of the world. According to White (1990), Foucault sees the human sciences dividing their objects of culture, consciousness or language in a ‘surface’ and a ‘depth’, without losing faith that they will find the ‘Subject’. He thus sees a diverse and relentless search for origins, which has managed to reveal neither the Origin, nor the Subject, just Difference and endless Change but which still serves as the motivator for this pursuit. (White 1990) This search for the Subject, the Origin reveals for Foucault the human sciences’ bondage
to the myth of the Same. He characterises his book *The Order of Things* as “a history of resemblance, … a history of the Same” and concludes that “[i]t is apparent how modern reflection … moves towards a certain thought of the Same – in which Difference is the same thing as identity”. (Foucault, 1966 quoted in White, 1990)

For Foucault the most important event in Western thought was the reappearance of man, not as a physical presence but as an entity conscious of its complexity and undeniably both empirical and transcendental. (Gutting 2005) As already seen, according to Foucault, the evolving conceptions of language played a central role in each stage of development. In the modern age, man’s new identity is complex and he constantly has to come to terms with obstacles in his language that are imbedded in the historical sedimentations that constrain and distort everything we try to say. (Gutting 2005) Foucault identifies the two opposing instruments of philosophical analysis, formalisation and hermeneutical interpretation, as “… two complementary efforts to overcome the obstacles language poses to knowledge.” (Gutting, 2005, p.17) As a prophet, Foucault sees a fundamental shift coming, an unpredictable change, which may involve a rebirth of language and so he states that “[T]he whole curiosity of our thought now resides in the question: What is language, how can we find a way round it in order to make it appear in itself, in all its plenitude?” (Foucault, 1966, p.305)

In his *Archaeology of Knowledge*, Foucault reveals that his discourse “… is an attempt … to show that to speak is to do something – something other than to express what one thinks; to translate what one knows, and something other than to play with the structures of a language (langue)…” (Foucault, 1971, quoted in White, 1990, p.107) What this other is, however, remains unanswered and at the end Foucault warns us of what it is not: “Discourse is not life: its time is not your time; in it, you will not be reconciled to death; you may have killed God beneath the weight of all that you have said; but don’t imagine that, with all that you are saying you will make a man that will live longer than he.” (Foucault, 1971, quoted in White, 1990, p.107) Perhaps then the whole issue is in the pursuit itself, a pursuit to find that, which in all its complexity will remain beyond our reach. Perhaps our evolved
human nature secretly enjoys this torment precisely because it keeps inviting us back to search for more, revealing the other in a journey without end.

4.2.3 Unconscious knowledge revealed in the structure of Language

American linguist Noam Chomsky is one of these people that, as Foucault stated, are motivated to seek the transcendental. Through his extensive research on man’s linguistic faculty, his linguistic ‘competence’, Chomsky (1972) attempts to reveal the origin of language in its transcendental form. In this section, I will focus on the innate structures of knowledge and the ‘architecture’ of language as one of its expressions, revealed in theories developed by Noam Chomsky.

- Insights into the acquisition of Language

In order to approach the problem of the acquisition of human knowledge, it is first necessary to determine how we go about interpreting the world. In Noam Chomsky opinion, “[i]t is the study of the interaction between a particular, biologically-given, complex system –the human mind- and the physical and social world.” (Chomsky, 1972, p.13) Referring to the poverty of the stimulus concept, he goes on to quote Bertrand Russell’s question, “how comes it that human beings, whose contacts with the world are brief and personal and limited are nevertheless able to know as much as they do?” This brings up the question of what exactly the relation between individual experience and the general body of knowledge really is. Reflecting on the small improvement of knowledge that experience offers on animals during their lifetime, David Hume (1902) asserts that “... the experimental reasoning itself, on which the whole conduct of life depends, is nothing but a series of instinct or mechanical power, that acts in us unknown to ourselves; and in its chief operations, is not directed by any such relations or comparison of ideas, as are the proper objects of our intellectual faculties. Though the instinct be different, yet still it is an instinct, which teaches a man to avoid the fire; as much as that, which teaches a bird, with such exactness, the art of incubation, and the whole economy and order of its nursery.” (Hume, 1902, p.108)
As seen at the start of the thesis, it seems quite reasonable to suppose that the principles of language structure are a biological given, seeing how the evolution of the human cortex is suggested to have led to the acquisition of our linguistic capacity and in effect also to the evolution of culture. It reveals, in fact, a fundamental ‘human nature’. Chomsky (1972) asserts, however, that the recognition of the surrounding world begins to operate long before the use of language, “... it appears that a child only a few months old interprets the world in terms of perceptual constancies, and shows surprise if stimuli do not manifest the expected behaviour of ‘enduring and recurring physical objects’. If our conjectures are to be made sense of in terms of observation, it would seem that such observations support the conjecture that the ‘scheme of enduring and recurring individual objects’ is primitive, rather than acquired in the course of language learning.” (Chomsky, 1972, p.19)

Experimental work has shown that even animals are capable of classifying objects and relationships according to abstract categories. The uniquely human language capacity, though, could be the driving force behind our ability of imaginary thought, evidently manifested in language, towards symbolism, visual imagery, artistic expression and scientific expression and thought.

Noam Chomsky (1972), addressing the problem of the process of naming, suggests that there must be several underlying abstract conditions beyond the expressed intention of a person in the process of naming and that these are unlikely to be learned. He quotes the dictum of the Cambridge Platonist Henry More (1614-1687), “… the Soul sings out the whole Song upon the first hint, as knowing it very well before”. (More, quoted in Chomsky, 1972, p.21) He follows by professing as ‘dubious’ the assumption by Russell and Wittgenstein, among others, that there are two ways of knowing what a word means: verbal definition and direct ostensive definition. (Chomsky 1972) The difficulty of verbal definition has been extraordinarily displayed by Socrates in the numerous Platonic dialogues. Notions such as knowledge, democracy, what is right or wrong, are indeed extremely difficult to define verbally. Chomsky suggests that: “What we call ‘verbal definitions’ are mere hints that can be interpreted properly by someone who already controls a rich,
highly articulated theory of language and the world. But surely the same is true of ‘ostensive definition’ [pointing out examples]. Again, neither Mill’s canons nor any other known scheme will account for the uniformity and specificity with which a child or an adult will understand what a new word means or denotes, under the conditions of ostensive definition.” (Chomsky, 1972, p.22)

- **Innate mechanisms of Language: Linguistic Universals**

Noam Chomsky (1972) asserts that we can really raise the question of the acquisition of knowledge only where we have a reasonably convincing characterisation of what has been learned. His intention has been to attempt to discover invariant properties of human language in order to be able to bind them with reflected properties of the mind in general, “… just as, if we were to discover invariant properties of the song of some species of bird, it would be plausible to suggest that these are genetically determined.” (Chomsky, 1972, p.22) According to Chomsky, in order to pursue this task “… we must investigate specific domains of human knowledge or systems of belief, determine their character, and study their relation to the brief and personal experience on which they are erected. A system of knowledge and belief results from the interplay of innate mechanisms, genetically determined maturation processes, and interaction with the social and physical environment. The problem is to account for the system constructed by the mind in the course of this interaction.” (Chomsky, 1972, p.25)

Chomsky (1972) suggests that we go further than our name-giving ability towards considering meanings of sentences. He asserts that some aspects of sentence-meaning are determined by the ordering of words and their arrangement into phrases, while others are related to structures of a more abstract sort.

Chomsky (1972) uses the following examples in order to clarify this. Consider the sentence: “John appealed to Bill to like himself” as opposed to the sentence “John appeared to Bill to like himself”. Chomsky indicates that although the sentences are practically identical in their surface form, their interpretation in the deeper sense is
quite different. So when we say “John appealed to Bill to like himself”, we mean that Bill is to like himself but when we say that “John appeared to Bill to like himself” we mean that it is John who likes himself. This is what Chomsky (1972) has named the level of ‘deep structure’ and it is at this level that the significant grammatical relations are expressed. This example illustrates relations of meaning among words that in turn influence the semantic representation in sentences and it can lead to tentative hypotheses in relation to some aspects of linguistic form, such as order, phrasing and abstract structures. (Chomsky 1972)

Another example that Chomsky (1972) gives is the conversion of a sentence to a question. By simply placing the ‘is’ in the beginning of the sentence we have transformed its meaning: “the dog in the corner is hungry” to “is the dog in the corner hungry?” The ‘is’ that follows the noun phrase is then moved at the front of the sentence. This Chomsky (1972) refers to as a structure-dependant operation, meaning that the operation considers not only the sequence of elements that constitute the sentence but also their structure. He goes on to clarify that we could have suggested a structure-independent operation, but that would be incorrect if we think of the following example. If we were to rephrase the original sentence to “the dog that is in the corner is hungry”, the question would not become “is the dog that in the corner is hungry”. Chomsky notes that “… the structure-dependent operation has no advantages from the point of view of communicative efficiency or ‘simplicity’” and that “[t]hough children make certain kinds of errors in the course of language learning, I am sure that none make the error of forming the question ‘is the dog that in the corner is hungry?’ despite the slim evidence of experience and the simplicity of the structure-independent rule.” (Chomsky, 1972, p.30) He calls this a very simple example of an invariant principle of language, “… what might be called a formal linguistic universal or a principle of universal grammar.” (Chomsky, 1972, p.30)
Innate and Experiential knowledge of Language: Plato's Problem vs. Orwell's Problem

The possibility of innate knowledge in the mind is of course not new. Plato advocates this in his Universals. Regarding human knowledge, Chomsky (1986) identifies two problems. One he refers to as ‘Plato’s problem’ and the other as ‘Orwell’s problem’. The essence of the first is what Russell’s question relates to the poverty of the stimulus: "How comes it that human beings, whose contacts with the world are brief and personal and limited, are nevertheless able to know as much as they do know?" The second is an analogue of social and political life and it refers to how it is possible to know so little, given the amount of information and evidence we have. (Chomsky 1986)

In Chomsky’s own words: “Plato's answer was that much of what we know is inborn, "remembered" from an earlier existence. Leibniz argued that the idea is basically correct, but must be "purged of the error of pre-existence." Much of our knowledge is innate, he held, virtually present in the mind even if not clearly articulated. This is true of the propositions of arithmetic and geometry, and also of "the in-built principles of the sciences," and of practical knowledge.” (Chomsky, 1986, p.263)

The same issue appears in Descartes’ argument of what a true triangle is. “[B]ecause we already possess within us the idea of a true triangle, and it can be more easily conceived by our mind than the more complex figure of the triangle drawn on paper, we, therefore, when we see the composite figure, apprehend not it itself, but rather the authentic triangle.” (Descartes, quoted in Haldane, 1955, quoted in Chomsky, 1986, pp.227-228)

For Plato’s problem we are confronted with the poverty of the stimulus. It is hard to explain how we seem to possess so much knowledge about language from a very young age. As already seen, even though our cognitive systems must reflect in some way our experiences, for Chomsky the two seem to be separated by a large chasm. It is difficult for us to reveal how the properties of these cognitive systems were formed.

13 More in chapter 6.
throughout our evolutionary experiences. For Chomsky (1986), the problem seems to be how we can reveal the properties of these cognitive systems. “Cognitive systems result from the interaction of experience and the organism's method of constructing and dealing with it, including analytic mechanisms and the intrinsic determinants of maturation and cognitive growth. The problem, then, is to determine the innate endowment that serves to bridge the gap between experience and knowledge attained or cognitive systems attained, abstracting from the truth-requirement for knowledge and generalizing to other systems that involve belief, understanding, interpretation, and perhaps more.” (Chomsky, 1986, pp.xxv) How can we account for the richness of our knowledge systems and the interactions between them?

According to Chomsky (1986), by focusing on language, the most evident and unique property of our species, we are also focusing on human thought and understanding. We talk about knowledge of language: ‘I know English or French’ etc. “We are thus in a good position to ascertain the nature of the biological endowment that constitutes the human ‘language faculty’, the innate component of the mind/brain that yields knowledge of language when presented with linguistic experience, that converts experience to a system of knowledge.” (Chomsky, 1986, pp.xxvi) Is it, however, appropriate to talk about knowledge of language?

Chomsky (1986) differentiates between I-Language, meaning the rules of the language and E-Language, our intuitive knowledge of language and suggests the use of the term: cognise. The properties he assigns to this term are: “… our awareness of the range of meaning of sentences and our awareness of the innately given principles that are further articulated by experience to yield the mature system of knowledge that we possess, the system that underlies language.” (Chomsky, 1986, pp.265) An ability to claim that these rules are correct and true would be an action ‘from the outside’; he, therefore, suggests that ‘cognising’ is meant as unconscious or implicit knowledge. He goes further by saying that there may be principles of learning, but that it appears that the system of knowledge attained is largely preformed, as much a part of our biological endowment as is the general organization of our body and that
we can speculate that the same is true in other areas where humans are capable of acquiring rich and highly articulated systems of knowledge. (Chomsky 1986)

There seems to be good reason to think that the knowledge of language indeed results from the interplay of initially given structures of mind, maturational processes and the interaction with the environment. But the question is if that can be generalised to a variety of knowledge processes or if it is unique to language. If we discover that other skills and competences involve similar or related schemata, we could have enough reason to suppose that the underlying rules of language reflect the nature of the mind itself.

Poetry and Meaning

According to Chomsky, “[i]n the case of humans, there is every reason to suppose that the semantic system of language is given largely by a power independent of conscious choice; the operative principles of mental organisation are presumably inaccessible to introspection, but there is no reason why they should in principle be more immune to investigation that the principles that determine the physical arrangement of limbs and organs.” (Chomsky, 1972, p.23) In order to clarify his point, Chomsky quotes Bertrand Russell and American transcendentalist Charles Sanders Peirce who speculated that: “It was the design of Providence that the infant mind should possess the germ of every science. If it were not so, they could hardly be learned.” [Peirce] argued that “man’s mind has a natural adaptation to imagining correct theories of some kinds... If man had not had the gift ... of a mind adapted to his requirements, he ... could not have acquired any knowledge.” We may not, however, forget that the principles of mind, as relayed by Russell (1949), who titled his study ‘Human knowledge: Its Scope and Limits’, indeed provide the scope as well as the limits of human creativity. “The relationship between scope and limits has traditionally been recognized but often thought to be a characteristic of the nonhuman animal world. It is the richness and specificity of instinct of animals that accounts for their remarkable achievements in some domains and lack of ability in others, so the argument runs, whereas humans, lacking such articulated instinctual
structure, are free to think, speak, discover, and understand without such limits.” (Peirce and Russell, quoted in Chomsky, 1986, pp.272-273) The effect that experience plays, according to Chomsky (1986), is of a triggering and shaping nature and it is made possible because of our mental constitution. “These systems, then, provide the frameworks within which our understanding can develop and flourish. The cost of this richness of potential in certain domains is the existence of limits in others, perhaps even absolute limits.” (Fodor, 1983, cited in Chomsky, 1986)

According to Chomsky (1972), “[I]n investigating some of the most familiar achievements of human intelligence –the ordinary use of language, for example- we are struck at once by their creative character, by the character of free creation within a system of rule.” (Chomsky, 1972, p.46) Here, the richness of potential seems to be limitless. As seen in Mithen’s model of the human mind, symbolism arises by the ability of the mind to interact between its various ‘intelligences’. A very similar operation, which occurs in language is metaphor, which in Greek means ‘transference’. Metaphors bring together two different entities and bind them together in an unexpected manner. They provoke an emotional response and often lead to the discovery of new levels of meaning and understanding. Tension between concepts is created by this interaction of difference. Literature and poetry owe their existence in the richness of meaning, metaphor, symbolism and interpretation that we convey to them. What is ‘produced’ is a new meaning, sometimes unique to a person or collectively understood, but one that always transcends the original meanings. The boundaries of language become fluid, right and wrong become blurred and the result is an amalgamation of the components, but still intrinsically dependent on the personal emotional and intellectual experience of the receiver. These properties exist in language in general. Language does not stand still, but resonates continually as meaning is recreated. There is a vast amount of potential associations that a word can afford; it is impossible to provide a simple definition of a word at any given moment. Much as in music or art, there exists a nearly boundless potential for new discovery of associations, which can create a multitude of emotions within us and bring forward another level of bound relations. The structure of language activates these associations. Our mind utilises this structure to create and transform meaning.
According to Chomsky (1972), grammar, as a defining structure informing all language, should not be seen as an idealised and rigid mental phenomenon. He refers to the violations of grammatical rules and cites William Epson’s comment on the degree of logical and grammatical disorder as a dimension of ambiguity who argues that we can often exploit the expressive resources of language most fully by departing from its principles. Epson suggests that the essential fact about the poetical use of language is the deviation from strict grammatical rule, a device which forces the reader to ‘invent a variety of reasons and order them in his own mind’ when seeking to determine the meaning of what is said. (Epson, cited in Chomsky, 1972, p.33) As an example I will use the final stanza of the poem 'Stopping by the Woods on a Snowy Evening' written in 1922 by the American poet Robert Frost (1874-1963):

The woods are lovely, dark and deep.
But I have promises to keep,
And miles to go before I sleep,
And miles to go before I sleep.

According to Richard Gray (1990), it seems to us unusual at first glance that the last two lines are identical as far as syntax and grammar is concerned. Is the repetition meant to intensify the meaning of the sentence or is there another reason? The tension felt between these two lines is, in fact, one of similarity and difference and it is in a sense the essence of the symbolic use of language. The first line most likely refers to the literal distance travelled by the hero of the poem, whereas the second could refer to life as a journey, the miles and miles of experience one will encounter in life before the final sleep, death. (Gray 1990) “'The poem is the act of having the thought', Frost insisted; it is process rather than product, it invites us to share in the experiences of seeing, feeling, and thinking, not simply to look at their results. So the most a piece like 'Stopping by Woods' will offer - and it is a great deal - is an imaginative resolution of its tensions: the sense that its conflicts and irresolutions
have been given appropriate dramatic expression, revelation and equipoise.” (Gray, 1990, p.381)

Chomsky (1972) argues that Plato's problem seems to be less deep and intellectually exciting than Orwell's problem, but unless we can come to understand Orwell's problem and to recognise its significance in our own social and cultural life, and to overcome it, the chances are slim that the human species will survive long enough to discover the answer to Plato's problem or others that challenge the intellect and the imagination. This is a belief that by studying language, it is not only possible to unravel the nature of the mind but also to unravel the nature of humanity itself. Chomsky refers to Russell who frequently wondered if man’s ‘true life’ consists ‘in art and thought and love, in the creation and contemplation of beauty and in the scientific understanding of the world’. If this is ‘the true glory of man,’ then it is the intrinsic principles of mind that should be the object of our awe and if possible; our inquiry. (Russell, cited in Chomsky, 1979, p.45)

The great mystery of language is in fact this intrinsic nature and its ability to become something entirely unexpected. “Russell wrote that ‘the humanistic conception regards a child as a gardener regards a young tree, i.e., as something with a certain intrinsic nature, which will develop into an admirable form given proper soil and air and light.’ I think it is fair to say that it is the humanistic conception of man that is advanced and given substance as we discover the rich systems of invariant structures and principles that underlie the most ordinary and humble of human accomplishments.” (Russell, cited in Chomsky, 1979, p.46)

4.3 **Interpreting human structures through insights into language**

In this section, I will attempt to delve deeper in the intrinsic nature of language, by establishing a connection between it and anthropological structures. In the first instance, I will refer to the Sapir-Whorf hypothesis of linguistic relativity to show
how they perceived language as the predominant factor of how one perceives the world. In the second, I will put forward the insights of Claude Lévi-Strauss who claimed to have studied anthropological phenomena as if they were languages. His assertions will connect back to Vico’s poetic wisdom where man unconsciously creates himself within the cosmos.

4.3.1 The Sapir - Whorf hypothesis: Language influences how we perceive the world

At this stage of the thesis it is worth to mention the heritage left by American structural linguists, especially since the contacts lost during the first and second World Wars meant that the two continents retained individuality but also surprising similarities in thinking. According to Hawkes (2003), a true advantage for the American linguist was the opportunity to research the large number of Indian languages, which were unknown to European linguists and combine it with an ability to research their cultures synchronically. The most prominent among these were Franz Boas (1858-1942), Edward Sapir (1884-1939) and Benjamin Lee Whorf (1897-1941). “Sapir’s book Language (1921) marks a significant breakthrough, for in it he records his growing awareness that languages operate by means of some kind of inherent structuring principle which simply overrides the ‘objective’ observations and expectations of the non-native speaker, who listens from ‘outside’…” (Hawkes, 2003, p.17) Making links of linguistic structuring with the fields of social behaviour, the conclusion was made that the way of life of a culture was determined by, or at least structured in the same way as the culture’s language. (Hawkes 2003)

Sapir and Whorf based their claims on direct experience of the cultures and languages they studied and subsequently formulated a daring hypothesis that impressed their peers. Many thinkers before them had expressed the conviction that differences in language lead to differences in experience and thought. Sapir and Whorf went further by declaring that each language embodies a worldview, which compels the speakers to perceive and conceptualise the world in different ways, making the speaker is in fact powerless in this process. (Hawkes 2003)
In Sapir’s own words: “Human beings do not live in the objective world alone, nor alone in the world of social activity as ordinarily understood, but are very much at the mercy of the particular language which has become the medium of expression for their society. It is quite an illusion to imagine that one adjusts to reality essentially without the use of language and that language is merely an incidental means of solving specific problems of communication or reflection. The fact of the matter is that the ‘real world’ is to a large extent built up on the language-habits of the group. No two languages are ever sufficiently similar to be considered as representing the same social reality. The worlds in which different societies live are distinct worlds, not merely the same world with different labels attached ... We see and hear and otherwise experience very largely as we do because the language habits of our community predispose certain choices of interpretation.” (Sapir, 1949, p.162)

Benjamin Lee Whorf (1897-1941), Sapir’s colleague and protégé, believed that similar languages provide a small likelihood of dramatic cognitive differences, but that languages different from the standard European would lead the speakers to greatly different worldviews. He believed that no individual is free to describe the world with absolute impartiality but is constrained to certain modes of interpretation even while he thinks himself most free. (Whorf 1956) These constrains are enforced by language. Whorf (1956) in fact even believed that some languages have given rise to more accurate worldviews than others. Indeed, he thought that the Hopi worldview was superior in various ways to that of speakers of Indo-European languages. (Whorf 1956)

Dorothy Lee (1960) attempts to explain this in how we codify reality through the use of the specific language and behavioural patterns characteristic of our culture. She suggests that our reality is not relative but it is punctuated differently by being presented to us in this code. Terence Hawkes suggests that one might go so far as to say that the social behaviour that constitutes a culture follows language’s model of encoding: “... a culture comes to terms with nature by means of ‘encoding’, through language… In fact, it might itself be a language.” (Hawkes, 2003, p.19) As I will be
present further, this is exactly how Claude Lévi-Strauss intended to study cultures; as languages.

### 4.3.2 Claude Lévi-Strauss's structural anthropology: Anthropological phenomena revealed through the structure of Language

The renowned anthropologist Claude Lévi-Strauss (1908-2009) is the one structuralist that, not only never objected to be called as such, but has evidently defined himself as one by producing such titles for his work as: *The Elementary Structures of Kinship* (1949) and *Structural Anthropology* (1972). Lévi-Strauss’s commitment to structuralism is evident in his use of Saussure’s doctrines. He explains that his intentions were to study anthropological phenomena as if they were languages. In the book *Structuralism and Since*, Dan Sperber (1979) comments that by doing so, he failed to see that he was actually using the term ‘languages’ metaphorically. “He studied them, that is, as systems: the systems of kinship, of totemism, of myth.” (Sperber, in Sturrock, 1979, p.11)

According to Sperber (1979), Lévi-Strauss has attempted to overcome the dilemma faced by anthropologists of whether or not to explain human nature in separation from cultural phenomena. “… [R]ather than opposing human nature to cultural variety as two incompatible notions, he has attempted to show that the first lies behind the second as a unified, abstract structure governing concrete, observable variations.” (Sperber, in Sturrock, 1979, p.19) Coming back to Giambattista Vico (1725), there seems to be a connection between them in as far as Lévi-Strauss shares his view of a poetic wisdom evident in ‘primitive peoples’. This is in fact a fundamental element of Lévi-Strauss’s thinking and he shares with Vico the belief that mankind has unconsciously created itself.

Lévi-Strauss, in his own admission, was directly influenced by Whorf, Sapir and others in accepting language as man’s overwhelmingly distinctive feature. In his words, it constitutes “… at once the prototype of the cultural phenomenon (distinguishing man from the animals) and the phenomenon whereby all the forms of
social life are established and perpetuated.” (Lévi-Strauss, 1972, p.358-359) One of his most famous quotes, from his book Tristes Tropiques (1955), is: “Qui dit homme, dit langue, et qui dit langue dit société.” (Lévi-Strauss, 1972, p.62) His main question being: “… whether the different aspects of social life (including even art and religion) cannot only be studied by the methods of, and with the help of concepts similar to those employed in linguistics, but also whether they do not constitute phenomena whose inmost nature is the same as that of language”. (Lévi-Strauss, 1972, p.62)

o **Universal structures of Kinship**

Lévi-Strauss’ extensive research into kinship reveals exactly this yearning to explain the human structures through the insights that the study of language offers us. He went so far as to suggest that women in a society can be seen in the same light as words, used to transfer messages. “The structure of spoken language determines not who says what to whom, but what can be said at all in the given tongue, irrespective of who the interlocutors are.” (Sperber, in Sturrock, 1979, p.19) Lévi-Strauss introduced the positive marriage rule, which describes from within which group of women a man is required to marry, which is put forward as the elementary structure of kinship. “In all human societies there exist rules, codes about whom one can and whom one cannot marry. Some of these rules concern categories of relations, e.g., men may be forbidden to marry their sisters but allowed to marry their cousins …” (Lévi-Strauss, 1949, quoted in Sperber, in Sturrock, 1979, p.20).

This quote from *The Elementary Structures of Kinship* displays Lévi-Strauss’ attempt to account for kinship structures in terms of basic mental structures: “What are the mental structures to which we have referred and the universality of which can be established? It seems there are three: the exigency of the rule as a rule; the notion of reciprocity regarded as the most immediate form of integrating the opposition between the self and the others; and finally the synthetic nature of the gift, i.e., that the agreed transfer of a valuable from one individual to another makes these individuals into partners, and adds a new quality to the valuable transferred.”
(Sperber, in Sturrock, 1979, p.45) He does acknowledge, though, that these mental structures are subconscious: “A kinship system does not consist in the objective ties of descent or consanguinity between individuals. It exists only in human consciousness; it is an arbitrary system of representations, not the spontaneous development of a real situation.” (Lévi-Strauss, 1972, p.50)

The social function of such a kinship system is itself ‘structural’: “… kinship systems, marriage rules, and descent groups constitute a co-ordinated whole, the function of which is to ensure the permanency of the social group by means of intertwining consanguineous and affinal ties. They may be considered as the blueprint of a mechanism which ‘pumps’ women out of their consanguineous families to redistribute them in affinal groups, the result of this process being to create new consanguineous groups, and so on.” (Lévi-Strauss, 1972, p.309)

According to Sperber (1979), even though Lévi-Strauss claims that the kinship system emerges clearly as ‘a language’ - a structured and structuring system of signs, he does not take this relation literally, implying that its mode is symbolic, self-regulating and self-sufficient, requiring no reference to a ‘reality’ or ‘nature’ beyond itself to justify or validate its procedures: “Because they are symbolic systems, kinship systems offer the anthropologist a rich field, where his efforts can almost (and we emphasise the ‘almost’) converge with those of the most highly developed of the social sciences, namely, linguistics. But to achieve this convergence, from which it is hoped a better understanding of man will result, we must never lose sight of the fact that, in both anthropological and linguistic research, we are dealing strictly with symbolism. And although it may be legitimate or even inevitable to fall back upon a naturalistic interpretation in order to understand the emergence of symbolic thinking, once the latter is given, the nature of the explanation must change as radically as the newly appeared phenomenon differs from those which have preceded and prepared it.” (Lévi-Strauss, 1972, p.51)
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0  **Structural interpretation of myth**

The anthropologist’s concern, according to Lévi-Strauss, should lie with the revelation of the ‘unconscious foundations’ on which the totality of a culture rests on. “His quarry, in short, is the *langue* of the whole culture; its system and its general laws: he stalks it through the particular varieties of its *parole.*” (Lévi-Strauss, quoted in Hawkes, 2003, 26)

Lévi-Strauss uses the example of a shaman in ‘primitive’ communities as opposed to a doctor in modern societies in order to explain the extent of these ‘unconscious foundations’. According to Lévi-Strauss, modern science guides us to “see a causal relationship between germs and disease, the shaman’s ‘cure’ rests upon his ability to relate the disease to the world of myth and monsters in which the sick person genuinely believes.” (Lévi-Strauss, cited in Hawkes, 2003, p.26) The shaman’s mythology, the spirits, magical animals and supernatural objects that he summons in order to cure the sick, might not belong to an objective reality, they do however belong to the foundations of the conception of reality, of the universe that their culture believes in. This ‘reality’ is considered for them as true and natural; its existence is not questioned. According to Lévi-Strauss, the illness is the inconsistency in the system “... which the shaman, calling upon myth, will re-integrate within a whole where everything is meaningful.” (Lévi-Strauss, 1972, cited in Hawkes, 2003, p.26) In his words: “The shaman provides the sick woman with a *language*, by means of which unexpressed and otherwise inexpressible, psychic states can be immediately expressed.” (Lévi-Strauss, 1972, quoted in Hawkes, 2003, p.26) Lévi-Strauss believes that the sick woman needs this *language* to be able to understand and experience the ordered reality offered to her by the shaman, a reality that makes sense to her, so that her body and mind can regain their balance and begin to heal.

For myth as well, the relationship between it and language occupies a central position in Lévi-Strauss’s view of the primitive mind, what he has called ‘savage mind’ a better translation being ‘untamed thinking’. The nature of that mind reveals
itself in the structures of its myths as much as in the structure of its language. But he sees myth not just reflecting men’s minds but being also formative and thus able to dissolve the distinction between nature and culture: “And so his aim, he says, is not to show how men think in myths, but “how myths think in men, unbeknown to them.” (Lévi-Strauss, 1964, ‘The Raw and the Cooked’, p.20, quoted in Hawkes, 2003, p.27) Lévi-Strauss supposed that myth was able to take any form and refer to any conceivable subject; however, he was astounded by how this possible arbitrariness of myth could be negated by the obvious recurrence of mythical themes around the world.

Besides the complicated internal structure of myth, Lévi-Strauss extensively researched the ‘external structure’ of myth. His major contribution to the interpretation of myth was to show that inversion (and systematic difference) as well as similarity was a relational characteristic between myths (Hawkes 2003). He insisted that only by analysing the total group of related myths could one achieve a true insight to them. He was able to identify systematic symmetries and oppositions in constellations of myth, which led to the conclusion that the production and themes of myth was not the product of common origins in cultures or identical stages in cultural evolution but that they reflected universal categories of the human mind. (Hawkes 2003) According to Deliège (2004), ideas are conceived as oppositions in a coherent and systematic fashion and in the myths he came across, Lévi-Strauss could discern the opposing meanings of edible vs. non-edible, raw vs. cooked and ultimately nature vs. culture. Dichotomous thinking, thus, became a central point of inquiry for Lévi-Strauss and he focused on these binary oppositions in order to examine the structure of myth.

The relation with language is obvious. Language is a system of signs and a sign exists only in relation to other signs, having no reality of its own outside the relations. (Deliège 2004) Language and speech in particular is vital for the myth: “to be known, myth has to be told: it is part of human speech” (Lévi-Strauss, 1972, p.209). The relation, however, with structural linguistics is more subtle but just as important. The distinction advocated by Saussure between langue and parole,
between structure and individual event is also embodied in myth: “Myth embodies this distinction in that the individual version of each myth, its *parole*, derives from and contributes to the fundamental structure of its *langue*: Sophocles’ *Oedipus Rex* derives, as *parole*, from the *langue* of the total Oedipus myth.” (Hawkes, 2003, p. 28)

According to Hawkes (2003), while myth is located in time it also reveals a timelessness that is reminiscent of the nature of language: “…each time the myth is recounted, it combines both the elements of *langue* and *parole*, and in so doing transcends both, being, as an ‘explanation’ of the world, trans-historical and transcultural.” (Hawkes, 2003, p. 29) Apart from its synchronic existence, therefore, the myth has a truly diachronic quality. Lévi-Strauss (1972) points out that a myth is recognised as being a myth by anyone in the world regardless of its origin, exposing a universal quality akin to language. “Myth is language, functioning on an especially high level where meaning succeeds practically at ‘taking off’ from the linguistic ground on which it keeps on rolling.” (Lévi-Strauss, 1972, p. 210)

According to Sperber (1979), Lévi-Strauss’s true contribution to mankind with his extensive study of myth is the insights he has provided into the little-known aspects of the human mind. This he has achieved by suggesting that the regularities and correspondences in myths could be accounted for by the actual process of their formation and transformation by the human mind through the ages, providing evidence of the ideal properties of ‘untamed thinking’. (Sperber, in Sturrock, 1979) This transformation is seen in two ways: as a genetic transformation, meaning that the myth is never created *ex nihilo* by the narrator, and as an intellectual transformation, meaning that it can transform into any myth it is related to through regular modifications, such as symmetrical inversion. (Sperber, in Sturrock, 1979)

Lévi-Strauss is trying to establish a sense of interaction between synchronic and diachronic dimensions, between *langue* and *parole*. He is trying to say that a myth is more than the story told at any given time but that it always consists “of all its versions”. (Lévi-Strauss, 1972, p. 217) This suggests myths work simultaneously on two axes, a synchronic and a diachronic axis. Lévi-Strauss has used a musical
reference to explain how a myth is like an orchestra score, which in order: “…to be meaningful, must be read diachronically along one axis - that is, page after page, and from left to right - and synchronically along the other axis, all the notes written vertically making up one gross constituent unit, that is, one bundle of relations.” (Lévi-Strauss, 1972, p.212) In order to illustrate his argument, Lévi-Strauss presents his controversial ‘decoding’ of the ‘score’ of the Oedipus myth resulting in the following chart:

<table>
<thead>
<tr>
<th>Cadmos seeks his sister Europa, ravished by Zeus</th>
<th>Cadmos kills the dragon</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Spartoi kill one another</td>
<td>Labdacos (Laios’ father = lame)</td>
</tr>
<tr>
<td></td>
<td>Laios (Oedipus’ father = left-sided)</td>
</tr>
<tr>
<td>Oedipus kills his father, Laios</td>
<td>Oedipus kills the Sphinx</td>
</tr>
<tr>
<td>Oedipus marries his mother, Jocasta</td>
<td>Oedipus=swollen foot</td>
</tr>
<tr>
<td></td>
<td>Eteocles kills his brother</td>
</tr>
<tr>
<td>Antigone buries her brother, Polynices, despite prohibition</td>
<td></td>
</tr>
</tbody>
</table>

(Hawkes, 2003, p.32)

According to Lévi-Strauss (1972), the myth can be read from left to right and top to bottom linearly but in order to understand the myth we need to make sense of the grouping of the mythical units along the columns. Finding the earliest or most authentic version of the myth is not important; it is the totality with its hidden and obvious relations that is of interest: “We are concerned in fact with the langue of the
According to Lévi-Strauss (1972), the events grouped in the first column reveal over-intimate, or overrated blood relations; in the second column we come across the inverted situation: the underrating of blood relations and the third column refers to monsters being slain. The fourth column, however, reveals a common feature in the hidden meaning of the names of the central male line: the hypothetical meanings refer to “difficulties in walking straight and standing upright.” (Lévi-Strauss, 1972, p.215)

In an imaginative leap, Lévi-Strauss believed that the message, on a deep structural level, was really the fundamental conflict between the cosmological belief that man is autochthonous, born from the earth like plants and the knowledge that man is born from the union of man and woman. (Wilcken 2010) According to Lévi-Strauss, the conflict cannot be solved; the myth, however, can provide a language for understanding the conflict: “… the overrating of blood relations is to the underrating of blood relations as the attempt to escape autochthony is to the impossibility to succeed in it. Although experience contradicts theory, social life validates cosmology by its similarity of structure. Hence cosmology is true.” (Lévi-Strauss, 1972, p.216)

Myth, therefore, emerges and operates as a logical tool, a knowledge giving method directed towards resolving oppositions: “… mythical thought always progresses from the awareness of oppositions toward their resolution.” (Lévi-Strauss, 1972, p.224) A logic in mythical thought is, thus, revealed which according to Lévi-Strauss “… is as rigorous as that of modern science and ... the difference lies, not in the quality of the intellectual process, but in the nature of the things to which it is applied [and reflects] the unchanged and unchanging powers of the mind.” (Lévi-Strauss, 1972, p.230)

- **Untamed Thinking and Totemism:**
  **The structuring nature of the savage mind creating culturally specific systems of meaning**

According to Hawkes (2003), Lévi-Strauss’s unconventional conclusion is that the invention of writing, which removed man’s need to depend on oral traditions and
therefore direct human contact, has lead us towards unauthentic contacts with each other. In his influential books *Totemism* (1962) and *The Savage Mind* (1966) he identifies the loss of our ability of totemic thinking. With the term *bricolage*, he defines the process through which the ‘primitive’ mind carefully and precisely orders, classifies and arranges into structures every message provided to it by our physical and meta-physical world. (Hawkes 2003) “The structures, ‘improvised’ or ‘made-up’ ... as *ad hoc* responses to an environment, then serve to establish homologies and analogies between the ordering of nature and that of society, and so satisfactorily ‘explain’ the world and make it able to be lived in. The *bricoleur* constructs the totemic ‘messages’ whereby ‘nature’ and ‘culture’ are caused to mirror each other.” (Hawkes, 2003, p.35-36) Within his untamed mind, man’s ‘totemic logic’ is not just structured, it is also structuring. According to Hawkes (2003), through the use of myth he can move effortlessly from one conceptual plane (nature) to the other (culture). This mind process in the words of Lévi-Strauss enables him to: “... equate significant contrasts found on different planes: the geographical, meteorological, zoological, botanical, technical, economic, social, ritual, religious and philosophical. As a result, the ‘savage’, or better, the ‘multi-conscious’ mind, able and willing to respond to an environment on more than one level simultaneously, and constructing in the process an elaborate and to us a bewilderingly complex ‘world picture’, builds mental structures which facilitate an understanding of the world in as much as they resemble it. In this sense savage thought can be defined as analogical thought.” (Lévi-Strauss, 1966, p.263) This can be seen to relate to schemata, which I examined earlier in the thesis. This process of creating ‘classification systems’, according to Lévi-Strauss (1966), leads in fact to the creation of ‘systems of meaning’, structural contrasts or oppositions that are shared by every member of a culture and become, therefore, the glue that binds it.

Lévi-Strauss has often referred to the example of the ‘raw’ and the ‘cooked’, what a culture terms as edible or inedible; which is illustrated with the French people’s love for frog legs and snails which in Britain would be termed inedible. Such distinction will facilitate a culture’s ability to distinguish itself from another, strengthening therefore their internal bonds. For Lévi-Strauss, totemic thought is generated by this
system of difference, present in the human mind. A man or a culture can identify themselves with a bear, not because of similarities, but because the analogy this act would evoke “… is not between social groups and natural species, but between the differences which manifest themselves on the level of groups on the one hand and on that of species on the other.” (Lévi-Strauss, 1966, p.138) This helps to clarify the relationships between them by structuring and conveying the coded messages from one system to the other. These social groups are attempting not so much to express social differences as to create and strengthen them. This is seen here as a fundamental and essential nature of the mind, one that reflects a peculiar kind of logic and a desire to create and attain knowledge, which is discernable even today. “That mind, which exists in us no less than in ‘primitive’ man, proves to be a fundamentally ‘structuring’ agency of considerable power.” (Hawkes, 2003, p.40)

Lévi-Strauss (1966) attacks sterile empiricism where one single undeniable reality exists and suggests that every human society creates its own reality. This fundamental point reveals the savage mind as the quintessential human mind, its nature unchanged through the ages, revealing to us “… particularly in its account of the nature of myth, the confirming, supportive, problem-resolving nature of all art. It thus strengthens the notion that art acts as a mediating, moulding force in society rather than as an agency which merely reflects or records.” (Hawkes, 2003, p.41)

The reconcilement of perceived opposites can be seen to be the aim of not only myth and totemism but also the aim of philosophical thought. According to Hawkes, the philosopher is thinking in the same manner as the Indian, showing the same desire “… to apprehend in a total fashion the two aspects of reality … continuous and discontinuous.” (Lévi-Strauss, quoted in Hawkes, 2003, p.41)

- **The reconcilement of time:**
  **Synchronic / Diachronic interpretations**

In his book Structuralism and Semiotics, Hawkes (2003) puts forwards that the reconcilement of ‘opposition’ with regard to time formed a central preoccupation of
poets such as T. S. Eliot (1888-1965) and his poem Four Quarters: Burnt Norton (published in 1936), where the necessity for a sense of suspended ‘discontinuous’ moments of time, which are both ‘in’ time and ‘outside’ is portrayed against our commitment to a notion of sequential and continuously flowing time. According to Hawkes, “[i]t involves at the very least a resurrection in the sophisticated ‘civilised’ mind of the ‘savage’ desire for a totemic reconciliation of the opposition between the ongoing movement of time, and its ‘stopped’, ‘frozen’ or ‘timeless’ moments. It is significant that where the ‘civilised’ mind aims to achieve this reconciliation through ‘art’ or ‘philosophy’, the ‘savage’ mind aims to achieve it through myth.” (Hawkes, 2003, p.42)

Yet the enchainment of past and future
Woven in the weakness of the changing body,
Protects mankind from heaven and damnation
Which flesh cannot endure.
Time past and time future
Allow but a little consciousness.
To be conscious is not to be in time.
But only in time can the moment in the rose-garden,
The moment in the arbour where the rain beat,
The moment in the draughty church at smokefall
Be remembered; involved with past and future.
Only through time time is conquered.

(Four Quartets: Burnt Norton, T. S. Eliot quoted in Hawkes, 2003, p.42)

The achievement of ‘reconciliation of time’ can indeed be seen as the ultimate meaning of culture. Our ‘savage’ mind reconciled with our ‘civilised’ mind are united as one. In the same line of thought as in the premise of language, the synchronic and diachronic perceptions of culture become equally valid. We live in the moment; our culture surrounds us in the most complete way imaginable. We are able to consciously live the myth as Jung would put it. Building on our existent basis
of knowledge, we transform every new experience offered. We are the building blocks of our culture; our culture cannot exist without us, without our past, our present and our future. We are the building blocks that the system is composed of. The regularly interacting and interrelating groups of activities or parts which, when taken together, form a new whole. This whole will now be identified by properties which cannot be found in its constituent elements but which represent them collectively.

Jacques Derrida's critique on Lévi-Strauss's ethnography: Nature vs. Culture: structure, sign and play

At this point, it seems necessary to address insights by the controversial French philosopher Jacques Derrida (1930-2004), notable for his critical theory known as deconstructionism. Derrida was driven to attempt to expose what he viewed where the paradoxes on which certain theories were founded. In his influential essay *Structure, Sign, and Play in the Discourse of the Human Sciences* (Derrida 1978), he sets the scene with an opening quote from Montaigne: “We need to interpret interpretations more than to interpret things.” (Montaigne, quoted in Derrida, 1978, p.278) Although Derrida’s writing style is very difficult and vague, this quote points towards the importance he places on the working of our own minds as opposed to the object of interpretation.

Derrida (1978) scolds Lévi-Strauss for choosing to establish the opposition between nature and culture as a methodological instrument in his book *The Elementary Structures of Kinship*, while at the same time making it impossible to accept this opposition. Indeed, Lévi-Strauss assigns to nature everything that is universal and spontaneous and to culture everything that “… depends on a system of norms regulating society and is therefore capable of varying from one social structure to another.” (Derrida, 1978, p.281) Almost immediately, however, according to Derrida (1978), Lévi-Strauss admits his shock at the scandal of incest-prohibition, which seems to combine the natural (universal) with the cultural (rule). Derrida believes that placing nature and culture in opposition is limiting and points that Lévi-
Strauss’s *scandal* is in fact no scandal in the sense of traditional concepts; “… it is something which escapes these concepts and certainly precedes them – probably as the condition of their possibility.” (Derrida, 1978, p.281)

Derrida criticises Lévi-Strauss for using empirical methods to build his theory while at the same time criticising empiricism when he says in the preface of The Raw and the Cooked that he has “… sought to transcend the opposition between the sensible and the insensible by placing [himself] from the very beginning at the level of signs.” (Lévi-Strauss, quoted in Derrida, 1978, p.280) Derrida here reaches a difficult point as he argues that we cannot erase the difference between signifier and signified unless we either submit the sign to thought or “… [put] in question the system in which the preceding reduction functioned: first and foremost, the opposition between the sensible and the intelligible.” (Derrida, 1978, p.280) Ultimately, Derrida argues that we have to accept the paradox, that “… language bears within itself the necessity of its own critique”. (Derrida, 1978, p.281)

Derrida (1978) alludes to a rupture, an event that took place when ‘the structurality of structure had to begin to be thought’, which brought about a loss of centre for the structure. I believe that Derrida is implying that man is no longer at the centre of this structure. In my opinion, it is Lévi-Strauss’s search for origins that causes Derrida’s (1978) criticism. Derrida indeed scolds Lévi-Strauss for what he perceives in his writings as being “… an ethic of nostalgia for origins, an ethic of archaic and natural innocence, of a purity of presence and self-presence in speech…”. (Derrida, 1978, p.293)

Derrida visualises a structure as limited by a fixed centre imposed on it: “The function of this centre was not only to orient, balance, and organize the structure – one cannot in fact conceive of an unorganized structure- but above all to make sure that the organizing principle of the structure would limit what we might call the play of the structure.” (Derrida, 1978, p.278) Derrida himself yearns for a rebirth, for the appearance of a new structure without origin, without truth, but with play and difference, unnameable, formless and even terrifying. (Derrida 1978)
Throughout this thesis, I have, ironically, used the boundary as the centre of the man-universe structure. Their transformation in relation to each other is their play. I do not believe that the act of thinking about the structure is limiting. It should be seen as a vital stage in the evolution of the structure, something that will challenge it and bring depth and understanding to its dynamic and transformable nature. In our evolved state of mind, interpreting the interpretation provides us with the means to challenge the relationship and set in motion the binding invitation that the universe extends us. The boundary, in Derrida’s terms, could be considered as the centre of the structure not in a physical sense but as a metaphysical entity that instead of limiting the structure it opens it up and demands its transformation.

**Synthesis: Man and the cosmos - a dynamic structure**

Having revealed man’s intuitive need to construct his environment through thought in order to be bound to it, I was left with a realisation of coherence. There is a unity that exists in our relation with our surrounding world and it is created by the nature of our mind. In this latest chapter, I attempted to look into the nature of this unity by exploring into the notion of structure. Man and the cosmos truly represent a dynamic unity in perpetual transformation. Wholeness, transformation and self-regulation infuse the notion of structure, their laws are not only structured but also structuring. Structure ‘binds’ everything together through relation, meaning that entities have no independent existence outside the structure. Man is revealed as a natural structuralist and is driven to perceive relationships rather than entities. This poetic wisdom is inherent and clarifies mankind’s intuitive response to the environment. Yet again the concept of boundary is expressed and implied in the notion of structure and manifested in the realm of language.

Language, as a distinctive human expression has provided a direct link into the workings of the mind within the structure. Through the insights provided by leading figures as de Saussure, Chomsky, Sapir and Whorf and Lévi-Strauss, as well as
opposing and enriching views by Jacques Derrida and Michel Foucault, language is revealed as a manifestation of boundary. A dialectic unity is revealed between langue and parole, between the signifier and signified, our concepts and our expressions of them. The inherent ability to construct language as well as its innate ‘architecture’ provides yet another insight into man’s fundamental kinship with the cosmos. His humanity is presupposed to receive the cosmos as the cosmos is engaging him in a perpetual interaction. As Vico affirms, man perceives within the world the superimposed nature of his own mind. The human element is central in this process. No concept can exist if it has not found expression, substance and meaning through our mind. It is indeed through us, through our mind that the universe finds its expression.

Man becomes entwined in this unending process of making sense of his existence within the world by attempting to make it tangible through language. The intrinsic nature of language is revealed as not only unifying but also directive, assisting man in his journey of reference with the cosmos. Language provides us with the blueprint to make sense of this process. Its own structure reveals the working of our mind and in its turn the nature of our humanity. In the following chapter, I will attempt to reveal culture as another expression of the dynamic structure of man and the cosmos.
CHAPTER 5:
The emergence of Culture: a system in transformation

Introduction

The fifth chapter will concentrate more specifically in the nature of culture as a knowledge structure, with the boundary revealed as being its discernable ontological driving force. Throughout this chapter, I will attempt to provide a tangible example of man’s complex existence within the cosmos by delving deeper into the meaning of culture and tracing the evolution of its meaning through time. I will present the theories of renowned academics in defining the challenging subject of culture.

Defining the meaning of culture is made complicated by the fact that its very definition has undergone a transformation through the years, providing remarkable insight into the evolution of language and thought through time. Raymond Williams (1983) discerned that fundamentally new social and cultural relationships and issues were triggered by the pivotal transition in the evolution of mankind brought about by the Industrial Revolution in Britain. Discerning a general pattern of change in the use of language, Williams (1983) based his analysis on the study of British literary history and by studying the written words of the people that lived this transition he drew insight from the way they tried to give meaning to their experience. He went on to formulate a very coherent and influential definition of culture by identifying three general categories for analysing culture: the ‘ideal’, the ‘documentary’ and the ‘social’ definitions. According to Williams, culture as an ‘ideal’ reflects “… a state or process of human perfection, in terms of certain absolute or universal values.” (Williams, in Storey, 2006, p.32) In this analysis, one would seek a universal order in the human condition. Art and the materiality of culture reflect Williams’ second definition of culture, the ‘documentary’ category. In Williams’ third category, the ‘social’ aspect of culture seeks the implicit and explicit value and meaning in a particular way of life, a ‘structure of feeling’. This analysis of culture removes the elitist definitions that saw culture in the hands of the few, asserting that culture is to
be found everywhere. Williams’ definitions will be enriched by insights into culture by Matthew Arnold, Edward Burnett Tylor, Franz Boas and James Clifford.

I will continue by addressing the findings of social psychologists Hazel Rose Markus and Shinobu Kitayama (1991), who have given more depth to Williams’ ‘social’ aspect of culture and his ‘structure of feeling’ through their insights on the nature of the self. In their research, Markus & Kitayama (1991) offer the oppositional example of Asian and Western cultures in order to present that people in different cultures have strikingly different construals of the self, of others, and of the interdependence of the two. These different construals have a powerful and formative influence, determining the nature of individual experience, thus challenging the assumed uniformity of cognition, emotion and motivation and making these areas culturally and personally significant. (Markus & Kitayama 1991)

In our modern world, the global reality is becoming harder and harder to dissect and pigeonhole. Cultural boundaries are becoming porous, causing each other to transform more rapidly than before. Definitions of gender are also becoming diffuse, with both men and women accepting the nature of the other sex within themselves. Throughout this thesis, I have been guided by the necessity of the realisation of difference brought on by boundary as a medium towards transformation and unity. The invitation of the other, the boundary, is being felt and will perhaps in time bring forth unity. The next step will thus be to identify the nature of transformation.

I will proceed by addressing a parallel trend in science, which sees evolutionary theory united in biology and anthropology. I will present the theories of renowned scientists, such as Mesoudi, Whiten & Laland (2006), Boyd & Richerson (1985/2006), Dunbar, Knight & Power (1999), Goldstein (1999) and Weinstock (2010) who see biology and culture as inextricably linked; some going as far as to assert that the capacity for culture is in fact a biological adaptation. According to Boyd & Richerson (2006), culture profoundly alters human evolution, not because it is learned, but because it enables a process of cumulative adaptation, in a manner much faster than genetic evolution and allows human populations to evolve cultural
adaptations to local environments. According to Mesoudi, Whiten & Laland (2006) as well as Dunbar, Knight & Power (1999), culture exhibits key Darwinian evolutionary properties. Mesoudi, Whiten & Laland (2006) assert that inheritance of successful cultural traits is plausible, with cultural selection occurring as a result of competition for limited attention, memory and expression. They also support that there is a continuum of ‘intentionality’ likely present in both biological as well as cultural evolution, ranging from blind, unconscious, undirected selection to goal-directed, conscious, directed selection.

The question I will attempt to address next is what triggers this evolution. Cultures, by predisposition, both embrace and resist change. According to James Clifford (1988, p.235): “A powerful structure of feeling continues to see culture, wherever it is found, as a coherent body that lives and dies. Culture is enduring, traditional, structural (rather than contingent, syncretic, historical). Culture is a process of ordering, not of disruption. It changes and develops like a living organism. It does not normally ‘survive’ abrupt alterations.” Seeing culture as a living system, I will proceed with the significant and diverse issue of emergence, as it informs the notion of transformation. Emergence studies complex phenomena and their emergent properties in a wide range of disciplines, biology, economy, language and architecture among others, making its universal nature evident. Emergence goes far beyond appearance by studying the irreducible complexity of ‘wholes’, systems whose nature is not to be deduced from its components. (Weinstock 2010) Michael Weinstock (2010) asserts that the evolution of civilisation can be seen as an emergent system, as it has increased in complexity through time. According to Weinstock (2010), increasing complexity within a system is characterised by increased differentiation and increased connections, in conjunction with an accelerated flow of energy and this can trigger emergence. This shared ‘architecture’ is discernable both in civilisation and nature as they are both subjected to a flow of energy, information and material during their evolution.

It will thus be revealed that cultural evolution is informed by the processes associated with genetic / biological evolution. Culture is revealed as a living, evolving
organism, as an expression of the boundary concept, a system whose viability depends on its ability to transform itself through creative opposition. Our genetic evolution has gifted us with the capacity to create culture and this unique human adaptation has ensured our survival.

Throughout the previous stages of the thesis, I have seen the creative tension, the dialectical unity that the boundary implies as a necessary driving force to achieve transformation and here I will attempt to present how this informs the evolution of culture. The transformation of culture through time reflects its nature as a living system and the perpetuation of transformation is seen as an essential point to the survival of a culture. In order to survive, a culture needs to exist in a dynamic symbiosis with its surrounds and to do so it triggers its own and unique transformation and emerges as an expression of these tensions. As seen at the end of the last chapter and in Four Quartets: Burnt Norton, the element of time also becomes paramount. The boundary between the synchronic and diachronic interpretations reveals culture as a complex whole. In order to survive, a culture needs to exist in a dynamic symbiosis with its surrounds and it thus becomes an expression of these tensions.

During the analysis of the emerging cultures of the Aegean (4th year dissertation thesis), I had come across this process of creation in the example of Classical Greece and its genesis through the boundary between the Minoan and Mycenaean cultures. (Saridaki 1998) It was interesting to see how these individual systems were combined to create, through the passing of time, a unique whole, making their interaction just as important as the outcome. The two cultures were drawn to each other by their difference and their dynamic natures provoked a series of adaptations in each other. (Saridaki 1998) Their dialectic nature is symbolised in the goddess Athena, in whose image discern not only wisdom and artistic expression but also a warlike nature and the tenderness of the mother goddess, is discerned. (Hawkes 1968) Through the melting pot of the Aegean, these two cultures met and engaged in an exchange of forces that only made them stronger. The resulting birth of Classical Greece could not have come into being if these two opposing elements had not
engaged in this powerful way. In the current thesis, these findings reflect a deeper and wider scope. The concept of boundary lay dormant in that early stage in my mind and it is here informed by emergence. The boundary concept finds here a true expression of the potential strength and depth of meaning that a dynamic unity can create. The example of the civilisation of classical Greece born out of this interaction is the ultimate expression of the concept of boundary. The nature of our mind drives it.

5.1 **Creation of culture**

At this stage I will attempt to approach the meaning of culture; an arduous and complicated task because of the widespread use of the word in diverse disciplines and systems of thought. This is the reason given by renowned Welsh academic Raymond Williams (1921-1988) who frustrated by its complexity said “… culture is one of the two or three most complicated words in the English language …” and that he “… wished that [he]’d never heard the damned word.” (Williams quoted in Smith, 2001, p.1; Bennett, 1985, p.63)

5.1.1 **Analysing and defining Culture through time**

The human species is unique on earth by being the only living species that has and is able to produce culture. But what do we mean by culture? Etymologically *culture* stems from the Latin word *colere* meaning, ‘to cultivate’, “… referring to the process of cultivation, caring, or tending, culture implied growth and improvement.” (Bennett, 1985, p.65) This meaning can, however, also refer to evolution. In Greek there is no such word as culture. The corresponding word used for culture is the same one as that used for civilisation and it is πολιτισμός (*politismos*). Πολίτης (*politis*) is the citizen and πόλις (*polis*) is the city. Man and his built environment, in this context, is paramount in the expression and communication of culture. He and the urban condition he has created are the vehicle of the communication and evolution of culture. (Saridaki 1999)
Defining the meaning of culture is made more complicated by the fact that its very definition has undergone a transformation through the years. This transformation is very informing as it provides remarkable insight into the evolution of language and thought through time.

The co-evolution of language, thought and experience was the driving force behind Raymond Williams’ (1983) groundbreaking work *Culture & Society: 1780-1950* (first published in 1958). In this book, Williams (1983) based his analysis on the study of British literary history and the insight it provided him into the pivotal transition in the evolution of mankind brought about by the Industrial Revolution. The fundamentally new social and cultural relationships and issues that were triggered by this historical transition were first felt in Britain before changing the world, as it was known then. By studying the written words of the people that lived during this transition, Williams (1983) drew insight from the way they tried to give meaning to their experience. This established the essence of culture as a transformable, lived and certainly not abstract entity. Discerning a general pattern of change in the use of language, Williams mapped out the wider changes in life and thought to which the changes in language refer. (Williams 1983) He singled out five key words: industry, democracy, class, art and culture as representative of their position in our modern structure of meanings. (Williams 1983) In his own admission, Williams (1983) used his research for this work “… as a way of finding a position from which [he] could hope to understand and act in contemporary society, necessarily through its history, which had delivered this strange, unsettling and exciting, world to us.” (Williams, 1983, p.xii)

This book led Williams to formulate a very coherent and influential definition of culture in his essay *The Analysis of Culture* (published in 1961), which is still relevant today. (Williams, in Storey, 2006) In this essay, Williams (2006) identifies three general categories for analysing culture but he sees these variations of the term not as a disadvantage but “… as a genuine complexity, corresponding to real elements in experience” and insists that no analysis is complete if it does not refer to
all three. (Williams, in Storey, 2006, p.33) These categories are the ‘ideal’, the ‘documentary’ and the ‘social’ definitions.

According to Williams, culture as an ‘ideal’ reflects “… a state or process of human perfection, in terms of certain absolute or universal values.” (Williams, in Storey, 2006, p.32) In this analysis, one would seek a universal order in the human condition. This is largely the standpoint of cultural critics Matthew Arnold (1882-1888) and F.R. Leavis (1895-1978). Arnold in particular defines culture as ‘the best that has been thought and said in the world’. (Arnold, cited in Storey, 2006) He thus saw culture as the premise of the few, which could provide improvement but he opposed it to the culture of the working class, which he labelled anarchy. Storey (2006, p.4) offers a now politically incorrect and Eurocentric biased quote from Arnold: “The highly-instructed few, and not the scantily-instructed many, will ever be the organ of the human race of knowledge and truth. Knowledge and truth in the full sense of the words, are not attainable by the great mass of the human race at all.”

Many people still retain this Arnoldian idea of culture developed in the 18th and early 19th centuries, which identifies culture with a ‘higher’ level of civilisation, a progressive refinement and sophistication of human behaviour that is in stark contrast to man’s animal nature and material needs. This notion of culture led to the unequal treatment of ‘savage’ peoples by ‘civilised’ colonialists, which permitted the classification of cultures as less civilised, leading to atrocities whose effect is still discernable today. In more recent times, sociologists rejected the opposition of culture to civilisation and the existence of higher and lower levels of culture. In time, the definition of culture developed to accommodate a wider variety of expressions, keeping at its core human evolution and human nature as the prerequisite of cultural creation and expression.

Edward Burnett Tylor (1832-1917), considered the father of modern anthropology, writing from the perspective of social anthropology in the U.K. described culture in the following way: “Culture or civilisation, taken in its wide ethnographic sense, is that complex whole which includes knowledge, belief, art, morals, law, custom, and
any other capabilities and habits acquired by man as a member of society.” (Tylor, 1976, first published: 1871, p.1) Art and the materiality of culture, in fact, reflect Williams’ second definition of culture, the ‘documentary’ category in which “… culture is the body of intellectual and imaginative work, in which, in a detailed way, human thought and experience are variously recorded.” (Williams, in Storey, 2006, p.32) The inclusion of beliefs, morals and customs in Tylor’s statement widens the scope by its reference to a complex whole. This is partly what Williams implies in his third definition of the ‘social’ aspect of culture. Tylor, however, ruined his own statement in our modern eyes by proceeding to arrange different cultures into evolutionary stages representing progress in a scale between the extremes of savage and cultured life. (Bennett 1985)

German-American anthropologist Franz Boas (1858-1942) was a pioneer as he asserted that cultures were of equal value and every human society is fully cultural. (Clifford 1988) According to Bennett (1985), Boas opposed the arrangement of cultures according to evaluative hierarchies choosing instead to define them according to their differences from one another. In fact he became the first social scientist to speak of cultures in the plural. (Bennett 1985) In this sense, culture reflects a continuum of existence of a people unique and distinct from their surrounding human environment. Difference is indeed a defining point here as it becomes evident not only in the physical expression of a culture (‘documentary definition’); namely tools, implements, utensils, clothing, ornaments and other artefacts such as literature but most importantly in its non-physical attributes (‘social definition’) namely customs, institutions, ideas, beliefs, taboos, rituals and of course language.

Williams’ third category, the ‘social’ aspect of culture, refers to culture as “… a description of a particular way of life, which expresses certain meanings and values not only in art and learning but also in institutions and ordinary behaviour.” (Williams, in Storey, 2006, p.32) Seeking the implicit and explicit value and meaning in a particular way of life, this analysis removes the elitist definitions that saw culture in the hands of the few; culture is to be found everywhere. (Bennett
American historian James Clifford (1988) suggests that modern culture and art ideas can only function together within an ‘art-culture system’ as mutually reinforcing domains of human value.

Williams’ second and third categories, the ‘documentary’ and ‘social’ aspects of culture are perhaps harder to distinguish from each other than one might think. This has to do with the fact that the material and the social merge; they are bound by the symbolic structures that give them significance. The term culture is often used to refer to the universal human capacity to classify, codify and communicate experiences symbolically. American anthropologist Clifford Geertz (1926-2006), an advocate of symbolic anthropology, was famous for his ‘thick-description’ of culture, which demanded a detailed inquiry in explaining with great detail the reasons behind human actions. (Geertz 1973) His concept of culture is essentially semiotic and in need of decipherment of its signs. (Brooks 2011) For Geertz culture is “… a system of inherited concepts expressed in symbolic forms by means of which men communicate, perpetuate, and develop their knowledge and attitudes toward life.” (Geertz, 1973, p.89) This ability to symbolise has long been seen as a defining feature of humanity.

All peoples in all times and places have possessed culture. In the course of his evolution, man displays his ability to symbolise and conceptualise his environment, developing within it and becoming capable of expression. According to American anthropologist Leslie White: “We call the ability freely and arbitrarily to originate and bestow meaning upon a thing or event, and, correspondingly, the ability to grasp and appreciate such meaning, the ability to symbol.” (White, 1949, p.3) In his book *Science of Culture*, White (1949) was seeking a way to define culture through the recognition of cultural ‘objects’ stating questions: “What sort of objects are they? Are they physical objects? Mental objects? Both? Metaphors? Symbols? Reifications?” (White 1949) He concludes that they are objects *sui generis*, meaning of their own kind and he used the term ‘symbolate’ to define them, meaning an object created by the act of symbolisation. He thus defined culture as ‘symbolates understood in an extra-somatic context’. (White 1949)
Religion and language are the most characteristic of human traits that were born by our ability to symbolise. Religion, coming from the Latin *religare*, meaning ‘to bind fast’, as well as general belief systems, constitute an integral part of a culture. They define a culture’s essence by representing a collectively accepted set of codes that permeates through to a variety of expressions within the culture, be it customs, myths, behaviour, taboos, artefacts etc. Holy water, for example, is not just a liquid that exists in nature but also a meaning or value derived from man, something that cannot be grasped or appreciated only with the senses. Symbolisation, according to White (1949), refers to the trafficking of meaning by non-sensory means. Symbols make culture possible, reproducible, readable and alive. Defending symbolism Geertz’s declares that: “To look at the symbolic dimensions of social action -art, religion, ideology, science, law, morality, common sense- is not to turn away from the existential dilemmas of life for some empyrean realm of de-emotionalized forms; it is to plunge into the midst of them.” (Geertz, quoted in Brooks, 2011, p.15)

Going back to the third category, the ‘social’ aspect of culture that describes a particular way of life, Williams (2006) proposes to seek for the implicit and explicit value and meaning in a particular culture and calls it a *structure of feeling*. He indicates the perils of the effort and asserts that we can never claim absolute knowledge of the structure of feeling of a given culture by analysing it from the outside, as certain elements will always be irrecoverable: “The most difficult thing to get hold of, in studying any past period, is this felt sense of the quality of life at a particular place and time: a sense of the ways in which the particular activities combined into a way of thinking and living.” (Williams, in Storey, 2006, p.36) In the living experience of a culture, Williams emphasises that “… every element is in solution, as an inseparable part of a complex whole.” (Williams, in Storey, 2006, p.36) What makes it, however, even harder for us to approach is that this structure of feeling does not appear to be learned, suggesting that each new generation responds in its own way to the unique world it is inheriting, bringing forth new elements that
cannot be foreseen. (Williams 2006)\textsuperscript{14} When a culture is lost, however, its ‘documentary’ aspects can provide us with some insight into this structure of feeling and this is precisely what Williams did in his 1958 book *Culture & Society: 1780-1950*.

We do need to be conscious, however, that our particular interpretations are intimately bound with our own structure of feeling, hence our radically different interpretations for just about everything throughout history. (Williams 2006) According to American historian James Clifford (1988, p.232): “Every appropriation of culture, whether by insiders or outsiders, implies a specific temporal position and form of historical narration.” However, it is not just the space-time context that is critical in the interpretation of culture but also the construal of the self.

### 5.1.2 Culture and the Self

In their research, social psychologists Hazel Rose Markus and Shinobu Kitayama (1991) have given more depth to Williams’ ‘social’ aspect of culture and his ‘structure of feeling’ through their insights on the nature of the self. According to Markus and Kitayama (1991, p.224) “[p]eople in different cultures have strikingly different construals of the self, of others, and of the interdependence of the two.”

In their article, *Culture and the Self: Implications for Cognition, Emotion, and Motivation*, Markus & Kitayama (1991) assert that these construals have a powerful and formative influence, determining the nature of individual experience. In their research, they offer the oppositional example of Asian and Western cultures and more specifically Japanese and American, which led them to formulate the notions of the interdependent and independent construals respectively. Bounding in this way psychology and anthropology, Markus & Kitayama (1991) are challenging the assumed uniformity of cognition, emotion and motivation, making these areas culturally and personally significant. In their findings, the American examples seem to stress an attention to and an assertiveness of the self and a difference to others,

\textsuperscript{14} I will return to this again in the following stages of the thesis, during the examination of the emergence of Classical Greece through the creative union of the Minoan and Mycenaean cultures.
whereas the Japanese examples tend to emphasise a harmonious fitting in with others. These expectations are deeply imbedded in the cultural DNA and become an indivisible part of the reality of these cultures and how this reality is experienced by the individual. According to Markus & Kitayama (1991, p.226): “The exact content and structure of the inner self may differ considerably by culture. Furthermore, the nature of the outer or public self that derives from one’s relations with other people and social institutions may also vary markedly by culture.”

In the diagram above, Markus & Kitayama (1991) identify the differences between the independent and interdependent view of self, based on the degree to which they see themselves as separate from or connected to others. (fig.5.1) The X’s within the circles represent the various aspects of self or others. Some circles intersect, but when there is as X in the intersection it “… refers to a representation of the self-in-relation-to-others or to a particular social relation (e.g. “I am very polite in front of my professor”).” (Markus & Kitayama, 1991, p.226)

The perception of the independent view of the self and its role within the culture it belongs to, is reflected in the following quote from Geertz where the person is viewed as: “… a bounded, unique, more or less integrated motivational and cognitive universe, a dynamic center of awareness, emotion, judgement, and action organized into a distinctive whole and set contrastively both against other such wholes and against a social and natural background.” (Geertz, quoted in Markus & Kitayama, 1991, p.226) In Western cultures the independence of the self, its uniqueness and
wholeness is viewed as evident. In Eastern cultures, “… the self is considered ‘a fraction’ and becomes whole when fitting into or occupying one’s proper place in a social unit.” (Markus & Kitayama, 1991, p.246)

In our modern world, the global reality is becoming harder and harder to dissect and pigeonhole. Cultural boundaries are becoming porous, causing each other to transform more rapidly than before. Definitions of gender are also becoming diffuse, with both men and women accepting the nature of the other sex within themselves. Throughout this thesis, I have been guided by the necessity of the realisation of difference brought on by boundary as a medium towards transformation and unity. The invitation of the other, the boundary is being felt and will perhaps in time bring forth unity. In the mean time, I proceed in the journey of transformation.

5.1.3 Cultural transformation

It is important here to point out a major parallel trend in science. The subject of evolutionary theory both in biology and anthropology, is traced in their shared goals “… to reconstruct the history of certain traits and to identify general patterns of change.” (Mesoudi, Whiten & Laland 2006, p.333) Initially, the reaction of the social sciences to the application of biological insights and examination in anthropological study was met with suspicion and negativity mostly because it was based on the misunderstanding that socio-biology supported that culture is learned; the age-old nature vs. nurture debate. However, “[d]istinctions between nature and culture now also have a weaker force as a result of the increasing sense that the relations between these are best thought of as porous and permeable.” (Bennett, 1985, p.68)

- Unifying genetic and cultural evolution

In their book, Culture and the Evolutionary Process, Boyd & Richerson (1985) advocate their dual-inheritance theory, which sees cultural evolution as an indivisible aspect of evolution generally; one that cannot be separated from the biological.
According to Boyd & Richerson (2006) culture profoundly alters human evolution, not because it is learned, but because it enables a process of cumulative adaptation in a manner much faster than genetic evolution and allows human populations to evolve cultural adaptations to local environments. In their book Not by Genes Alone: How Culture Transformed Human Evolution, Richerson & Boyd (2005b) argue that our psychology is uniquely adapted to create culture. They continue in this line of questioning and demonstrate that biology and culture are inextricably linked and assert that the capacity for culture is in fact a biological adaptation. They thus define culture as “… information capable of affecting individuals’ behaviour that they acquire from other members of their species through teaching, imitation, and other forms of transmission.” (Richerson & Boyd, 2005b, p.5)

According to Mesoudi, Whiten & Laland (2006) as well as Dunbar, Knight & Power (1999) culture exhibits key Darwinian evolutionary properties. Mesoudi, Whiten & Laland (2006) assert that inheritance of successful cultural traits is plausible, with cultural selection occurring as a result of competition for limited attention, memory and expression. They also support that there is a continuum of ‘intentionality’ likely present in both biological as well as cultural evolution, ranging from blind, unconscious, undirected selection to goal-directed, conscious, directed selection. Boyd & Richerson (2006), support that the transmission of cultural variation does not occur in the same way as with genes and they also believe in this apparent intentionality, which they call ‘guidance system’. They support that this guidance system is like an innate design tool that steers the cumulative cultural adaptations and suggest that it may have to do something with our propensity to adopt dangerous beliefs that leads us to successful cultural adaptations. This designing guidance system is innate.

Going back to the beginning of the thesis, Mithen (1996) suggested the idea of cognitive fluidity, as a result of an interaction and merging of our distinct intelligences within a super-chapel, giving us the means for the capacity of symbolic thought. Symbolic thinking is culturally relevant. It could, thus, be possible that our cognitive fluidity; informed by culture and merging the self and the environment,
acts as this innate designing guidance system. This would, in fact, make sense, as it would mean that the cumulative cultural adaptations would become active in a much faster way than genetic evolution, making sure that man is able to keep up with the rapid changes in his environment. It could, in fact, mean that the propensity to create culture is proven as the most vitally important adaptation of all. In the process of presenting boundary as an ontological, inherited/existential force that consciously or subconsciously drives the formation of environment and the realisation of being, it has been important to examine the meaning and implications of cultural transformation, as it is possibly the most profound manifestation of man on earth. Culture is seen as an expression of the boundary concept, a structure whose viability depends on its ability to sustain its meaning through creative opposition.

Mankind is in fact synonymous to culture. As I presented at the beginning of the thesis, the dawn of humanity coincided with the emergence of language and the propensity of mankind to provide symbolic visualisations of its environment in every aspect of life. Language has been seen as the ultimate code through which culture and in effect the understanding of mankind’s evolution can be examined.

Culture is not only communicated through language (verbal or metaphoric), but also artefacts and the surrounding environment, each carrying distinct codes and messages that provide vital knowledge of the external world and a sense of unity with the environment. This knowledge of culture is transmitted both horizontally within a group, but also vertically learned and transferred from one generation to the next not as a thing but through a process of evolution. The environment plays a formative role on culture as differing physical habitats and resources can influence variation among cultures. Culture is therefore in itself a complex whole. Each culture is the result of the long-term involvement of people with their physical and social environment and since conditions are rarely the same, cultures are generally unique and distinct.

According to Barati (1997), cultural transformation is a complex phenomenon and has far-reaching effects. Continuity and transformation are never-ending, ensuring a
constant pattern of change. This pattern exists in the mind, through associations between people and their interpretation of the world transmitted through knowledge. Human existence should be looked at as a multifaceted whole, a holistic structure. Indeed, culture is a continuous structure of knowledge, not only of physical characteristics but also of an interpretation of the world, of cosmology. “Culture is holistic local knowledge about reality.” (Barati 1997)

Culture and Emergence

According to James Clifford (1988, p.235): “A powerful structure of feeling continues to see culture, wherever it is found, as a coherent body that lives and dies. Culture is enduring, traditional, structural (rather than contingent, syncretic, historical). Culture is a process of ordering, not of disruption. It changes and develops like a living organism. It does not normally ‘survive’ abrupt alterations.”

The question I will attempt to address here is what triggers change. Cultures, by predisposition, both embrace and resist change. There exist both dynamic influences that encourage transformation, as well as conservative forces that resist it. The influences that cause changes can come from various forces. These can appear within a culture as in the change of the position of woman in western cultures. Changes in the natural environment can also instigate change. As we have seen, climatic pressures during the last Ice Age, for example, led to the invention of agriculture and urban culture in general. In the same way as a living organism evolves in order to adapt to the changing environment, its predator or food source, so with culture, it is the contact with other cultures in a globally symbiotic sense that primarily initiates transformation. At this point it would be interesting to visit the significant and diverse issue of emergence as it informs the notion of transformation.

Emergence studies complex phenomena and their emergent properties in a wide range of disciplines, biology, economy, language and architecture among others making its universal nature evident. Emergence goes far beyond appearance by studying the irreducible complexity of ‘wholes’, systems whose nature is not to be
deduced from its components. (Weinstock 2010) The roots of emergence are traced back to Aristotle who more than two millennia ago wrote in his Metaphysics: “The whole is something over and above its parts, and not just the sum of them all …”. (Aristotle, Book H, 1045:8-10, quoted in Weinstock, 2010, p.41). Goldstein (1999) sees emergence as a description of the need to study the whole in a macro level rather than the parts, in order to discern and describe the unique dynamics, laws and properties that are exhibited on the macro-level.

In order for phenomena to be characterised as emergent they need to share the following properties stated in Goldstein (1999). Firstly, it is the radical novelty of the properties of the complex system observed; meaning that they are neither predictable nor deducible from the micro-level. Secondly, that there is a coherence or correlation; meaning that the system maintains a sense of identity over time. Thirdly, that a global or macro level can be identified, on which the emergent phenomena of the system occur. Fourthly, that the system evolves dynamically over time. And lastly, that the emergents can be ostensibly recognised; they can be perceived. The following diagram shows how widespread the roots of the theory of emergence are. (fig.5.2)

![The widespread scientific roots of emergence.](image)

**figure 5.2: The widespread scientific roots of emergence.** Source: Goldstein (1999)
Self-organisation is a paramount factor in emergence. When witnessing the process of a natural system and we are unable to discern an external controlling factor directing its processes, then it safe to assume that the organisation is generated from within the system. (Weinstock 2010) This brings to mind the apparent intentionality in the transmission of cultural variation advocated by Boyd & Richerson (2006), which they called ‘guidance system’. Life itself is the primary emergent phenomenon: “All forms of the world, of nature and civilisation, interact with each other as the environment of any form is comprised of the other forms. Energy, information and material flow between the forms of the world at multiple scales of space and time, and it is the fluctuations in these flows that induce change.” (Weinstock, 2010, p.9) Corals, termite cathedral mounds, shoals of fish and the
symmetry of snowflakes are classic examples of emergent phenomena, appearing in unique and unpredictable forms. (fig.5.3-5.6)

In his book The Architecture of Emergence: The Evolution of Form in Nature and Civilisation, the director of research and development at the Architectural Association in London, Michael Weinstock (2010) asserts that the evolution of civilisation can be seen as an emergent system as it has increased in complexity through time. According to Weinstock (2010), increasing complexity within a system is characterised by increased differentiation and increased connections in conjunction with an accelerated flow of energy and this can trigger emergence. This shared ‘architecture’ is discernable both in civilisation and nature as they are both subjected to a flow of energy, information and material during their evolution. “No system in nature or civilisation is closed – that is to say there is always a continuous exchange of energy and material across the ‘boundary’ of the system. … The presence or absence of negative and positive feedback is critical to all systems, as are the boundary conditions of the system, and the relations to an environment that lies outside of those boundaries.” (Weinstock, 2010, p.36)

This flow through the boundary of the system is a prerequisite for transformation. Throughout this thesis, I am attempting to reveal that this boundary does not belong to the system, it is precisely the locus of unification of the system with the environment, the locus of kinship. The catalyst, the internal directing process that triggers emergence, is the human mind working in unity with the cosmos in a part to whole relationship.

As I have shown in the previous section, culture is transmitted not only vertically through time from generation to generation, but also horizontally between social groups. I have identified that this is, in fact, an evolutionary adaptation that enables man to adapt more rapidly to his changing environment. According to Weinstock (2010), this forms a significant difference with biological emergent systems, as they transform in order to adapt to their environment through time, whereas the evolution of human culture has often instigated the adaptation of the environment for the
benefit of the human species. Culture is a system distinct from but still connected to the biological system. Every culture evolves as part of a unique environment both natural and man-made. Continuous contact between cultures can bring about a process of change, which anthropologists call ‘acculturation’, while the changes triggered will reflect the nature of the contact. (Weinstock 2010) According to Weinstock (2010, p.26) “… peaceful contact will result in the emergence of a new variant, in which the beliefs and practices of both societies merge and hybridise, while political, economic or military domination will usually result in one society completely absorbing the other’s cultural patterns by a process of selection and modification.” Of course this is not a clear science of prediction as the emergent phenomena are ultimately unpredictable.

During my analysis of the emerging cultures of the Aegean (4th year dissertation thesis) I had come across this process of creation in the example of Classical Greece and its genesis through the boundary between the Minoan and Mycenaean cultures. (Saridaki 1998) It was interesting to see how these individual systems were combined to create, through the passing of time, a unique whole, making their interaction just as important as the outcome. The two cultures were drawn to each other by their difference and their dynamic natures provoked a series of adaptations in each other. (Saridaki 1998) In the current thesis, these findings reflect a deeper and wider scope. The concept of boundary lay dormant in that early stage in my mind and it is here informed by emergence.

Throughout the previous stages of the thesis I have seen the creative tension, the dialectical unity that the boundary implies as a necessary driving force to achieve transformation and how this informs the evolution of culture. The transformation of culture through time reflects its nature as a living system and the perpetuation of transformation is seen as an essential point to the survival of a culture. In order to survive, a culture needs to exist in a dynamic symbiosis with its surrounds and to do so it triggers its own and unique transformation and emerges as an expression of these tensions.
Although cultural transformation can be seen in any part of the world and at any moment in time, the example of the Minoan and Mycenaean cultures is a pertinent one, since, as mentioned at the beginning of the thesis, it displays the genesis of the boundary concept in my mind, during the research for my 4th Year Dissertation Thesis (1998) *Bronze Age Civilisation in the Aegean; The Emergence of Urban Culture*. The example of the interaction of the Minoan and Mycenaean cultures that met and engaged in an exchange of forces, instigating the birth of Classical Greece is the ultimate expression of emergence and of the concept of boundary as a driving force in our world.

5.2  **Culture as an expression of dynamic unity:**  
*The birth of classical Greece through the opposition of the Mycenaean and Minoan civilisations*

This section is aimed at providing an example of man’s complex existence within his environment and his attempt to interpret and transform it into culture. This he does by inviting and being invited to challenge and reinterpret his worldview by opposing it to his surrounding world; in this case another culture. He initiates the transformation of his culture while at the same time causing the ‘other’ to transform. In this example, this creative tension, as I will present, brought forward an extraordinary birth. Through the opposition of the Mycenaean and Minoan civilisations and the marine networks of the Aegean that became their melting pot, classical Greece was born. (Saridaki 1998)

5.2.1  **Bronze Age civilisations in the Aegean:**  
*The emergence of urban culture*

Civilisation in the Greek lands, at the dawn of the Bronze Age, is believed to have been inspired and influenced by ideas, which came chiefly from the advancing cultures of Mesopotamia and Egypt. The Aegean islands, especially the Cyclades and Crete played the chief role in transmitting these ideas, inspirations and technical advances to
Greece. Until relatively recently, though, there was no proof for the existence of this continuity and development, evident in the Aegean since the third millennium BC. The Hellenic culture represented until recently only by Classical Greece, appeared isolated in time and space.

The Mycenaean civilisation, unearthed by German archaeologist Heinrich Schliemann (1822-1890) at the end of the 19th century, was the first proof given to the historical value of the Homeric Epics that widely refer to the heroic era of the Greek past, one that existed before the miracle of Classical Greece. The discovery of the ruins and artefacts of the palace of Knossos, at the beginning of this century, by British archaeologist Sir Arthur Evans (1851-1941), brought to light a new, unknown civilisation, the Minoan. This culture reached its peak at an earlier time, forming a clearly individual identity, whose impact proved extremely influential to its neighbours during its life span (Saridaki 1998). Excavations in Akrotiri, in the island of Thera (Santorini), as well as in a number of other Cyclades, gave further grounds to the above but also established a third paragon, a link between the development phases of the civilisations, bringing them closer together, earlier than it was originally thought.

In my 4th Year Dissertation Thesis (1998) Bronze Age Civilisation in the Aegean; The Emergence of Urban Culture, the intention was to examine and analyse the results of the inter-relations of these cultures, their fusions, their distinct identities and parallel progress, individually and as a whole. Urban structures, through time, were used as a representative tool for examining the development and identity of the individual cultures. This process was facilitated by interpreting the social structure, analysing and comparing the birth and evolution of urban communal life and the larger scale networks that were the backbone of development and survival of these cultures. In the following section, I will attempt to distil the message of this thesis and present how it reflects the concept of boundary.

5.2.2 The awakening of civilisation in the Aegean

The emergence of the civilisations in the Aegean came at a time when the East was becoming a dynamic centre of progress and a revolution was taking place for the
history of mankind. According to Mumford (1966) the great city-states appeared first in Mesopotamia and then the Valley of the Nile. These eastern centres became centres of spreading of ideas, inspiration and new technology. People were concentrated in big urban settlements and dynasties, priesthood and great palaces with greater still temples, emerged. The clear separation of social classes (from slaves to God/Kings) and the monumental art begin to show a new ideology, towards a superhuman or even inhumane character. It is obvious that the Bronze Age for the East was not just a technological change but also a radical diversion of man’s development, the poetic effects of which I have already mentioned in the analysis of the epic of Giglamesh in chapter 2.

Greece, though, has always been a poor country; its wealth has lain in the ingenuity, talents and industry of its people. To compete with and gain from its neighbours it had to turn these energies outwards; it would have to export or die. (Schallin 1994) This driving force, evident modestly in the early stages of the Cycladic civilisation, was behind both the Minoan and the Mycenaean cultures and raised them from a humble status to a position of great wealth and power.

Most obviously of all, the Old-Palace civilisation of Crete came as a natural development of the Pre-Palace period under the direct influence of these Eastern cultures. However, it would be a mistake to think of it as substantially eastern in character, because it was certainly distinctive enough to be treated as an original creation. (Christopoulos 1974) (fig.5.7-5.9) With the urbanisation of life and a radical change in the system of government, Crete naturally adopted some cultural elements long present in the East, but until then unknown in the Aegean. (Castleden 1994) But in Crete, “... the concentration of power in the hands of kings seems to have been balanced by popular participation in the management of public affairs, while the conception of theocratic kingship was not predominant as in the East”. (Christopoulos, 1974, p.169) According to Castleden (1994) there were no large temples and no place for a powerful hierarchy of priests; the deity was worshipped in small shrines, as an almost household figure, or in peek sanctuaries.
The Greek legend concerning the admirable state of law and order on Crete and the sense of justice of its rulers becomes more evident in the New-Palace period, but it is certain that the Minoans were, from the start, a peaceful, free and independent people with a keen taste for the joys of living. (Castleden 1994) The innumerable frescoes showing aspects of life and religion, the sensitivity and sophistication in arts and architecture, their love of luxury goods and worship of nature, indicates a cultural ideology vastly different from that of the East, one characteristic to their own personality.
5.2.3 The character and interaction of cultures

The Minoan palace age society was clearly very advanced in its orderly and bureaucratic organisation, showing a rational and practical side with highly developed craft technologies, and yet it also possessed all the imaginative power and childlike freshness of a very young culture. (Castleden 1994) This can be explained by their exalted but humanised religious life, so wholly connecting man with nature, as in his sacred union with the goddess of nature (Epiphany). (fig.5.10) For the Minoans, the feeling of affection, which had come to characterise man’s attitude towards nature, developed into a special sort of sensibility, a leaning to what was gentle in life, retaining its mysterious energy. (fig.5.11-5.13)

figures 5.10-5.11: The tenderness towards nature displayed in Minoan art: The sacred Marriage (Epiphany) as a re-enactment of the eternal circle of life in nature. Gold seal ring from the Late Minoan I period. Source: Heraklion Archaeological Museum, Ministry of Culture / Archaeological Receipts Fund. Fresco of sport or ritual of ‘bull-leaping’ from the east wing of the palace at Knossos (the red skinned figure is a man and the two light skinned figures are women). Source: (Kofou 1992)

figures 5.14-5.15: The original 'labyrinths': avoidance of symmetry and formalisation coupled with an ingenious use of the site and planning. The Palaces at Knossos and Phaistos. Source: www.ancient-greece.org

figures 5.16-5.17: Astonishing detailing and ingenuity in domestic Minoan architecture, demonstrating a peculiar modern character. The "Town Mosaic": models of house facades made of faience plaques from the temple repository, in Knossos. Source: (Michailidou 1993) Clay house model from Archanes, near Knossos. Source: (Michailidou 1993)

The peculiar Cretan mentality, which appears even in their Neolithic houses, imposed a disorderly and seemingly romantic character on all Eastern borrowings. (Lawrence 1973) The plans show an avoidance of symmetry and look all the more chaotic because of the multiplicity of similarly sized small rooms. (fig.5.14-5.15) This however was not mindless architecture. “The Minoans obviously saw no advantage in symmetry and may have been lovers of the picturesque at all costs; in
fact their architecture resembles their other arts in showing little sense of form. (fig.5.16-5.17) But the planning of their palaces, was very largely dictated by an obligation to segregate groups or suites of rooms; bearing that principle in mind, their attitude is generally seen to be logical and due to meticulous ingenuity.” (Lawrence, 1973, p.34)

The inhabitants of the island of Thera (Santorini) borrowed many elements from the Minoans in the sphere of building technology and art, however, this “... borrowing was selective and the foreign traits were absorbed into local Cycladic tradition in such a way that a distinctive Creto-Cycladic order of architecture was created, denoting above all the prosperity of Theran society.” (Doumas, 1992, p.42) Art and architecture, in general, as a representation of the society that has created them, reveal here a people with a high standard of living, peaceful and joyful. Their characteristics include a vivid imagination and a freedom of expression, an advanced ‘sociability’ and affability, qualities entirely harmonised with the urban structure that enclosed them (Doumas 1992). (fig.5.18-5.22)

figures 5.18-5.19: The peculiar ‘European’ character evident in the prosperous Theran settlement of Akrotiri, on the island of Thera (Santorini).
View of the ruins buried by the volcanic eruption. Source: (Doumas 1992)
View of the West House showing the ‘Large Window of Appearances’ and a second floor. (ca 1500BC) Source: www.ancient-greece.org
Indeed, it would not be an exaggeration to say that these people developed the first European civilisation, not only because of its geographical significance, but also in its relevance to values and characteristics of modern society. (Hood 1971) Their character as a culture, their way of life -its influence portrayed so vividly in Akrotiri-, their balanced coexistence with other cultures and within their own and their idealistic respect of nature, brings them closer to modern European ideals than to those of their synchronous Eastern neighbours. “The eye of discernment or of faith can distinguish something peculiarly European in it, something which was inherited by the civilisation of Classical Greece and ultimately by our own.” (Hood, 1971, p.11)

During the brilliant New-Palace period, Crete became the centre of the Aegean world, and when the moment came for the now mixed race of the Helladic people to emerge from their state of stagnation, experiencing themselves what they previously had known of through their link with the Cyclades, the influence of Minoan culture was so fruitful that there was a wholesale transplantation of the Minoan spirit, which was most evident in art (Taylour 1983). (fig.5.23) The Mycenaean rulers turned themselves in time, from barbarian chiefs into palace-dwelling princes. (Taylour 1983) This might never have happened if not for the exposure to this other culture.

figures 5.24-27: Obvious in their architecture and partly in their art, the Mycenaean retained the masculine character of their culture.
Aerial view of the citadel of Mycenae. Source: (Mylonas 1996)
The cyclopean masonry and the relieving triangle of the Lion Gate at Mycenae. Source: www.ancient-greece.org
Bronze Mycenaean daggers with impressed decoration. Source: (Iakovides 1999)
The ‘Warrior Vase’ from Mycenae, Lower Citadel. Source: (Mylonas 1996)
Despite all the Minoan influence, though, the basic character of the civilisation on the mainland remained Helladic. The Mycenaeans retained their identity, their masculine, warrior temper, fortifying their citadels and glorying in the possession of splendid weapons; impressing the seal of their own culture on whatever they adopted: “They were chiefly distinguished by the organising spirit of men who had become conscious of the value of the human factor, their thought had advanced to the abstract level of a higher logic which strove to impose on all creation its own laws of inner truth, those laws precisely which would later be applied by the Greeks on a much broader scale during the Geometric, Archaic and Classical periods.” (Christopoulos, 1974, p.253) (fig 5.24-5.27)

The Mycenaeans assimilated the sophisticated character of Minoan life; however, they retained a liking for plainness of an order in which the masculine and aggressive spirit were more prominent. (Taylour 1983) Religion, though minoanised, showed an obvious trend towards an anthropomorphic multi-figure pantheon, as it will appear in the epic circle and Classical Greece. According to Taylour (1983), the Linear B tablets reveal a new political, social and economic organisation, based on military supremacy, rather than any theocratic concept and so certainly not Minoan.
In art, the Mycenaeans imitated the Minoans, but in other fields, they kept their preference for abstraction and tectonic organisation. The laws of harmony and symmetry were more highly valued than naturalism and came as an expected consequence to their temperament. (fig 5.28-5.29)

5.2.4 Birth of a Culture: Classical Greece as the result of cultural evolution, blending the Minoan (female) and Mycenaean (male) civilisations

The greatest achievements of Classical Greece grew out of the events of its prehistoric past. The most crucial phase was in the days of the Mycenaean kings in the closing centuries of the Bronze Age, but its genesis was much earlier. (Saridaki 1998) Speaking metaphorically, this genesis took place when a predominantly feminine force (the Minoan) united with a predominantly masculine one (the Mycenaean). This metaphor, though, has substantial meaning. The spontaneous creation of cultures and civilisations through an interplay of time and place, evokes variations in the human psyche and its potentials. (Saridaki 1998)

According to Hawkes (1968), in the Minoan spirit, the sense of the worshipful and sacred upon the maternal power, undoubtedly strengthened the feminine element in the individual psyche and hence throughout society. In the Mycenaean spirit, the aggressiveness and war preoccupation translated masculine features in their culture. In this sense, the Minoans and the Mycenaeans were different; one evolved a highly permissive outlook in life, while the other a repressive; one paid respect to peaceful arts, while the other to warlike expressions; one thought of the enjoyment in this life, while the other was preoccupied with death and its service. “In Greece and the Aegean the two met, and there ensued some degree of racial mingling and almost complete cultural fusion.” (Hawkes, 1968, p.19) In acknowledgement to its creators, this civilisation that was to influence the birth of Classical Greece, is often referred to as Creto-Mycenaean civilisation.
Athena symbolises the fruits of the union between the Minoan and Mycenaean civilisations, as she represents the fine balance between the warlike goddess and the protector of cities with her intellectual pursuits enriched with female skills. Her wisdom came from this balance between the creative poles of life. In fact, at least four of the symbols of the Minoan goddess (the snake, the bird, the pillar and the shield) were to be inherited by the Classical Athena. (Hawkes 1968) (fig.5.30-5.31)

In the Homeric epics she is portrayed with masculine characteristics. However, with the return of civilised values in Classical Greece, her more peaceful nature is regained, depicting Athena, once again, as the old feminine guardian of life. (Hawkes 1968)

The Minoan civilisation, through its impact on the Mycenaean, has had all kinds of repercussions on the development of the Greek culture, which developed later. Yet, extraordinarily, the historians of the 5th century BC, Herodotus and Thucydides, had comparatively little to say about the culture or history of Crete. It may have been that the Minoan civilisation was so totally destroyed that it vanished from the Greek consciousness, or that the Greeks were too proud of their own civilisation to acknowledge the existence of an advanced earlier one. When, however, Phidias in
his golden-ivory sculpture of Athena in the Parthenon (5th century BC) places a snake and a bird adorning her armour, he must have been aware of their ancient religious symbolism. (Hawkes 1968)

The developments which took place here were of great historical significance and had far-reaching consequences, since Greece was the south-eastern outpost of Europe, through which civilisation was to be brought to the ‘barbarian’ continent. (Christopoulos 1974) “Without the cultural traditions of the Mediterranean, particularly the Minoan, and without the blending of antithetical elements and trends in the special melting-pot of the Aegean, Creto-Mycenaean civilisation could never have come into being”. (Christopoulos, 1974, p.171)

- **Orbits – Urban Networks as agents of cultural transformation**

The examination of the coexistence and cultural dependence of the Minoan and Mycenaean cultures raises the issue of the fundamental importance of networks of cities. We need to address this in order to be able to understand the evolution of the ways of the world, which are relevant more clearly today. “The coevolution of cities and citizens cannot be separated from the turbulent dynamics that characterise the complex relations of city forms to the ecological system within which they arose. From this perspective, civilisation is the product of culture, and is advanced through the evolutionary trajectory of human forms and their increasing human ability to extract energy from nature, to manipulate the materials of nature, and the accumulation and propagation of information.” (Weinstock, 2010, p.19) The city cannot be considered anymore only in the framework of the surrounding region. It lives, prospers, lasts or falls not only as the centre of a region, but chiefly as a partner in a constellation of cities.

The Bronze Age Mediterranean was the cradle of this phenomenon of urban networks, which starts when a city establishes an orbit. The Cyclades, Crete and the East, regardless of geographical difficulties, became connected with powerful bonds, establishing ever widening orbits, later to be upheld entirely by the unified
Mycenaean ‘Koine’. (Gottmann 1982) The civilisation fused together their individual regional environments with the wider one, that was, at that time, global.

figures 5.32-5.33: Astonishing detail in this representation of an ancient sea route map, displaying the urge to connect. The ‘Miniature of the Fleet’ frieze from Akrotiri (17th century BC). Source: (Doumas 1992)

The ‘Miniature of the Fleet’ wall painting in Akrotiri (17th century BC) provides us with physical evidence to support this. (fig.5.32-5.33) It could be characterised as the most ancient map known in the world, one that portrays a lot more than a description of a place. Here, the cities and people can be depicted, connected with each other through sea-routes. Details of their topography are evident, their ports, cities, rivers or canals, their architecture and even the surrounding wildlife (lions, deer, birds and palm trees). To identify in reality which these cities are would be difficult. However, it is important to understand that this is a historic-economic map of an era when symbols and scales did not exist, and to acknowledge the essence of what it defines.

What was the energy, though, that sparked off this unprecedented behaviour? “Does this ancient Mediterranean tradition express basic curiosity or even more, the impulse to learn how to deal with others, how to overcome distance and perhaps even how to overcome human diversity? The will of individuals to liberate themselves from their original environment even if it is the Garden of Eden?” (Gottmann, 1982, p.11) In the context of the evolution of European civilisation, the civilisation born in
the Mediterranean was the one that conquered and first reorganised, the then known world, in a single complicated orbit. The multiplicity of influences through the ages and their subsequent importance in the development of Western thought, its culture and ideals, whose products are still discerned today, could never have occurred if the energy to establish urban networks did not exist. (Gottmann 1982)

Today, there is an obvious demand and aspiration towards a universally linked world, dependent on these interlinked orbits. Their scale might be different, the essence of their existence, though, is still the same. According to Weinstock (2010, p.269): “It is clear that the world is within the horizon of a systemic change, and that transitions through multiple critical thresholds will cascade through all the systems of nature and civilisation. New forms will emerge down through all the generations to come, and they will develop with new connections between them as they proliferate across the surface of the earth.” As we stand upon this threshold, we ought to realise the extent of our responsibility for the future. We are not just actors, we are the makers of our destiny. Emergence may be unpredictable, however, the human mind is the guiding system, the unknown innate entity that guides the system, inhabits the boundary and ultimately steers and instigates transformation. The precedent of the Bronze Age Aegean civilisations is a remarkable example of a tremendous stirring of the human spirit and man’s surge of achievement. Above all it is ultimately an example of man’s potential. “The Bronze Age Cretans and Greeks merit our concern for they were after all, the mother and father of Western civilisation.” (Hawkes, 1968, p.16)

**Synthesis: Cultures on the threshold of transformation**

In the process of presenting boundary as an ontological, inherited/existentia l force that consciously or subconsciously drives the formation of environment and the realisation of being, it has been important to examine the meaning and implications of cultural transformation, as it is possibly the most profound manifestation of man
on earth. Culture is seen as an expression of the boundary concept, a system whose viability depends on its ability to transform itself through creative opposition.

Throughout this last chapter, I have attempted to provide a tangible example of man’s complex existence within the cosmos by examining the meaning of culture. Man’s creation of culture is exposed as an attempt to interpret and transform it into meaning beyond space and time. The dynamic nature of culture as an open system, a system in constant transformation is displayed in the creative tension that the Minoan and Mycenaean civilisations engaged in. This creative tension, that led towards the birth of the ancient Greek civilisation, personified in the image of Athena, truly embodies the concept of boundary.

Mankind is in fact synonymous to culture. As I have presented at the beginning of the thesis, the dawn of humanity coincided with the emergence of language and the propensity of mankind to provide symbolic visualisations of its environment in every aspect of life. Language has been seen as the ultimate code through which culture and in effect the understanding of mankind’s evolution can be examined. Culture is, however, not only communicated through language but also through material documentation of art, carrying distinct codes and messages that provide vital knowledge of the external world and a sense of unity with the environment merged within a structure of feeling. This knowledge of culture is transmitted both horizontally within a group, but also vertically learned and transferred from one generation to the next not as a thing but through a process of evolution. The environment plays a formative role on culture as differing physical habitats and resources can influence variation among cultures. Culture is therefore in itself a complex whole. Each culture is the result of the long-term involvement of people with their physical and social environment and since conditions are rarely the same, cultures are generally unique and distinct.

Cultural transformation is a complex phenomenon and has far-reaching effects. Continuity and transformation are never-ending, ensuring a constant pattern of change. This pattern is fuelled in the mind, through associations between people and
their interpretation of the world transmitted through knowledge. Human existence should be looked at as a multifaceted whole, a holistic structure. Indeed, culture is a continuously transforming structure of knowledge, not only of physical characteristics but also of an interpretation of the world. Our genetic evolution has gifted us with the capacity to create culture and this unique human adaptation has ensured our survival. Culture is finally seen as an emergent system, whose unpredictable transforming nature reflects intimately the nature of our humanity and its bounded kinship with the cosmos.

The flow of energy through the boundary of the system is a prerequisite for transformation. Throughout this thesis, I have attempted to reveal that this boundary does not belong to the system; it is precisely the locus of unification of the system with the environment, the locus of kinship. The catalyst, the internal directing process that triggers emergence, is the human mind, inhabiting the boundary and working in unity with the cosmos in a part to whole relationship.
At this stage of the thesis I came at a turning point. The boundary between the universal mind and our mind so evident in the makeup of our mind, in our creation of cosmology, religion, myth and culture has reached a point of deepening complexity. Man’s evolving mind endowed him with an urge towards greater independence. Having achieved his footing in the world, man instigates the next stage of his evolution, which involves a questioning of his own existence and of the reality that surrounds him. The message that had been carried in a single direction now branches out and lends its expression to every manifestation of life.

In the next stage, man is seen exploring into abstract realms of thought in his attempt to apply reason to his existence. Philosophy and science were born in these early times as the most valuable and demanding pursuits of the human mind. They emerged with the primary object loosely described as the attempt to understand the universe as a whole. In the consequent centuries, the compiled mass of complementary as well as contradictory theories moved beyond the object of the physical world and its scientific explanation, encompassing the moral, aesthetic and spiritual consciousness of man. The strength of his own mind became at the same time both an instigator for achieving independence but also the force that invited him to reconnect with the otherness. Man is for the first time imposing abstract ideas, questioning his existence and the reality of his world. The deep yearning though is still to understand who we are and what our role in the world is. The boundary expressed between our evolving scientific and philosophical mind and the parallel path discernable in our creation of architecture will be tackled in this second part of the thesis. The objective of the following sections is, thus, to reveal how science, philosophy and architecture are driven by the creative force of boundary, engaging human thinking in a perpetual opposition with the cosmos in our ultimate pursuit to unravel the meaning of the world and our role within it.
CHAPTER 6:
Science, Philosophy and the struggle for reason
Our scientific and philosophical mind attempting to apply reason to existence

Introduction

Throughout the thesis, man and the cosmos is seen as being engaged in a constant dialogue, like actors in a grand theatrical stage. In its earthly stage, the drama of our humanity reaches now an exciting turning point. Man through his development of philosophical and scientific thought initiated the struggle to apply reason to our existence. (Pojman 2002) Philosophical and scientific thinking will be shown to be developing hand in hand with each area provoking adaptation within the other. Our advanced consciousness of self becomes bound in a continuous cycle of reference, examination and attempts of independence with the otherness. Our role within it or separated from it is put into question.

The existential beginnings of science are approached in ancient astronomy merged with cosmology. Interpreting the world in mythical terms, these ancient scientists meticulously recorded the order of the cosmos. (McClellan & Dorn 2006) Their efforts reflect an attempt of using an empirical method to attach a mythological meaning to the cosmos. These efforts will be seen to reach a new level of evolution in the scientific and philosophical endeavours of the pre-Socratics. The pre-Socratics, these philosophers/scientists first attempted to analyse the world in a scientific way by attaching individual reason to it. Their conceptualisation of the world was seen in terms of archetypal principles led by a dialectic inquiry. (Kirk & Raven 1957) Among others, the entities of earth and wind, fire and water as the origin of the universe and dike and adikia as the principles that order it, were approached. (Kahn 1960) The influential Pythagorean worldview unified the spiritual and physical world, conceiving nature as a structured system ordered by
mathematical forms. (Tarnas 1996) For the Pythagoreans, man’s understanding of this cosmic order showed his essence as intrinsically linked to that of the universe. Heraclitus saw the cosmos as an intelligent system regulated by *Logos*, a single intelligent order. (Vlastos 1996) He presented a unity in opposites and *Flux*, paradoxically as a necessary condition of constancy. (Tarnas 1996) Parmenides and his successors, on the other hand, first addressed logic, the problem of reality and the autonomy of human reason, seeing reality as motionless and changeless. (Honderich 1995) Anaxagoras proposed a universe constituted of an infinite number of seeds and postulated that matter was brought to motion by a primordial Mind (*Nous*); a notion that influenced greatly the philosophies of Socrates, Plato and Aristotle. (Vlastos 1996) Finally, Democritus completed this evolutionary stage in science and philosophy by putting forth his atomistic theory. His universe was composed of lifeless, mindless and indivisible atoms caused to move perpetually in a boundless void by a blind chance (*Ananké*), stripping the universe from its spiritual essence. (Tarnas 1996) This theory, as I will see, later paved the way to the Cartesian mechanistic universe.

In this evolution of his mind, man is gradually freeing himself from a savage state towards a higher level of consciousness. His new superior abilities, however, gradually led him to *hubris*. (Tarnas 1996) As advocated by the Sophists, the advent of reason left man doubting anything, giving him the power to achieve prosperity through self-promotion. (Waterfield 2000) A great crisis in the spirit of man was reached. This imbalance, this vacuum, however, was spectacularly opposed and eventually rectified by the bright light of the Socratic spirit; liberating the modern mind of its presumed infallibility. (Tarnas 1996)

Socrates was a man consumed by a passion for truth and placed the soul central in achieving excellence. Through his unique and influential dialectic form of argument, he attempted to dismiss conventions and challenge opinions in his search for the absolute essence of things. (Honderich 1995) Socrates’ synthesis of *eros* and *logos* in his desire for truth was complemented by a powerful belief in the immortality of the soul and its longing for a reunification with an immortal cosmos. (Tarnas 1996)
The divine and universal archetypes of the ancient past found in Socrates and Plato a renewed essence; an independent reality of their own. (Honderich 1995) Through the supreme discipline of philosophy, these universals could be again contacted by the human mind in its attempt to regain the divine wisdom that was once its possession and to unite with the universal mind, only in this way could he glimpse ultimate reality where true being resides. Accessible only by the mind this reality was put in opposition with the world of the senses, initiating dualism, the object / subject debate and the questioning of the validity of truth and experience. (Tarnas 1996) The Platonic worldview of universal forms, however, revealed this transcendent intelligence, this divine wisdom of the universal mind as coming from within us as an innate structure of the mind. The mind’s ability to penetrate and access this reality implied that they were both governed by the same intelligence. (Tarnas 1996) This reveals a boundary between the universal ideal and the experienced reality, which in its turn reveals the boundary between our mind and the universal mind.

In the person of Aristotle, the scientific and philosophical scene of the Platonic world is endowed with a powerful opposition, a creative dialectic that will continue to the present day. The interaction of science and philosophy gathers speed as it brings to light an instinctive representation of the duality within the boundary; the dialectic and its creative energy. Aristotle was the initiator of empirical knowledge, uniting logos with aitia (cause) and basing his scientific method on observation and deduction. (Honderich 1995) He employed reason in order to discover an inherent order within the empirical world. He transmuted the principles of formal and material causality into those of actuality and potentiality within a unified universe in which each substance is involved in constant and unending motion. (Tarnas 1996) His scientific methodology has been extremely influential. His classification of entities and identities will be seen as an attempt to reveal the essence of things. (Adler 1991) The dual legacy of Plato and Aristotle is ever-present in human reason. Their opposition has provided a unique synthesis, a guiding light, generating the independence and actualisation of our mind within the world. (Tarnas 1996) On the one hand, we have the notion of a transcendental world order accessible to the mind
through intellectual development and on the other hand, the belief of a tangible knowable universe accessible through empirical observation. Their search for meaning in dialectical reference to the cosmos reveals yet again a powerful boundary.

A defining factor in the evolution of thought in the West was the growing authority and pervasiveness of the Christian faith. At a time of great upheaval and faced with the imminent distraction of the Roman Empire, Augustine of Hippo (354-430AD), with his Confessions, directed his view towards the self and the soul. According to Cary (2000), Augustine first affirmed the existence of the human ego in the soul, influencing the way we interpret ourselves in relation to our now external world. Inspired by the Socratic and Platonic doctrines, Augustine was the first to conceive of the self as a private inner space, an inner world of human memory and thought, thus starting the Western tradition of inwardness. Man was now able to think of the world as merely external. (Cary 2000)

Though the Platonic doctrines were more readily associated with Christianity, it was Aristotle and his method that attracted the developing sciences. The Church needed to either counter or embrace the surge of scientific, independent thought. The influential philosopher and theologian, Thomas Aquinas (1225-1274) is credited for achieving a Christian interpretation of Aristotle’s thought by unifying it with the Platonic Ideas with God as catalyst. In his philosophy, Aquinas managed to show that faith and reason enriched each other, thus healing the rift that was taking place between the realm of reason and theology.

In the following centuries, the mind went through a series of staggering stages in evolution both in the scientific as well as the philosophical realms. An important stage in both the scientific and philosophical realms was the paradigm shift that occurred in science as a direct result of Copernicus’ heliocentric planetary model. (Lindberg 1992) Though it is by no means the only unique moment in the evolution of the human mind, this example was chosen as a powerful example of the dialectical unity it portrayed in the scientific and philosophical realms and the revolution it
instigated. The scientific and philosophical revolution that followed, led by
Descartes and Newton drew parallels with ancient atomism and supported an image
of the world as an intricate impersonal machine strictly ordered by mathematical
laws. (Lindberg 1992) The Pythagorean belief of a mathematically ordered universe
was entirely stripped of its spiritual significance. On the one hand, man’s
intelligence prevailed. He had conquered nature. On the other, however, he had
removed himself from his place in the centre of creation, bringing him in crisis.
(Tarnas 1996) Up until that point man was always assured of his role and
importance as the centre of reference. Now he had robbed himself of his
individuality leading him to an identity crisis that is still discernable today. The
dichotomy between mind and matter, the thinking substance and the physical body
was established. (Tarnas 1996) In this climate, Kant’s critical philosophy attacked
man’s remaining security; his ability to achieve knowledge. (Honderich 1995) Could
man really know anything as it really is? This formed a question that was to haunt
and challenge the human mind to this day.

As in all other stages of our revolution, though, we are still driven by our need to
belong. The shift in the balance provoked us, invited us to re-assess our standpoint.
We are now living in an exciting age where our need for the convergence of our
conflicting natures and theorisations has gradually led to a revolt against Dualism.
(Tarnas 1996) We are engaging all areas of our life to support us in this undertaking.
The boundary principle is a manifestation of this urge. The next step of the thesis
will thus examine the evolution of our thinking in science and philosophy as it was
carried in the revolt against dualism.

Opposing Kant, Hegel saw the world as a single, unified coherent structure of
thought. (Honderich 1995) Seeking understanding of anything leads us to relate it to
something else. This reference, this relation between things not only reveals but also
partly constitutes their nature. For Hegel, the knowing mind and the object known
cannot be considered as two separate things; they are related. (Tarnas 1996) His
ontological dialectics support the coexistence of thesis – antithesis, with synthesis as
the interaction of two dialectically opposite definitions whose common denominator is their unbreakable unity. (Honderich 1995)

I will continue to explore into the shift from dualism to renewed boundary and convergence in the domain of science by looking into the paradigm shift that occurred in scientific developments of the 20th century. (Kuhn 1970) Crushing the Newtonian model, Modern Physics and especially Quantum Theory showed that there is no objective reality that the physicist can know. The rise of quantum physics brought about the realisation that man is an intrinsic ingredient of observations, an entity we are unable to separate from the phenomena. (Heisenberg 1989) In fact, human consciousness, observation and interpretation seemed to have an inherent influence in the phenomena. This in a sense brought mankind back to the centre of reality. The theory of everything in physics as an attempt towards a unified theory of the universe will be presented. (Hawking 1998) Other areas to introduce here will be the anthropic principle and David Bohm’s wholeness and implicate order in an unfolding/enfolding universe portrayed as an unbroken whole. Echoing Aristotle’s formative and final causes, Bohm (1980) argues that life itself is enfolded in the totality and that even when it is not manifest it is somehow implicit to the totality. Man should therefore be viewed in the same way; not as an independent actuality who interacts with other human beings and with nature, but as a creative projection of a single totality. Insights into the quantum self will further uphold the boundary between matter and consciousness leading us to a coherent worldview of undivided wholeness.

Through these evolutionary stages we are witnessing a gradual breaking down of the dualism between subjective and objective knowledge and a yearning towards the interdependence of existence of the human mind and our world. (Tarnas 1996) Our scientific and philosophical mind is bound in a dialectical creative opposition. Our conceptualisations of the world can be seen as insights of our mind in its attempt to unravel the meaning of the cosmos. But through them it is as though the Universal Mind is revealing itself to us. (Tarnas 1996) This reference is seen as the archetypal dialectic, the rebirth of man from the cosmic womb.
In this chapter, I will attempt to show how the notion of boundary emerges in a variety of intensities, directly or indirectly, named or implied among the different philosophies. Our scientific and philosophical journey represents in itself a boundary between our environment and thought. This suggests that the boundary has a powerful place in human thinking. It is present in our very essence, giving us insight into the order that defines who we are. We are now reaching towards a new synthesis with our world. The archetypal dialectic has taken us from a primordial undifferentiated consciousness through to the dualistic alienation and back towards a redemptive synthesis and reunification of the individuated self within the universal matrix. This creative force will be revealed as the archetypal Eros.

6.1 The birth of science and the advent of reason:
Man as instigator of boundary between our scientific and philosophical mind

When early man gazed at the sky, its luminosity and apparent stability, starkly contrasted with the unstable events on earth. This must have imbedded in his mind awe for its order that could only be explained as divine; the heavens became for most civilisations the abode of the Gods (Hawkes 1955). People have been gazing at the sky in an attempt to uncover its secrets since the beginning of our prehistory.

6.1.1 Existential beginnings of science in cosmology

As seen in the first chapter, evidence of proto-science exists as far back as the dawn of man on earth. Recordings have been found of the periodical movements of the Sun and the Moon made by the Homo sapiens. (Hawkes 1993) For them, the recordings of the season must have been important to pinpoint terrestrial events such as the migration of animals. With the invention of agriculture, however, the precise knowledge of the seasons became more crucial. (Lindberg 1992) This science
defined as the knowledge of natural processes is universal and inherent among mankind.

The combination of religion and astronomy was at the beginning a fundamental characteristic of science. Mesopotamia, Egypt and China, as well as Central America and India provide us with evidence of recordings of the spectacle of the heavens and the appreciation of the regularity of the movements of the heavenly bodies. (Lindberg 1992) In its search for order, the human mind seized the opportunity to study and record the order of the cosmos. Even in Britain and north-western Europe (2500 B.C.) we come across evidence of scientific importance in, among others, the megalithic structures of Stonehenge. All this indicates to the apparent religious connotation that is coupled with a very complex astronomical purpose, giving us further proof of the technical and social skills of the people that created them. (Lindberg 1992)

According to McClellan & Dorn (2006), the Chinese did not fill the cosmos with gods and demons, whose will determined events. For them order was inherent and expected in the universe and their task was to observe and record it in order to be able to survive and profit from it. They maintained accurate calendars dating back to 2000 B.C. The Maya of Central America also created calendars in which astrology and astronomy played a central role in the religious governing of their people. (McClellan & Dorn 2006) In the Middle East, however, we come across two different approaches to cosmic order. In Egypt the cultural structure assumed that the existence of cosmic order was due to an array of benevolent hosts. (Hawkes 1955) The lack of climatic violence in their surrounding world and the ordered flooding of the Nile may have driven them to believe that there is life after death, inspiring its culture to extensive technological and scientific feats to accentuate their devotion for the afterlife. (Hawkes 1968) All important questions about the heavens were answered by religion, limiting the astronomical calculations towards calendar calculations that predicted the life giving flooding of the Nile. In Mesopotamia, however, the climatic events were often violent and destructive. Storms, floods, insects and invaders made life very insecure and the people depended on a strong
system to allow them to survive. (Waterfield 2000) This support extended both in the religious and scientific domains. According to Mumford (1960), the cities in the plains were centred on temples and the priests held a powerful position not only as spiritual leaders averting the wrath of the Gods, but also as organising bodies of the complex and advanced irrigation systems and other major civic works. Out of these practises grew very advanced mathematics, of which we still find remnants today in our numbering system (e.g. the system of degrees based on 60, from which minutes and seconds developed). (McClellan & Dorn 2006) Astronomy also thrived in these conditions, as heavenly phenomena were thought to hide secrets that could foresee natural disasters. (McClellan & Dorn 2006) As in Egypt, theological cosmology was greatly evolved and complex and it served to answer most of the large questions about mankind’s place and destiny. (Hawkes 1968)

According to Waterfield (2000), in China and Mesopotamia we have clear evidence of exact observation and precise description of nature, but no explanation in the scientific mode. For the Chinese, cosmic order was founded on the balance of opposite forces (yin-yang) and the harmony of the five elements (water, wood, metal, fire, earth) without explaining why. (Waterfield 2000) For the Egyptians, the Babylonians and other Mesopotamian cultures the will of the Gods made the world harmonious. For these cultures religion and magic was used to explain phenomena and not human reason. (Waterfield 2000) “It was the Greeks who first sought to go beyond description and to arrive at reasonable explanations of natural phenomena that did not involve the arbitrary will of the gods. Gods might still play a role, as indeed they did for centuries to come, but even the gods were subject to rational laws.” (Waterfield, 2000, p.xi-xii)

### 6.1.2 The search for reason (Logos) within the mythic past (Mythos)

In the chapter on culture, I presented the creative amalgamation of the patriarchal and war-like religions of the Mycenaean civilisation with the Mother-Goddess essence of the Minoan civilisation symbolising the creation of classical Greece. This dynamic opposition of the male and the female in religion led to the creation of the
classical myths of the Olympian Pantheon. (Hawkes 1968) This dichotomy continued in the pluralism of Greek religion, with the public rites of the Olympic deities on the one hand and with the widely popular mystery religions (Orphic, Eleusinian and Dionysian) whose rites followed the pre-Greek and oriental traditions of death-rebirth initiations, fertility cults and the worship of the Mother Goddess on the other. (Hawkes 1968)

The widely influential epic poems of Homer’s Iliad and Odyssey (ca.700 BC) initiated the luminous dawn of the western literary tradition and in themselves provide us also with yet another dichotomy. The dramatic world of gods and heroes, combining the immediate sense-related world with that of a universal drama was portrayed in a world that was both ordered and mythic. (Tarnas 1996) This mythic past showed the known world as an ordered whole which was governed by an impersonal fate (moira) that governed all humans as well as gods and whose purpose was to maintain a balance, an equilibrium of forces. (Tarnas 1996) This heritage was carried further in the tragedies of the golden 5th century BC, informed by the philosophical advances of the day. According to Tarnas (1996), the ancient poets reached into the world of myth, searching for universals that would illuminate the meaning of the essential process of life. They found purpose and meaning in the profound suffering of human existence, which would lead to a profound learning; when the universal gives clarity to the concrete. (Tarnas 1996)

Probably because of this dynamic essence in their religious and mythical traditions, which placed them in stark contrast with the fully developed and constant religious worldview of Mesopotamia and Egypt, the Greeks felt compelled to approach the heavens with an enquiring mind. (Pojman 2002) They allowed themselves to question their beliefs since their religion did not offer to them ready answers to the workings of the cosmos and so they directed the evolution of their thinking to merge the scientific and the philosophical approach. Science and philosophy were seen from now on, throughout the ages, to go hand in hand, provoking adaptations within each other. The advanced consciousness of the self and its growing humanism
became bound in a continuous cycle of reference, examination and attempts of independence with the otherness and our role within it or separated from it.

6.2 **Boundary between science and philosophy in the theories of the pre-Socratic philosophers**

The first attempt of analysing the world in a scientific way and organising it in an all-inclusive philosophical doctrine is said to have occurred through the theories or cosmologies of the pre-Socratic philosophers. (Waterfield 2000) The pre-Socratic philosophers attempted “… to rationalize phenomena and explain them within the framework of general hypotheses. The object aimed at was giving general validity to the experience obtained from regarding the world as a single orderly unit - a cosmos the laws of which can be discovered and expressed in scientific terms.” (Waterfield, 2000, p.xi-xii) The pre-Socratic philosophers situated either in the coastal Greek colonies of Asia-Minor or south Italy and Sicily often came into contact with other cultures. They initiated a variety of ways of conceptualising the world ranging from monistic to pluralistic explanations. (Waterfield 2000) Their theories, however, have always had an underlying vein. This vein was dialectical inquiry and thinking and a sustained and highly diversified tendency to interpret the world in terms of archetypal principles. (Tarnas 1996)

6.2.1 **Approaching the cosmos through dialectic inquiry and archetypal principles**

Dialectic thinking as we have seen already was evident since the cosmogonic myths of Hesiod Theogony and the conflicts of the primordial gods (ca. 700 BC). According to Tarnas (1996), the Greek universe was ordered by a variety of archetypal principles. “These archetypal principles included the mathematical forms of geometry and arithmetic; cosmic opposites such as light and dark, male and female, love and hate, unity and multiplicity; the forms of man (anthropos) and other living creatures; and the Ideas of the Good, the Beautiful, the Just, and other absolute
moral and aesthetic values.” (Tarnas, 1996, p.4) These timeless essences were personified in myth as Eros, Chaos, Heaven and Earth (Uranus and Gaia), as well as Zeus, Prometheus and Aphrodite. (Tarnas 1996)

Thales of Miletus (6th century BC) is said to have been the first to give a natural explanation of the world and marked a pivotal stage by overlapping the mythic and the scientific mode; his idea being: “All is water, and the world is full of Gods.” (Waterfield 2000) He was the first to suggest that the world came from this single, primary and divine animated substance that moved and changed taking various forms. (Kirk & Raven 1957) The first step was now made and from then on attempts would be made to explain the cosmos by means of observation and reasoning.

Anaximander of Miletus (a prosperous Ionian city on the coast of Asia Minor, the eastern part of the Greek world), (ca. 610 - 546 BC), pupil and successor of Thales, disagreed with him as to water being the primary essence of the universe and instead introduced the idea of the apeiron, the unbounded or indefinite as both principle (archē) and element (stoicheion). (Selegman 1974) In his thinking, the ceaseless movement of the Unbounded produces a generative source, which is separated from the Unbounded, and in turn produces the four basic opposites - hot and cold, dry and wet - that constitute the different elements of the world and underlie all observable processes and changes. (Selegman 1974) Their struggle with each other became the creative force that produced the world. These opposites interact by encroaching on one another and thus ‘giving penalty’ (dike) on one another's ‘injustice’ (adikia). (Selegman 1974)

Anaximander’s successor, Anaximenes of Miletus maintained that air was the origin of all things and that all changes empirically observed in nature are due to the dialectical relationship of rarity and density, declaring that matter arose out of air through the process of rarefaction and condensation. (Kirk & Raven 1957)
6.2.2 The Pythagoreans’ unifying worldview linking the spiritual with the physical world: The Universal Mind revealed through the human mind

Pythagoras of Samos (ca. 580 - 500 BC) was one of the earliest known thinkers and one of the most influential. The mythology that surrounded his name in antiquity had to do with the fact that his scientific and philosophical vision was permeated by a strong spiritual basis in the beliefs of mystery religions (Orphism) that created a so-called Pythagorean sect. (Kirk & Raven 1957) The Pythagorean School overcame the dichotomy of religion and reason that characterised this new era and “... maintained the ancient structures of myth and mystery religions while advancing scientific discoveries of immense consequence for later Western thought.” (Tarnas, 1996, p.23)

The nature of this philosophy was unique. Pythagoras conceived nature as a structured system ordered by number. “Pure mathematics was taken as the paradigm, perhaps the only possible kind of knowledge. A reduction of all sciences to arithmetic seems to have been seriously attempted.” (Honderich, 1995, p.715) Instead of focusing on the material substance of phenomena like his Ionian contemporaries, he concentrated on the forms (especially the mathematical forms) that governed them. For the Pythagoreans the universe revealed itself through number, maintaining that all things are number and that their essence and structure can be determined by finding the numerical relations they express, thus revealing a deeper meaning, a spiritual illumination: “The forms of mathematics, the harmonies of music, the motions of the planets, and the gods of the mysteries were all essentially related for Pythagoreans, and the meaning of that relation was revealed in an education that culminated in the human soul’s assimilation to the world soul, and hence to the divine creative mind of the universe.”(Tarnas, 1996, p.23)

For the Pythagoreans, attempting to reveal these cosmological secrets was not only to reveal the cosmic wisdom but also to reveal it in one’s own mind. According to Tarnas (1996), the regulating intelligence of the Universal Mind is reflected in the
human mind, rendering it capable of knowing the cosmic order. Since these mathematical harmonies are first brought to light in the human mind, the human mind can in itself discover its own essence hidden in nature. The Pythagoreans first came to use the word *kosmos*, which for the Greeks came to signify a unique combination of intelligence, order, structural perfection and beauty. (Tarnas 1996)

According to Tarnas (1996), the revelation of this *kosmos*, this *Universal Mind* is the quest of the philosopher/scientist, and even though Pythagoras never wrote anything, he influenced many and more specifically, as I will present further in the thesis, Socrates and Plato. “As restated by Plato, to discover *kosmos* in the world was to reveal *kosmos* in one’s own soul. In the thought life of man, the world spirit revealed itself. Here the Socratic dictum “Know thyself” was seen not as a creed of an introspective subjectivist, but as a directive to universal understanding.” (Tarnas, 1996, p.47)

Apart from the Pythagorean example, the Hellenic mind from now on attempted to follow a direction away from myth and religion towards reason. At times this was ambiguous but the first steps had been made. (Waterfield 2000) In the following section we will visit the thought of Heraclitus and Parmenides who, in their different approaches, were both concerned with the problem of unity and diversity in the universe, and the problem of appearance and reality. (Honderich 1995)

### 6.2.3 Unity, opposition and change: Heraclitus’ Logos and Flux revealing order in the cosmos

Heraclitus of Ephesus (c.540-c.480 BC), a controversial and obscure figure who considered the epic poets fools and Pythagoras a fraud, is said to have written a single book, or rather a collection of around 100 statements in his personal aphoristic and oracular style. (Vlastos 1996)
Logos as order in the cosmos

Heraclitus’ speech is complicated and intentionally loaded with layers of meaning and complexities that are to be discovered in insights and solved like riddles, just as the logos is meant to be discovered in order to reveal the deeper regularities that constitute the cosmos. (Vlastos 1996) Many of his statements support two or more readings, and contain hidden insights: “To comprehend them the reader must grasp their complexity and then discover their unity. To read Heraclitus appropriately is to have a rich cognitive experience… ”. (Vlastos 1996)

Heraclitus sees himself as the vessel, the messenger of the logos and not the author of this universal and timeless truth: “Having harkened not to me but to the Word (Logos) it is wise to agree that all things are one.” (B50, in Kirk, 1954) From his writings, what Heraclitus meant by using the term logos was possibly an objective law-like principle that governs the cosmos. According to him, “all things are one” (B50), indicating a single order that directs all things, an order that could be seen as divine but connected to humanity through our capacity for intelligent thinking giving us the power to grasp the system as a whole, through knowing the logos. (Tarnas 1996) The cosmos itself is an intelligent, eternal (and hence divine) system that orders and regulates itself in an intelligent way: the logos is the account of this self-regulation. (Tarnas 1996)

The concept of change as a stable universal feature (paradox), with fire as symbol

Heraclitus uses the symbol of fire in order to express this unchanging order of the eternal system, since fire is always changing and always the same. Using for the first time in antiquity the term kosmos, Heraclitus offers his cosmology: “This world order (kosmos), the same for all, was made by no god: or man, but always was and is and will be an ever-living fire, being kindled in measures and quenched in measures.” (B30, in Kirk, 1954)
Heraclitus was charged by many for being a material monist that proposed fire as the ultimate reality. Yet fire is indeed the least substantial and the most evanescent of elemental stuffs, making a better symbol of change than of permanence. According to Vlastos (1996), fire for Heraclitus manifests “need and satiety” (B65), a kind of ongoing consumption that can live only by devouring fuel. The basic reality of his ‘monism’ then is a paradox, and his appeal to fire is intended to draw on the process of change as being more real than the material substances that undergo change. (Irwin 1989)

According to Terence Irwin (1989), Heraclitus believed that the constant features of the universe are not the ordinary objects but the ceaseless processes of change that these ordinary objects undergo. Instead of implying instability in the universe, change for Heraclitus was a prerequisite of being. He believed in an orderly cosmic order, a hidden order that is stronger than the apparent. (Irwin 1989)

- The unity of opposites and flux, as a necessary condition of constancy, with the river as symbol

Heraclitus presents the interplay of opposing states and forces, which he points to as being unified through the role of strife in human life as well as in the cosmos, as the signs or evidence that will provide lovers of wisdom (philosophers) the means through which to understand nature and the Word. (Irwin 1989) He rejects the idea of a continuing subject through his belief in the 'unity of opposites'. “The road up and the road down, he says, are one and the same. The same water is both good (for fish) and bad (for human beings). The strung bow is held together in being pulled apart. God is both day and night, summer and winter, war and peace, satiety and hunger. 'War is the father and king of all', because everything depends on a ceaseless struggle between opposites.” (Irwin, 1989, p.25)

In Heraclitus, a series of subtle analyses reveal the interconnectedness of contrary states in life and in the world. He does not express a logical fallacy, as many have accused him of. For Heraclitus, opposites are a reality, their interconnections are
real but the corresponding opposites are not identical to each other. (Irwin 1989) He depicts two key opposites that are interconnected, but not identical, trying to explain how things have the potential of opposing qualities: “As the same things in us are living and dead, waking and sleeping, young and old. For these things having changed around are those, and those in turn having changed around are these.” (B88, in Irwin 1989) As an extension of the concept of change, Heraclitus presents the above qualities or characteristics that are found in us ‘as the same thing’. (Honderich, 1995) They are the same by virtue of one thing changing around to another. Sleeping and waking, alive and dead are both found in us, but not at the same time or in the same respect; these contrasts are presented as constituting a system of connections: alive-dead, waking-sleeping, young-old. (Honderich 1995) Subjects do not possess incompatible properties at the same time but the potential of being an opposite at a different time. According to Honderich, “[Heraclitus’] remarks and their generalizations are not meant to infringe the law of non-contradiction; rather they trade on it to point out a systematic ambivalence (between polar opposites) in the essential nature of things.” (Honderich, 1995, p.351)

Heraclitus' famous doctrine of Flux is a special case of the unity of opposites, pointing to the way things are both the same and not the same over time. “Collections: wholes and not wholes; brought together, pulled apart; sung in unison, sung in conflict; from all things one and from one all things.” (B10, in Kirk 1954) Probably the most controversial of Heraclitus’ statements was and still is the river fragment:

“potamoi toisin autoisin embainousin hetera kai hetera hudata epirrei” (B12) or “On those stepping into rivers staying the same other and other waters flow” (translation by Cleanthes from Arius Didymus from Eusebius, quoted in Vlastos, 1996)

According to Honderich (1995), the controversy was first created by Cratylus, a late follower of Heraclitus, who interpreted Heraclitus’ statement as “one cannot step into the same river twice”, and who was subsequently quoted by both Plato who had allegedly heard his lectures and Aristotle. This interpretation is furthered by Plato
who wrote: “Heraclitus, I believe, says that all things pass and nothing stays, and comparing existing things to the flow of a river, he says you could not step twice into the same river.” (Plato Cratylus 402a = A6, quoted in Honderich, 1995) According to Vlastos (1996), Kirk (1954) and Marcovich (1967) attempted to verify Plato’s interpretation by looking at Heraclitus' own words. They concluded that statement B12 is genuine as suggested by the features it shares with Heraclitean fragments: syntactic ambiguity with what comes before or after (toisin autoisin ‘the same’ can be construed either with ‘rivers’ -“the same rivers”- or with ‘those stepping in’ -“the same people”-), chiasmus, sound-painting (the first phrase creates the sound of rushing water with its diphthongs and sibilants), rhyme and alliteration. (Vlastos & Graham, 1996)

Heraclitus, is seen here using one of his signature tools “… parallelism or identity of structure between the operations of the mind, as expressed in thought and language, and those of the reality which it grasps”. (Honderich, 1995, p.351) The major theoretical connection in the fragment is that between ‘same rivers’ and ‘other waters’ which presents a coincidence of opposites while at the same time specifying the rivers as the same. (Honderich 1995) It appears that on the surface this statement is paradoxical. However, at closer inspection it is found to make perfect sense. According to Honderich (1995), we call a body of water a river precisely because it consists of changing waters; if the waters should cease to flow, it would not be a river, but a lake or something stagnant. “There is a sense, then, in which a river is a remarkable kind of existent, one that remains what it is by changing what it contains.” (cf. Hume Treatise 1.4.6, p. 258 Selby-Bigge, in Honderich, 1995)

Seen in this way, the message of the river fragment (B12) is not that all things are changing so that we cannot encounter them twice, but something much more subtle and profound. It is that some things stay the same only by changing (Honderich 1995). The material reality of the river exists by virtue of the constant change of its constituent matter. Here, constancy and change are not opposed but inextricably connected. According to Tarnas (1996), the human body, as Aristotle later presented, could be understood in precisely the same way, as living and continuing
by virtue of constant change (metabolism). On this reading, Heraclitus believes in flux, not as destructive of constancy but rather paradoxically as a necessary condition of constancy. (Tarnas 1996)

One may even go as far as calling Heraclitus a structuralist. Indeed the abstract notion of structure is omnipresent in his thinking, revealing an intrinsic harmony. Throughout his writings, one perceives the existence of a language that needs to be read in order for the world to be understood. Indeed, human reason has the capacity to unravel this language precisely because its own operations are conducted in analogous ways.

6.2.4 Dialectic between reality and truth and the autonomy of human reason: Parmenides, Anaxagoras, Empedocles and Democritus

The next step of this philosophical, as well as scientific, evolution was taken in the western part of the Greek world in southern Italy, when Parmenides of Elea (born ca. 510 BC) approached the problem of what was genuinely real by means of a purely abstract rational logic. (Kirk & Raven 1957)

- Parmenides: The superiority of human reason – the realm of truth vs. the realm of the senses

According to Tarnas (1996), in Parmenides’ struggle with language and logic, for something ‘to be’ made it impossible for something to change to something it is not, for what ‘is not’ cannot be said to exist at all. Similarly, ‘what is’ can never come into being or pass away, since something cannot come from nothing or turn into nothing; if nothing cannot exist at all. By logical necessity, he concluded that true reality is changeless and unitary and that the world of the senses must be mere opinion. (Tarnas 1996) “… most significant was Parmenides’ declaration of the autonomy and superiority of the human reason as judge of reality. For what was real was intelligible – an object of intellectual apprehension, not of sense perception.” (Tarnas, 1996, p.21) A move away from the mythical cosmos as well as from a
naturalist explanation of the universe towards a rationalist one is witnessed. The development of logic initiated by Parmenides brought forward for the first time such matters as the difference between the real and the apparent, between rational truth and sensory perception and between being and becoming.

o **From dialectic cosmologies and a transcendent primordial Mind (**Nous**) to atomism**

The naturalist and rationalist trend in early philosophy drove the thinkers of the age to seek to reconcile the conflicting demands of sensory observation with the new logical rigor of a naturalistic empiricism where a rigorous deductive logic was implemented. (Vlastos 1996)

Anaxagoras of Clazomenae (ca. 500 - 428 BC) and Empedocles of Acragas (born ca. 490 BC) as well as the atomists, attempted to modify Parmenides’ monism of a one, motionless and changeless reality by concentrating on explaining change and multiplicity within more pluralistic systems. They adhered to Parmenides’ notion that what was real could not come into being or pass away by proposing a multiplicity of fundamental unchangeable elements whose constantly shifting interactions were subject to change. (Vlastos 1996)

Empedocles presented his dialectic cosmology by positing four ultimate root elements -earth, water, air and fire- which were eternal, and which were moved together and apart by the primary forces of Love and Strife. (Tarnas 1996) Anaxagoras, on the other hand, proposed that the universe was constituted by an infinitive number of minute, qualitatively different seeds, but instead of explaining matter’s movement in terms of blind semi-mythic forces (such as Love and Strife), he postulated a transcendent primordial Mind (**Nous**), which set the material universe into motion and gave it form and order; a forerunner of the Platonic Universal Mind. (Tarnas 1996)
The importance of Anaxagoras, according to Tarnas (1996), is that he marks an important theoretical step in attributing the motion of his ingredients to an external, intelligent force - although both Plato and Aristotle were disappointed that his theory was not properly teleological from their point of view. Their movement and rotation is ultimately causally responsible for the formation of the heavens and the activities of mass and water on the earth governing the cycles of weather and life and death on earth. (Vlastos 1996) According to Anaxagoras, even though we do not perceive all things we can legitimately infer the nature of what is real from what is apparent: “… owing to their [the senses’] feebleness, we are not able to determine the truth … ” yet “… appearances are a sight of the unseen …”. (Anaxagoras writing in the mid 5th century, quoted in Vlastos, 1996)

The most comprehensive and lucid rational effort to present a theory of the universe, however, was atomism. Leucippus (5th century BC) and his successor Democritus (ca. 460 - 370 BC) attempted to resolve Parmenides’ argument against change by presenting a materialistic universe exclusively composed of by lifeless, mindless and indivisible atoms caused to move perpetually in a boundless void. (Kirk & Raven 1957) This void also opposed Parmenides’ objection that what ‘is not’ cannot exist. The random collisions of the atoms produced the phenomena of the visible world. “The atoms were moved mechanically, not by any cosmic intelligence such as the Nous, but by the blind chance of natural necessity (Ananké). All human knowledge was derived simply from the impact of the material atoms on the senses.” (Tarnas, 1996, p.24) Atomism, thus, removed entirely the mythological residue of the earlier philosophers.

6.3 The Platonic world-view:

The Universal Mind revealing itself to us

As I have presented so far, there is an evident evolution of the Greek mind from a state of revered connection with the world to a gradual independence. The
questioning of reality as opposed to appearance begins to gather momentum. This independence characterises the spirit of the age; the golden age of Periclean Athens.

6.3.1 The changing nature of the Greek mind leading to a spiritual vacuum: The Socratic ideal and the birth of the Socratic hero

The 5th century BC was seen as the enlightenment in Greek history. The consensus was that mankind was gradually freeing itself from a savage state and was aiming towards a higher level of consciousness. This came as a total antithesis to what was previously perceived as true; that modern man was a distant relative of a heroic ideal of the past portrayed in the epic Homeric poems. The new abilities of this superior man were magnificently displayed in the construction of civic works and temples that were meant to celebrate perhaps more the engineering achievement and its rational clarity and mathematical elegance than the divinity it was dedicated to. The development of democratic self-governance expressed and encouraged the humanistic spirit. In the arts the human body was idealised. Among others, Hippocrates’ seminal work in medicine, Herodotus’ observant histories and Thucydides’ objective historical analyses provided more evidence of this great potential for man.

- The Sophists and the degeneration of morals

The second half of the 5th century, however, saw the other side of the coin. The tragic poets had been warning their public for the potential hubris of human nature and one can claim that the Sophists personified it. The Sophists were professional teachers who advocated the value of the self above others and claimed to be able to lead their students to success and prosperity in life through their teachings simply by achieving proficiency in rhetorical persuasion and logical dexterity. (Waterfield 2000) Manipulation for personal gain was deemed acceptable. The Sophists were even in favour of agnosticism or atheism in order to pursue their morally dubious agenda freed from ethical restrictions, advocating practical reasoning: man was the measure of all things and truth was relative. (Tarnas 1996)
The philosopher/poet Xenophanes asserted: “As for certain truth, no man has known it, nor will he know it.” (Xenophanes, quoted in Tarnas 1996) Man could only know the contents of his own mind and that should be the only valid concern. Indeed, the developing scientific environment seemed to uphold this notion, with the scientific theories of the era presenting highly personal, varied and sometimes antithetical themes that were impossible to prove. (Lindberg 1992) None provided a satisfactory answer. With the advent to reason everything seemed open to doubt and above all the nature and validity of reality as opposed to experience. In Tarnas’ words: “... if the true reality was entirely divorced from common experience, then the very foundations of human knowledge were called into question. It seemed that the more man became freely and consciously self-determining, the less sure was his footing.” (Tarnas, 1996, p.24)

At this point of great crisis came the bright light of the Socratic spirit to provide the necessary transformation on this moral degeneration brought on by the Sophists. It is as though this imbalance, this spiritual vacuum created its own demise by attracting, inviting its antithesis. In fact this phenomenon, this pattern of transformation, is discernable in all phases of the development of the human mind as I have attempted to and will continue to show. I have called it the boundary.

- The central significance of the soul in Socrates, dialogue and the quest for truth

Socrates, known to us through the Platonic dialogues, was a man consumed by a passion for truth. He had studied the philosophical and scientific endeavours of his predecessors and contemporaries and found them unsatisfying. He, therefore, turned his attentions to ethics and logic as a remedy for the crisis of his contemporary environment and the subsequent moral vacuum. (Honderich 1995) His fame was great. The oracle of Apollo at Delphi had pronounced that no man was wiser that Socrates, and attempting to disprove the oracle, Socrates came to conclude that he
may indeed be the wiser as he was the only one to recognise his own ignorance (Honderich 1995).

In opposition to the Sophists, Socrates considered that the soul was of critical importance in achieving excellence in life, bringing a new awareness of its significance. (Tarnas 1996) Excellence came through living a virtuous life, a life that was good for the soul. For Socrates, to achieve this, one had to know the essence of good. Through his favourite channel, the dialogue, he attempted to approach this essence, dismissing convention and challenging mere opinions in the process.

The dialectical form of argument was very influential and became fundamental to the character and evolution of the western mind. Indeed, the process, the arduous attempt to discover answers, was for Socrates of greater importance than knowing the right answers. With penetrating questions he invited his students to analyse and challenge conventions, expose false beliefs and search deeply into their soul and their understanding of the world in order to elicit truth. No stone was left unturned. Everything would be first treated as a hypothesis, deducing its consequences and thereby judging its value.

For Socrates, self-critical reflection and constant intellectual struggle was necessary to achieve genuine knowledge; his own life embodying his beliefs. “With its unique synthesis of eros and logos – of passion and mind, friendship and argument, desire and truth – Socrates’ philosophy appears to have been a direct expression of his personality.” (Tarnas, 1996, p.35) According to Tarnas (1996), this dialectic between eros and logos, of goodness and wisdom is paramount in his worldview. Socrates was a man consumed by a love for mankind and its potential. He believed in the goodness of people and in the sanctity of the soul. He attempted to awaken his contemporaries and wanted them to regain their pure nature and cosmological significance by becoming aware of eternal truths. Even in death Socrates was fearless, longing to unite with the eternal, immortal cosmos. Through Plato’s writings, the Homeric hero is reborn in the person of Socrates “… as a hero of the
intellectual and spiritual quest for absolutes in a realm endangered by the Scylla of sophistry and the Charybdis of traditionalism.” (Tarnas, 1996, p.37)

6.3.2 Universal Forms as the boundary between the universal mind and our own mind

In the philosophy of Socrates, Plato and Aristotle but also in the rich poetry and literature of Homer, Hesiod and the tragedies of Aeschylus and Sophocles, a common vision was expressed; that of the typical Greek propensity to see clarifying universals in the chaos of life. (Tarnas 1996) At the basis of Greek culture “... was the view of the cosmos as an ordered expression of certain primordial essences or transcendent first principles, variously conceived as Forms, Ideas, universals, changeless absolutes, immortal deities, divine archai, and archetypes.” (Tarnas, 1996, p.3) These structures and principles were so enduring that they were believe to possess an independent reality of their own and it was upon this that Plato based his metaphysics and theory of knowledge.

Plato, Socrates’ devoted pupil, dedicated his life in this search for eternal truths. For Plato, through philosophy, the human mind can recall and regain the divine wisdom that was his former possession. (Irwin 1989) Truth cannot be introduced to the mind from the outside, but it is drawn out from within and this knowledge shares a genetic code with the universe. (Tarnas 1996) The Platonic Ideals or Universal Forms were first mentioned in the dialogues and Socrates certainly believed in their existence. He believed that these universals have a real nature that transcended the phenomena and the only way they could be reached by the human mind was through the exhaustive and rigorous discipline of philosophy. He postulated that: “[w]hen something is good or beautiful, it is so because that thing partakes of an archetypal essence of goodness or beauty that is absolute and perfect, that exists on a timeless level that transcends its passing particular manifestation, and that is ultimately accessible only to the intellect, not to the senses.” (Tarnas, 1996, p.36) The Universal Mind, the world order is thus contacted and revealed.
The beginnings of the objective / subjective reality debate: Questioning truth and the validity of experience

According to Socrates, the philosopher, through rigorous study, can reach a profound level of reality. He can go beyond the apparent and glimpse the true nature, the authentic reality of a Universal Form, of Beauty or Truth. (Tarnas 1996) These archetypal forms are revealed to the inner rather than the outer perception. Plato was influenced by both Heraclitus’s flux and Parmenides’ stasis. (Irwin 1989) His thinking presents us with a marked distinction between being and becoming; for him, all phenomena are in a state of constant transformation, only the Ideas are unchangeable. (Irwin 1989)

According to Tarnas (1996), Plato’s theory of Universal Forms/Ideas presents elements of both ontology (theory of being) and epistemology (theory of knowledge). The Ideas form the basic essence and reality of things but at the same time also the means by which certain human knowledge can be achieved. The Universal Forms for Plato present the only stable ultimate reality wherein true being lies. The Pythagorean conception of a universe organised in accordance to the mathematical Ideas of number and geometry presented a paradigmatic example of Plato’s thinking. (Irwin 1989) These Ideas are apprehensible only in the mind, they are not empirically visible and they cannot be revealed through the senses. A perfect circle or triangle cannot be seen in nature; however, their ordering principles can be conceived in the mind. In Plato’s thought, the human mind and the universe are, therefore, ordered according to the same archetypal structures and essences. (Tarnas 1996)

Plato did not formulate a complete system of Ideas, conceiving even arguments against his own theories, such as to what extent knowledge of the Ideas is even possible. (Irwin 1989) The question of purpose in the world was still unresolved and only in Pythagoras was the dichotomy of religion and reason resolved in a synthesis. In Plato’s philosophy, one thing, though, was certain: the human mind, through knowledge needs and seeks absolutes. (Tarnas 1996) Through the rigorous study of
philosophy the archetypal realm could be contacted and approached. It is as though the Universal Mind invites us to explore and know it.

- **Eros and the divine wisdom of the Universal Mind**

As seen, the realm of Ideas for Plato revealed the true essence of things. However, the journey towards the revelation of this *real* world was seen as evoking an intense emotional and mystical response. (Tarnas 1996) The sublime form of Eros overcomes the philosopher (the lover of wisdom) and drives him to restore the unity with the divine. In the *Republic*, Plato refers to this as freeing man from the chains of his sensory body towards an archetypal light, a divine existence where true reality can be experienced; the well-known cave story. (Honderich 1995) Through philosophy, this divine wisdom can be regained and the soul’s eternity revealed. Plato’s philosopher was thus “... motivated by a ceaseless desire to re-attain the lost union with the eternal. Through the labour of philosophical recollection, the human mind can bring to birth the divine wisdom that was its former possession.” (Tarnas, 1996, p.43) The role of education becomes thus paramount. Education is the medium through which the mind and the soul can reconnect with the universe. According to Tarnas (1996), Plato saw truth as revealed from within, with the mind gradually exposing to itself knowledge that is both of its own nature and of the universe but which is not obscured by physical existence. (Tarnas 1996)

The transcendent intelligence, the divine wisdom of the Universal Mind is thus revealed within us. Plato’s Forms, Pythagoras’ mathematical patterns, Anaxagoras’ *Nous* and Heraclitus’ *Logos*, all reveal this permeating principle of a fundamental universal structure that is accessible to the mind. Not only is it accessible to us, it is revealed through us because our mind is ordered and governed by that same regulating intelligence. The quest of the philosopher was thus perceived as the discovery of the eternal behind the apparent, as the attempt of our mind to comprehend and unite with the eternal. The Platonic worldview of Universal Forms reveals this innate structure of the mind. It is a boundary between the universal ideal
and the experienced reality, which in its turn reveals the boundary between our mind and the Universal mind.

In the person of Aristotle, a student of Plato for 20 years, the Platonic universe of Ideas will be faced with a new boundary, a new opposition to challenge it, and the human mind with another foundation and structure.

6.4 The dual legacy of Greek thought influencing science and philosophy

In the Renaissance painting of The School of Athens, by Raphael (ca. 1510), the two central figures portray the boundary in human reason. (fig.6.1-6.2) The older figure of Plato points to the heavens, to the invisible and transcendent while the younger, Aristotle is motioning us to remain on earth, to the visible and immanent. (Tarnas 1996) Facing each other, it is as though Aristotle and Plato are deep in dialogue, each reaching for that which they consider most important.

figures 6.1-6.2: The boundary in human reason portrayed by the two central figures of ‘The School of Athens’: Socrates, pointing to the heavens and Aristotle motioning us to remain on earth. (by Raphael, ca1510, Vatican)
Source: www.italian-renaissance-art.com
6.4.1 Aristotle’s empirical reason as key to understanding the universal order

Aristotle’s aim, like Plato’s, was the development of human intellect in order to comprehend the world’s order, the defining difference, however, was that Aristotle saw the empirical world as truly real. (Adler 1991) He was the initiator of empirical knowledge, uniting logos with aitia (cause) and basing the scientific method on observation and deduction. (Lindberg 1992) He employed reason in order to discover an inherent order within the empirical world, using an analytical method that was widely influential and has formed the basis of science as we know it. (Lindberg 1992)

Aristotle had a different way of seeing the being-becoming distinction. As already seen, Plato perceived true reality only in the unchanging Forms. Unlike Plato, Aristotle did not perceive the concept of change as unreal. Inspired by the natural world, he bestowed the idea of potentiality on the process of change. (Adler 1991) He distinguished between the two significantly different meanings of being: is, as existence and is, in the sense of a predicable (i.e. something is big/a horse/a man etc). (Adler 1991)

The dual legacy of Plato and Aristotle is ever-present in human reason. Their opposition has provided a unique synthesis, a guiding light, generating the independence and actualisation of our mind within the world. On the one hand we have the notion of a transcendental world order accessible to the mind through intellectual development and on the other hand the belief of a tangible knowable universe accessible through empirical observation. One thing, however, has remained the same throughout history. “All men desire to know”, this is how Aristotle starts his *Metaphysica*. (Adler 1991) As advocated by Socrates, philosophy questions views that have been established without the consent of our reason, our independent thought, the ones that are mere products of the conventions and beliefs of the society and time we happened to have been born in. Philosophy liberates through the process of raising doubts about what has been taken for granted, it
restores and revives the mystery of the world, by challenging what the world is, in its pursuit to unveil what it may be. In this endeavour, science and philosophy are united.

6.4.2 Aristotle’s Metaphysics and the boundary between identity and character

As defined by Aristotle in the 4th century BC, Metaphysics, the ‘first philosophy’ is synonymous to ontology, the theory or study of Being, the basic characteristics of reality. Since, however, metaphysics came to include other studies, such as philosophical cosmology and psychology, ontology replaced metaphysics as the preferred study of being. Like Plato, Aristotle believed in universals but he saw them as features of the world itself with substance and essence, not of independent existence. His argument is teleological; an organism strives towards a realisation of its form, from a state of potentiality to a state of actuality. (Barnes 1995) Form, is not static for Aristotle, it is implicit and it is in the nature of every organism to actualise this inherent form. (Barnes 1995) Here, a small part of its ontological intentions is presented.

In his *Metaphysica*, Aristotle enumerates four causes to explain any thing or any situation (Adler 1991):

i) **the material cause**, out of which a thing comes to be,

ii) **the efficient cause**, the way it is formed, initiating the motion,

iii) **the formal cause or formative**, the shape of a thing and

iv) **the final cause**, the purpose for which a thing is intended.

In order to clarify these notions, Adler (1991) uses the example of a plant. For the plant the material cause is what constitutes its substance: the soil, air, sunlight, water. The efficient cause, the external action that allows the process to begin, is the planting of the seed. The formal or formative cause, is an ordered and structured inner movement that is essential to what things are, in this case the forming of cells, branches, leaves etc. Here, the final cause, the purpose or design, is also implied.
The nature of something is to actualise its inherent form. There is a teleological development towards achieving maturity. The seed becomes a tree and an embryo becomes a man. The form is intrinsic, inherent.

Aristotle considers his own singular contribution to be the discussion of the efficient and final causes. (Tarnas 1996) Carefully distinguishing how men think about things and how they state what they know, Aristotle embraces with one stroke the meanings of knowledge, statement and being. He transmuted the principles of formal and material causality into those of actuality and potentiality or the passive and active principles involved in any process (e.g. knowledge), into a unified universe in which each substance is involved in constant and unending motion. (Adler 1991)

The “Great Boundary”: Issues of Identity

Aristotle states that the Physical World, the only one that may truly exist, is part of a Greater World. In examining this Physical World he draws a line, a boundary (όριον), which distinguishes its components to two greater categories, one of bodies (σώματα) and one of characteristics (ιδιότητες), for example a stone and its weight. (Adler 1991)

Adler (1991) presents the example of the stone. The existence of a characteristic (weight) is directly related to the body (stone). The body is able, though, to be part of a group of bodies (pile of stones), or exist on its own, as a distinct entity. This distinction becomes clearer when considering change. The characteristics of a body can change (a stone can become smooth from harsh), but it is still the same body, it has not become another one. If it was not the same we would not be able to identify change. Bodies are in themselves changeable while characteristics are not (harshness cannot become smoothness). However, the characteristics are the parameters according to which Physical Bodies change. In Greek, ιδιότητα (idioteta) is the nature, the particular existence, the special characteristic, the separate and distinct property. In themselves the words imply, self, character and belonging to self, an existence directly related to the object the property belongs to.
Adler (1991) specifies that for Aristotle, a Physical Body also has other characteristics, such as its relation to other objects, its actions, the reaction of its actions to itself, the beginning and the end of its existence and the duration of its existence. Some characteristics are permanent (birds lay eggs, mammals give birth) and are therefore more important because they distinguish a kind of body from another. (Adler 1991) These characteristics along with the changeable ones give the body its essence, its identity, thus making them distinct entities.

The ability of the Physical Bodies to be changeable and not static entities (as in evolution), through the boundary between the bodies and their characteristics, identifies the Great Boundary according to Aristotle (Adler 1991).

### 6.4.3 Plato and Aristotle’s dual legacy challenging the Christian worldview through the writings of Augustine and Aquinas

I seem to be following a chronological evolution in philosophy and its influence on science. Philosophy is unique in the sense that there is no stage of its evolution that can or should be regarded as falsified. Indeed, one could say that Plato’s theory of Ideas is utterly absurd and unnecessary but his insights have been instrumental in the way we think about the world. It is for this reason that I disagree with this kind of
compartmentation of thought. A student of chemistry may not need to study the evolution of his science to move forward, a student of philosophy, however, should. The journey of the mind is so great because its course is mysterious. Every stage is valuable not only in itself but because it will propel us to the unexpected. Going back to the evolution of culture, I found that our particular interpretations are intimately bound with the structure of feeling of our own culture in a space-time context. (Williams 2006) Similarly, every time that we review the philosophy of the past we will ultimately see it in the context of our own existence in the given present and each time it will offer us a different insight. The true legacy of the philosophy of Plato and Aristotle is that it has been instrumental and influential throughout the course of philosophy. Much of what has been written or thought has been as a reaction to their unique minds and prolific writing that ranged from physics and metaphysics to ethics and politics.

A defining factor in the evolution of thought in the West was the growing authority and pervasiveness of the Christian faith. At a time of great upheaval and faced with the imminent distraction of the Roman Empire, Augustine of Hippo (354-430AD), with his Confessions, directs his view towards the self and the soul. In his Confessions -his autobiography-, Augustine’s personal experiences and sinful past, recognised in the self, becomes the medium towards finding God. According to Cary (2000), Augustine first affirms the existence of the human ego in the soul. Calling upon the Socratic and Platonic doctrines, Augustine, a Neo-Platonist, asserts that self-awareness and introspection were necessary for the salvation of the soul but places God and his divine grace as the instrument of this salvation. (fig.6.3-6.4) He attempted to locate God within the soul, without affirming the divinity of the soul; God was other and external to the self. (Cary 2000)

According to Cary (2000), Augustine first conceived of the self as a private inner space, an inner world of human memory and thought, starting the Western tradition of inwardness. This ability to look within, which we now conceive of as self-evident, influenced the way we interpret ourselves in relation to our now external world: “[f]or once you have conceived of an inner self, you think differently about
the external and the other. If there is an inner world, then the world we all live in can be ‘merely external’, and you can worry whether it is lifeless and meaningless like a Newtonian mechanism. You can even worry whether the external world exists.” (Cary, 200, p.141)

Having disappeared from consciousness for a few centuries, Aristotle was ‘rediscovered’ in the West around the 12th century AD, through the analysis of his Arab commentators. (Barnes 1995) According to Barnes (1995), Aristotle’s writings greatly appealed to the now ready western mind as he provided a clear scientific argumentation and a confidence in the power of human intelligence. Though the Platonic doctrines were more readily associated with Christianity, it was Aristotle and his method that attracted the developing sciences. The Church needed to either counter or embrace the surge of scientific, independent thought. The influential philosopher and theologian, Thomas Aquinas (1225-1274) is credited for achieving a Christian interpretation of Aristotle’s thought by unifying it with the Platonic Ideas with God as catalyst. For Aquinas, the existence of the Platonic Ideas was threefold:
as exemplars in the mind of God and independent of things (Plato), as intelligible forms in things (Aristotle) and as concepts in the human mind formed by abstracting from things. (Tarnas 1996) It was God that gave man the potential for knowledge of the world, the light of human reason; and by searching for the meaning of the existence of created things, man could gain access to the mind of God. (Cottingham 1996) In his philosophy, Aquinas managed to show that faith and reason enriched each other, thus healing the rift that was taking place between the realm of reason and theology.

Throughout the centuries, the mind has gone through a series of staggering stages in evolution both in the scientific as well as the philosophical realms. The areas I have presented, though by no means unique, are still powerful examples of the underlying search for a dialectical unity driving man in his scientific and philosophical quest. In the following section, I will present how the realms of theology and science eventually reached a critical threshold, a point of no return, a point of emergence, which brought about probably the greatest paradigm shift that humanity has encountered.

6.4.4 The Post Copernican paradigm shift: the universe as a measurable model

An important stage in both the scientific and philosophical realms -with enormous religious implications-, was the paradigm shift that occurred in science as a direct result of Copernicus’ planetary model. (McClellan & Dorn 2006) Living in the height of the Renaissance, Nicolaus Copernicus (1473-1543) attempted to resolve the problem of planetary movements realising that classical astronomy’s imperfections were based on a fundamental error. Having reviewed all accessible scientific literature from the past, he found that the Pythagoreans and Platonists had proposed a moving Earth; Aristotle’s geocentric universe was, therefore, not the only option to consider. (McClellan & Dorn 2006) Copernicus thus set forth to form a heliocentric model for the universe with the Earth rotating around the Sun.
Johannes Kepler (1571-1630) further vindicated the Pythagorean belief of a mathematically ordered universe, by conceiving elliptical orbits for the planets and Galileo Galilei’s (1564-1642) telescope provided tangible and qualitative new evidence, his observations pointing towards a much larger than previously conceived universe. (McClellan & Dorn 2006) Unfortunately, the Catholic Church chose to retain the cosmology suggested in the scriptures, favouring a stationary Earth, thus alienating the great minds of the day. It lost its influence and claim to represent human aspiration towards full knowledge of the universe, thus widening the divide between the spirit and the mind.

René Descartes’ (1596-1650) mechanistic philosophy, drawing parallels with the basic principles of ancient atomism, visualised an image of nature as an intricate impersonal machine strictly ordered by mathematical laws. (Tarnas 1996) The notion of the existence of an attracting force that governed both falling bodies and planetary motion completed the synthesis of a mechanistic universal model. Finally, with his three laws of motion (inertia, force and equal reaction), Isaac Newton (1642-1727) formulated what appeared to be the governing laws of the entire cosmos. Newton thus fulfilled Descartes’ mechanistic vision of nature establishing the foundation of a new worldview.

6.4.5 The advent of dualism: Man no longer at the centre of creation

The Scientific Revolution had a multitude of consequences. On the one hand, creation was finally viewed with empirical proof justifying measurable knowledge. On the other, however, the mystery of the world was removed. Mankind’s intelligence prevailed. Man had penetrated the universe’s essential order. God, the perfect being, existed as the creator of this perfectly explainable world, but was separated from it; the universe was self-sufficient. (Tarnas 1996) God’s existence was affirmed through reason and the universe was robbed of its Aristotelian teleological purpose. In this environment, Descartes’ dualism took hold. The dichotomy between mind and matter, the thinking substance and the physical body
was established. Upon this dual foundation philosophy proceeded and science conquered.

The scientific implications of this era essentially removed the Earth and thus mankind from the centre of creation. Up until that point mankind was always assured of his role and importance as the centre of reference. According to Tarnas (1996), a peculiar contradiction ensued. On the one hand, man’s intelligence was vindicated in revealing the laws of the universe; on the other, his cosmic position was no longer fixed or absolute. The new freedom enjoyed in this new worldview had also stripped him of his cosmic meaning. One could say that Darwin’s theories delivered the last blow. Man was no longer at the centre of creation and was little more than an animal whose consciousness rose accidentally through evolution.

o  **Kant’s Critical Philosophy**

In this climate, Immanuel Kant (1724-1804) concentrated his work in answering one of the most fundamental questions in philosophy: can man know anything at all, or rather can he know it as it really is. (Cottingham 1996) In doing so he constituted a criticism of man’s thought and the conditions of his thinking, generally described as ‘Critical Philosophy’. This study, named appropriately *epistemology* -the science of knowledge- is the department of philosophy that concentrates in the knowing process, the conditions, the limits and the validity of all that we know or think we know.

Life demonstrates that there is some proximate, practical truth evident to man, the empirical or experimental truth based upon experience (e.g. the sun will rise tomorrow). Kant’s position states that this knowledge, our knowledge of the external world, is limited and conditioned by the limits and conditions of our own minds and therefore it is knowledge not of reality but of appearances. (Cottingham 1996) Appearance and reality or the *phenomenon* and *noumenon*, is the categorisation of the Universe that Kant employs which specifies that our knowledge is only what appears to us and is therefore only phenomenal knowledge. (Cottingham 1996)
According to Kant, we know and we can know only the world of appearance, because we construct it in the very act of knowing it, by imposing the categories of the mind (space, time, quality, causality) upon it. (Tarnas 1996) The universal order is perceived within and by the mind; it conforms to the order that the mind has imposed on it. Absolute are only the a priori structures that the mind creates, through which sensory experience is channelled, leaving the world beyond the reach of human cognition. (Tarnas 1996) In Kant’s thinking, “[m]an can attain certain knowledge of the world, not because he has the power to penetrate to and grasp the world in itself, but because the world he perceives and understands is a world already saturated with the principles of his own mental organisation.” (Tarnas, 1996, p.345)

6.5 The revolt against Dualism: towards a unification of science and philosophy

The Cartesian view of a mechanistic universe and Kant’s assertion of our inability for real knowledge robbed man of his individuality and led to an identity crisis that is still discernable today. As in all other stages of his evolution, though, man is still driven by his need to belong. This shift in the balance provoked him and invited him to re-assess his standpoint. Starting two hundred years ago with Hegel’s ontological dialectics, as answer to Kant’s epistemology, we are witnessing an exciting age where the need for the convergence of our conflicting natures and theorisations has gradually led to a revolt against Dualism. Man is initiating all areas of his life to support him in this undertaking. The boundary principle is a manifestation of this urge. Twentieth century science and philosophy is thus pointing and striving towards unification.

6.5.1 Hegel's Ontological Dialectics

Like Kant, Georg Wilhem Friedrich Hegel (1770-1831) distinguishes between the world of appearance and the world of reality, however, for him the world of reality is
not a number of unknown entities, but a single, unified structure of thought. (Cottingham 1996) Hegel conceived each fragment of the Universe - whether thought or thing - as a link to the next fragment of reality - so that the whole formed a coherent unified structure. The world of appearance is contained within this whole, seen as a partially revealed aspect of it. (Cottingham 1996) In Greek, the ὅλον (olon) is the whole, the entire, the complete in all its parts. Aristotle in his Metaphysics refers to the ὅλον as the universe, implying on it a distinction of definite order. (Adler 1991) In Plato, importance is given to the antithesis between infinite and finite. Infinite is the unspecifiable and finite is the boundary, the limit, the analogy, the μέτρον, the definition with which and through which freedom is given an existence, a being. (Cottingham 1996)

According to Honderich (1996), Hegel’s arguments deal with the nature of things and the nature of our thinking of things, described as the Axiom of Internal Relations. For Hegel, seeking to obtain a complete understanding of any one thing demands a reference to other things, because by itself a thing is not self-sufficient (e.g. glass is more brittle than stone). These relations between things reveal and partly constitute their nature, penetrating into their very being, making them what they are. These relations, of course, are not one-way links; they are part of the same related structure.

Hegel continues this thought process while examining the theory of knowledge, objecting to previous views that the knowing mind and the object known can be considered as two initially separate things, with knowledge being the relation that brought them together. (Honderich 1995) For Hegel knowledge exists initially as a unit composed by the knowing mind and the object known; they do not exist in reality as separate things. (Tarnas 1996)

Hegel’s dialectics are ontological; they support the coexistence of thesis - antithesis in every stage of dialectics and the production of a meaning not as a final result, a synthesis, but as a dynamic interaction of two dialectically opposite definitions, which have as a common denominator their unbreakable unity. (Tarnas 1996) This
unity is a representation of the power each side has to withstand in itself its opposite, showing a fundamental connection with the notion of boundary.

As seen so far, the notion of *boundary* has emerged in a variety of intensities, directly or indirectly, named or implied among the different philosophies. This suggests that the *boundary* has a powerful place in human thinking as it provides the underlying thread beneath the philosophies of these people. There are boundaries that exist in human thoughts. Indeed, philosophy expresses in itself a kind of *boundary* between our environment and thought. However, philosophy does not place barriers between the world and our knowing and understanding of the world, but instead strives to surpass them.

### 6.5.2 Science in crisis: a quantum paradigm shift

Karl Popper’s influential critique on science suggested that science can never produce certain knowledge and that no theory can be viewed as more than conjecture because another theory can at any time falsify it. (Samir 2002) According to Popper, rigorous testing and attempts at falsification of one’s theory are necessary. Thomas Kuhn, however, pointed out that seldom does a scientist attempt to falsify his own theories, instead choosing to build his paradigm on conformations: self-criticism gives way to self-validation. (Kuhn 1970) Finally, however, as seen in the evolution of science so far, when enough proof of falsifying data is gathered, a radical change becomes inevitable. Kuhn called this a paradigm shift, a radical shift of vision that can in fact be seen as akin to radical jumps in evolution. (Kuhn 1970)

Indeed, the major change in the 20th century took place at the heart of scientific thought in the West. Astonishing developments in physics—including electromagnetic fields, quantum physics, relativity theories and string theory—led to another paradigm shift, one that paradoxically re-established man’s position in the centre of the cosmos. (Tarnas 1996) Crushing the Newtonian model, Modern Physics and especially Quantum Theory showed that there is no objective reality that the physicist can know. (Bohm 1980) Curved space and the existence of multiple
dimensions challenged our belief in our ability to visualise and conceive space at it really is. (Hawking 1998) Werner Heisenberg, a major contributor to Quantum Theory, said that: “The one thing we can know of Nature is our knowing of it”. (Heisenberg 1989) It was shown that it was impossible to remove the observer from the phenomenon. In fact, human consciousness, observation and interpretation seemed to have an inherent influence in the phenomena (Bohm 1980) In addition, matter and energy were shown to be interchangeable, unable to be separated, giving it an almost spiritual identity; thus a new holistic thinking about the world was encouraged. (Bohm 1980)

At the same time, the catastrophic applications of this scientific revolution, witnessed in the use of the atomic bomb, led many to distrust science, as well as the nature of humanity. This disillusionment had as a result a growing alienation towards the modernist ideologies where man is seen as the master of Nature. It became obvious that man could not continue to regard Nature as something to be taken advantage of but needed to be respected. Nature could no longer represent the object that God has given to Man to rule over and take advantage of in order to improve the quality of his life. Modern Physics had subtracted not only the functional but also the theoretical basis of this rule, because it had shown that the objective reality that the physicist once believed he could know does not exist. (Bohm 1980) Science needed to be looked at again as a worldview not as a separator of man’s unity with nature. In the words of Heisenberg, “... the atomic physicist is obliged to realise that science is nothing but another link in the infinite chain of the dialogue between Man and Nature and cannot speak of Nature as such. Science presupposes Man and we are obliged to realise that in the theatre of life we are not just spectators, but also actors”. (Heisenberg 1989)

6.5.3 ‘The Theory of Everything’: searching for a unifying theory

A large number of physicists are preoccupied with providing an answer about the universe through a unified ‘Theory of Everything’. Stephen Hawking, Professor Emeritus of Mathematics in Cambridge University, gave a lecture in 1980 titled: ‘Is
the end in sight for Theoretical Physics’. In this lecture he described the progress physicists have already made in the last 100 years in understanding the universe and asked what the chances were that we would find a theory of everything by the end of the 20th century. (Hawking 1998) In his 1998 lecture at the University of Crete titled The Theory of Everything, he commented that, although theoretical physics has come a long way, particularly in the previous three years, the theory of everything seems to be quite a long way away. However, the quest is still on to find an answer to Theoretical Physics in the near future. Hawking (1998) attempted to describe the problem of finding the theory of everything in its constituent parts.

The description of the universe around us is divided into two parts:

1) **Local Laws:**
A set of Local Laws describes how a region of the universe evolves in time, if we know its initial state and how it is affected by other regions.

2) **Boundary Conditions**
Boundary Conditions specify what happens at the edge of space and time, in a search to determine how the universe begins and maybe how it ends.

As an indication, the Local description of the universe has again been split into two parts:

a) **Matter**
Matter is composed of a set of elementary particles, like the electron, the proton and the neutron.

b) **Forces**
Examining the various forces between the matter particles:
The connection between them was that one matter particle emitted a force-carrying particle and another matter particle absorbed it. This process is a bit like American football or rugby with one player throwing the ball to another. Both the throwing and the catching will cause the surrounding players to recoil. Similarly the emission and absorption of the force-carrying particle will affect the motion of the matter particles in the same way as if they had exerted a force on each other. (Hawking 1998)

Many people including probably the majority of Physicists believe that the task of Theoretical physics should be confined to the first part that includes *Local Laws* and describes how the universe evolves in time and the question of how the initial stage is determined as being beyond the scope of physics and into the role of metaphysics and religion. The subject of boundary conditions, though, is still very controversial. Dualities exist between the different theories. The same conclusions can be reached, but no theory can be uniquely correct. It is Stephen Hawking’s belief that they may be different expressions of the same theory; a small area being accurate, but a large area distorted. According to Hawking, a unified theory will give a view on how the universe evolves in time but not its original state. For him universe simply is as it is now, because it was as it was then. He insists on a ‘no boundary proposal’, that is that the boundary condition of the universe is that it has no boundary, no Limit, no end, and that as a whole, “... if we were to discover a complete theory of cosmology, we might come to know the mind of God.” (Hawking 1998)

- **Uniting the spiritual and material world**

Science, however, now more than ever, seems to be at cross-purposes with traditional faith. Faith and reason represent different worlds, speak different languages and maintain different notions of truth. As we have seen, all great religions have tried throughout history to ‘explain’ the science of their day. The guiding force behind this is a need to form a coherent picture of the world and our own place in it. For the ancient Greeks, the Gods were the embodiment of the forces of nature. For the
Buddhists the universe is the all-embracing state of consciousness and humans need to attempt to re-unite with it. The Christian faith, however, concerned with social unification and order represented in the oneness of the body of Christ, embraced in a way, from the beginning, the Platonic conviction of the separation of the earthly world matter and the spiritual world leading to an earth centred cosmology. (Tarnas 1996) It has, since, become increasingly difficult to accept both scientific discoveries and religious or spiritual beliefs, as they depend on different truths.

However, man increasingly needs to understand himself and his world in a coherent picture. The mechanical physics of Newton and the Darwinian biology of the survival of the fittest or of random evolution, have given us a vast amount of information but tell us nothing about ourselves, about consciousness and the purpose of conscious creatures in our world, leaving us spiritually starved. (Tarnas 1996) The quest is on for a material proof of the existence of consciousness through science, as this would enable man to place himself complete in the world, uniting the spiritual and material worlds.

6.5.4 Bohm’s unfolding-enfolding universe and consciousness: Wholeness and the Implicate order

David Bohm (1917-1992) has attempted to build a theory that would make it possible to comprehend both the cosmos and consciousness as an unbroken totality. In his unfolding-enfolding universe Bohm is proposing a new notion of order – the implicate order, taken from a Latin root meaning ‘to enfold’ or ‘to fold inward’. (Bohm 1980) He contrasts this to the explicate order still dominant in physics which sees things independently lying in their own particular region of space and time. In his mind, the mechanistic world-order, the fragmented way of looking at the world as constituted of different elements is difficult to be changed. This is because it goes deep into the understanding of modern man and his consciousness of self. Bohm (1980) suggests that it would be more beneficial to change the task of science. According to Bohm (1980), instead of starting from the parts in order to derive to wholes through abstraction by explaining the interactions of the parts, one should
begin with an undivided wholeness of the universe and derive the parts from abstractions from the whole.

For Bohm (1980) this new notion of order is necessary in order to break through the deadlock of physics. He portrays relativity theory and quantum mechanics as the major challenges of the mechanistic order. However, although it does not seem possible to unify them, he insists that instead of looking at their differences it is better to look at what they have in common. (Bohm 1980) According to Bohm (1980), what they have in common is undivided wholeness and he therefore suggests that a qualitatively new theory is needed, “... one from which both relativity and quantum theory are to be derived as abstractions, approximations and limiting cases.” (Bohm, 1980, p.176)

According to Bohm (1980), the theory of relativity implies that no coherent concept of an independently existent particle is possible. In terms of this notion, for Bohm, relativity theory conveys that “... the entire universe (with all its ‘particles’, including those constituting human being, their laboratories, observing instruments, etc.) has to be understood as a single undivided whole, in which analysis into separately and independently existent parts has no fundamental status.” (Bohm, 1980, p.174) On the other hand, quantum theory exposes that movement is in general discontinuous, that entities can show different properties (particle- or wave-like) depending on the environmental context within which they exist and that two entities (such as electrons) show a peculiar non-local relationship. (Bohm 1980) Through quantum theory, Bohm (1980) also sees the universe portrayed as an unbroken whole. “In this whole, each element that we can abstract in thought shows basic properties (wave or particle, etc.) that depend on its overall environment, in a way that is much more reminiscent of how the organs constituting living beings are related, than it is of how parts of a machine interact.” (Bohm, 1980, p.175)

Bohm (1980) considers it important to redirect the way by which we view ourselves - our humanity- as distinct from the cosmos. He believes that man’s general way of thinking of the totality, is crucial for the overall order of the human mind. He uses
music and the growth of a living plant as examples of this order. Through music, the enfolded order “... is sensed immediately as the presence together of many different but interrelated degrees of transformations of tones and sounds. In listening to music, one is therefore directly perceiving the implicate order.” (Bohm, 1980, p.199-200) For the example of the plant, he states that the growth of a plant starts from a seed, but the seed itself contributes almost nothing to the actual material substance and the energy that it needs to grow. (Bohm 1980) What it does contribute, though, is direction. In the form of DNA, the information imbedded in the seed somehow directs the environment to form the corresponding plant, which in turn is uniquely shaped by its environment. Echoing Aristotle’s formative and final causes, Bohm (1980), therefore argues that life itself is enfolded in the totality and that even when it is not manifest it is somehow implicit to the totality. Man should therefore be viewed in the same way; not as an independent actuality who interacts with other human beings and with nature, but as a creative projection of a single totality. (Bohm 1980)

6.5.5 The quantum self unifying matter and consciousness: A Coherent World View through Quantum Physics

Danah Zohar, in her book The Quantum Self, argues in favour of using Quantum Physics to portray a quantum mechanical model of consciousness, in order to reach a physical basis for a coherent world picture. A fundamental issue in this pursuit is the possibility of reality having had a creative role to play in developing consciousness and through this an understanding of the meaning of consciousness. (Zohar 1991)

From elementary to advanced forms of consciousness, Danah Zohar argues that “... the physical basis of consciousness rests on a very special sort of dynamic relational holism, a coherent ordering of some bosons (photons) present in neural tissue or neurone cell walls.” (Zohar 1991) This quantum coherence makes possible “... the coherent firing of most neurones (10^{11}) in the human brain and the integration of information to which their firing gives rise, thus giving us the unity of consciousness
and, ultimately the sense of self and world.” (Zohar 1991) According to Zohar (1991), the quantum coherence (ground state of consciousness) and the neural tissue (matter), in relationship to each other, give the brain its conscious functioning capacity, which is linked to all the networks that process data from the environment. “So at the level of consciousness found in ourselves and higher animals, the creative dialogue between matter and consciousness is obvious and crucial – neither is reducible to the other, and yet neither could function without the other.” (Zohar 1991)

This ordered quantum coherence is not self-conscious, it does not have a sense of purpose, however, Zohar (1991) argues that it has a sense of direction. “Life seems always to create more life, more and greater quantum coherence. And at each level where there is greater quantum coherence, there is a creative give and take between that coherence and its material surrounding.” (Zohar 1991) According to Zohar (1991), the increasingly coherent ordering of complex quantum systems takes place because of the special kind of relationship that exists wherever two bosons meet, in their propensity to bind together, to overlap and to share an identity, and as a result, tracing our consciousness back to its roots. Danah Zohar here refers to Ilya Prigogine, who argues that order always increases and that a living system is an open system, and it cannot maintain its drive towards increased order in a static or homogeneous universe, a universe at equilibrium. According to Prigogine creativity happens at far from equilibrium conditions and gravity may be regarded as a basic organising factor in the universe, mediating the passage from equilibrium to non-equilibrium; gravity itself is a boson field. (Zohar 1991)

Zohar (1991) goes deeper in detail: Bosons are essentially ‘particles of relationship’, the fundamental building blocks of all of Nature’s Forces (gravitational, weak and strong nuclear, electromagnetic) binding together the material world. The fundamental building blocks of the material world are fermions (electrons, protons) and they are referred to as antisocial, since they prefer to keep themselves to themselves. If it wasn’t for the bosons, this is what would happen. However, from the beginning of what later became the material world and the world of
consciousness, the building blocks of matter (fermions) and the building blocks of consciousness (bosons) have essentially been involved in a creative dialogue, creating themselves and the world and fulfilling their nature as ‘relationship’. (Zohar 1991)

This is in a sense Danah Zohar’s (1991) ‘genealogy of consciousness’ tracing the roots of our physical and mental lives to the creative dialogue between bosons and fermions. It lends a new perspective to what physicists call ‘The Anthropic Principle’ which maintains that the universe has to look like it does to us because it is we who are looking at it (weak anthropic principle), that some intelligent life had to result from the unfolding universe (strong anthropic principle) and lastly that observers are necessary to bring the world into being (participatory anthropic principle). (Barrow 1986) According to Danah Zohar, these observers are “... not fully fledged, intelligent, conscious beings like ourselves, but rather ourselves and all our long line of predecessors, going back to simple boson pairs”. (Zohar 1991)

Recently, many people have begun to sense that the new physics, -primarily quantum physics- would provide the answer for a new world-view, one that gives us a physical basis to a holistic way of knowing ourselves within the world. As presented here, Danah Zohar has indicated how the physics of human consciousness can be traced back to quantum processes within the brain and that as a result human consciousness and the whole world of its creation shares a physics with everything else in this universe. It therefore becomes impossible to imagine a single aspect of our lives that is not drawn into one coherent whole. In Danah Zohar’s (1991) words: “ Crudely put, mind is relationship and matter is that which it relates. Neither on its own could evolve or express anything; together they give us ourselves and the world.”
Synthesis: The archetypal boundary as the mythos of our age

- The philosophical and scientific heritage: an ongoing dialectic

As seen throughout the sixth chapter, the drama of our humanity reaches now an exciting turning point. Man through his development of philosophical and scientific thought initiated the struggle to apply reason to our existence. Our advanced consciousness of self becomes bound in a continuous cycle of reference, examination and attempts of independence with the otherness. Our role within it or separated from it is put into question.

The evolution of our mind has taken us to an extraordinary dialectical journey in its attempt to understand its purpose. At the beginning we have witnessed a primordial bond with the cosmic womb. Mankind then initiated the separation, moving gradually further and further away from his surrounding world. Gaining confidence in his own powers and intelligence, man placed himself as the master of Nature. His new worldview became devoid of intrinsic meaning and spiritual purpose, leaving him in crisis. The mechanistic worldview escalated to a dichotomy between human culture and nature, robbing his individuality of its context; the cosmos. This alienation is often described as the curse of modernism. By endorsing this mechanistic worldview, modernism ultimately failed because it did not reveal a greater, ordered coherence. It was, however, a necessary part in the evolution of our mind in its attempt to understand the cosmos and its purpose within it. Becoming aware of its own hubris in its self-created seclusion, our mind is again yearning to reunite with the cosmos. In our age something indeed is ending; something new, however, has begun.

As seen in the previous sections, the recent scientific discoveries confirmed that man cannot be taken away from the phenomena. The world was thus revealed essentially as a construct and human knowledge as interpretive. Human endeavours could no longer establish their ground on an independent reality. “Meaning is rendered by the mind and cannot be assumed to inhere in the object, in the world beyond the mind,
for that world can never be contacted without having already been saturated by the mind’s own nature.” (Tarnas, 1996, p.419) In this way, the phenomenology of human experience started to enter formal philosophy. Instead of analysing an objectified world the philosophers of this age focused their attention on ‘being’ itself; they focused on the lived world of human experience and its complexity. Human knowledge was itself seen as a reality within a metaphysical system where the Universal Mind reveals itself through man.

- **The Universal Mind revealing itself through man:**
  - our mind as boundary

The relation of the human mind to the world can ultimately be seen not as dualistic but participatory. According to Tarnas (1996), this conception acknowledges the validity of Kant’s critical insight that all human knowledge of the world is in some sense determined by subjective principles. These principles, however, can be seen as sharing their essence with the world, in a way not unlike the one supported by the ancient Greek heritage. They can be seen as “… an expression of the world’s own being, and that the human mind is ultimately the organ of the world’s own process of self-revelation. Nature’s unfolding truth emerges only in the active participation of the human mind. Nature’s reality is not merely phenomenal, nor is it independent and objective; rather, it is something that comes into being through the very act of human cognition. Nature becomes intelligible to itself through the human mind.” (Tarnas, 1996, pp.433-434) Our mind is thus the ultimate boundary, invited to engage in perpetual creative opposition with the cosmos, as a boundary in dynamic unity.

David Bohm’s implicate order points to a notion of a higher-dimensional reality. He is led to propose a “… more comprehensive, deeper, and more inward actuality, which is neither mind nor body but rather a yet higher-dimensional actuality, which is their common ground and which is of a nature beyond both.” (Bohm, 1980, p.4) We call our conceptualisations of these realities, theories, but they might best be described as insights. “(O)ur theories are not ‘descriptions of reality as it is’ but,
rather, ever-changing forms of insight, which can point to or indicate a reality that is implicit and not describable or specifiable in its totality.” (Bohm, 1980, p.17)

Karl Popper saw man approaching the world as a stranger with a thirst for explanation and an ability to create myths, theories, conjectures that at times turn out to be successful. (Tarnas 1996) His unsatisfying explanation was that these successful theories created by man were lucky guesses. Tarnas, however, offers another possible rationalisation, one that detects the quest for knowledge at a far deeper source. He believes that these bold conjectures and myths come “... from the wellspring of nature itself, from the universal unconscious that is bringing forth through the human mind and human imagination its own gradually unfolding reality.” (Tarnas, 1996, p.345)

Tarnas (1996) believes that there is a reciprocal existence between mind and world. The human mind does not reveal an objective truth in the world but rather that the world’s truth achieves its existence when it comes to birth in the human mind gradually in the form of new stages of human knowledge much as a plant that grows and blossoms. (Tarnas 1996) This thought process sees the mind as sharing a radical kinship with the cosmos, which would also reflect the pivotal role of our mind as the vehicle of the universe’s unfolding meaning. (Tarnas 1996) “[A]s Hegel emphasised, the evolution of human knowledge is the evolution of the world’s self-revelation.” (Tarnas, 1996, p.435)

The universe and man are thus seen as constituting a living totality. This reality is unfolded in our consciousness, it exists within us. We are unconsciously aware of it as a boundary that invites us to engage with it in a perpetual dialectic, a creative boundary.

- **Eros, a dynamic expression of boundary**

It becomes clear that through this paradigm shift we are witnessing a powerful archetypal dialectic in the modern mind, a rebirth of man, a profound boundary
between self and other, experience and reality and ultimately us and the cosmos. There is a sense of a renewed consciousness of self. Man is searching for his legitimate place in this unity, this cosmic scheme of things. He is now reaching towards a new synthesis with his world through a dialectical opposition that has taken him from the primordial undifferentiated consciousness through to the dualistic alienation and back towards a redemptive synthesis and reunification of the individuated self within the universal matrix.

The Möbius Strip, the mathematical mystery deriving its name from the German mathematician Augustus Möbius (1790-1868), was used by Ruth Nanda Anshen as a symbol of convergence (Anshen 1983). In contrast to a cylindrical strip that has two surfaces (inside and outside), the Möbius Strip has only one continuous surface and eventually converges with itself. If an ant were to crawl along the length of this strip, it would return to its starting point having traversed every part of the strip without ever crossing an edge. The Möbius Strip has no inside or outside, no beginning or end. “Converging with itself it symbolizes the structural kinship, the intimate relationship between subject and object, matter and energy, demonstrating the error of any attempt to bifurcate the observer and participant, the universe and man, into two or more systems of reality. All, all is unity.” (Anshen, 1983, p.xxiii)

Science and philosophy, from their most general theoretic and cosmological edges to their most practical and detailed parts, have been the vehicles of our effort to provide a complete picture of our existence; leading us to challenge as well as reassure ourselves that our existence is an integral part, an ontological brick in this world. (fig.6.5-6.6)

According to Anshen (1983), we are beginning to accept our convergence with the Cosmos by allowing the mystery of our surrounding world to be gradually revealed to us. “Mind and matter, mind and brain, have converged; space, time, and motion are reconciled; man, consciousness, and the universe are reunited since the atom in a star is the same as the atom in man. … We have reconciled observer and participant. For at last we know that time and space are modes by which we think, but not
conditions in which we live and have our being. Religion and science meld; reason and feeling merge in mutual respect for each other, nourishing each other, deepening, quickening, and enriching our experiences of the life process. We have heeded the haunting voice in the Whirlwind.” (Anshen, 1983, p.xxii)

figures 6.5-6.6: Unifying Creation Mythology and Science: Shiva’s Cosmic Dance a symbol of creation and destruction, birth and rebirth, quite appropriately placed at the European Centre for Research in Particle Physics (CERN), in Geneva. Source: Source: www.fritjofcapra.net/shiva.html

The Möbius Strip, a symbol of convergence: no inside or outside, the surface converges with itself, the unity of man and cosmos.

Source: Nobel museum, Stockholm.

The scientific and philosophical paradigm shifts can thus be seen as a necessary part of a larger evolutionary process. No stage should be dismissed as a mistake; they are all integral parts of our unfolding being in its dynamic interaction with the cosmos. According to Tarnas, the Cartesian hero that has attempted the separation is a masculine, suffering hero; seeking redemption and unity, he embraces the ‘female’ cosmos. (Tarnas 1996) Could we not see this as the creative force that it is? Could we call this the archetypal Eros? Is longing for reunification not an act of love?

In Plato’s Symposium, Socrates and his guests attempt to decipher the nature and meaning of Eros. Socrates calls on Diotima, a priestess, who claims that the highest fulfillment of Eros is the philosopher’s conjugal union with the Idea of Beauty, which brings forth the birth of wisdom. (Vlastos 1981) Setting Eros against Beauty, Diotima identifies Eros as the in-between, something that is neither beautiful nor
ugly, good or evil, ignorance or wisdom; instead she insists that Eros is capable of being either one. (Hyland 2008) Answering her own question, Diotima identifies the function, the *ergon* of Eros as ‘giving birth in beauty, both in body and soul’, binding together the divine and the mortal into a whole. (Hyland 2008) Ultimately, Eros is the philosopher whose quest, whose *telos*, though unattainable, is wisdom. Eros is thus manifested in the boundary, with man inhabiting and driving this boundary.

This emerging synthesis, this archetypal boundary is indeed the purpose, the direction, the Aristotelian *aitia* of our being. And it is finally leading us to reunite with our alienated but not lost other. In the words of Wolfgang Pauli, from his ‘Writings on Physics and Philosophy’: “Contrary to the strict division of the activity of the human spirit into separate departments - a division prevailing since the nineteenth century - I consider the ambition of overcoming opposites, including also a synthesis embracing both rational understanding and the mystical experience of unity, to be the mythos, spoken and unspoken, of our present day and age.” (Pauli, ca.1957, quoted in Brockelman, 1999, p.3)
CHAPTER 7:
Architecture embodying the man – world boundary
Architecture as a fundamental manifestation of existence within the cosmos

Introduction

In the previous chapters, I attempted to present the extraordinary journey of the mind. Through these evolutionary stages, I became aware of the inherent dynamic between our mind and our world in our attempt to achieve an understanding of self, while at the same time yearning to understand our position in the cosmic scheme. The interdependence of existence of the human mind and our world becomes evident. Bound in this dialectical creative opposition, our conceptualisations of the world are seen both as insights of our mind in its attempt to unravel the meaning of the cosmos, as well as the cosmos’s attempt to gradually reveal its nature within us. The mind’s radical kinship with the cosmos and its role as the vehicle of the universe’s unfolding meaning is thus revealed.

In this chapter, I will attempt to delve deeper into this unfolding dialectic of mind and cosmos as it is manifested in the realm of architecture. The aim in the following sections of the thesis will be to reveal the nature of architecture as a fundamental manifestation of our existence within the cosmos and its capacity to engage the boundary between man and the cosmos by inviting us to read a model of the world while at the same time endowing us with our own sense of self. In order to do so, I will address a range of writings by leading thinkers and architects whose insights in the domain of architecture as well as their creations truly reflect this boundary.

As seen earlier in the thesis, it is not only experiential knowledge, but most importantly its interplay with his innate knowledge that has aided man in finding his footing in the world. Neil Spiller (2010) sees in the obsessive search for new
digitally emergent forms and gratuitous and seductive complex surfaces and structures in architecture, the danger in ‘forgetting’ the human element and subtracting it from the architectural product by focussing architectural discourse to issues of instrumentality. I will attempt to oppose this trend and identify the numerous nuances that architecture possesses, in an effort to present a polemic for the complexity in architecture that includes the unnamed, innate mystery of man’s relation to the cosmos. The intention here is to gain insight into why certain experiences of architecture seem to touch us in a deep and unexpected way through to our very core, by awakening the intense memories of being in the world that well up in us as ‘involuntary memories’. (van Schaik 2002)

The built environment, like language, has the power to define and refine sensibility, in the same way that words contain and intensify feeling, sharpening and enlarging consciousness. (Tuan 1977) Man possesses endowments with which to apprehend the world and find meaning in it and we should, therefore, not be affected by blindness to experience, but instead try to comprehend what being-in-the-world is truly like. (Tuan 1977) This will provide a vital insight into the essence of architecture as a profound manifestation of the man-cosmos boundary.

In his celebrated analysis of the ‘house’, Gaston Bachelard (1964) attempted to distil a permanent message out of the transient notion of habitation, insisting that people need houses in order to dream and to imagine. He asserts that the house we were born in is physically inscribed in us, so much so, that whenever we read about or experience space we are transported to that particular, original experience of space that we first encountered. According to van Schaik (2002), Bachelard’s work continues to be compelling because it points towards an architecture that affects people by touching their own ‘lost’ knowledge and awareness.

Bachelard (1964) sees the dialects of inside and outside as informing the nature of being, confronting man’s being with the world’s being. The nature of the concept of boundary reflects this challenge through the attraction of the other in order to define the self. Massumi urges that: “The equilibrium of the physical environment must be
re-established, so that cultures may go on living and learn to live more intensely, at a state far from equilibrium.” (Massumi, quoted in Massey, 2005, p.160) He suggests that the unpredictable and essential transformation of being is felt before it is thought; reaching a critical boundary it emerges reborn through an immanent limit. In these thoughts, I could discern the universality of the concept of boundary. It is in the boundary that Massumi’s event horizon is located, triggering a potential dynamic transformation.

In the following section, I will visit the insights of Maurice Merleau-Ponty as it informs the structure of the potentiality of our consciousness by bounding idea and phenomena. In Maurice Merleau-Ponty’s writings, especially his essay on The Visible and the Invisible (1968), the role of the body in phenomenal experience takes centre stage. In his writings our body and mind are revealed as undivided. Our flesh and the flesh of the world in their turn are revealed as one. Merleau-Ponty (1962/1968) believes in the interdependence of thought and feeling, of flesh and idea and on the indissoluble bond between mind and world. Our living body and the world are intertwined. We perceive with our whole being. Merleau-Ponty (1968) points to a potentiality of consciousness which is reflected in this intertwining and which affects man unto the depths of his being by endowing him with a sense of self.

I will continue with Juhani Pallasmaa’s insights on architecture as the medium of existential and embodied experience. For Pallasmaa (2005/2009), the boundary between the self and the world is identified by our interacting thinking senses. The embodied nature of architecture has the capacity to articulate our being in the world providing a confrontation with our own existential boundary and directing us to experience our existence with unique intensity. (Pallasmaa 2009)

I will then search into the nature of the relationship between body and place, starting with Michel de Certeau (1984) who, by comparing the nature of movement with language, asserts that there is a rhetoric of walking within the palimpsest that is place. In her attempt to define a new, progressive, global sense of place, Doreen Massey (1994) asserts that place is not a static entity but a process, without a unique
identity whose specificity is continually reproduced. I will then move to Yi-Fu Tuan (1977), according to whom the built environment, like language, has the power to define and refine sensibility and to sharpen and enlarge consciousness. He identifies place as security and space as freedom wondering whether “… space and place [are] the environmental equivalents of the human need for adventure and safety, openness and definition.” (Tuan, 1977, p.202)

Martin Heidegger (1951) calls for man to learn to dwell. His thought and his insights on architecture gathering the world and dwelling poetically will be interpreted next. Here, I will delve deeper into the associations this philosopher makes between building, dwelling and thinking, his analysis of the bridge and the temple as gathering the world and architecture as the multifarious in-between, existing between earth and sky. (Heidegger 1951) Georg Simmel’s interpretation of the Door and the Bridge will provide further insight on the inherent connection and separation imposed by the human mind as it attempts to understand the world and the self within it. The reflections of Norberg-Schulz (1972) on the nature of place and man’s role in endowing it with meaning will be presented next.

Gathering the world, architecture’s embodied nature has the capacity to connect our consciousness back towards the world and reveal our fundamental kinship with it. Through the invitation issued by the embodied and existential experience of architecture, engaging our united body and mind, the universe is unfolded. Man is again revealed as the boundary, as the vehicle of the universe’s unfolding meaning and architecture as the medium of this revelation.

I will then move towards the spiritual nature of architecture and how it is revealed through the notion of unity of the Buddhist En translated as spiritual and physical transactional space –boundary- in traditional Japanese architecture. (Nitschke 1994) The spirituality of Tadao Ando’s architecture will also be put forward as it is translated in his design of a temple and a house. Their unique interpretations, merged with the natural and spiritual realm of the Japanese culture, are seen as endowing man with the strength to engage with the world and achieve a sense of self.
Alvar Aalto’s lyrical architecture presents a unique interpretation of the Finnish natural and cultural environment. It will be presented as it engages in a double movement, with nature providing a distinct sense of the circle of life. (Weston 1996) Through Aalto’s work, seamlessly merging idea and phenomena, the inherent beauty of architecture is discerned. Gathering the unique Finnish environment, the chosen examples portray architecture’s capacity to bind man with the world.

In Carlo Scarpa’s work, I could detect a unification between the architect’s intentions and his architecture. Merleau-Ponty’s (1968) potentiality of consciousness is here evident in the flesh. The layering of meaning that Scarpa bestows on his work is both driven and inherent. The intentionality of his composition in Castelvecchio with its elaborate details and its sensitivity towards the context will be presented and his work revealed as an effortless unification of the logos of techne and the techne of logos, the phenomenal and the mental world. (Fascari 1984) As an architect, Scarpa has achieved a fusion between body and mind and through his architecture he has succeeded in transferring this fusion to the perceiver and the perceived.

Similarly to Scarpa, Steven Holl’s architecture displays an intense experiential depth. Profoundly influenced by Merleau-Ponty’s insights, Holl’s architecture rests on a solid conceptual ground binding idea and phenomena and guiding his process of architectural creation. These are the concepts of anchoring, intertwining and parallax. The aim of his architecture is to demonstrate the indissoluble bond between our lived body and the world and to raise architecture to a level of thought. (Holl 1996) Through anchoring, the essence of the site, as the site force, is poetically linked with the idea force and carried by a limited concept. They are both intertwined by the presence of the body in space endowing them with meaning. (Holl 2000) This in turn again points towards man as the boundary, his body and mind united in reference to his environment. The example of the Helsinki Museum of Contemporary Art will be presented as it embodies this architect’s intentions and demonstrates the potential of architecture as a carrier of meaning inviting the visitor to a journey of body and mind.
I will continue with the insights of Thomas Mayne of Morphosis and his passionate search for ‘a third way’ in approaching architecture through investigation in a constant state of doubt by embracing complexity and hazard. His essay on Connected Isolation (1993) enriched by Richard Sennett’s (1991) and John Fowles’s (1964) writings indicates the struggle of the mind and its longing to understand. In its violent open-endedness, the architecture of Morphosis materialises this effort of man to understand and to belong. By inviting or even forcing the perceiver to learn through inquiry and doubt, Morphosis attempt to inspire and assist man in redefining his public role and achieving a sense of self in our rapidly changing modern condition. The role of architecture is indeed central in our understanding of change. (Woods 2006)

Opposing the investigating architecture of Morphosis that confronts man with the awareness of solitude and incompleteness, I will also address the ability of architecture to effortlessly instil in us a sense of belonging, as displayed in the work of Louis Barragán and Peter Zumthor. The unconscious beauty of architecture has the ability to stir our emotions. This dual nature of architecture is important to uphold. As I have presented in the previous stages of the thesis, man needs doubt in order to evolve. The universe issues this invitation. The sense of belonging is indeed achieved through struggle. Deep inside us, though, we know we belong in this world and that we are an inherent part of it. At times the world unquestionably presents itself to us and embraces us with its unconscious beauty. We need this reassurance, this magical encouragement in order to go on, just as much as we need doubt. We thrive in this in-between, in this boundary.

The range of architecture is immense. In this final stage, I will attempt to distil the message and purpose of architecture, its timeless task. Recognising the inherent dynamic between man and cosmos, architecture is identified as a medium through which the essence of man is allowed to penetrate towards the cosmos and the essence of the cosmos to penetrate towards man. Man seeks that which completes him, for the unifying other that urges and invites him to know. Architecture provides the
stage for this drama to take place. Anchored in the place, merging our phenomenal and intellectual essence, architecture has this capacity to reattach man back to the world, to the place where he belongs revealing its nature as an existential manifestation of our being. Taking inspiration from Pallasmaa’s statement: “The timeless task of architecture is to create embodied and lived existential metaphors that concretise and structure man’s being in the world. ... Architecture enables us to perceive and understand the dialectics of permanence and change, to settle ourselves in the world, and to place ourselves in the continuum of culture and time.” (Pallasmaa, 2005, p.71)

7.1 Tension between formal and informal knowledge in architecture

Throughout the previous chapters, I presented the extraordinary dialectical journey of the evolution of our mind in its attempt to understand its purpose. Architecture, a primary cultural manifestation of man’s existence, has followed similar lines of development; from expressing a primordial bond with the cosmic womb evident in indigenous architectures, to the display of a mechanistic worldview in modernism. In this thesis, it is not my intention to articulate the development of architecture through time. Though this would be a valuable exercise, this is not the aim of this chapter. The intention here is to attempt to gain insight into why certain experiences of architecture seem to touch us in a deep and unexpected way through to our very core.

In the previous stages, I have revealed man’s complex nature and his dynamic existence in reference to the cosmos. From the moment that man achieved a realisation of self and thus difference, his developing mind has taken him to a journey of belonging, reference, alienation and redemption within his surrounding environment. As seen in chapter 3, the architecture of his mind has played a major role in the way that man experiences and interprets his environment. I showed that it is not only experiential knowledge but most importantly its interplay with his innate
knowledge that has aided man in finding his footing in the world. This genetic endowment works rapidly, silently and unseen but is still instrumental in the way it affects our preference in our surrounding environments. The maturity of our mind, however, and its attempts at independence throughout our evolution has also played a defining role in our understanding of our world reflected in the choices we make. It seems that these two poles of our human nature influence profoundly how we inhabit the world. “We usually fall into much error by considering the intellectual powers as having dignity in themselves, and separate from the heart; whereas the truth is, that intellect becomes noble or ignoble according to the food we give it, and the kind of subjects with which it is conversant.” (Ruskin, 1851, quoted in van Schaik, 2008, p.83)

In the Poetics in Architecture issue of the AD (Architectural Design) magazine, editor Leon van Schaik15 (2002, p.5) states that there is a clash between two basic forms of architectural knowledge: “… the formal, specialised traditions and systems and the informal knowledge that everyone holds in an internalised, often subconscious way.” He believes that it is not often that architecture succeeds in addressing this polarity between specialist knowledge and the continuum of human knowledge. (van Schaik 2002) Recalling Proust’s concept of ‘involuntary memories’, van Schaik (2002) appeals for the study of eidetic experience within architecture, the study of the intense memories of being in the world that well up in people as ‘involuntary memories’. This, he asserts, is essential in preventing the alienation that seems often to plague architecture.

In his essay Digital Solopsism and the Paradox of the Great ‘Forgetting’, published as a counterpoint in an AD (Architectural Design) issue dedicated to new technologies and complex form-finding in current architectural culture, Neil Spiller16 (2010) questions the hegemony and obsessiveness of this dominant focus and

15 Leon van Schaik is Professor of Architecture (Innovation Chair) at RMIT, the Royal Melbourne Institute of Technology.
16 It is perhaps important to state that Neil Spiller is Professor of Architecture and Digital Theory at the Bartlett School of Architecture and has researched and published widely on architecture and cyberspace and the blurred boundary between the virtual and the actual. If one takes into account his background, this essay displays a surprising and essential turn at self-criticism.
wonders if it ultimately comes to the expense of the final architectural product rather than to its benefit. He sees in the obsessive search for new digitally emergent forms and gratuitous and seductive complex surfaces and structures in architecture, the danger in ‘forgetting’ the human element and subtracting it from the architectural product by focussing architectural discourse to issues of instrumentality. (Spiller 2010) He states that the goal of the 21st century must be an “[a]rchitecture that digitally, historically, uncannily and ecologically doesn’t FORGET.” (Spiller, in Oxman & Oxman, 2010, p.134) Spiller calls for an architecture that is not just about itself, not just narcissistic, but that “… engages with humanity, its joys and fears, its actual and mnemonic context and its aspirations towards cross-cultural citizenry.” (Spiller, in Oxman & Oxman, 2010, p.131)

Spiller (2010) suggests that the problem lays in our modern perception and belief of the infallibility of the scientific method and its subsequent tyranny forces to the margins other approaches. Yi-Fu Tuan, philosopher and Professor Emeritus at University of Wisconsin-Madison, shares this opinion. In his book Space and Place, Tuan (1977, p.200) cites Lord Kelvin who went so far as to say that we do not really know anything unless we can measure it, asserting that: “Analytical thought has transformed our physical and social environment. … We are so impressed that to us ‘knowing’ is practically identical with ‘knowing about.” Tuan (1977) cautions that mind and vision are not the only endowments that man possesses with which to apprehend the world and find meaning in it. We should, therefore, not be affected by blindness to experience but instead try to comprehend what being-in-the-world is truly like. According to Spiller, “[a]rchitecture has numerous nuances that late Modernism has forgotten. Enigma, memory, mythology and quotational poetics are crucial to the prospect of creating architectures that invigorate all aspects of the human mind and not just the pocket.” (Spiller, in Oxman & Oxman, 2010, p.131) He is, however, not reductive, arguing for a “… symbiotic use of new technology with an understanding of the human longing to express humanity’s rich spectrum of aspirations and hopes in architecture and its lineaments.” (Spiller, in Oxman & Oxman, 2010, p.131)
It is precisely these numerous nuances that architecture possesses that I am trying here to identify, in an effort to present a polemic for the complexity in architecture that includes the unnamed, innate mystery of man’s relation to the cosmos.

7.2 The Poetics of Space: House as a metaphor of humanness

As seen in chapter 4, the inherent nature of language displays a fundamental bond between man and environment, a dynamic boundary. According to Tuan (1977), in the creation of architecture, man commits his whole being, mind and body, to the creation of a material form that captures an ideal, heightening his awareness. Offering an analogy with language, he compares “… the way that words contain and intensify feeling …” with the way that “… [t]he built environment, like language, has the power to define and refine sensibility. It can sharpen and enlarge consciousness. Without architecture feelings about space must remain diffuse and fleeting.” (Tuan, 1977, p.107)

The poetic element of language provides a surprising gateway towards the revelation of the nature of the bond between man and cosmos. Scattered throughout the rest of this chapter, poetic language will provide a vital insight into the essence of architecture as a profound manifestation of the man-cosmos boundary. I will begin by visiting Gaston Bachelard’s insights in his influential 1958 book The Poetics of Space.

7.2.1 The poet speaks on the threshold of being

The French philosopher Gaston Bachelard (1884-1962), in his celebrated analysis of the ‘house’, has attempted to distil a permanent message out of the transient notion of habitation. He claims that inhabited space transcends geometrical space and that the human element is a catalyst in this process; the boundary that gives meaning to space. According to van Schaik (2002), Bachelard’s work continues to be
compelling because it points towards an architecture that affects people by touching their own ‘lost’ knowledge and awareness. This lost knowledge can be called for through poetry.

Bachelard (1964) insists that people need houses in order to dream and to imagine. According to Bachelard (1964), a house as a child’s first cosmos has the power to shape his subsequent knowledge of all the spaces he encounters. Coupled with his inherent evolutionary knowledge of space, this early experiential knowledge directs his ability to dream; directs his material imagination.

Indeed, Bachelard (1964) asserts that it is in daydreaming that memory and imagination become associated. He suggests that there is a dialectic relationship in daydreaming: a house has the ability to enable us to daydream precisely because as children we learned to daydream in houses. (Bachelard 1964) Having been influenced by psychoanalysis and more specifically Jung, Bachelard (1964) believes that we can find the consolation of the cave within ourselves while dreaming in our own modest homes. “Not only our memories, but the things we have forgotten are ‘housed’. Our soul is an abode. And by remembering ‘houses’ and ‘rooms’, we learn to ‘abide’ within ourselves.” (Bachelard, 1964, p.xxxvii) Bachelard (1964) claims that the house is one of the greatest powers of integration for the thoughts, memories and dreams of mankind; it is where the unconscious is housed. He proposes topoanalysis to complement psychoanalysis as a way to regain our lost knowledge. “Each one of us, then, should speak of his roads, his crossroads, his roadside benches; each one of us should make a surveyor’s map of his lost fields and meadows.” (Bachelard, 1964, p.11) According to Bachelard (1964), language, through meaning encloses but through poetic expression opens up.

Bachelard (1964) asserts that the house we were born in is physically inscribed in us, so much so, that whenever we read about or experience space we are transported to that particular, original experience of space that we first encountered. More specifically he constructs a psychology of the house by suggesting two principal connecting themes: that the house differentiates itself in terms of its verticality
ensured by the polarity of cellar and attic, and in terms of its centrality, as a concentration of being. (Bachelard 1964)

7.2.2 The dialectics of inside and outside in the search for being

According to Bachelard (1964), a profound metaphysics is rooted in an implicit geometry, which confers a spatiality in thought, so that when philosophers think of inside and outside they tend to think in terms of being and non-being. He asserts that: “Man’s being is confronted with the world’s being, as though primitivity could be easily arrived at.” (Bachelard, 1964, p.212) Bachelard (1964) sees the dialects of inside and outside as informing the nature of being, confronting man’s being with the world’s being: “Being does not see itself. Perhaps it listens to itself. It does not stand out, it is not bordered by nothingness: one is never sure of finding it solid, when one approaches a center of being. … Sometimes, it is in being outside itself that being tests consistencies.” (Bachelard, 1964, p.215) The nature of the concept of boundary reflects this challenge through the attraction of the other in order to define the self. This creative force is encountered in Clara Rilke who wrote that: “Works of art always spring from those who have faced the danger, gone to the very end of an experience, to the point beyond which no human being can go. The further one dares to go, the more decent, the more personal, the more unique a life becomes.” (Rilke, quoted in Bachelard, 1964, p.220) The dynamic nature of being can thus be encountered in all its potential not on the centre but on the edge, the boundary.

In his influential essay, Event Horizon, Canadian political philosopher and social theorist Brian Massumi (1998) reflects on the transformability of a system when it reaches an unpredictable critical stage. Massumi (1998) suggests that at this point the system is hyper-connectible and all its possible systems are present in the materiality of the system. As a notice to force, the self-ordering transformation is set off by an in-system event trigger. (Massumi 1998) In a sudden turn of phrase Massumi (1998) identifies the system as you: “The system is you. Reabsorbing possibility, yielding (to) potential. … At every step you ground and orient yourself, using gravity to propel you along your habit-ridden line of action. … Mid-step, in
passing, something registers and resonates. It hits you where your equilibrium shifts. … Where habit meets event.” (Massumi, in Brouwer, 1998, p.160) The unpredictable and essential transformation of being is felt before it is thought; reaching a critical boundary, it emerges reborn through an immanent limit, “… immanent to bodily change, enveloped in potential, outside possibility and predictability. The event horizon.” (Massumi, in Brouwer, 1998, p.166) Massumi urges that: “The equilibrium of the physical environment must be re-established, so that cultures may go on living and learn to live more intensely, at a state far from equilibrium.” (Massumi, quoted in Massey, 2005, p.160) In these thoughts, I could discern the universality of the concept of boundary. It is in the boundary that the event horizon is located triggering a potential dynamic transformation.

In the following section I will visit the insights of Maurice Merleau-Ponty as it informs the structure of the potentiality of our consciousness by bounding idea and phenomena.

7.3 **The potentiality of consciousness:**

**bounding idea and phenomena**

The French philosopher Maurice Merleau-Ponty (1908-1961), whose major contribution to philosophy is his Phenomenology of Perception (1945), has proved an influential figure in the realm of architectural thinking. The intention of this section is to point out how his insights can contribute to the way we think and experience architecture and how they relate to the concept of boundary.

7.3.1 **Merleau-Ponty on the phenomenology of perception:**

**Mind and world in an indissoluble bond**

Throughout his work, Merleau-Ponty is searching for the phenomenon of the body, seeing it not so much as a consciousness but as a body that embraces and constitutes the world. The aim of this search is mentioned in his Phenomenology of Perception:
“... by thus remaking contact with the body and with the world, we shall rediscover our self, since perceiving as we do with our body, the body is a natural self and, as it were, the subject of perception.” (Merleau-Ponty, 1962, p.239)

The unfolding dialectic between mind and cosmos is taken to a new level by Maurice Merleau-Ponty through his attempts to describe and explicate the nature of embodied consciousness, a phenomenon that he considered basic to human experience. (Rush 2009) Merleau-Ponty maintained that our embodiment is bound to our conceptualisations. The intention of his philosophy is an attempt “... to rediscover the world in which we live, yet which we are always prone to forget.” (Merleau-Ponty, 1948, quoted in: Baldwin, 2004, p.6)

According to Fred Rush (2009), Merleau-Ponty in his Phenomenology of Perception, attacks the traditional ways of formulating the mind-world problem. The traditional ways of thinking about their relationship is either through empiricism or realism and intellectualism or idealism. Realism begins with the world and attempts to understand the mind in terms of the world, whereas in idealism the structure of the physical world is understood in terms of the structure of the mental world. At the core of this problem, Merleau-Ponty believes, lies the presumption that mind and world are radically different things. He goes on to propose a ‘third way’ beginning with the mind and the world in an indissoluble bond. (Merleau-Ponty 1962)

Merleau-Ponty follows Husserl in upholding that the relationship between perception and thought is that of foundation (fundierung). (Baldwin 2004) His central claim is that the body resides at the core of perception; the body is what perceives. Fred Rush (2009) considers it important to understand that when Merleau-Ponty speaks of the ‘body’ he does not mean the physical body but a body embedded in the world. For Merleau-Ponty, the body is ever present to us; it is not an object but a medium for movement, a unified essence with the world. The lived body provides the means of experiencing space, orienting itself in environments in search of potentialities for it. “By ‘body’ Merleau-Ponty means a conscious and potentially self-conscious body, for which the world is not something else that is given to it for extra-worldly
processing but is, rather, what the body is already embedded in. ... In the perception of one's body there is no logical space, so to speak, between the consciousness and body; body and the awareness of body are co-mingled and, to that extent, are unified.” (Rush, 2009, pp.11-12)

For Merleau-Ponty (1962) the body is the residence of both senses and ideas. As I already addressed in the section on science, we cannot take man away from the phenomena. There is an interdependence of thought and feeling, of flesh and idea. We are unable to detach ourselves from the world. The relationship of the mind to the world is thus put forward by Merleau-Ponty as that of part to whole and not as a unity of disparate entities existing outside of each other. “Merleau-Ponty holds that the body is the point at which the mind and the other parts of the world overlap.” (Rush, 2009, p.16)

7.3.2 The Visible and the Invisible: the intertwining of the lived body and the world

In his uncompleted essay, The Visible and the Invisible, Merleau-Ponty (1968) claims that our embodiment brings an a priori structure to our perceptual experience and it is brought forward by our consciousness. “It is our ‘bodily’ intentionality which brings the possibility of meaning into our experience by ensuring that its content, the things presented in experience, are surrounded with references to the past and future, to other places and other things, to human possibilities and situations.” (Baldwin, 2004, p.9)

The visible things in the world that surround us, and our act of seeing them, have for Merleau-Ponty a reciprocal quality. He implies that “... the gaze itself envelopes them, clothes them with its own flesh” but at the same time asks “How does it happen that my look, enveloping them, does not hide them, and finally, that veiling them, it unveils them?” (Merleau-Ponty, 1968, pp.164-165) He goes on to state that: “The look... envelopes, palpates, espouses the visible things. As though it were in a relation of pre-established harmony with them, as though it knew them before
knowing them ... so that finally one cannot say if it is the look or if it is the things that command.” (Merleau-Ponty, 1968, pp.164-165)

This a priori structure to our perceptual experience, brought forward by our embodied consciousness, takes us to the concept of the invisible, the ‘intuitus mentis or idea’. Merleau-Ponty here clarifies that: “[w]e are not here proposing any empiricist genesis of thought: we are asking precisely what is that central vision that joins the scattered visions, that unique touch that governs the whole tactile life of my body as a unit, that I think that must be able to accompany all our experiences.” (Merleau-Ponty, 1968, p.173) Indeed he infers that “… one must see or feel in some way in order to think, that every thought known to us occurs to a flesh.” (Merleau-Ponty, 1968, p.173)

In his influential to architectural thought essay ‘The Intertwining – The Chiasm’ within The Visible and the Invisible, Merleau-Ponty (1968) describes the notion of the flesh or chair in French which he uses “… to refer to the way in which the world and the lived body are fused” (Rush, 2009, p.19). In this essay he upholds that: “My body is made of the same flesh as the world … this flesh of my body is shared by the world...” (Merleau-Ponty, 1968, p.146) The flesh he describes is neither mind nor matter. “It is the coiling over of the visible upon the seeing body, of the tangible upon the touching body...”. (Merleau-Ponty, 1968, p.173) This is the concept of intertwining, which as I will address further has influenced greatly the American architect Steven Holl.

A very difficult area in Merleau-Ponty’s thought process is now reached. His statement about this coiling over, this intertwining of the lived body and the world is meant to indicate that their distinction is impossible. The intertwining of the self and the world signifies that they are one. Looking back to the previous chapter, the Möbius Strip symbolised just this conversion. Being human is therefore not something outside of this world. For Merleau-Ponty “[t]he flesh is in this sense an ‘element’ of Being.” (Merleau-Ponty, 1968, p.170)
Merleau-Ponty (1968) implies that we do not possess ideas; they possess us. The ideas are not alien to the flesh they define its essence. In his own words: “We do not see, do not hear the ideas, and not even with the mind’s eye or with the third ear: and yet they are there, behind the sounds or between them, behind the lights or between them, recognisable through their always special, always unique manner of entrenching themselves behind them, ‘perfectly distinct from one another, unequal among themselves in value and in significance.’ ... [The idea is] ... not a de facto invisible, like an object hidden behind another, and not an absolute invisible, which would have nothing to do with the visible. Rather it is the invisible of this world, that which inhabits this world, sustains it and renders it visible, its own and interior possibility, the Being of this being.” (Merleau-Ponty, 1968, p.176-177)

Quoting Husserl, Merleau–Ponty points to a ‘potentiality of consciousness’ in this intertwining that is reflected unto ‘the depths of our being’. “When Husserl spoke of the horizon of things – of their exterior horizon, which everybody knows and of their ‘interior horizon,’ that darkness stuffed with visibility of which their surface is but the limit – it is necessary to take the term seriously. No more than are the sky or the earth is the horizon a collection of things held together, or a class name, or a logical possibility of conception, or a system of ‘potentiality of consciousness’: it is a new type of being, a being by porosity, pregnancy, or generality, and he before whom the horizon opens is caught up, included within it. His body and the distances participate in one same corporeity or visibility in general, which reigns between them and it, and even beyond the horizon, beneath his skin, unto the depths of being.” (Merleau-Ponty, 1968, p.175)

This pregnancy and porosity that Merleau-Ponty refers to, this ‘new type of being’, brings the boundary concept to mind. It is as though man and the cosmos are inviting each other in order to be rendered visible to each other. The potentiality of consciousness expresses this dynamic, this primary essence of our being, our mind and body unified in this inherent ability towards a revelation of self within the cosmos. Sharing a radical kinship, man and the world interpenetrate each other, revealing themselves through the other in a constant process of reference.
Man’s sense of self is realised through the potentiality of his consciousness. Seen through Merleau-Ponty’s insights, man’s experiences of the world are bound to his conceptualisations. His senses and ideas inherently link him back to the world and complete him, while at the same time conveying the universe’s unfolding meaning through them. In the following stages of the thesis, I will delve deeper into this intertwining which reflects our indissoluble bond between our lived body and the world, flesh and idea, mind and world and show how it is essentially materialised in the experience and creation of architecture.

7.4 The embodied and existential nature of architecture and its role as the medium of the universe’s unfolded meaning

In this stage of the thesis, I will attempt to take the concept of embodiment -put forward by Merleau-Ponty- as it is enriched by the concept of boundary in order to reveal how “… complex, deep and all-inclusive the experience of architecture can be”. (Rush, 2009, p.3) Due to its primarily tactile nature, it is impossible to think of architecture outside the realm of experience and Merleau-Ponty’s thinking can give us a discerning view into the significance of the experience of architecture.

Thomas Baldwin (2004) points out that Merleau-Ponty sees the senses in perception as intentionally invisible in the way they organise experience and constitute the world; they make their role invisible to us. In order to rediscover and articulate the world we need to get a detached look at it with the help of reflection. Art and philosophy can provide us with that detachment. Architecture also has the capacity to provide both a detachment as well as a sense of belonging. Baldwin (2004) goes on to quote a memorable passage that exemplifies this from the Phenomenology of Perception: “Reflection does not withdraw from the world towards the unity of consciousness as the world’s basis; it steps back to watch the forms of transcendence fly up like sparks from a fire; it slackens the intentional threads which attach us to
the world and thus brings them to our notice; it alone is consciousness of the world because it reveals that world as strange and paradoxical.” (Merleau-Ponty, 1962, p.xv) This mystery that the world instils in us ignites its invitation to experience the world, to attempt to comprehend it and reunite with it.

Taking into account Merleau-Ponty’s reading of the body and the world fused as one, one can begin to see the potential of architectural experience and thought. “... [T]he experience of architecture, perhaps especially of it, is bound up with the experience of one’s body as the medium for that experience.” (Rush, 2009, p.4) In a sense the significance of architecture lies in the fact that there is a reciprocal relationship between our human body and the body of architecture. In Fred Rush’s words: “… the experience [of architecture] is embodied in that it is experience had by means of the body as the seat of perception, and it is also embodied because the architecture itself, as a complex body, impels experience in that way.” (Rush, 2009, p.4)

I will begin by addressing the writings of architect and theorist Juhani Pallasmaa on the embodied and existential wisdom revealed in the experience as well as creation of architecture.

7.4.1 Architecture as the medium of existential and embodied experience

In his essay The Geometry of Feeling, Pallasmaa asks why it is that some buildings seem to appeal to our feelings and give us a sense of familiarity and pleasure. (Pallasmaa, 1986, cited in: Nesbit, 1996) He considers the most important architectural experience to be the sense of being in a unique place. He believes that quality in architecture lies in its capacity for awakening our imagination through the emotional force that it carries. “An impressive architectural experience sensitizes our whole physical and mental receptivity. It is difficult to grasp the structure of feeling because of its vastness and diversity. In experience we find a combination of the biological and the culturally derived, the collective and the individual, the
conscious and the unconscious, the analytical and the emotional, the mental and the physical.” (Pallasmaa, 1986, cited in: Nesbit, 1996, p.453)

For Juhani Pallasmaa architecture is an extension of nature in the same way that the body is an extension of the world for Merleau-Ponty, providing us with the means to encounter and understand the world. It strengthens the existential experience and upholds our sense of ‘being in the world’ by constituting an uninterrupted continuum with our inner world. Pallasmaa appeals for the need “... to understand that we do not live separately in physical and mental worlds – these two projections are completely fused into a singular existential reality.” (Pallasmaa, 2007, p.17)

- Juhani Pallasmaa’s insights into inhabiting the world through our ‘thinking’ senses and the primacy of touch

Pallasmaa has long advocated against the dominance of the sense of vision indicating towards the primacy of the haptic sense. In his book The Thinking Hand, Pallasmaa (2009) exposes the hand not just as a passive executor of the intentions of the brain but as an entity with its own intentionality, knowledge and skills, which links it to a deeper layer of our consciousness. He remains suspicious of the computerised hand in architecture because its process and product has a false precision that removes the uncertainty of the creative process. This process engages only the visual realm causing a distance between the maker and the product. He does, however, maintain
that the unconscious experience of touch is concealed not only in vision but also in all our senses, revealing its primacy (Pallasmaa 2009) (fig.7.1)

In his book The Eyes of the Skin, Pallasmaa (2005) puts forward the importance of embodied experience and the inherent interaction of the senses. “The boundary line between the self and the world is identified by our senses. Our contact with the world takes place through the skin of the self by means of specialised parts of our enveloping membrane.” (Pallasmaa, 2009, p.100) Our enveloping membrane, the skin, covers not only our hands but also our eyes, ears, mouth and nose. “Touch is the unconsciousness of vision, and this hidden tactile experience determines the sensuous qualities of the perceived object.” (Pallasmaa, 2009, p.102)

Pallasmaa (2005) makes a distinction between concentrated vision and peripheral vision. In his opinion, peripheral vision engages an atmosphere and envelops us in the flesh of the world. Since the ancient past, clear vision and light have been used as metaphors for knowledge and truth, but Pallasmaa (2005) believes that it is through peripheral vision that we engage in the mystery of the world. According to Pallasmaa (2005), during emotional states we appear to be shifting towards the more archaic senses, from vision down to hearing, touch and smell and from light to shadow. For this reason he laments the imbalance of our sensory system in our modern environments and the loss of experiential depth evident in visually dominated architecture which is caused by isolating the eye from the other senses, or from each other in general. Indeed, this separation and reduction fragments the innate complexity, comprehensiveness and plasticity of the perceptual system, reinforcing a sense of detachment and alienation. (Pallasmaa 2005)

Pallasmaa (2005), proceeds in his thinking by giving an account of the importance of the interaction of the senses. Sound, for example, measures space and makes its scale comprehensible by creating an experience of interiority: “Anyone who has become entranced by the sound of dripping water in the darkness of a ruin can attest to the extraordinary capacity of the ear to carve a volume into the void of darkness. The space traced by the ear in the darkness becomes a cavity sculpted directly in the
interior of the mind.” (Pallasmaa, 2005, p.50) Texture, taste and vision are also linked. “The sensuous materials and skilfully crafted details of Carlo Scarpa’s architecture as well as the sensuous colours of Louis Barragán’s houses frequently evoke oral experiences.” (Pallasmaa, 2005, p.60) Indeed, spaces are often carved in our memories through their unique smell. “Every dwelling has its individual smell of home.” (Pallasmaa, 2005, p.54)

Our senses, merged, provide us with a deep existential experience. “A pebble polished by waves is pleasurable to the hand, not only because of its soothing shape, but because it expresses the slow process of its formation; a perfect pebble on the palm materialises duration, it is time turned into shape.” (Pallasmaa, 2005, p.58) The sound of the waves that formed it, its smooth texture and colour, its salty taste and the smell of the sea are all merged in our mind. All our senses collaborate.

Juhani Pallasmaa (2005) advocates for the role of the body as the locus of not only perception but also thought and consciousness. Influenced by Merleau-Ponty, like him he sees the relation between the self and the world as osmotic, interpreting and mutually defining each other, emphasising the simultaneity of the interacting senses. He goes on to quote Merleau-Ponty: “My perception is ... not a sum of visual, tactile and audible givens: I perceive in a total way with my whole being: I grasp a unique structure of the thing, a unique way of being, which speaks to all my senses at once.” (Merleau-Ponty, 1964, quoted in Pallasmaa, 2005, p.21) Even before we are able to speak our bodies inhabit the world. Our senses and thoughts are attuned to our environment, natural or built; our embodied existence resides at the very basis of our interaction and integration with the world. “We are occupants of this world with its physical realities and mental mysteries, not outside observers or theoreticians of the world.” (Pallasmaa, 2009, p.117)

We are intricately connected with the world through our senses and through their effect on our mind in a reciprocal exchange. Human existence is a fundamentally embodied condition. “The senses are not merely passive receptors of stimuli, and the body is not only a point of viewing the world from a central perspective. Neither is
the head the sole locus of cognitive thinking, as our senses and entire bodily being directly structure, produce and store silent existential knowledge. The human body is a knowing entity. Our entire being in the world is a sensuous and embodied mode of being, and this very sense of being is the ground of existential knowledge. ‘[U]nderstanding is not a quality coming to human reality from the outside; it is its characteristic way of existing,’ as Jean-Paul Sartre claims.” (Pallasmaa, 2009, p.13)

Pallasmaa goes as far as to say that our senses think and that they structure our relationship with the world in a perpetually unconscious activity. “Our entire bodily constitution and senses ‘think’ in the fundamental sense of identifying and processing information about our situation in the world, and mediating sensible behavioural responses.” (Pallasmaa, 2009, p.116) But our thinking senses take us further than that. In our mind we reach with our imagination to deeper realms of understanding. “We do not live in an objective world of matter and facts... The characteristic human mode of existence takes place in the worlds of possibilities, moulded by our capacities of fantasy and imagination. We live in worlds of mind, in which the material and the mental, as well as the experiences, remembered and imagined, completely fuse into each other.” (Pallasmaa, 2009, p.127)

- **Architecture and movement bringing the world into an intimate contact with the self**

Merleau-Ponty’s writings “... analyse the intertwining of the senses, the mind and the world, providing a stimulating ground for the understanding of artistic intention and impact.” (Pallasmaa 2009) According to Pallasmaa (2009), architecture’s embodied nature has the capacity to structure and articulate our experiences of ‘being in the world’ and renders possible an intense experiential and existential encounter. In architecture, perception, memory and imagination are engaged in constant interaction. Even when we are not physically present we have the capacity to enter a remembered or imagined place. “Architecture is our primary instrument in relating us with space and time, giving these dimensions a human measure. It domesticates
limitless space and endless time to be tolerated, inhabited and understood by humankind.” (Pallasmaa, 2005, p.17)

Pallasmaa (2005) refers to the statements of various artists and writers. He quotes Salman Rushdie’s insights on the softening of the boundary between the self and the world in an artistic work and experience. “Literature is made at the boundary between self and the world, and during the creative act this borderline softens, turns penetrable and allows the world to flow into the artist and the artist to flow into the world.” (Rushdie, quoted in: Pallasmaa, 2009, p.19) Artists often claim that during the ecstatic experience of creating a work of art they feel as though they are merely recording what is revealed to them, as if it were beyond their conscious control. “The landscape thinks itself in me, and I am its consciousness” Paul Cézanne confesses and according to Gaston Bachelard, the poet speaks of encounters at ‘the threshold of being’. According to the poet Jorge Luis Borges, “[t]he taste of the apple ... lies in the contact of the fruit with the palate, not in the fruit itself; in a similar way ... poetry lies in the meeting of poem and reader, not in the lines of symbols printed on the pages of a book. What is essential is the aesthetic act, the thrill, the almost physical emotion that comes with each reading.” (Cézanne, Bachelard and Borges, quoted in Pallasmaa, 2005, p.14)

In Pallasmaa’s opinion architecture can in the same way be conceived and experienced at this existential boundary line merging space and a sense of self, providing a confrontation with one’s own existential boundary. “The same fusion of the external and the internal, material and mental, thought and execution takes place in the designer’s and architect’s work.” (Pallasmaa, 2009, p.17)

Due to the physical attributes of architecture, architectural experience goes beyond artistic and poetic experience by bringing the world into an intimate contact with the body. There is a tremendous strength imbedded in our subconscious bodily memory, passed down by our ancestors, whose potential architecture can employ. “The body knows and remembers. Architectural meaning derives from archaic responses and reactions remembered by the body and the senses. ... Architecture does not only
respond to the functional and conscious intellectual and social needs of today’s city-dweller; it must also remember the primordial hunter and farmer concealed in the body.” (Pallasmaa, 2005, p.60)

The sense and nature of movement through an environment is one of these primordial memories. According to Fred Rush “… conscious perception is influenced, … by more implicit and perhaps in some sense un- or pre-conscious states having to do with motion and bodily equilibrium that are also responsive to being ensconced in architectural space.” (Rush, 2009, p.3) The literal interaction of the body with the architectural work brings these primordial memories to the foreground. “As we open a door, the body weight meets the weight of the door; the legs measure the steps as we ascend a stairway, the hand strokes the handrail and the entire body moves diagonally and dramatically through space.” (Pallasmaa, 2005, p.63) Pallasmaa even suggests that architecture has a verb rather than noun related form. “We do not see a door, we move through it. A building is encountered; it is approached, confronted, related to one’s body, moved through, utilised as a condition for other things. Architecture initiates, directs and organises behaviour and movement.” (Pallasmaa, 2005, p.63)

In his essay Walking in the City, Michel de Certeau (1984) compares the nature of movement with language and asserts that there is a rhetoric of walking. De Certeau appeals for man to get down to the perspective of the city in order to experience it by walking through it, weaving the spaces together in a subjective way. In this way, the pedestrian reads the city as a text, as a universe that is constantly exploding. The user of the city, “… thus creates a discreteness, whether by making choices among the signifiers of the spatial ‘language’ or by displacing them through the use he makes of them. He condemns certain places to inertia or disappearance and composes with others spatial ‘turns of phrase’ that are ‘rare’, accidental or illegitimate. But that already leads into a rhetoric of walking.” (de Certeau, 1984, p.99) Layers of memory play a vital role in our perception and preference of a place. According to de Certeau (1984): “The memorable is that which can be dreamed about a place. In this place that is a palimpsest, subjectivity is already linked to the
absence that structures it as existence and makes it ‘be there’, Dasein.” (de Certeau, 1984, p.109) (fig.7.2)

In her essay, A Global sense of Place, Doreen Massey (1994) argues for the need to rethink place in a progressive, outward-looking way that would be “… adequate to this era of time-space compression.” According to Massey (1994), the recognition that people have multiple identities can be extended to places. In her attempt to define a new, progressive, global sense of place, Massey (1994) asserts that place is not a static entity but a process. She goes on to state that places do not have boundaries in the sense of divisions that frame enclosures, separated by an outside. What gives place its specificity is “… that it is constructed out of a particular constellation of social relations, meeting and weaving together at a particular locus.” (Massey 1994) Most importantly, however, places do not have single and unique identities, their specificity is continually reproduced, where history itself is “… imagined as the product of layer upon layer of different sets of linkages, both local and to the wider world.” (Massey 1994)

According to Yi-Fu Tuan (1977), the built environment, like language, has the power to define and refine sensibility. It can sharpen and enlarge consciousness. Without architecture feelings must remain diffuse and fleeting. Kinaesthesia, sight and touch
enable human beings to have their strong feeling for space and for spatial qualities. (Tuan 1977) “Space is experienced directly as having room in which to move. … Space assumes a rough coordinate frame centred on the mobile and purposive self.” (Yi-Fu Tuan, 1977, p.12) The element of experience, however, is revealed as a necessary condition in the perception of place. “Purposive movement and perception, both visual and haptic, give human beings their familiar world of disparate objects in space. Place is a special kind of object. It is a concretion of value, though not a valued thing that can be handled or carried about easily; it is an object in which one can dwell.” (Yi-Fu Tuan, 1977, p.12) Certain cross-cultural similarities may exist but what remains constant is man, who is the measure of all things: “Body is ‘lived body’ and space is humanly construed space.” (Tuan, 1977, p.35) Tuan (1977) identifies place as security and space as freedom wondering whether “… space and place [are] the environmental equivalents of the human need for adventure and safety, openness and definition.” (Tuan, 1977, p.202)

Through architecture we become aware of the embodied nature of thinking. According to Pallasmaa, architectural creation is inherent and architectural ideas are “… embodied metaphors of the world and of the particular ways we exist in the world.” (Pallasmaa, 2009, p.115) He maintains that “[a]rchitectural ideas arise ‘biologically’ from unconceptualised and lived existential knowledge rather from mere analyses and intellect.” (Pallasmaa, 2009, p.15) There is a fusion of the maker and the created product. “As the work interacts with the body of the observer, the experience mirrors the bodily sensations of the maker. Consequently, architecture is communication from the body of the architect directly to the body of the person who encounters the work, perhaps centuries later.” (Pallasmaa, 2005, p.67)

Architectural thought may arise from the combined essence of creator and the given conditions but it aspires to an ideal, it attempts to build a better world. “Every true piece of architecture relocates man in the world and casts some new light on man’s existential enigma. ... In fact a design task is an existential exploration in which the architect’s professional knowledge, life experiences, ethical and aesthetic sensibilities, mind and body, eye and hand, as well as his/her entire persona and
existential wisdom eventually merge.” (Pallasmaa, 2009, p.109) Creative work calls for a focus directed simultaneously on the world and on the self. When an architect works with his entire body and sense of self, engaging the existential knowledge that has moulded his experiences of life, his work will be infused with an understanding of the human world and his own mental world.

Searching for what makes authentic architectural experience we need to focus to an architecture that reveals its inherent capacity to direct us to experience our own existence with a unique intensity. “... [T]he mental impact of architecture does not derive from a formal or aesthetic game; it arises from experiences of an authentic sense of life. Architecture does not invent meaning; it can move us only if it is capable of touching something already buried deep in our embodied memories.” (Pallasmaa, 2009, p.136) This architecture infuses us with both physical and mental structures, “... [it] does not only provide a shelter for the body, it also redefines the contour of our consciousness, and it is a true externalisation of our mind.” (Pallasmaa, 2009, p.20)

Quoting Merleau-Ponty’s view of Cézanne’s paintings, Pallasmaa (2005, p.64) sees the task of architecture as in art to ‘make visible how the world touches us’: “We are in constant dialogue and interaction with the environment, to the degree that it is impossible to detach the image of the Self from its spatial and situational existence. ‘I am my body’, Gabriel Marcel claims, but ‘I am the space, where I am,’ establishes the poet Noël Arnaud.”

According to Merleau-Ponty’s insights, the flesh of the world is fused with our flesh. Architecture allows us to read our surrounding world and feel united with it, framing our existence and defining the horizon of understanding of the human existential condition, the boundary between us. “The ultimate meaning of any building is beyond architecture; it directs our consciousness back to the world and towards our own sense of self and being. Significant architecture makes us experience ourselves as complete embodied and spiritual beings.” (Pallasmaa, 2005, p.11)
Through its material existence of space, structure, matter, gravity and light coming in contact with our fused body and mind, architecture has the ability to expose and develop existential and lived metaphors. “In memorable experiences of architecture, space, matter and time fuse into one singular dimension, into the basic substance of being, that penetrates our consciousness. We identify ourselves with this space, this place, this moment, and these dimensions become ingredients of our very existence. Architecture is the art of reconciliation between ourselves and the world, and this mediation takes place through the senses.” (Pallasmaa, 2005, p.72)

Engaging a constant interaction between the world and our being – body and mind – architecture reflects our fundamental bond with it. Neither action, nor thought or sense is beyond or external to the world. We are one, bound in an unending evolving equilibrium. Man is here indeed revealed as inhabiting, living the boundary. It is through him, his body and mind united, that the universe is unfolded and architecture is the medium of this revelation.

7.4.2 Architecture ‘gathering’ the world

In this section, Martin Heidegger’s (original texts 1927 and 1951) thoughts on dwelling poetically together with Georg Simmel’s (original text 1909) writings on the connected - separated distinction will be reinforced with their analyses of the temple, the bridge and the door ‘gathering’ the world. Architecture is revealed as the materialisation of man in-between the ultimate, primary boundary between earth and sky; as Heidegger suggested, within this boundary and through architecture man dwells poetically. Further input will be given by Christian Norberg-Schulz’s (1983) insights on reading Heidegger, which led him to seek the nature of place as opposed to space in genius loci, the spirit of place.

- Dwelling poetically between earth and sky

The influential German philosopher Martin Heidegger (1889-1976) in Being and Time (1927, in: Macquarrie & York, 1962) argues about the indivisible relationship
of the person with the world. In his phenomenology, a person is thought to be experiencing *Dasein* or ‘being there’, in the context of the world. Heidegger’s essay Building, Dwelling, Thinking is dominated by a poetic and mythical language. (Heidegger, 1951, in: Krell, 1993)

The primary aim of his essay is to re-establish the connection between thought and being through a revelation of the relation of *building* to *dwelling* as they permeate *thinking*. Heidegger states that language remains the master of man and not the other way round. (Heidegger, 1951, in: Krell, 1993) In his opinion, language houses Being and “[w]hen things are named for the first time, they are recognised as what they are. Before they were just transient phenomena, but the names keep them, and a world is opened up. ... Man *dwells* in language, that is: when he listens to and responds to language the world which he is, is opened up, and an authentic existence becomes possible. Heidegger calls this to dwell poetically.” (Norberg-Schulz, 1983, in: Nesbitt, 1996, p.434)

He begins with a linguist search on the meanings of building. “For Heidegger to *dwell* signifies the way ‘we humans are on earth.’ Man’s Being rests in his capacity to cultivate and safeguard the earth...” (Krell, 1993, p.345) He traces the meaning of *bauen* to *being*, from the German *bin/bheu* and Latin *fui* to the origins of the Greek *phuo*, which indicates an inherent ‘coming to light’, growing in time from the earth towards the sky. (Heidegger, 1951, in: Krell, 1993)

In Building, Dwelling, Thinking, Heidegger (1951) advocates for the gathering of four dimensions – the earth, the heavens, mortals and the divinities –, which are needed in order to bring forward ontological events. The sky signifies the divinities for Heidegger and dwelling as ‘coming to light’ suggests a yearning to unite with them. “But ‘on earth’ already means ‘under the sky.’ Both of these *also* mean ‘remaining before the divinities’ and include a ‘belonging to men’s being with one another.’ By a *primal* oneness the four – earth and sky, divinities and mortals – belong together in one.” (Heidegger, 1951, in: Krell, 1993, p.351) Thus to build becomes for Heidegger an ontological phenomenon. “For building is not merely a
means and a way toward dwelling – to build is in itself already to dwell.” (Heidegger, 1951, in: Krell, 1993, p.348)

Heidegger was greatly influenced by poetry and provides a deep analysis of two verses in Friedrich Hölderlin’s (1770-1843) poem “Der Ister”:

“Full of merit, yet poetically, man
Dwells on this earth.”

(Heidegger, 1951, in: Leach, 1997, p.111)

Christian Norberg-Schulz writings in their turn were deeply influenced by Heidegger’s thinking. He tries to explain what this poem meant to Heidegger: “... [M]an’s merits do not count much if he is unable to dwell poetically, that is, to dwell in the true sense of the word.” (Norberg-Schulz, 1983, in: Nesbitt, 1996, p.426)

According to Neil Leach, “[t]o dwell authentically, for Heidegger, is to dwell poetically, since poetry is a manifestation of truth restored to its artistic dimension. Architecture becomes a setting into work of ‘truth’, and a means of making the ‘world’ visible.” (Leach, 1997, p.98)

Heidegger considers that the word yet in the poem is of primary importance. In a sense it signifies the potential of dwelling poetically. Heidegger believes that dwelling is inherent in poetry and vice versa; man’s capacity to dwell poetically is inherent. (Heidegger, 1951, in: Leach, 1997) “Poetry builds up the very nature of dwelling. Poetry and dwelling not only do not exclude each other; on the contrary, poetry and dwelling belong together each calling for the other. ... Do we dwell poetically? ... dwelling can be unpoetic only because it is in essence poetic. For a man to be blind, he must remain a being by nature endowed with sight.” (Heidegger, 1951, in: Leach, 1997, p.118)

Heidegger acknowledges the origin of poetry in the Greek word for making or creating, poiesis and “… points out that the Greek word techne meant a creative ‘revealing’ (Entbergen) of truth, and belonged to poiesis…” (Norberg-Schulz, 1976, in: Nesbitt, 1996, p.420) Techne for Heidegger is linked to the term tikto – ‘to bring
forth or to produce’ and should not be confused with the modern term ‘technology’ in which techne remains concealed. (Heidegger, 1951, in: Krell, 1993)

Norberg-Schulz points out to Heidegger’s attraction to Greek mythology as a source for revealing hidden meaning. He refers particularly to the connection that the ancient Greeks made between memory and poetry. (Norberg-Schulz, 1983, in: Nesbitt, 1996) Mnemosyne (memory) was the mother of the muses, their father was Zeus. Mnemosyne herself was the daughter of Gaia and Uranus, the earth and sky. This genetic heritage implied for Heidegger that “Zeus needed memory to bring forth art...” and that “… the memories which give rise to art are our understanding of the relationship between earth and sky.” (Norberg-Schulz, 1983, in: Nesbitt, 1996, p.434)

- **The temple**

In the ancient Greek temple, Heidegger has found a fitting embodiment of his thinking of man dwelling poetically through the fourfold. “In his famous example of the Greek temple, Heidegger illustrates how the temple discloses the spatiality of Being through its ‘standing there’. Fundamental to Heidegger’s treatment of architecture is the situatedness of buildings - their dasein.” (Leach, 1997, p.98)

![figures 7.3-7.4: Architecture gathering the site. The temple gathering the fourfold. The Temple of Poseidon at Sounion, Greece (440 BC). Source: www.athensguide.com/sounion/ The Theatre and the Temple of Apollo at Delphi, Greece. Source: Ministry of culture and Tourism /database](image-url)
Through the existence of the temple, the god is able to be there. The building encloses the god and its presence gathers to it the fourfold, stretching from the rock towards the sky, it houses the god and in the process of its building it represents the life of mortals and their yearning for blessing, giving thanks or asking forgiveness. (fig.7.3-7.4) The temple’s static mass contrasts with the changing nature that surrounds it. “The temple’s firm towering makes visible the invisible space of air.” (Heidegger, 1951, in: Leach, 1997, p.120)

By making the surrounding world visible the temple endows it with meaning. “The temple-work, standing there, opens up a world and at the same time sets this world back again on earth... The temple, in its standing there, first gives to things their look and to men their outlook on themselves.” (Heidegger, 1951, in: Leach, 1997, p.120) Heidegger here suggests that there is an indivisible connection between man and world. In the words of Norberg-Schulz: “[The example of the temple] suggests that landscape cannot be isolated from human life and from what is divine. The inhabited landscape therefore is a manifestation of the fourfold, and comes into presence through the buildings which bring it close to man.” (Norberg-Schulz, 1983, in: Nesbitt, 1996, p.437) The temple gathers the world between earth and sky and in so doing, through the temple and through man the fourfold is lived. “Human life takes place in between earth and sky in a concrete sense and the things which constitute the place have to be disclosed in their immediate presence. It is this kind of disclosure which is accomplished by the Greek temple.” (Norberg-Schulz, 1983, in: Nesbitt, 1996, p.434)

**Man as the embodiment of the boundary**

The boundary condition between earth and sky becomes clearer. In Norberg-Schulz’s words: “When we say that life takes place, we imply that man’s being-in-the-world mirrors the between of earth and sky. Man is in this between, standing, resting, and acting. The natural and man-made things which constitute the boundaries of the between, also stand, rest, and tower...” (Norberg-Schulz, 1983, in: Nesbitt, 1996, p.434)
According to Heidegger, man pervades space; his relationship to space is inherent in his dwelling (Heidegger, 1951, in: Krell, 1993). When thinking of the relationship of man and space, Heidegger specifies that space is neither an external object nor an inner experience. It is not separate from man but essentially defines man. “A space is something that has been made room for [a place freed for settlement and lodging], something that has been freed, namely, within a boundary, Greek peras [orion]. A boundary is not that at which something stops but, as the Greeks recognized, the boundary is that from which something begins its essential unfolding. That is why the concept is that of horismos, that is the horizon, the boundary.” (Heidegger, 1951, in: Krell, 1993, p.356)

Figure 7.5: Architecture bringing the earth as the inhabited landscape close to man. Huayna Picchu towering above the ruins of Machu Picchu, Peru. (ca 400 AD). Source: UNESCO World Heritage Site

The unfolding that is initiated by the boundary points to a deeper layer of the energy of the in-between, its ability to make the world visible and coherent. Norberg-Schulz (1976) uses the example of settlements that are organically related to their environment suggesting that they serve as foci where the environmental character is condensed and ‘explained’ channelling Heidegger’s claim that they gather the
The buildings bring the earth as the inhabited landscape close to man, and at the same time place the closeness of neighbourly dwelling under the expanse of the sky.” (Norberg-Schulz, 1976, quoting Heidegger, 1971, in: Nesbitt, 1996, pp.417-418) (fig.7.5)

**The bridge and the door**

In Building, Dwelling, Thinking, Martin Heidegger (1951) gives an intriguing analysis of the *bridge* as a medium through which the surrounding environment is gathered. The German sociologist and philosopher Georg Simmel (1858-1918) also provides us with an analysis of the *bridge* but what is interesting is the fact that he compares it with the *door*, in order to give us insight into the connected-separated distinction.

A bridge in Heidegger’s opinion “... gathers the earth as landscape around the stream”. (Heidegger, 1951, in: Krell, 1993, p.354) The bridge gathers the fourfold in such a way that it allows it to become a locale, or as Christian Norberg-Schulz will come to call it, a *place*. “The bridge *gathers* to itself in *its own* way earth and sky, divinities and mortals”. (Heidegger, 1951, in: Krell, 1993, p.355) The locale did not exist before the bridge. The bridge gave it its meaning. “Before the bridge stands, there are of course many spots along the stream that can be occupied by something. One of them proves to be a locale, and does so *because of the bridge*.” (Heidegger, 1951, in: Krell, 1993, p.356) In Heidegger’s mind, the bridge *gathers* the meaning of the place. The bridge allows the stream to continue its course but at the same time it allows mortals passage to its banks, in its turn, giving them meaning. “The banks emerge as banks only as the bridge crosses the stream.” (Heidegger, 1951, in: Krell, 1993, p.354) The bridge unifies earth, stream and mortals and rising to the sky it gives thanks to the divinities.

In his prominent essay ‘Bridge and Door’ (Brücke und Tür, 1909), philosopher and sociologist Georg Simmel discusses the issues of connection and separation. For Simmel the bridge and the door signify “… concrete manifestations of fundamental
human tendencies to connect and separate everything”. (Leach, 1997, p.65) Simmel believes that things need to be separated first from each other in order to be connected. “By choosing two items from the undisturbed store of natural things in order to designate them as ‘separate’, we have already related them to one another in our consciousness, we have emphasized these two together against whatever lies between them.” (Simmel, 1909, in: Leach, 1997, p.66) This takes place in both the physical as well as the symbolic realms. Simmel proceeds to give the examples of the door and the bridge to support his thinking.

Simmel considers the act of building a path to connect two places, as one of the greatest human achievements, one that involves the act of “… freezing movement into a solid structure that commences from it and in which it terminates.” (Simmel, 1909, in: Leach, 1997, p.66) The bridge materialises our longing to connect and in our visual and physical experience of it, it becomes a symbol of the active expansion of the will in space. (Van Winkel, 1991) In this manner it is unified with the landscape.

The door, on the other hand, takes our fundamental tendency to connect and separate everything to a deeper level by representing “… in a more decisive manner how separating and connecting are only two sides of precisely the same act. ... The [bridge] is mute, but the door speaks. It is absolutely essential for humanity that it set itself a boundary, but with freedom, that is in such a way that it can also remove this boundary again, that it can place itself outside it.” (Simmel, 1909, in: Leach, 1997, p.67) For Simmel the door becomes the image of the boundary, its materialisation. But human intention in this case is key. There is no differentiation of intention possible when crossing a bridge. The door, however, represents the radical difference between entering and exiting. “Viewed in terms of the opposing emphases that prevail in their impression, the bridge indicates how humankind unifies the separatedness of merely natural being, and the door how it separates the uniform, continuous unity of natural being.” (Simmel, 1909, in: Leach, 1997, p.69)
Simmel here emphasises that it is the human being that projects its mind onto the world; he is the connecting creature. In effect he is the boundary. By placing a door “... [a] part of infinite and continuous space is closed off and made accessible at the same time; people impose a limit on themselves which is always open to dissolution.” (Van Winkel, 1991) It is through man that the world is given meaning, but it is the world that invites him to act.

○ **Genius loci as the spirit of place**

Heidegger explains that when we think of a locale, giving the old bridge in Heidelberg as example, this thinking “… is not a mere experience inside the persons present here; rather; it belongs to the essence of our thinking of that bridge that in itself thinking persists through [durchsteht] the distance to that locale.” (Heidegger, 1951, in: Krell, 1993, p.358) Heidegger claims that when we are thinking about the bridge in our mind it is not as some representational content in our consciousness. We are much closer to its essence than someone that uses it on a daily basis. “Man’s relation to locales, and through locales to spaces, inheres in his dwelling. The relationship between man and space is none other than dwelling. ... Building and thinking are, each in its own way, inescapable for dwelling.” (Heidegger, 1951, in: Krell, 1993, p.362)

Norberg-Schulz (1979) adopts the term genius loci, meaning the guardian deity of a place to denote the ‘spirit of place’. Norberg-Schulz deems that the existential purpose of building is to reveal the inherent essence of a site and its potential meaning taking Heidegger’s locale to a different level. Norberg-Schulz considers that a place means more than a location; it is distinctive by its qualitative nature, its character. “Character is determined by *how* things are, and gives our investigation a basis in the concrete phenomena of our everyday life-world. Only in this way we may fully grasp the *genius loci*, the ‘spirit of place’, which the ancients recognised as that ‘opposite’ man, has to come to terms with, to be able to dwell. The concept of *genius loci* denotes the essence of place.” (Norberg-Schulz, 1976, in: Nesbitt, 1996, p.418)
Norberg-Schulz believes that building “... gathers the properties of the place and brings them close to man. The basic act of architecture is therefore to understand the vocation of place. In this way we protect the earth and become ourselves part of a comprehensive totality...” (Norberg-Schulz, 1979, p.23) A reciprocal relationship between man and his surrounding man-made and natural environment thus arises and it is one of meaning. In Norberg-Schulz’ words, “... man ‘receives’ the environment and makes it focus in buildings and things. The ‘things’ thereby ‘explain’ the environment and make its character manifest. Thereby the things themselves become meaningful.” (Norberg-Schulz, 1976, in: Nesbitt, 1996, p.421)

In order to reflect this environment permeated by meaning through man, Norberg-Schulz (1976) refers to another poem analysed by Heidegger.


A Winter Evening
Window with falling snow is arrayed,
long tolls the vesper bell,
The house is provided well,
The table is for many laid.
Wandering ones, more than a few,
Come to the door on darksome courses,
Golden blooms the tree of graces
Drawing up the earth’s cool dew.
Wanderer quietly steps within;
Pain has turned the threshold to stone.
There lie, in limpid brightness shown.
Upon the table bread and wine.
Primarily the poem distinguishes between *inside* and *outside*; between the warm well-provided environment of the home and the harsh reality of the natural world. The threshold of the home acquires specific meaning in the poem as the boundary that simultaneously unites and separates the inside and outside, as presented in Simmel’s (1909) analysis of the *door*. Every word reflects the character of the scene. According to Norberg-Schulz (1976) even the word ‘falling’ guides us to visualise the boundary by creating “... a sense of space, or rather: an implied presence of earth and sky.” (Norberg-Schulz, 1976, in: Nesbitt, 1996, p.416) The poem “... concretises basic properties of existence. ‘Concretise’ here means to make the general ‘visible’ as a concrete, local situation.” (Norberg-Schulz, 1976, in: Nesbitt, 1996, p.416)

But who crosses the threshold? Who is able to visualise the environment? Man. Man is yet again revealed as the ultimate embodiment of the boundary. He is capable of dwelling poetically and the genius loci, the essence of place can only be revealed through him. “Architecture occurs in the boundary as an embodiment of world.” (Norberg-Schulz, 1983, in: Nesbitt, 1996, p.436) Architecture has the capacity to bear and convey the spirit of place and engage man in dwelling. “The essence of building is letting dwell. Building accomplishes its essential process in the raising of locales by the joining of their spaces. *Only if we are capable of dwelling, only then can we build.*” (Heidegger, 1951, in: Krell, 1993, p.362) Heidegger declares that it is man’s duty to actively search for the essence of dwelling. “The proper dwelling plight lies in this, that mortals ever search anew for the essence of dwelling, that they *must ever learn to dwell.*” (Heidegger, 1951, in: Krell, 1993, p.363)

As the temple grows out of the rock and the bridge gathers together the banks of the river, so does man stand in the world. Heidegger asserts that “... the farmhouse in the Black Forest is born on and of the mountain slope where it sits built by the ‘dwelling’ on peasants.” (Heidegger, 1951, quoted in: Leach, 1997, p.98) This is how the essence of man is revealed: born on and from the earth. Through his standing, his being there, he is reaching for the heavens. Through his creation of architecture he attempts to concretise his foothold on the world and create place and
a site for the fourfold to be received. In Heidegger’s words: “Building puts up locales that make space and a site for the fourfold. From the simple oneness in which earth and sky, divinities and mortals belong together, building receives the directive for its erecting of locales. ... To preserve the fourfold, to save the earth, to receive the sky, to await the divinities, to initiate mortals – this fourfold preserving is the simple essence of dwelling. In this way, then, do genuine buildings give form to dwelling in its essence, and house this essential unfolding.” (Heidegger, 1951, in: Krell, 1993, p.360)

7.5 Searching for architecture’s emotive power

The aim of this section is to reveal the ontological dimension of the built environment by visiting a number of representative architectural examples. In these examples, architecture addresses not just the visual but also the totality of our senses engaging the united body and mind, seeing space not as abstract but as a lived experience,. In his book Spatial Intelligence: New Futures for Architecture, Leon van Schaik’s (2008) appeals for a conscious inclusion of our spatial intelligence in architectural endeavour. He believes that: “Despite the manifest lack of awareness of this interdependence between architecture and the mental space that gives rise to it, the world is peppered with places and spaces that have the power to move us.” (van Schaik, 2008, p.83) In the past Vitruvius, attempted to describe and define what makes memorable architecture, proposing his triad of firmness, commodity and delight. This was for many centuries considered sufficient, however, with the development and acceptance of evolutionary psychology, it would be beneficial to consider that architecture could be the product of spatial intelligence by bringing it to the surface beyond the subconscious where it now resides. According to van Schaik (2008, p.85): “When we allow ourselves to seek out and dwell on spaces that cause wonderment, we find that there is a continuum of spatial experience, between the intimate and immense, with stops that can be celebrated all along the scale.” In the following sections, I will attempt to delve deeper into how these architectures seem to move us, combining the multiple layers of our humanity, our palimpsest, from the
spiritual to the tangible and spatial upholding complexity and aiming for wonderment.

7.5.1 Spirituality in architecture

In this section, the Buddhist notion of *en* as spiritual and physical transactional space will be presented as it is traced and embodied in traditional Japanese architecture, giving us insights into the Japanese concept of space making and space understanding. Tadao Ando’s spiritually laden architecture in the Row House, Sumiyoshi (Azuma house), Osaka, Japan (1975-1976) and the Lotus Pond Hall of the Honpukuji Shingon Buddhist Water Temple, on Awaji Island, Japan (1979-1981) will also be put forward.

- The Buddhist *En*, as spiritual and physical transactional space embodied in Japanese architecture

In his book From Shinto to Ando: Studies in Architectural Anthropology in Japan, Günter Nitschke (1994) is aiming for a study of the *anthropology of building* by examining the unconscious foundations of architecture, “… arguing that the transition from the conscious to the unconscious is marked by a progression from the specific and time-bound towards the common and unchanging”. (Nitschke, 1994, p.7) In the essays of his book, Nitschke attempts to point towards “… common human denominators below the complexity and differences of the diverse outward manifestations of built form on our planet throughout history”. (Nitschke, 1994, p.7)

In his essay *En – Transactional Space*, Nitschke attempts to explain the Buddhist notion of *en* as it permeates life in the Japanese culture. He asserts that *en* denotes transaction in three different contexts: “… in Buddhist morals it refers to the law of Karma, the *bridge* from cause to effect in the chain of human actions (e.g. *in-en* = karma); in social relations to the *bond* between different individuals (e.g. *en-musubi* = love bond); and in architecture to the transition from inside to outside, building to nature, private to public (e.g. *en-gawa* = verandah”). (Nitschke, 1994, p.85)
What I began to see here is a very distinctive connection of *en* with the concept of boundary. *En* can be seen as an embodiment of boundary as it signifies a bond, a unity in dynamic opposition. “In all three contexts *en* implies connection and/or separation, neither one nor the other alone, but both simultaneously. Ultimately, the uses of *en* suggest a deeply ambivalent interpretation of man’s being, his social structures and architectural artefacts as being neither simply independent of nor dependent upon, but as being interdependent among each other, part of each other.” (Nitschke, 1994, p.85)

Here, one can detect the unique nature of the Japanese language in how it reflects the ontological philosophy of Buddhism. Nitschke (1994) proceeds to give an analysis of how these notions, this philosophy was absorbed and embodied in the traditional Japanese architecture throughout the centuries of its evolution, unifying man with his spiritual, social and natural environment. Nitschke (1994) refers to the traditional Japanese buildings, in rural as well as urban settings whose significant characteristic is their huge overhanging roofs, which at the same time define and blur the edges of the buildings. This boundary, the *noki-shita* literally the ‘sphere under the eaves’ is the space for climatic, visual and social transactions. (Nitschke 1994)

Nitschke (1994) gives two examples of this typology: the ‘dwelling-shop’ (*ie-mise*), which faces the street and combines living and working on one plot and the ‘house-garden’ (*ie-niwa*), which is secluded from the street but opens up to the garden. They both portray unique devices that “… ease and/or prevent the transition from private to public realm, to allow and/or restrict the filtration of light, air and wind, and to enable and/or obstruct vision”. (Nitschke, 1994, p.85)

**The ‘dwelling-shop’ (*ie-mise*) dwelling: street permeating house**

The *machiya*, the Japanese town houses, follow the rules of the ‘dwelling-shop’ (*ie-mise*) facing the street in a narrow plot and going deep in the city’s grid. Nature is brought in the house through a courtyard garden into the building. Under the eaves
of the roof the connection/separation from the street is ingeniously regulated in a flexible manner that can be altered according to need. (Nitschke 1994) (fig.7.6-7.8)

**figures 7.6-7.8: Architectural ‘transactional space’ between street and house. Machiyas in Kyoto’s Gion Shimbashi District. Source: www.kyotomachiya.com**

The architectural devices of the approximately 60cm-deep transaction space between the inside and the outside include fixed wooden lattices, cloth curtains, translucent paper sliding screens, solid wooden rain shutters that can be folded away and of course transparent glass sliding doors. Both in the ground floor as well as in the first floor, these devices provide the residents with a control of their boundary towards the street. Various degrees of visibility and permeability can be combined to create the desired climatic or access control. (fig.7.6-7.7) “Ever so slightly different wooden lattice windows are the wall towards the street...” and thus during the open times of the shop “[t]he action on the street outside becomes part of the life inside” (Nitschke, 1994, p.86). Variations in ventilation, light and sight work in unison with the environment of the street. Since pavements do not exist in these traditional shopping streets, it is within this transactional space, this boundary that money and goods exchange hands. At night the life inside the domestic areas of the shop illuminates the street with a translucent light punctuated by the shadows of the residents going about their domestic duties. (Nitschke, 1994) (fig.7.8)

**The ‘house-garden’ (ie-niwa) dwelling: garden permeating house**

The house-garden (*ie-niwa*) type dwelling, on the other hand reveals a different orientation. Nitschke (1994) presents the example of *shake-machi* or priests’ house that matches this typology. The characteristic difference of this type is that it is
concealed by a long, often solid wall from the street. (fig.7.9) In the Gion Shimbashi district of Kyoto a small river separates the houses even further from the street. Its substantial garden, however, completely permeates its boundaries. In Nitschke’s words, “[t]he garden is not placed in the house, ... but the house in the garden. ... The garden, rather than the street, becomes part of the internal space.” (Nitschke, 1994, p.87) (fig.7.10) The Japanese architectural tradition embraces a unique sensibility in reference to nature. “Human life is not intended to oppose nature and endeavour to control it, but rather to draw nature into an intimate association in order to find union with it. ... This kind of sensibility has formed a culture that de-emphasises the physical boundary between residence and surrounding nature and establishes instead a spiritual threshold.” (Nitschke, 1994, p.87)

The transactional space of the house-garden is larger, about one meter deep, the architectural devices used however, are quite similar in essence but more formalised. They, too, provide flexibility to the occupant to adjust them or entirely remove them. “The en with its various pellucid membranes of different degrees of solidity and of porousness separates and/or joins the dwelling with nature. Visually, the en often becomes part of the garden.” (Nitschke, 1994, p.90) When the sliding doors are open there is no barrier to the outside. “It is as if you were floating on top of the ground.” (Nitschke, 1994, p.90) (fig.7.11) The en is, however, still part of the inside. Coming
from the garden, in this space “... you have to remove your shoes before you move up to it, and its surface is nearly flush with the tatami floor”. (Nitschke, 1994, p.90)

Another factor that governs the ambiguity of the en’s spatial belonging is its ambiguity of light. “The visual game played here constantly varies one’s depth of vision ending either at the shoji, the glass doors, the sudare, a rock setting, the garden wall or some remote feature drawn into one’s perspective.” (Nitschke, 1994, p.90) It is spatially important since it regulates access to the different rooms of the house, featuring as a corridor while making the garden an essential part of the required movement in the house.

Nitschke refers to the Imperial Katsura Palace, in Kyoto (1620-1624) as the ultimate example of the ie-niwa, garden-house type. “When a ground plan interlocks with the garden in the famous zigzag pattern of the Katsura Palace, the multilayered diaphanous membranes of the en joining at right angles visually create a geometric complexity and a play of shadow and light that is unmatched by modern Japanese architecture.” (Nitschke, 1994, p.90) However, Tadao Ando’s Horiuchi House (1977-1979), in Osaka, is also mentioned as an attempt to portray the quality of the en with the shadow/light play of the occupants’ movements cast on its glass-brick wall to the street. (fig.7.12)
In these examples we are faced with a physical interpretation of a deeply spiritual meaning; that of unity. The *en*, representing both the inside and outside, simultaneously connects and separates, confines and defines the social, physical and symbolic realms. Evolved through hundreds of years, these houses achieve in uniting the natural realm with the domestic, the private with the social, the spiritual with the physical, thus truly embodying the poetic sense of dwelling advocated by Heidegger.

**Tadao Ando’s spiritually infused architecture**

In this section we will visit two innovative examples of Tadao Ando’s unique architecture. Through these it will be attempted to reveal how an architectural intervention can become an embodied boundary between man and his surrounding cosmos.


According to Günter Nitschke, Tadao Ando’s revolutionary design of The Lotus Pond Hall of the Shingon Honpukuji temple freed Buddhist temple architecture from
2000 years of stylistic shackles. (Nitschke 1994) Ando’s first innovative step was to remove the traditional axial alignment of Buddhist temples and lead the visitor/pilgrim through a large open area strewn with white pebbles and along two very high walls, one curved and one straight. There is no specific indication of a gate but the proportions of the walls and open space give one the feeling of entry. (Nitschke 1994) (fig.7.13-7.14) Suddenly the visitor is confronted by a large oval lotus pond whose surface reflects the bright blue sky. Nitschke (1994, p.77) reminds us that “[t]he lotus is a venerable symbol in Asia – the channel of origin of all life in Indian cosmogony, and the symbol of self-creation (enlightenment) in Buddhism”.


A lotus pond spanned by a bridge is often found in Buddhist temples, here however the visitor is almost literally entering the lotus pond, immersing himself in its cosmological signification. (fig.7.15-7.16) Via the narrow staircase at the centre of the pond he is entering a ‘womb-like’ realm. “Standing out in the open beside the lotus pond above, the interior of the hall is sensed via the long slit-like staircase leading down into it; once inside the red enclosed space of the temple, on the other hand, the vastness of the sky is sensed via the spheroid ceiling. The ‘transparent’ and womb-like worlds of Shingon are brought into experiential union.” (Nitschke, 1994, p.79) (fig.7.16-7.17) When inside the Lotus Pond Hall the superimposition of the two Shingon mandalas “… one representing kongo-kai, the world of diamond-like
transparent wisdom, and the other *taizo-kai*, the ‘world of womb-like phenomenal experience’” is reflected and perceived in the geometry of the building, the circular Buddha Hall and the square tea reception room. The visitor is thus immersed in a three-dimensional realm of Tantric training.” (Nitschke, 1994, p.77) (fig.7.17)

![figures 7.15-7.16: Immersing into a world of cosmological signification. Source: (Nitschke 1993)](image)

![figure 7.17: The womb-like interior of the temple unifying spiritual and phenomenal experience. Source: (Nitschke 1993)](image)

The strength of this intervention lies in its simplicity. Decisive design implementations guide the visitor towards a unified spiritual and phenomenal experience. Light and colour intensify the meditative experience, submerging the visitor into a spiritual world within a physical world. The symbolic religious cues of the intervention – lotus pond, mandalas and womb-like interior - provide the visitor with a familiar stepping stone within the new physical translation of the Buddhist temple bounding him with the world he already knows while thrusting him towards a deeper spiritual experience.

Having already seen Tadao Ando’s revolutionary temple interpretation, we will move to a unique interpretation of a house with an intriguing spatial configuration. In the Sumiyoshi or Azuma House, Tadao Ando chooses a very radical intervention in the conventional housing typology. Behind an austere facade, the house is separated in two by a courtyard, intervening in-between the living room and the dining room, kitchen and bathroom. (fig.7.18-7.20)


According to Baek, “[t]he courtyard interrupts the activities for which these individual spaces are set; this unconventional configuration demands the inhabitant to be, according to Ando, a man of ‘strong will’ who dares to traverse the courtyard even on a harsh winter day.” (Baek, in: Odgers, 2006, p.183) The reason for this decisive decision is given by Ando himself: “In an early work, Row House, Sumiyoshi (Azuma House), I severed in half a place for living composed of austere geometry by inserting an abstract space for the play of wind and light. It sought to inject inquiry, thereby, into the inertia that has overtaken man’s dwelling.” (Ando, 1977, quoted in Baek, in: Odgers, 2006, pp.183-184) Ando perceived the necessity
of such a radical action in order to awaken man’s sensibilities basing it on a broad spiritual base.

Baek refers to the idea of *fudo*, a concept articulated primarily by the Japanese philosopher and historian Tetsuro Watsuji (1889-1960). “In Japan, the idea of a perceiver who is enshrouded by a specific atmosphere of the world has been articulated in the idea of *fudo*, or its conventional, yet largely dissatisfactory, translation into climate. ... *Fudo* is about the climatic and topographical field as they affect the interiority of selfhood and as they initiate cultural activities that extend the moment of self-discovery to the intersubjective realm.” (Baek, in: Odgers, 2006, p.186) According to Baek (2006), Watsuji would claim that when one says ‘I feel cold’, the interiority of the ‘I’ is filled with the coldness of the surrounding air bounding him with his environment but also with others, forming a ‘social space of sympathy’.

In this sense, Ando’s unconventional courtyard can therefore be seen as a medium for recovering a sense of *fudo* within a metropolis where the environment is mostly controlled. (fig.7.19-7.20) Baek again quotes Ando: “With the sense of life generated by this approach to form and materials as a *mediating* element, it becomes possible to inspire contacts between people and *things* (mono) on a deeper level and in this way to evolve new relations between them. This in turn will enable human beings to hope for the emergence of new place in which to experience the kind of self-knowledge that people today are losing.” (Ando, 1977, quoted in Baek, in: Odgers, 2006, p.187) This knowledge that we are losing, according to Baek, “... does not lie in the introspective vision of one’s interiority, but in the rediscovery of *fudo* as the mode of enabling a revelation about the world, that embraces and penetrates one’s interiority.” (Baek, in: Odgers, 2006, p.187)

By thrusting the occupants of the house into the courtyard, Ando enables them to unite with their environment. “A simple geometric form, the concrete box is static; yet as nature participates within it, and as it is activated by human life, its abstract existence achieves vibrancy it its meeting with concreteness. ... The architecture
created at that moment is filled with a space that provokes and inspires.” (Ando, 1991 in: Nesbitt, 1996, p.459) The design intervention therefore does not implement a separation but rather paradoxically a connection; a boundary that connects by separating. The architect in a sense obliges the resident of the house to put himself in the boundary. In so doing, the occupant brings life to the courtyard and the courtyard to the occupant in a process of interpenetration.

In order to define the intertwinedness between the perceiver and the object of perception in *fudo*, Baek (2006) refers to the concept of *shintai* in the Japanese tradition, which reflects ‘the actively knowing body’ as ‘the agent for deep and active sensation’. In Japanese thought, according to Baek (2006), the self is considered as an empty vessel. The emptiness of selfhood in the act of perception starts as a form of self-negation in order to embrace the other, and through that process, it paradoxically leads to acquiring one’s selfhood. This thinking resonates Maurice Merleau-Ponty’s insight on the body as flesh of the world. “The emptiness of selfhood is not a conceptual theorem, but a principle that is corporeally actualised at the moment when one feels the other as his own interiority. The body is like an iconic instrument for the unconditioned acceptance of a thing, constituting the deepest layer of one’s knowing the thing.” (Baek, in: Odgers, 2006, p.188)

In the courtyard of Ando’s Azuma House, the perceptual experience of the agents of *fudo* - wind, light, rainwater or snow - is an enriching one. “According to Ando, wind does not remain on the margins of our body, but ‘penetrates’ it. The perceiver’s experience of a cool breeze in the courtyard of the Azuma House through *shintai*, ‘a sentient being that responds to the world’, brings about its absolute contradictory of warmness and softness as the expression of the very self.” (Ando, 1977, quoted in Baek, in: Odgers, 2006, pp.189) The agents of nature through the perceptual experience are bound to the self in a constant interaction and definition. Indeed, in the process of self-negation, the self as boundary engages and embraces *fudo* and brings life into the courtyard. In Ando’s own words: “When water, wind, light, rain, and other elements of nature are abstracted within architecture, the architecture becomes a place where people and nature confront each other under a sustained sense
of tension. I believe it is this feeling of tension that will awaken the spiritual sensibilities latent in contemporary humanity.” (Ando, 1991 in: Nesbitt, 1996, p.460)

7.5.2 Alvar Aalto’s lyrical architecture embodying the environment and the collective psyche of Finland

In this stage, I will approach Alvar Aalto’s lyrical and culturally permeated architecture. As we will see, his architecture embodies an expression of the collective psyche of the Finnish people and their culture’s unique amalgamation with their environment, conveying a true link between man and his surrounding environment.

The celebrated Finnish architect Alvar Aalto (1898-1976) presented a distinct voice in a time when modernist ideals were pervasive. Though his architecture is by no means romantic, -he considered himself a Modernist- it is however imbued by a lyrical quality that binds it seamlessly to his people’s culture and their close connection with their environment. (Weston 1996) In the words of Juhani Pallasmaa (quoted in Weston, 1996, p.17): “The memory of the protective embrace of woods and trees lies deep in the collective Finnish soul.”

Situated on the northern fringe of Europe, the Finnish natural environment is engulfed by forests and lakes, many lying within the Arctic Circle. (fig.7.21-7.24) The extreme position of Finland has meant that the Finns have lived in relative isolation for centuries, binding them more closely to their surroundings. “[Finland is] a land of lakes and forests adorned by buildings and artefacts designed and made with a special feel for natural materials by people whose hundreds of years of virtual isolation had taught them to trust their senses, to rely on the work of their hands, to accept and appreciate the ways of nature.” (Weston, 1996, p.16)
Aalto, whose father was a surveyor mapping the landscape of central Finland, was deeply affected by the forest culture of Finland. This, however, did not stop him from acknowledging his commitment to the present. According to Weston (1996), Aalto’s genius is reflected in the way he achieved a creative tension between the conflicting poles of his time; between the national and international and the romantic and rational; seeing no necessary conflict between science, art and technology. Aalto himself acknowledged the importance of his early experience as an assistant cartographer to his father, whose white table was imbedded in his mind. (Weston 1996) Weston sees these early experiences as contributing to Aalto’s “… mastery of fitting buildings to the land, and, more specifically, to that fascination with line and contour, which is such a conspicuous feature of his drawings”. (Weston, 1996, p.100)

o **Architecture and Life: A double movement**

*From nature to architecture and from architecture to nature*

Throughout Aalto work, some distinct elements arise that in a sense provide a thread that links them together. It is as though they speak the same language. This is the language of his land and his people and through Aalto it found a contemporary voice.
According to Weston, Aalto “... sought inspiration from natural forms and processes, but they were always subjected to the abstracting power of the human mind...”. (Weston, 1996, p.104) An excellent example of this is the Finnish Pavilion at New York’s World Fair of 1939, presented further on.

Many have commented on Aalto’s masterly use of wood, not only in his architecture but also in his furniture design. (fig.7.25-7.26) Pallasmaa has praised “his muscular and tactile buildings” and the conscious concern for the senses in his architecture showing that “... he was clearly more interested in the encounter of the object and the body of the user than in mere visual aesthetics”. (Pallasmaa, 2005, p.71) “His elaborate surface textures and details, crafted for the hand, invite the sense of touch and create an atmosphere of intimacy and warmth. Instead of the disembodied Cartesian idealism of the architecture of the eye, Aalto’s architecture is based on sensory realism.” (Pallasmaa, 2005, p.71) According to Pallasmaa (2005, p.70), Aalto’s architecture is “... based on a full recognition of the embodied human condition and of the multitude of instinctual reactions hidden in the human unconscious”.

figures 7.25-7.26: Sensory realism infused with the memory of the environment in Aalto’s masterly use of material, wood-bending and glass. Source: (Pallasmaa 2009) and Iittala Alvar Aalto
The most distinct essence of Aalto’s buildings, according to Weston (1996), is a double movement from nature to architecture and from architecture to nature. (fig.7.27-7.28) What he means by that is that apart from the obvious inspiration that Aalto has distilled from nature, some of his buildings are also imbued with a sense of returning to the earth, as if time has already begun its relentless work. (Weston, 1996) The sense of the circle of life is perhaps the most powerful characteristic of the human condition as it is of any other living organism. Death is in fact bound with life; it is an unavoidable and essential part of it. According to Weston (1996), in Aalto’s architecture nature seems to follow a natural path, engulfing corners of buildings and sliding across windows, in opposition to Frank Lloyd Wright’s architecture where nature forms an integral part of the organic ornament. This is apparent in Aalto’s Säynätsalo Town Hall and summerhouse at Muuratsalo, addressed further.

The Finnish Pavilion, at New York’s World Fair (1939):
Born from nature through the eyes of man

The Finnish Pavilion at New York’s World Fair in 1939 is one of Aalto’s iconic buildings. Here, in a challenging space Aalto was able to complete a symphonic structure that bound together nature and architecture and created an experience that
recalled the essence of Finland, its past and its future. (Weston, 1996) (fig.7.29-7.30)

In his Finnish Pavilion, Aalto succeeded in conveying this vision of Finland. Weston (1996) refers to Juhani Pallasmaa’s powerful concept of ‘forest space’ as the core of Aalto’s architecture. The glaciated wilderness of Finland is covered with forests, lakes and islands. The impossibly tall trees and the flatness of the lakes present a juxtaposition of verticality and horizontality, creating ‘a highly architectural place’. In addition, the misty diffuse light filtered by either trees or clouds offers an enchanted play of colours, light and shade.

Photo: Museum of Finnish Architecture, Helsinki. Source: www.architectureweek.com

In the interior of the Pavilion, a massive wooden serpentine wall “... was intended to evoke the aurora borealis and was clad with closely-spaced fins to enhance the optical effect of its undulating surfaces; the metaphor was made even more vivid by washes of coloured light from a battery of spot-lamps mounted on top of the projection booth”. (Weston, 1996, p.113) In the undulating geometry, the landscape was brilliantly evoked bringing to mind the profiles of lakes. Vast photographs hanging on the space, made this connection even more explicit. The use of the latest technologies also presented the forward-looking character of the Finnish people. “[T]he message of Aalto’s ‘Modernist forest’ was clear for all to see: Finland as a modern, creative country with deep roots in the landscape and culture of the forest. His ‘symphony’ proclaimed a productive, harmonious symbiosis between man’s
intellectual and material culture, and nature, a vision of what Finland could aspire to than what it already was – for Aalto, ever a Modernist, the world was about becoming not being.” (Weston, 1996, p.113) In this creation, Aalto accomplished what was considered impossible: linking modernist ideals while achieving a synthesis of nature and culture, an architecture that was born from nature through the eyes of man.

The Muuratsalo summerhouse (1953): engulfed by and returning to nature

Aalto’s summerhouse in Muuratsalo, is situated in the northern remote shores of Lake Päijänne and is often referred to as the experimental house. This is due to the elaborate patterns of brickwork throughout the walls and floors of the house. (fig.7.31-7.32) It does, however, mark a very distinct time in the architect life.

In their essay ‘The modern-day primitive hut? Self-building’ with Jung, Aalto and Le Corbusier’, Flora Samuel and Sarah Menin (2006) attempt to illustrate the essence of the retreats that these three individuals built for themselves. (fig.7.33-7.35) The search is towards a primitive source of life and they maintain that these retreats “…were built to encourage an almost mytho-poetic view of life, breaking down boundaries between self, time and architecture.” (Samuel & Menin, in: Odgers, 2006, p.207) The authors state that the houses’ main common feature is that they are all sited within trees and above purifying water, elements that the authors consider to
have an archetypal significance. In the case of Alvar Aalto’s summerhouse in Muuratsalo, the control of the boundary is also significant.

Samuel & Menin (2006) refer to Jung’s theories on the self, developing towards individuation and the experience of nature as giving a deep and reassuring knowledge of our nature by encouraging and stimulating poiesis. “Boundaries, thresholds, edges are the stuff of architecture. Yet, in Jung’s view, to be truly primitive is to lose boundaries, boundaries that simultaneously protect and repel, to be fully immersed in the world, in many ways a terrifying prospect and a challenge to the architectural preoccupation with threshold.” (Samuel & Menin, in: Odgers, 2006, p.211)

Unlike conventional summerhouses, in Aalto’s summerhouse in Muuratsalo the connection with nature is mediated through an enclosed courtyard. (fig.7.36-7.39) This courtyard forms a boundary with nature. On one of its walls, a superb view is framed to the south towards the lake; on another, nature is viewed through an altar-like white trellis. (fig.7.37) In the centre of the courtyard, a hearth is set. Nature threatens to engulf the building but does not entirely succeed. According to Samuel & Menin (2006), nature is in fact encouraged to complete the courtyard creating an important psychological corollary.
The movement of architecture towards nature, towards reintegration, is clear here. The house projects a sadness that reflects the mood of the architect who built it shortly after the death of his first wife. The mood is of returning to earth. Even the access to the island, which was then only possible by boat, brings to mind the journey of the newly deceased towards Hades. Perhaps one could say that this work reflects a necessary healing process undergone by the grieving architect to regain the strength to continue. According to Samuel & Menin (2006), “... Aalto’s need to deny death at the conscious level led to the creation of a retreat imbued with the presence of that very reality he denied. Ruin, overgrowth and decay were inherent in his creative idea – gelled in the moments of childlike play – moments in which the horror of both his childhood loss of his mother and the premature loss of his wife commingled.” (Samuel & Menin, in: Odgers, 2006, p.215) The return from
architecture to nature is complete, bearing man back to the threshold of his existence in his yearning to redefine and realign the purpose of his life. (fig.7.28)

The Säynätsalo Town Hall (1952):
routed on the earth, the public and natural realm united

A self-confessed Modernist, Aalto began to feel the chasm between the Modernist urban ideals and his own sense of the importance of place. The contempt towards the natural site, as showcased in Le Corbusier’s La Ville Radieuse, went against the essence of Aalto as an architect and man. “[I]t is clear of the mid-1930s onwards that having initially thrown himself headlong into the international mainstream of architecture, he soon began to worry about a ‘rootless, airborne internationalism’, and to search instead for an architecture ‘which builds upon the popular psyche and on purely geographic conditions’.” (Aalto, cited in Weston, 1996, p.107)

Aalto’s buildings seem to encourage human participation and provide a sense of belonging. The sense of place is essential in this process and it permeates his buildings. The Säynätsalo Town Hall is probably the clearest example of this quality inherent in Aalto’s architecture. In his own words: “We may define the ideal outcome of architecture as being that a building should serve as an instrument which mediates all the positive influences and intercepts all the negative influences affecting man ... a building cannot carry out this task unless it is itself as finely nuanced as the surroundings in which it stands.” (Aalto, quoted in Weston, 1996, p.122)

In the Säynätsalo Town Hall Aalto brings forward his intense understanding of the earth by nestling his intervention in the landscape in such a way that it seems to belong there. (fig.7.40) Aalto acknowledged that this was a relatively large building for such a small community, his intention however, was to inspire a sense of pride and grandeur to the people, especially evident in the great hall of the complex, with its great height and tree-like trusses that bind the natural and civic realm. (fig.7.41-7.42)

figures 7.41-7.42: The great hall of the town house and its tree-like trusses evoking the natural realm. Source: (Weston 1995)

The building is wrapped around a courtyard, an element that Aalto included in order to evoke the ancient palace complexes of Crete, the Athens agora and the Italian hill towns. (Weston 1996) (fig.7.43-7.45) By exploiting the sloping ground, he establishes a piano nobile where the civic functions are accommodated. The freely angled grass steps, in addition, leading to the courtyard project a sense of rootedness to the earth. (fig.7.40) This is intensified by the rough surfaces of the red brick, which was laid in oblique angles to provide a rippled effect in the light. The natural surroundings engulfing the building complete this picture, reinforcing a seemingly natural and organic connection to life.
Access to the entire building is provided by a corridor that surrounds the courtyard, reinforcing the public nature of the Town Hall and supporting an also figurative feeling of accessibility of the administration to the visitor. (fig. 7.43) Weston (1996) refers to Hannah Arendt’s observations on the double meaning of the term ‘public’. For Arendt, public not only means something that is seen or heard by everyone, it also signifies the world itself as it is common to us. “The public realm, as the common world, gathers us together and yet prevents our falling over each other, so to speak. What makes mass society so difficult to bear is not the number of people involved, or at least not primarily, but the fact that the world between them has lost its power to gather them together, to relate and to separate them.” (Arendt, quoted by Weston, 1996, p.142) According to Weston, this is precisely what Aalto’s Säynätsalo Town Hall achieves; to create a public place for the community that ‘gathers them together’ both physically and symbolically.

In Pallasmaa’s words “... an architectural work is great precisely because of the oppositional and contradictory intentions and allusions it succeeds in fusing together. A tension between conscious intentions and unconscious drives is necessary for a work in order to open up the emotional participation of the observer. ‘In every case one must achieve a simultaneous solution of opposites’ as Alvar Aalto wrote.” (Pallasmaa, 2005, p.29) As in his summerhouse, this work seems to fuse the natural and human worlds so closely together that they seem to define each other, revealing the primary bond. Providing an unbroken link with his unique natural and cultural
environment, Alvar Aalto represents a man who lives the boundary, who in fact is the boundary. His architecture speaks through him in a unique way and reveals the unconscious bond between man and his surrounding environment. Aalto’s architecture indeed materialises Merleau-Ponty’s insights on the potentiality of man’s consciousness. Through his work one can live in the boundary and experience the intertwining of our lived body and the world in the essentially materialised experience of architecture.

7.5.3 Carlo Scarpa’s logos of techne and techne of logos

Anyone familiar with Carlo Scarpa’s work can attest to the exceptional beauty of this architect’s detailing. His details, however, formed just a part of an extensive design process that began in the drawing board. According to his former colleague Sergio Los, for Scarpa, a design came about through the drawing process; it was a poetic process which revealed an even ‘linguistic competence’. (Los 1993) Scarpa thought through drawing: “I draw because I want to see”, he asserted. (Scarpa, quoted in Los, 1993, p.10) As already seen, Pallasmaa greatly believes in the ‘thinking hand’ and its almost independent nature in the drawing process and Scarpa’s work is a testament to this. (fig.7.46-7.47)

Tectonics, craftsmanship and material deeply affected Scarpa. “Following Giovanni Battista Vico’s maxim, “verum ipsum factum” [truth itself is constructed], Scarpa emphasised that one reaches the truth through manual constructional work, a thought akin to the logic of dialectical reasoning.” (Los, 1993, p.22) The detail became for Scarpa an essential element of his thinking, ‘gathering’ the design intentions and achieving the synthesis of the intervention in such a way that they become indispensable. “Scarpa stressed the joints and sought to enhance them by dissociating the whole into its component parts. ... Profiles, edges, mouldings etc. show how the elements of a building attack and repel each other, while their disappearance leaves all relations between these elements in limbo.” (Los, 1993, p.16) (fig.7.48-7.50)

By giving the perceiver the chance to discover the joints, Scarpa was able to clearly reconstitute the whole and offer a complete and comprehensible experience. He turned the act of construction into a process of communication and understanding. This is supremely evident in his museum designs when even the works displayed engage in the collective cognitive process while their meaning within the whole is revealed. “His museums are never merely neutral spaces into which any old works of art could be inserted; rather, they represent critical and conscious decisions, which, taking the exhibits as their starting point, complement them in a way essential to their understanding...” (Los, 1993, p.37) Scarpa’s seminal work in Castelvecchio
in Verona reveals the depth of this master’s capacity in directing the visitor to achieve an understanding of the layering of time in the building itself in unison with the museum’s contents.

In his polemic essay ‘Rappel à L’Ordre, The case for the tectonic’, Kenneth Frampton (1990) searches for the essence of architecture and identifies the structural unit as the irreducible essence of architectural form. He asserts the syntactically tectonic nature of Carlo Scarpa’s architecture and quotes Marco Frascari’s distinction between ‘constructing’ and ‘construing’ by delving into the semantic meaning of the word technology. Fascari (1984) was intrigued by the dialectic of techne and logos presented within the word and the change in meaning it produced when set up as a mirror-like relationship between the techne of logos and the logos of techne. He used the examples of the Enlightenment and Carlo Scarpa’s work in order to clarify this: “At the time of the Enlightenment the rhetorical techne of logos was replaced by the scientific logos of techne. However, in Scarpa’s architecture this replacement did not take place. Technology is present with both the forms in a chiastic quality. Translating this chiastic presence into a language proper to architecture is like saying that there is no construction without a construing, and no construing without a construction.” (Frascari, 1984, quoted in Frampton, 1990) ‘Constructing’ and ‘construing’, building and interpreting became in Scarpa’s work one and the same.

Through his work, Carlo Scarpa has achieved this fusion of body and mind, this boundary that unites the perceiver and the perceived in a perpetual process of co-definition, which essentially binds him to the cosmos. The seemingly effortless unification of the techne of logos and the logos of techne is a testament to this architect’s genius and accomplishes what Pallasmaa calls the timeless task of architecture, which is to “…concretise and structure man’s being in the world… enable[ing] us to perceive and understand the dialectics of permanence and change, to settle ourselves in the world, and to place ourselves in the continuum of culture”. (Pallasmaa, 2005, p.71) Carlo Scarpa’s ingenious intervention in the Castelvecchio, in Verona reveals exactly this essential capacity of architecture.
The Castelvecchio in Verona (1956-1964):
architecture as a learning medium in embodied experience

Scarpa believed that Castelvecchio was full of deceptions. Throughout the centuries of its life the castle had seen many styles of building, each attempting to hide or adjust those that came before. (fig.7.51-7.52) More interested in historical transparency rather than restoration, Scarpa’s intention was to revive Castelvecchio by revealing the different historical layers in a comprehensible unified whole. His intervention took the existing situation to a higher level by creating and exploiting accidents and collisions, juxtapositions and relationships between the various parts and ages of the building, while at the same time engaging the works of art to assist in his story towards a complex symbolic form. (Murphy 1990) According to his former colleague Sergio Los (1993), Castelvecchio demonstrates how Scarpa’s architecture was based on juxtaposition.


An instrumental design solution was Scarpa’s decision to demolish a narrow strip of a façade in order to expose the different structural and historical layers hidden behind it. This intentional break in fact achieved a synthesis for the entire complex and is
emphasized by the statue of Cangrande della Scala, which stands where the historical interconnections are clearest. (Los 1993) (fig.7.52-7.56)

figures 7.53-54: The conscious break in the façade with the smiling statue of the Cangrande housing the in-between. Source: (Los 1993)

In the Castelvecchio, Scarpa was responsible not only for the renovation of the castle but for the design of the exhibition as well. According to Stavroulaki & Peponis (2003), the structure of the occupiable space, which results from the viewing of the displays, results in a third layer of depth in Scarpa’s intervention. “The relationship between these interlacing aspects of spatial arrangement and symbolic meaning is mediated by an intensively embodied experience of space, whereby the gaze acquires almost haptic dimensions through movement, and where movement becomes punctuated not merely through its interaction with physical boundaries or objects, but
rather by virtue of complex visual percepts staged through design.” (Stavroulaki & Peponis, 2003, p. 66.1)

The sculpture and painting galleries are of particular interest in this respect. According to Stavroulaki & Peponis (2003), at first there seems to be no particular viewing sequence; some defining principles however do emerge: As you enter the subsequent rooms in the sculpture galleries, no statue is facing the visitor directly; thus inviting him to move around. It becomes apparent that the statues seem to be conversing, their gazes meet and at the intersections the visitor is engaged with the totality. (fig.7.57-7.59) His moving body through space becomes another medium for understanding. The visitor, thus feels included in the whole, as part of the story. (Stavroulaki & Peponis 2003)

In the painting galleries, a similar design device is used. Scarpa has chosen to place some paintings on freestanding easels, at times in the middle of the rooms. The visitor is thus encouraged to move closer and even look behind the paintings. (fig.7.60) Superimpositions are created between freestanding painting and paintings on the walls and their relation is also thematic. (Stavroulaki & Peponis 2003)

In the painting galleries, Scarpa used the differentiated perceptual points, provided by two axes of movement at the edges of the rooms, to create yet another referential aspect. (Los 1993) On the one side, the connecting access doorways reach the ceiling, on the other, however, they are framed, offering the visitor two different kinds of perspective and ambiguities of visual depth and scale. (Stavroulaki &
By placing paintings close to the edges of the transverse walls Scarpa ingeniously calls forth an association between the architectural perspective and the perspective apparent in the paintings themselves. (Stavroulaki & Peponis 2003) (fig.7.61-7.62)

Scarpa’s Castelvecchio is laden with juxtapositions. According to Stavroulaki & Peponis (2003), the visitor is immersed in a theatrical stage of expressions where the works of art, the architecture and the body are intertwined in an embodied experience where “… the conjunction of movement and seeing, understanding and perceiving is brought under the authority of a design intention.” (Stavroulaki & Peponis, 2003, p.66.11) In addition, Scarpa created a dialogue between different materials from different historical periods and by distinguishing and differentiating them, he in fact united them. “[T]he newly laid floors, like carpets, stop short of the walls, while the walls in turn stop short of the ceilings.” (Los, 1993, p.74) (fig.7.63-7.64)

All these design decisions are made with the clear intention of leading the visitor through time and through this particular space using the medium of architecture as an almost learning medium in this embodied experience. The existence of the visitor is paramount to animate this totality. He is the boundary through which the building
and its contents come alive. The architecture invites him to learn and understand; giving him clues he can read and engage with, both with his body and mind.

As mentioned earlier, movement plays an essential role in this design intervention. Instead of viewing isolated objects, the visitor is invited to engage his entire body and mind in the exhibition and its meaning in order to become one with the story. The essence of boundary is clear here. As a miniature cosmos, the museum is the inviting entity that attracts the visitor to reveal its meaning through an embodied experience and define himself in reference to it. At the same time, though, the visitor endows meaning to the museum by essentially becoming part of it. In Castelvecchio, Scarpa achieved in breathing life not only to the museum itself and its exhibits but also to the individual visitor, which is touched by it, thus completing a reciprocal process of reference and co-definition. The museum and the visitor become two parts of an unbroken totality, needing each other in order to exist.

7.5.4 Steven Holl unifying thought and creation in search of the experiential potential of embodied architecture

Similarly to Carlo Scarpa’s and Alvar Aalto’s architecture, the work of American architect Steven Holl displays an intense experiential depth. Unlike many of his colleagues, Steven Holl is outspoken about what it is that drives his architecture, giving us a unique insight into the working of the mind of this exceptional architect.
In his own words, the aim of his architecture is “... to realise space with strong phenomenal properties while elevating architecture to a level of thought.” (Holl, 1998-96, p.16) Through his work, Holl is attempting to unify thought and creation in search of the experiential potential of embodied architecture.

During the formative stages of his career Holl became deeply influenced by the writings of Maurice Merleau-Ponty (1968) and in particular from ‘The Intertwining – The Chiasm’ within The Visible and the Invisible. “In 1984, on a long train ride across Canada, a philosophy student introduced me to the work of Maurice Merleau-Ponty.” (Holl, 2000, p.302)

figure 7.65: The conceptual sketch driving Steven Holl’s architecture: The intertwining of Idea – Space – Material, anchored in site. “Words are his sails... the way they are set turns them into concepts”. Source: (Holl 1996)

As already seen through Merleau-Ponty’s insights, man’s experiences of the world are bound to his conceptualisations. The intertwining reflects our indissoluble bond between our lived body and the world, flesh and idea, mind and world and Holl attempts to materialise this fusion in the experience and creation of architecture. (Holl 1996) Taking inspiration from Merleau–Ponty’s writings, Holl puts forward a
framework of thought guided by insights into the concepts of anchoring, intertwining and parallax that seek to enhance the experiential potential of embodied architecture in his aim to endow us with an understanding of our profound symbiotic relationship with the surrounding environment. (fig.7.65) In his own words: “With the reflective capacities of phenomenology, an intrinsic understanding of space, and a pure passage from the sign to the signified, it is possible to move from the particular to the universal. The seer and the architectural space were no longer opposites; the horizon includes the seer. A new topological openness in the form of a field that extends to a ‘horizon-structure’ became my theoretical frame (no longer simple morphology-typology).” (Holl, 2000, p.302)

**Anchoring – Intertwining: Boundary of Idea and Phenomena**

Frampton believes that Steven Holl’s work is underlined by two fundamental principles: the *anchoring* of the building in its site and the need to integrate the conceptual level of his work with a phenomenological experience of its presence.” (Frampton, in Holl, 1989, p.8) This integration of the conceptual and phenomenological he called *intertwining* as a reference to Merleau-Ponty (1968).

Echoing Heidegger, Steven Holl begins his essay on anchoring with the statement: “Architecture is bound to situation. ... Building transcends physical and functional requirements by fusing with a place, by gathering the meaning of a situation.” (Holl, 1989, p.9) He believes that building and site have been interdependent since the beginning of architecture. In the past, there was no conscious intention and the connection manifested itself “... through the use of local materials and craft, and by an association of the landscape with events of history and myth.” (Holl, 1989, p.9) He urges, however, that new connections between site and architecture must be found today for a constructive transformation of modern life to occur. “[Holl] believes that the architect has as much a responsibility to challenge the site as to harmonize passively with its form.” (Frampton, in Holl, 1989, p.8)
Steven Holl believes in the importance of the site and architecture’s potential to gather the meaning of a place. “The site of a building is more than a mere ingredient in its conception. It is its physical and metaphysical foundation... Through a link, an extended motive, a building is more than something merely fashioned for the site... Architecture and site should have an experimental connection, a metaphysical link, a poetic link.” (Holl, 1989, p.9)

This poetic link is materialised through the built form by a processes of intertwining of the site-force, the idea-force and the manifested phenomenal properties of the product. “Architecture’s meaning lies in the intertwining of its site, its phenomena, its idea. Architecture may be expressive, yet it also carries like a vehicle ontological and epistemological maps. Site-force, circumstance, program, and phenomena are connected with idea-force.” (Holl, 1996, p.15)

According to Holl, architecture displays an organic link between concept and form; it gives birth to a third condition. “When a work of architecture successfully fuses a building and situation, a third condition emerges. In this third entity, denotation and connotation merge; expression is linked to idea, which is joined to site. ... In this one situation, its intentions are collected.” (Holl, 1989, p.9) In Anchoring, Holl (1989) describes this emotional realisation of the fusion of site and architecture in two examples, Louis Kahn’s Salt Institute and Adalberto Libera’s Malaparte residence in Capri. Holl (1989) marvels about the metaphysics of space created by the fusion
through light of ocean and courtyard that occurs at Louis Kahn’s Salt Institute when the sun reflecting on the distant ocean merges with the light reflecting on the rivulet of water which dissect the central court. (fig.7.66) At Capri the stark walls of the villa seem merged with the rock, rising from the sea as an offering to the sun in a ‘mysterious example of order in space, light, and time’. (Holl 1989) (fig.7.67)

Holl charges phenomenology and Merleau-Ponty’s writings for making him understand the importance and individuality of site and the potential of architecture as it binds the body with the world. In his own words these writings allowed him “... to grasp the profound uniqueness of each specific place, its light, its air, its smell, its ambient colour, its history, or should I say, many histories. I realised that each site on earth was a different beginning point, experientially, historically, intellectually, capable of joining us together in new ways as our bodies move through it and as it, the place, moved through our bodies. This simple but deeply moving fact, opened my mind to the possibility of a radical eruption in architecture, whose traditions and techniques I saw as more concerned with one or another mode of sameness, with typology for example, or historical contextuality.” (Holl, quoted in Kipnis, 2003, p.42) Here Holl identifies the reciprocal and undivided bond between man and place.

Holl recognises the change that occurred in the evolution of his work from the Anchoring (1989) towards the Intertwining (1996), acknowledging the necessity of man as this in-between. The concept of boundary shares this genetic make-up. “Herein lies a mystery that is familiar but unexplained. The intertwining has a ‘between’ that alternates from within to without. Our body moves through and simultaneously, is coupled with the substances of architectural space – “the flesh of the world (Maurice Merleau-Ponty).” (Holl, 1996, p.16) In this new stage “... the site/situation is both subject and object, both existence and essence” (Holl, 1996, p.16). This metaphysical and poetic link, this emerging third condition reflects the boundary concept. Man’s essence, his merged body and mind, his senses and conceptualisations form the in-between.
o  ‘Limited concept’

Like Merleau-Ponty, Holl believes that in the human mind, the idea is formed but it is never independent. “By ‘making’ we realise idea is only a seed for extension in phenomena.” (Holl, 1989, p.9) In Anchoring, Holl (1989) proposes the adoption of a ‘limited concept’ as an alternative to ideology or theory to achieve an open, transcultural language in architecture. This ‘limited concept’ begins with dissimilarity and variation and illuminates the singularity of a specific situation. It is not intended as an ideology but an aim at “… celebrating the extraordinary, parallel to nature’s diversity… a celebration of the as-yet-unknown.” (Holl, 1989, p.12)

According to Holl, there is an organic link between concept and form. The idea drives the architecture as a “… hidden thread connecting disparate parts with exact intention. … [establishing] an order, a field of inquiry, a limited principle.” (Holl, 1989, p.10) The limited concept is both free and limiting, tying together the architectural elements to a larger whole. “As mytho-poetic stories, buildings make connections to histories, sites, cultures, and passions.” (Holl, 1996, p.15)

Throughout Steven Holl’s work, we can discern several examples of this limited concept: the chiasm for the Helsinki Museum of Contemporary Art (1993-1998); the bottles of light for the St. Ignatius Chapel, Seattle University, Washington (1994-1997); porosity/sponge for the Simmons Hall of MIT, in Cambridge Massachusetts

The ‘limited’ concept as a hidden thread binding idea and phenomena: figures 7.68-7.69: Concept sketch of ‘Seven Bottles of Light in a Stone Box’ and the atmospheric detail evident in Steven Holl’s poetic watercolour sketch. The Chapel of St. Ignatus, Seattle (1994-97). Source: (Holl 1996) (Frampton 2002)
(1999) and the luminous lenses for the extension to the Nelson-Atkins Museum of Art, in Kansa City, Missouri (1999), to name a few. (fig.7.68-7.72) (fig.7.93-7.94)

figures 7.70-7.72: The metaphor of the sponge as a limited concept with its organic lungs generating vertical porosity, the Simmons Hall, Massachusetts, (1999-2002).
Source: (Holl 2000) and (Frampton 2002)

Like Scarpa, Steven Holl depends heavily on drawing to crystallise his ideas. Over his choice of watercolour as a medium he asserts that: “Watercolour allows you to make bodies of light, to go from bright to the dark.” (Holl quoted in Zaera Polo, 2000, p.19) According to Franscesco Garofalo, Holl produces a sequence of sketches for each project which in a sense form “... a laboratory in which the genesis, the development of alternatives and the strategy of communication are all closely linked” (Garofalo, 2003, p.11) revealing the genesis of the project “... with a clarity that is full of poetry”. (Garofalo, 2003, p.28) Holl’s poetic watercolour sketches serve as a guiding thread throughout the design process. Although they are at times basic, they still convey an extraordinary amount of atmospheric detail and Holl’s capacity to visualise and captivate the three-dimensional realm. (fig.7.69, 7.73-7.79)

Kenneth Frampton (1989) points out at Holl’s attention to detailing, his preoccupation with tactile experiences and the phenomenological intensity of his work. “Holl is a fanatic not only about the selection of materials, but also about how they are installed, treated and revealed.” (Frampton, in Holl, 1989, p.6) His attention to detail is intended to reinforce the fusion of our inner and outer perception. “If we consider the order (the idea) to be the outer perception and the phenomena (the experience) to be the inner perception, then in a physical construction, outer perception and inner perception are intertwined.” (Holl, 1989, p.11)

As already mentioned, Holl has been deeply influenced by Merleau-Ponty’s insights into the intertwining of our flesh and the world. Like Pallasmaa, Holl (1996) believes in the importance of the haptic realm and that the materiality of architecture has the potential to intensify our sensory experience, engaging our psychological dimensions. Reflecting the boundary concept, Holl senses that our joined body and mind is coupled with the architectural space. “In a three-dimensional triad, the reciprocal insertion of the body –oneself– in the interwoven landscapes of architecture yields identity and difference. This insertion of oneself is an intertwining of one in the other of architecture. Without purpose as an object, without recourse as a style, architecture depends on this reciprocal insertion of the other, oneself.” (Holl, 1996, p.16) We, our body and mind combined, become essential ingredients. Architecture thus becomes the materialisation of the boundary between us and the world. In Holl’s words: “Architecture surrounds us.” (Holl, 1996, p.12)

Seeing the potential of this process, Holl’s thinking evolved towards parallax. “The shifting movement between near and far objects, walls, and buildings makes an always-changing, visually tectonic landscape called ‘parallax’.” (Holl, 1996, p.12) With parallax comes a complexity that reflects the spatial experience of an architectural synthesis of changing planes, depth, material, textures and light, which depends on the movement of the body in space in order to come alive. “Motility and
the body-subject are the instruments for measuring architectural space. ... Only the criss-crossing of the body through space –like connecting electric currents- joins space, body, eye and mind.” (Holl, 2000, p.38)

Holl’s parallax echoes Kaplan and Appleton’s theory of evolutionary forces. As seen in chapter 3, refuge and prospect, mystery and coherence have been part of our DNA since the birth of man on earth, bounding us with our environment. They, too, can be summoned in the experience of architecture. “Our faculty of judgement is incomplete without this experience of crossing through spaces. The turn and twist of the body engaging a long and then a short perspective, an up-and-down movement, an open-and –closed or dark-and-light rhythm of geometries- these are the core of the spatial score of architecture.” (Holl, 2000, p.26) (fig.7.74-7.85)

Source: (Frampton 2002)

figures 7.80-7.85: The moving body responding to evolutionary forces. The dramatic physical manifestation of Holl’s watercolour studies, a materialisation of the fluid spatiality of intertwining. Source: (Frampton 2002)

The element of time, as connected to the individual and to space is brought forward. Holl (1996) refers to French philosopher Henri Bergson (1859-1941) and his conception of ‘lived time’ (durée réelle). “Time is duration. ... Time and perception in architecture intertwine with light and space of architecture within a certain
duration. The idea of lived time (*durée réelle*) is particular to each culture and has no universal definition.” (Holl, 1996, p.13) Challenging fixed time in architecture, Holl aspires towards continuity in architecture through the fourth dimension of time. Duration in architecture, combined with sensory experience “... presents an architecture of open flux – open to the distant past, wide open to a far away future that envelops the past, while the past envelops the future”. (Holl, 1996, p.14)

![Figures 7.86-7.87: Light as a tentative bridge through fields of experience](image)

To achieve this, light in Holl’s work, is given paramount importance. “Space remains oblivion without light. ... Light subjects space to uncertainty, forming a kind of tentative bridge through fields of experience.” (Holl, 1989, p.11) In his work, Holl engages in dualities of association in order to complete a unified phenomenal whole; light with dark and heaviness with weightlessness. (fig.7.86-7.89) “With as much attention to darkness and to the contrasting secrets of light and dark, we engage in a metaphysics of light. Night’s darkness evokes a connection to Dionysian archetypes and mysteries, while the bright light of day is Apollonian, exuberant, and unconcealed.” (Holl, 1996, p.11) Light gains its power when associated with dark and the heaviness of mass. “The different qualities of darkness and light affect not only a spatial, visual fluidity, but also a psychological space of association – sometimes fast, other times slow. ... A phenomenal architecture calls for both the stone and the feather. ... A duality exists in the bricks’ weight pressing in on the dim light.” (Holl, 1996, pp.13-14)
Source: (Frampton 2002)

the architectonic embodiment of intertwining

The Helsinki Museum of Contemporary Art (1993-1998) is an excellent example of Holl’s process of thought in built form. Synthesising building and landscape, space and time, light and material, this building displays a unique materialisation of the intertwining of body, idea and site, while at the same time reflecting the experiential potential of parallax. (fig.7.90-7.92)

figures 7.90-7.92: The duality of weight and weightlessness in the reflections of day and night. The architectonic embodiment of the intertwining-chiasm in the entrance of the museum. Source: (Frampton 2002)
Here, Holl engages the chiasm (kiasma) as a limited concept to represent the intertwining of two main lines of forces, the ‘cultural line’ and the ‘natural line’, which aims at anchoring the building on the site. Situated in an area where the water of Töölo Bay narrowly meets the land, Holl is drawn to the urban and natural forces meeting on the site. “A kiasma occurs as the building’s mass intertwines with the geometry of the city and landscape, which are reflected in the shape of the building. An implicit ‘cultural line’ curves to link the building to Finlandia Hall [Alvar Aalto 1962-1971] while it also engages a ‘natural line’ connecting to the east landscape and Töölo Bay.” (Holl, 1996, p.88) (fig.7.93-7.94)

![figures 7.93-7.95: Holl’s conceptual sketches of the intertwining-chiasm, lines of forces driving the museum design and the poetic spatiality of intertwining, in the Helsinki Museum of Contemporary Art (1993-98). Source: (Holl 2000)](image)

The complexity of the concept is carried in the interior spaces of the museum. The spatial parallax invites the visitor to a poetic journey that binds him not only to the eminent physical space but also to the referenced landscape, which is traced through his own body. (fig.7.95) “The geometry has an interior mystery and an exterior horizon that, like two hands clasping each other, form the architectonic equivalent of a public invitation. The interiors refer to the landscape and form the site that, in this special place and circumstance, is a synthesis of building and landscape ... a kiasma.” (Holl, 1996, p.90)

The uncharacteristically asymmetric and curved shape of the museums walls, coupled with the changing quality of light diffused from above, compose a ‘living’
stage for the visitor’s body and mind, reflecting and receiving meaning from his movement. (fig.7.80-7.85, 7.89, 7.95) According to Holl, “[t]he body concentrates the mysteries” (Holl, 1996, p.16). In the Helsinki Museum of Contemporary Art, this is indeed the case; Steven Holl’s aim is achieved. “The aim for a vision that begins in the particularity of site and is culturally grounded is propelled by idea toward phenomenal experience. Not only an architecture of feeling, our aim is for an intertwining of subjective-objective. Our aim is to realize space with strong phenomenal properties while elevating architecture to a level of thought.” (Holl, 1996, p.16)

7.5.5 Thom Mayne's Connected Isolation

Beyond beauty: embracing complexity and hazard

The range of architecture is immense. According to Juhani Pallasmaa (2009), some works of architecture echo ‘the tremors of origins’ and ‘project an authoritative radiance and depth of feeling’. “Such works are not always necessarily aesthetically polished as they pose a deep and disturbing emotive power and open up questions rather than provide well-formulated answers.” (Pallasmaa, 2009, p.115) The architecture of the American office Morphosis creates such an architecture of doubt, inviting inquiry.

Morphosis explores complexity and embrace hazard as an architectural strategy as well as a social reality. Hazard is, according to Fowles, the only reality we can know. Mediating between life and death, “… hazard is essential to the evolutionary process... The purpose of hazard is to force us, and the rest of matter, to evolve.” (Fowles, 1964, quoted in Mayne, 1993) Driven by process, the architecture of Morphosis reflects a struggle, an unfinished quality. Working mostly in the challenging urban experiment of Los Angeles, a city in a perpetual state of becoming, Morphosis has succeeded in giving the city a true sense of itself. (Moss, in Mayne, 2006) Seeking new tensions in the urban environment, architecture emerges as a clear representation of the boundary in the urban/spatial and social/symbolic environment. In Thom Mayne’s words: “… if architecture has a single objective, it is
to clarify its intentions and realign its purposes with the aim of reflecting the richness of our pluralistic world.” (Mayne 1993)

Morphosis, staying true to their name, attempts a metamorphosis of form that seeks to awaken the individual in his demanding public role. In his influential essay ‘Connected Isolation’ (Mayne 1993) the charismatic leader of Morphosis, Thom Mayne, states that the office embraces difference and aims towards a coherent complexity, a support of idiosyncrasy and an authentic representation of our time. He believes that: “The importance today is to comprehend and utilise the complexity of everyday experience. ... It is necessary for architecture to be based in the present and to aspire to that presence.” (Mayne 1993) Mayne quotes John Fowles (1964) in The Aristos, who describes the highly evolved person as one who knows “… [we] all live at the crossroad of myriad irreconcilable poles, or seemingly opposing factors. Their irreconcilability constitutes our prison, and the discovery of living with, and utilising this irreconcilability constitutes our escape.” (Fowles, 1964, quoted in Mayne, 1993)

figures 7.96-7.97: Hazard and open-endedness as a representation of the complexity of everyday experience, portrayed in the Diamond Ranch High School, by Morphosis, in California. Source: www.suckerpunchdaily.com

In our cities, no longer identifiable as entities, the coherency of place is challenged. According to Lebbeus Woods, however, architecture has the capacity to engage us and is “… central to our contemporary understanding of change.” (Woods, in Mayne, 2006, p.35) Opposing the preconceived idea of beauty, the buildings of Morphosis
convey an open-endedness. “[W]ith their questionings, their distortions of the known, with their unresolved, frankly exposed collisions of differences, [they] are self-consciously incomplete.” (Woods, in Mayne, 2006, p.36) (fig.7.96-7.97)

By embracing difference with their architecture, Morphosis aims at educating and upholding the evolving self in complexity. The individual is thrown in the centre and is encouraged to learn to cope. “One is made aware of the value of relationships, integration, and apparent oppositions. Through the fusion of the exterior and interior worlds, the individual gradually becomes more oriented ... learns to keep balance, bridging the gap between the subjective experience of our inner world and the objective experience of our external world.” (Mayne 1993) (fig.7.98-7.100)

The realisation of difference and the yearning for belonging becomes clear here. The boundary is reflected in this series of oppositions. In the awareness of solitude, we seek the other to complete us and architecture provides the stage for this revelation. Richard Sennett (1991) in The Conscience of the Eye discusses “... the immersion into this unknown quality of the city in order to sense the other, to understand we, we must do the work of accepting ourselves as incomplete... it is out of the harsher connection made out by the arousal by the stranger, the feeling of the presence of those who are different that lets us know ourselves.” (Sennett, 1991, quoted in Mayne, 1993)
In its constant scepticism and questioning, the architecture of Morphosis attempts to embody the sense of self within our challenging modern environments. In Eric Owen Moss’s words: “The edge didn’t come to the centre... In Thom Mayne’s case the centre went to the edge, where poignancy, idiosyncrasy, and subversion endure.” (Moss, in Mayne, 2006, p.25)

7.5.6 Architecture’s emotive power in the unconscious beauty of form

Through these limited examples, I have attempted to present the enormous range of architecture. At times a violent confrontation of our current condition, architecture can still issue a more subtle invitation to our being. In fact, it is this dual ability of architecture that makes it so intriguing, precisely because it reflects the dual essence of man. It can affect both our body and mind, our senses and our thoughts. There are times when a work of architecture catches us unaware and moves us in an unconscious way. Something stirs in the depths of our being but we cannot quite explain it. We can discern this unconscious emotive power in a simple forest hut or a ruin of a long disappeared civilisation. (fig.7.28, 7.5) Contemporary architecture can also display this emotive power. The elegant poverty of Louis Barragán’s architecture or Peter Zumthor’s attempts to recall and unravel the magic of the real through memory and the sensation of beauty comes to mind.

figures 7.101-7.103: The elegant poverty of Louis Barragán’s architecture.
Torres de Satélite Naucalpan, Estado de México Ciudad de México
Source: www.archined.nl, photo by Júbilo Haku.
Roof terrace of Barragán’s home, Mexico City. - Fuente de los Amantes, Los Clubes.
Source: © Armando Salas Portugal, Barragán Foundation, Switzerland.

Alvaro Siza states that Barragán’s architecture “… envelops us like a physical presence, simple and dense, defying description, imitation and photography; universal and present.” (Siza, 1994, quoted in Rispa, 2003, p.11) (fig.7.101-7.103)
At the same time, Peter Zumthor insists that our perception is visceral and that reason plays a secondary role. Zumthor’s architecture searches for the unconscious beauty of form, a monumental and even unattainable task, which finds its voice in the simplicity of Brother Claus Field Chapel. (fig.7.104-7.105) Pallasmaa (2005) praises Zumthor’s Thermal Baths in Vals Graublunden (1990-6) for displaying this unconscious beauty; a restrained architecture, which conveys a rare sensuous richness by addressing all the senses simultaneously. (fig.7.106) In Zumthor’s own words: “Whether the appearance that touches me really is beautiful cannot be properly judged by the form itself because the depth of feeling that belongs to the sensation of beauty is not ignited by the form as such but rather by the spark that jumps from it to me.” (Zumthor, 2006, p.77)

This spark is reciprocal. It conveys its message to me through my ability to read it. This spark speaks to the depths of our soul and lets us know we belong in this world and that we are an inherent part of it. At these times, the world unquestionably presents itself to us and embraces us with its unconscious beauty. We need this reassurance, this magical encouragement in order to go on, just as much as we need doubt. We thrive in this in-between, in this boundary.

For Zumthor himself, the magic of the real is the essence of beauty. “The magic of the real: that to me is the ‘alchemy’ of transforming real substances into human
sensations, of creating that special moment when matter, the substance and form of architectural space, can truly be emotionally appropriated or assimilated.” (Zumthor, 2006, p.85)

**Synthesis: The rediscovery of the self within the cosmos as the timeless task of architecture**

In the chosen examples, I have attempted to reveal how these architects and thinkers are consciously and unconsciously searching for and responding with their designs and insights to the ultimate question of the purpose of our existence. The ultimate aim can be seen as a rediscovery of the self.

According to Neil Spiller (2010), there is a danger in ‘forgetting’ the human element and subtracting it from the architectural product by focussing architectural discourse to issues of instrumentality. I attempted to oppose this trend and identify the numerous nuances that architecture possesses, by presenting a polemic for the complexity in architecture that includes the unnamed, innate mystery of man’s relation to the cosmos. The built environment, like language, has the power to define and refine sensibility, in the same way that words contain and intensify feeling, sharpening and enlarging consciousness. (Tuan 1977) Man possesses endowments with which to apprehend the world and find meaning in it and we should, therefore, not be affected by blindness to experience, but instead try to comprehend what being-in-the-world is truly like. (Tuan 1977) This will provide a vital insight into the essence of architecture as a profound manifestation of the man-cosmos boundary.

In his celebrated analysis of the ‘house’, Gaston Bachelard (1964) attempted to distil a permanent message out of the transient notion of habitation, insisting that people need houses in order to dream and to imagine. He asserts that the house we were born in is physically inscribed in us, so much so, that whenever we read about or experience space we are transported to that particular, original experience of space that we first encountered. According to van Schaik (2002), Bachelard’s work
continues to be compelling because it points towards an architecture that affects people by touching their own ‘lost’ knowledge and awareness. Bachelard’s analysis provides insight into why certain experiences of architecture seem to touch us in a deep and unexpected way through to our very core, by awakening the intense memories of being in the world that well up in us as ‘involuntary memories’. (van Schaik 2002)

Bachelard (1964) sees the dialects of inside and outside as informing the nature of being, confronting man’s being with the world’s being. The nature of the concept of boundary reflects this challenge through the attraction of the other in order to define the self. Massumi urges that: “The equilibrium of the physical environment must be re-established, so that cultures may go on living and learn to live more intensely, at a state far from equilibrium.” (Massumi, quoted in Massey, 2005, p.160) He suggests that the unpredictable and essential transformation of being is felt before it is thought; reaching a critical boundary, it emerges reborn through an immanent limit. In these thoughts, I could discern the universality of the concept of boundary. It is in the boundary that the event horizon is located, triggering a potential dynamic transformation.

As I have revealed throughout the thesis, there is an inherent dynamic between man and cosmos. Man seeks that which completes him, for the unifying other that urges and invites him to know. Their relationship is that of part to whole. In Merleau-Ponty’s vision, the flesh of the world is fused with our flesh. Through his insights we can surmise that it is impossible to separate the idea from the phenomena, they are intertwined. Our body and mind are united in the experience of life. According to Merleau-Ponty, every thought occurs to flesh; we do not possess ideas, they possess us. It is this ‘bodily’ intentionality that brings the possibility of meaning to our existence and commands our collective existence, our past and present. Man thrives on this as an organism in a state of pre-established harmony with its environment.
According to Merleau-Ponty, the intertwining of man and the cosmos, body and mind, points towards a new type of being, a ‘being of porosity and pregnancy’. This potentiality of our consciousness leads to a revelation of self within the cosmos. Sharing a radical kinship, man and the cosmos interpenetrate each other. This intertwining which reflects the indissoluble bond between our lived body and the world, flesh and idea, mind and world, is essentially materialised in the experience and creation of architecture. According to Pallasmaa, the human body is a knowing entity and the medium of existential knowledge. Through our thinking senses we reach deeper realms of understanding. Architecture’s ability to become an emotional, phenomenal and intellectual medium is unique. In its poetic nature “…architecture incorporates life.” (Unwin, 1997, p.23)

Pallasmaa (2005) believes that architecture does not invent meaning, but has an inherent capacity to direct us to experience our own existence with a unique intensity, by touching what is already buried deep in our embodied memories. “The body is not a mere physical entity; it is enriched by both memory and dream, past and future.” (Pallasmaa, 2005, p.45) Within each one of us we carry, what Hans-Georg Gadamer called, a ‘fusion of horizons’, which moulds us and enriches our understanding. (Leach 1997) According to Pallasmaa, “[w]e transfer all the cities and towns that we have visited, all the places that we have recognised, into the incarnate memory of our body. Our domicile becomes integrated with our self-identity; it becomes part of our own body and being.” (Pallasmaa, 2005, p.72) Our subconscious bodily memory, left to us by our ancestors, is also called upon. Searching into the nature of the relationship between body and place, Michel de Certeau (1984) compared the nature of movement with language, asserting that there is a rhetoric of walking within the palimpsest that is place. In her attempt to define a new, progressive, global sense of place, Doreen Massey (1994) asserts that place is not a static entity but a process, without a unique identity whose specificity is continually reproduced. In addition, Yi-Fu Tuan (1977) saw that the built environment, like language, has the power to define and refine sensibility and to sharpen and enlarge consciousness. He identifies place as security and space as
freedom, wondering whether “… space and place [are] the environmental equivalents of the human need for adventure and safety, openness and definition.” (Tuan, 1977, p.202) Space is defined through architecture, it becomes place, acquires structure, spirit and meaning. In our creation and experience of architecture, we are taking part in an act of defining, consciously and subconsciously diffusing together the different horizons of the past and the present, continuously interpreting and re-interpreting them through our body and mind.

Infusing our mind with both mental and physical structures, memorable architecture directs our consciousness back to the world and towards our own sense of self and being. (Pallasmaa 2005) Through its material existence of space, structure, matter, gravity and light coming in contact with our fused body and mind, architecture has the ability to expose and develop existential and lived metaphors, giving human dimensions to space and time. In embodying our constant interaction with the world, our being – body and mind – architecture reflects our fundamental bond with it. Architecture initiates, directs and organises behaviour and movement. It allows us to read our surrounding world and feel united with it, framing our existence and defining the horizon of understanding of the human existential condition; the boundary between us and the world.

Heidegger advocates the need for man to dwell poetically and for architecture to gather the fourfold -earth, heavens, mortals and divinities- endowing the surrounding world with meaning, while at the same time defining the essence of man. Man’s capacity to dwell poetically is indeed inherent. Norberg-Schulz deems that the existential purpose of architecture is to reveal the inherent essence of the site and that this spirit of the place, this genius loci, is that opposite that man has to come to terms with in order to be able to dwell.

The architectural manifestations of En expose the dramatic unity that exists between the spiritual and the phenomenal worlds of the Japanese culture. Here, man does not oppose nature but rather draws nature to an intimate association, in order to find
unity. In *fudo*, he allows nature to embrace and penetrate the interiority of his selfhood, leading him to paradoxically acquire his selfhood.

In Aalto’s work and life struggle, I could discern an architecture that was born from nature through the eyes of man. In his architecture, he embodies the intertwining of man and cosmos by creating a synthesis of nature and culture, a symphony that unites the essence of the Finnish people and their unique environment.

Scarpa’s architecture portrays the essential element of the architect as the guide that will direct the perceiver in a journey of revelation that will ultimately endow him with an understanding of space and time as well as a realisation of self. In his work, the human body is essential. The embodied experience animates his architecture while at the same time it engages man in a passage that leads to unity. This intentionality is even more pronounced in the architecture of Steven Holl.

Throughout his work, Holl is attempting to unify thought and creation, idea and phenomena in search of the experiential potential of embodied architecture. Deeply influenced by Merleau-Ponty’s vision, Holl engages the concepts of anchoring, intertwining and parallax as the seeds of his creative process. Carried by a limited concept, the idea-force and the site-force are poetically linked. His compositions result in a living stage for the perceiver’s body and mind, reflecting and receiving meaning from his movement. Echoing the boundary, Holl’s architecture engages the haptic realm, the mind and the site, in a three-dimensional triad. Architecture materialises the boundary between us and the world.

The architecture of Morphosis reflects the unsettled, inquiring mind of man materialising his struggle to understand and to belong. By inviting, or even forcing the perceiver to learn through inquiry and confront his incompleteness, their architecture attempts to assist man in redefining his public role and purpose. On the other hand, through the architecture of Zumthor and Barragán we encounter the silent, unconscious beauty of architecture and its ability to stir our emotions. This dual nature of architecture is important to uphold. As seen in the previous stages of
the thesis, man needs doubt in order to evolve. The universe issues this invitation. The sense of belonging is indeed achieved through struggle. Deep inside us, though, we know we belong in this world and that we are an inherent part of it. At times the world unquestionably presents itself to us and embraces us with its unconscious beauty. We need this reassurance, this magical encouragement in order to go on, just as much as we need doubt. We thrive in this in-between, in this boundary.

Architecture exists in this boundary between earth and sky. Within this boundary the essence of man penetrates towards the cosmos and the essence of the cosmos penetrates towards man. Neither action, nor thought or sense is beyond or external to the world; we are bound as one. Man is here indeed revealed as embodying the boundary. It is through him, his body and mind united, that the universe is unfolded and architecture is the medium of this revelation. The ontological holistic identity of the concept of boundary and its dynamic nature provides a powerful medium for us to search for an understanding of self within the cosmos and our role in its unfolding meaning.
Almost at the end of this journey, it is perhaps necessary to pause and reflect. As many individuals in this thesis, I would also like to use the words of a poet to aid my meaning. This poem, of the renowned Greek poet Constantine Cavafy (1863-1933), has always had a particular resonance in my mind, probably because of my own separation from my homeland. From its title, Ithaca, we are immediately transported to think of Odysseus’s long and unforgiving journey to his homeland after the Trojan War. We soon realise though, that Cavafy’s poem does not refer to a journey of return. This is a journey towards the unknown, a journey forward, a journey of life. At the beginning of the thesis, I chose to reveal to the reader only the first three

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verses, those reflecting a wish for a long journey full of adventure. I hope that I have delivered that promise. The missing verses, seen above, reveal the ultimate meaning and purpose of the poem. The tone of the poem is encouraging, reassuring; the dangers that one will meet along the way are not the monsters encountered by Odysseus. Ithaca, though, remains in the mind as an unspecified destination. We do not know her but she is the reason we are undertaking the journey. She is the driving force, the boundary that pulls us forward and transforms us. At the end, the poet advises the traveller of life not to be deceived by the apparent poverty of Ithaca; the riches gained from the journey are measured in knowledge, ultimately the priceless knowledge of the self. For me this is the real meaning of Ithaca: a journey towards a revelation of what is within one’s own self, an awareness of the self. So perhaps, after all, this journey with an unknown destination is indeed a journey about return, not a return to the same place in space and time but towards a sense of belonging with the otherness, this time a conscious belonging, with freedom.

In the beginning, the unity of man with the otherness was unquestioned. The journey that man has followed, however, shows us a transformation of the relationship, which ultimately sees the revealed self realising the potential of a renewed unity with the otherness in dynamic equilibrium. The perpetuation of the journey is the ultimate scope. Once you reach Ithaca you yearn for more. The concept of boundary has navigated me in this journey; it has been *Ariadne’s mitos*, the thread that helped me to navigate the Labyrinth of being, by connecting the various stages of our maturing mind.

I have attempted to synthesise in this journey a plurality of approaches for identifying and defining the journey of the self, from theological and archaeological to psychological, phenomenological, philosophical, etc. I consider this a major part of my contribution and I hope that it can benefit my fellow researchers. Given my architectural background, I am certain that there are many areas that to the expert will seem underdeveloped or simply skimming the surface. This is paradoxically the limitation of the wide scope I have chosen. Due to time and space constraints I have not been able to go as deeply as I would have liked in the various areas I have
visited. Still, I stand by my choices and welcome the criticism. Though specialisation is indispensable, I do believe that it often leads us to forget that there is a larger picture and that nothing can be entirely isolated to the point that it has no effect or dependence to *other*. This is ultimately the message of the thesis. In building this thesis, I consciously stepped outside my discipline in order to compliment my research and receive insight from other disciplines. By opening it up, I believe that I managed to deepen and strengthen the concept of boundary, making it relevant to these other disciplines. In a sense it has also provided a link between them, contributing to a wider and growing need to look for unification. This search is evident in a wide range of areas of knowledge, from anthropology to physics.

The premise of this work does not belong to the digitally driven current trend in architecture or a fragmentary view of existence that sees man and his mind separate and above nature; it does, however, try to understand this trend and see its necessity as a vital expression of our humanity. In our day and age, formal knowledge is often given precedence. Here, I attempted to compose a polemic that sees this knowledge integrated in a dynamic whole. The boundary is a holistic, all-inclusive concept, located in the whole. It would have been easier to construct my thesis upon eastern philosophy, as these ideas are inherent there. However, I chose to delve deeper into the nature of the western mind, my own mind, as I believe that there is a shared human nature that lies underneath our individual identities. One could see my approach as holistic, imbedded in deep ecology, existential phenomenology, participatory epistemology or emergence. It is evident that these areas have been valuable sources of inspiration for me in the building of this concept. Indeed, I was inspired and influenced by them in every step during the building of the thesis. Beyond this, however, I believe that the strength of my approach and its contribution has been an acceptance of the complexity of being, its permeability and its drive towards transformation and resurgence.

Ultimately, the thesis is inspired by love, *eros* as that creative, dynamic, unifying force. The boundary is an expression of this love. According to Satish Kumar
(2002), an advocate of deep ecology, in our time it is vital that we transition from a materialistic to a spiritual worldview by recognising nature’s intrinsic value, its sacredness as a maintainer of life. He uses the metaphor of the seed, which sacrifices itself to maintain and produce life. (Kumar, 2002, p.19) Species are not in competition in order to survive in the Darwinian sense; they partake in the eternal dance of life. (fig.6.4) The point goes beyond bridging the dualism of subject - object, mind – matter to an ultimate realisation that these are indivisible parts of a whole. Realising that we inhabit this whole with our transformable being, that we are not constrained by it, but that we are a necessary, animated part of it, will allow us to achieve an understanding of our value and potential.

If I learned anything through this process is that the journey of mind is open-ended. The questions raised are as valuable as the conclusions and I hope that I have raised and provoked as much objection as approval. Indeed, I am looking forward to addressing the various questions already raised in further research, publications and hopefully teaching. It would be very challenging for the future to attempt to seek a tangible application for the concept of boundary in architecture. I would be interested to see how it can inform the design process and enrich the manner in which we see, respond and create our environments. But this is another journey…
For now, it will suffice to revisit some key areas in the process of building this paradigm to unravel the mind’s fundamental kinship with the cosmos and its role as the vehicle of the universe’s unfolding meaning, guided by the concept of boundary, an expression of the dynamic unity between man and environment.

b) Distilling the message of the thesis

The aim of this thesis has been to build a paradigm to unravel the concept of boundary as a primary ontological force that drives, provokes and defines our thinking, consciously and subconsciously, in our attempt to achieve an understanding of self within the cosmos.

The value of the boundary concept has been presented through its manifestation as an invitation to opposition, an invitation to experience. The mind brings to surface a tension. By choosing to separate things in his mind, man in fact relates what he has separated. Entities have similarities in essence, in order for them to be perceived and related. Their relation implies unity and tension is an expression of that unity. Their opposition is materialised through the boundary. The boundary takes them to a deeper level of unity; it defines and structures their unity. Throughout the thesis, the boundary is seen as a materialisation of this invitation to an experience in the form of religious experience, knowledge experience, scientific experience, and so on. The invitation to opposition created by the boundary sparks off the arousal that becomes evolution. In order to perceive the universe, man is provoked by it to construct it through thought. The existential / cosmological qualities of boundary enable it to become a major medium, a driving force of this process of building our knowledge.

Challenging its primarily physical interpretation, the thesis begun by examining the concept of boundary from its genesis, imbedded in the primary moment of the birth of human consciousness within the universe following it along its progressive complexity. Building on a number of essential phases in our existence through a synthesis of induction and deduction, I was confronted by how they were driven by
boundary. Myth, religion, language, culture, philosophy, science, and even architecture are manifestations of humanity’s gradual attempt to understand, adapt to and transform our world and ourselves within it. They have become in this thesis, the backbone of unravelling our existence and the role that boundary has played in it. Through these evolutionary stages I gradually became aware of the inherent dynamic between our mind and our world in our attempt to achieve an understanding of self, while at the same time yearning to understand our position in the cosmic scheme.

Bound in this dialectical creative opposition, our conceptualisations of the world have been revealed both as insights of our mind in its attempt to unravel the meaning of the cosmos as well as the cosmos’s attempt to gradually reveal its nature within us. The mind’s radical kinship with the cosmos and its role as the vehicle of the universe’s unfolding meaning has thus been revealed.

**The Primary Boundary**

In the first chapter, I attempted to lay down the foundation of the concept of boundary. The genesis of the boundary was revealed in the birth of human consciousness brought in an ever-lasting tension / opposition with the surrounding cosmos. This primary boundary is indeed materialised in the very essence of the human mind and its evident potential even in its embryonic stages. The rise to consciousness and the realisation of difference, placed man in the beginning of an all-consuming journey. From then on he will be forever engaged in a dialogue with his surrounding world, inviting and being invited by it within a unified dynamic structure.

**The birth of knowledge**

Following the rise to consciousness, in the second chapter, I became engaged with man’s initial attempts at actualising his essence within the structure by unravelling the Universe through knowledge. In the opening stages I addressed cosmology – worldview as a knowledge system, one that enables man to construct his environment in thought leading to a collective mind in societies. The connection
between man and cosmos deepens in complexity and it is carried by the mind in the form of knowledge. In the shape of knowledge the universe is gradually revealing itself to man, inviting him to ask the fundamental and universal question: where did we come from? In cosmology, man attempts to answer this question by reinstating himself within the structure; a constant interaction with the surrounding cosmos is thus ensured and perpetuated. Through myth he dissolves his self-initialised separation and erases the barrier between himself and the cosmos. The boundary between man and the universe is in this manner lived, stored and transformed in myth.

A collective nature in the mind, evident across cultures is becoming evident. According to Eliade and Jung, the myth-creating level of the mind reveals a collective unconscious, which in its turn reveals that our mind is still nurtured by the memory of the sacred. Its paramount importance is that it provides an invisible blueprint through which the mind finds its way back to the source, giving meaning and significance to man’s existence. Archetypes, as governing agents of myth creation, possess an immense emotional significance, necessary for human experience in its cosmic significance. Through these channels, knowledge of the world is revealed and reinterpreted exposing them as manifestations of the dynamic essence of the boundary, this vehicle of unification, integration and wholeness. This apparent collective essence of knowledge, however, raised the question of the essence of knowledge as learned or innate.

**Constructing the universe through knowledge**

Throughout the third chapter, I attempted to explore into the nature and make-up of the mind, slowly unravelling the intrinsic relationship between man and the environment as it is manifested in the architecture of our mind and the nature of knowledge.

The essence of the boundary concept, the notions of distinction, tension, opposition, invitation and transformation make their appearance again as central notions of the
structure and nature of our mind. It seems that we are inherently driven or endowed to seek for boundary in our attempt to create and transform the meaning of our existence within our surrounding cosmos leaving us with a sense of coherence and unity in the wilderness that is our mind.

Innate and experiential knowledge was throughout the third chapter revealed as a constantly provoking relation that expresses unity. The boundary between perception and cognition becomes clear as they are seen to be two interrelated functions of our existence, permeating each other. Perception is seen as providing the link with the otherness while cognition providing the guideline that allows its interpretation. Schemata (whether experiential or cosmogonic), evolutionary forces and constructs are revealed as the blueprints that guide us in this process of reference with our environment. These innate adaptations of our mind are created in order to help us record a model of the world within ourselves, enabling us to cope with the demands of our existence.

The environment is gradually revealed as our ultimate 'other', our opposition towards creating a unified whole. Here, we are the boundary. Opposition is the prerequisite for the creation of meaning, for identity to become present and for the mind, our inner world to unveil its fundamental connection with the universal mind. Innate and experiential knowledge exists within us as a unified whole in dynamic transformation. The mechanisms of our mind, these inherited tools enabling us to visualise, live, create and transform our existence within and in constant reference with our environment, are revealed as the agents of the mind’s fundamental kinship with the cosmos.

Constructing the universe through knowledge, man is endowed with the ability to reunite with it. Knowledge is thus exposed as stemming from an apparent universal order. From this order, man has inherited his tendency towards acquiring knowledge, creating and revealing meaning.
Having revealed man’s intuitive need to construct his environment through thought in order to be bound to it, I was left with a realisation of coherence. There is a unity that exists in our relation with our surrounding world and it is created by the nature of our mind. In the fourth chapter, I was able to look into the nature of this unity by exploring into the notion of structure. Man and the cosmos truly represent a dynamic unity in perpetual transformation. Wholeness, transformation and self-regulation infuse the notion of structure; their laws are not only structured but also structuring. Structure ‘binds’ everything together through relation, meaning that entities have no independent existence outside the structure. Man is revealed as a natural structuralist and is driven to perceive relationships rather than entities. This poetic wisdom is inherent and clarifies mankind’s intuitive response to the environment. Yet again the concept of boundary is expressed and implied in the notion of structure and manifested in the realm of language.

Language, as a distinctive human expression provided a direct link into the workings of the mind within the structure. Through the insights provided by leading figures as de Saussure, Chomsky, Sapir and Whorf and Lévi-Strauss, as well as opposing and enriching views by Jacques Derrida and Michel Foucault, language is revealed as a manifestation of boundary. A dialectic unity is revealed between langue and parole, between the signifier and signified, our concepts and our expressions of them. The inherent ability to construct language, as well as its innate ‘architecture’, provides yet another insight into man’s fundamental kinship with the cosmos. His humanity is presupposed to receive the cosmos as the cosmos is engaging him in a perpetual interaction. As Vico affirms, man perceives within the world the superimposed nature of his own mind. The human element is central in this process. No concept can exist if it has not found expression, substance and meaning through our mind. It is indeed through us, through our mind that the universe finds its expression.

Man becomes entwined in this unending process of making sense of his existence within the world by attempting to make it tangible through language. The intrinsic
nature of language was revealed as not only unifying but also directive, assisting man in his journey of reference with the cosmos. Language provides us with the blueprint to make sense of this process. Its own structure reveals the working of our mind and in its turn the nature of our humanity.

**Cultures on the threshold of transformation**

In the process of presenting boundary as an ontological, inherited / existential force that consciously or subconsciously drives the formation of environment and the realisation of being, it has been important to examine the meaning and implications of cultural transformation, as it is possibly the most profound manifestation of man on earth. Culture was seen as an expression of the boundary concept, a system whose viability depends on its ability to transform itself through creative opposition.

Throughout the fifth chapter, I have attempted to provide a tangible example of man’s complex existence within the cosmos by examining the meaning of culture. Man’s creation of culture is exposed as an attempt to interpret and transform it into meaning beyond space and time. The dynamic nature of culture as an open system, a system in constant transformation is displayed in the creative tension that the Minoan and Mycenaean civilisations engaged in. This creative tension, that led towards the birth of the ancient Greek civilisation, personified in the image of Athena, truly embodies the concept of boundary.

Mankind is in fact synonymous to culture. As seen at the beginning of the thesis, the dawn of humanity coincided with the emergence of language and the propensity of mankind to provide symbolic visualisations of its environment in every aspect of life. Language has been seen as the ultimate code through which culture and in effect the understanding of mankind’s evolution can be examined. Culture is, however, not only communicated through language but also through material documentation of art, carrying distinct codes and messages that provide vital knowledge of the external world and a sense of unity with the environment merged within a structure of feeling. This knowledge of culture is transmitted both horizontally within a group, but also
vertically learned and transferred from one generation to the next not as a thing but through a process of evolution. The environment plays a formative role on culture, as differing physical habitats and resources can influence variation among cultures. Culture is therefore in itself a complex whole. Each culture is the result of the long-term involvement of people with their physical and social environment and since conditions are rarely the same, cultures are generally unique and distinct.

Cultural transformation is a complex phenomenon and has far-reaching effects. Continuity and transformation are never-ending, ensuring a constant pattern of change. This pattern is fuelled in the mind, through associations between people and their interpretation of the world transmitted through knowledge. Human existence should be looked at as a multifaceted whole, a holistic structure. Indeed, culture is a continuously transforming structure of knowledge, not only of physical characteristics but also of an interpretation of the world. Our genetic evolution has gifted us with the capacity to create culture and this unique human adaptation has ensured our survival. Finally, culture is seen as an emergent system, whose unpredictable transforming nature reflects intimately the nature of our humanity and its bounded kinship with the cosmos.

The flow of energy through the boundary of the system is a prerequisite for transformation. Throughout this thesis I have attempted to reveal that this boundary does not belong to the system, it is precisely the locus of unification of the system with the environment, the locus of kinship. The catalyst, the internal directing process that triggers emergence, is the human mind, inhabiting the boundary and working in unity with the cosmos in a part to whole relationship.

The Primary Boundary between Man and Otherness deepening in complexity

At this stage of the thesis a turning point is reached. The boundary between the universal mind and our mind so evident in the makeup of our mind, in our creation of cosmology, religion, myth and culture, reached a point of deepening complexity.
Mankind had now achieved his footing in the world and the next stage of his evolution involved a questioning of his own existence and of the reality that surrounds him. The message that has so far been carried in a single direction now branches out and lends its expression to every manifestation of life. From then on mankind is exploring into abstract realms of thought in his attempt to apply reason to his existence. The strength of his own mind became at the same time both an instigator for achieving independence but also the force that will invite him to reconnect with the otherness. For the first time man’s imposition of abstract ideas is questioning his existence and the reality of his world. The deep yearning though was still to understand who we are and what our role in the world is.

**The archetypal boundary as the mythos of our age**

Philosophy and science were born in these early times as the most valuable and demanding pursuits of the human mind. They emerged with the primary object loosely described as the attempt to understand the universe as a whole. In the consequent centuries the compiled mass of complementary as well as contradictory theories moved beyond the object of the physical world and its scientific explanation encompassing the moral, aesthetic and spiritual consciousness of man.

The objective of the sixth chapter was to reveal how science and philosophy have been driven by the creative force of boundary engaging human thinking in a perpetual opposition in our pursuit to unravel the meaning of the world and our role within it.

As we have seen throughout the sixth chapter, the drama of our humanity reaches now an exciting turning point. Man through his development of philosophical and scientific thought initiated the struggle to apply reason to our existence. Our advanced consciousness of self becomes bound in a continuous cycle of reference, examination and attempts of independence with the otherness. Our role within it or separated from it is put into question.
Interpreting the world in mythical terms, the ancient scientists meticulously recorded the order of the cosmos. The pre-Socratics, these philosophers / scientists first attempted to analyse the world in a scientific way by attaching individual reason to it. Their conceptualisation of the world was seen in terms of archetypal principles led by a dialectic inquiry. The influential Pythagorean worldview unified the spiritual and physical world, conceiving nature as a structured system ordered by mathematical forms. Heraclitus saw the cosmos as an intelligent system regulated by Logos, a single intelligent order. He presented a unity in opposites and Flux, paradoxically as a necessary condition of constancy. Parmenides and his successors, on the other hand, first addressed logic, the problem of reality and the autonomy of human reason. They saw reality as motionless and changeless. Anaxagoras proposed a universe constituted of an infinite number of seeds and postulated that matter was brought to motion by a primordial Mind (Nous); a notion that influenced greatly the philosophies of Socrates, Plato and Aristotle. Finally, Democritus completed this evolutionary stage in science and philosophy by putting forth his atomistic theory, a universe composed of lifeless, mindless and indivisible atoms caused to move perpetually in a boundless void by a blind chance (Ananké), stripping the universe from its spiritual essence; this theory paving the way to the Cartesian mechanistic universe. In this evolution of his mind, man is gradually freeing himself from a savage state towards a higher level of consciousness.

The bright light of the Socratic spirit liberated the modern mind of its presumed infallibility. His synthesis of eros and logos in his desire for truth was complemented by a powerful belief in the immortality of the soul and its longing for a reunification with an immortal cosmos. The divine and universal archetypes of the ancient past found in Socrates and Plato a renewed essence; an independent reality of their own. Through the supreme discipline of philosophy, these universals could be again contacted by the human mind in its attempt to regain the divine wisdom that was once its possession and to unite with the Universal Mind. Only in this way could man glimpse ultimate reality where true being resides.
In the person of Aristotle, the scientific and philosophical scene of the Platonic world is endowed with a powerful opposition, a creative dialectic that will continue to the present day. Aristotle initiated empirical knowledge, uniting *logos* with *aitia* (cause) and basing his scientific method on observation and deduction. He transmuted the principles of formal and material causality into those of actuality and potentiality within a unified universe in which each substance is involved in constant and unending motion. The dual legacy of Plato and Aristotle is ever-present in human reason as a unique synthesis, a guiding light, generating the independence and actualisation of our mind within the world.

An important stage in both the scientific and philosophical realms was the paradigm shift that occurred in science as a direct result of Copernicus’ heliocentric planetary model. The scientific and philosophical revolution that followed, led by Descartes and Newton drew parallels with ancient atomism and supported an image of the world as an intricate impersonal machine strictly ordered by mathematical laws. Up until that point man was always assured of his role and importance as the centre of reference. The dichotomy between mind and matter, the thinking substance and the physical body was established. In this climate, Kant’s critical philosophy attacked man remaining security; his ability to achieve knowledge entirely stripping the universe of its spiritual significance.

Opposing Kant, however, Hegel saw the world as a single, unified coherent structure of thought. Seeking understanding of anything leads us to relate it to something else. This reference, this relation between things not only reveals but also partly constitutes their nature. For Hegel, the knowing mind and the object known cannot be considered as two separate things; they are related. His ontological dialectics support the coexistence of *thesis* – *antithesis*, with *synthesis* as the interaction of two dialectically opposite definitions whose common denominator is their unbreakable unity.

The evolution of our mind has taken us to an extraordinary dialectical journey in its attempt to understand its purpose. At the beginning, a primordial bond with the
cosmic womb is witnessed. Mankind then initiated the separation, moving gradually further and further away from his surrounding world. Gaining confidence in his own powers and intelligence, man placed himself as the master of Nature. His new worldview became devoid of intrinsic meaning and spiritual purpose, leaving him in crisis. The mechanistic worldview escalated to a dichotomy between human culture and nature, robbing his individuality of its context; the cosmos. This alienation is often described as the curse of modernism. By endorsing this mechanistic worldview, modernism ultimately failed because it did not reveal a greater, ordered coherence. It was, however, a necessary part in the evolution of our mind in its attempt to understand the cosmos and its purpose within it. Becoming aware of its own hubris in its self-created seclusion, our mind is again yearning to reuni

tet his theories Kant had supported the opinion that “… mind supplied the form taken by experience, but that the content of experience is given empirically by an external world.” (Tarnas, 1996, p.352) The philosophical climate after Hegel, however, focused on an ontological existence for man. This paradigm shift seemed to uphold the position that “… the cognitive categories of the human mind were in some sense the ontological categories of the universe –i.e., that human knowledge did not point to a divine reality but was itself that reality- and on that basis constructed a metaphysical system with a universal Mind revealing itself through man.” (Tarnas, 1996, p.351) According to Tarnas (1996), the discovery of the unconscious in psychology reinforced this notion and added another significant layer in the subject of human interpretation. In this sense, the science of the Enlightenment lost the mythical status of the revelation of truth, the objective consciousness of the observer, upon which the Cartesian division between Man and Nature was based. (Tarnas 1996) One of the paramount values of the Enlightenment was the vision of the free, unbound thinker, portrayed appropriately by Auguste Rodin in his sculpture of the thinker; the man who rests his head on his hand, deep in thought. This vision, today, is challenged in all levels of science, humanities and sociology, but even in the classical sciences, where objective knowledge had been
The recent scientific discoveries confirmed that man could not be taken away from the phenomena. The world was thus revealed essentially as a construct and human knowledge as interpretive. Human endeavours could no longer establish their ground on an independent reality. “Meaning is rendered by the mind and cannot be assumed to inhere in the object, in the world beyond the mind, for that world can never be contacted without having already been saturated by the mind’s own nature.” (Tarnas, 1996, p.419) In this way, the phenomenology of human experience started to enter formal philosophy. Instead of analysing an objectified world the philosophers of this age focused their attention on ‘being’ itself; they focused on the lived world of human experience and its complexity. Human knowledge was itself seen as a reality within a metaphysical system where the Universal Mind reveals itself through man.

The relation of the human mind to the world can ultimately be seen not as dualistic but as participatory. According to Tarnas (1996), this conception acknowledges the validity of Kant’s critical insight that all human knowledge of the world is in some sense determined by subjective principles. These principles, however, can be seen as sharing their essence with the world, in a way not unlike the one supported by the ancient Greek heritage. They can be seen as “… an expression of the world’s own being, and that the human mind is ultimately the organ of the world’s own process of self-revelation.” (Tarnas, 1996, p.433) Our mind can thus be seen as the ultimate boundary; invited to engage in perpetual creative opposition with the cosmos, as a boundary in dynamic unity. It is through our mind that nature’s truth is unfolded; it finds in human cognition a medium for becoming intelligible to itself. (Tarnas 1996)

David Bohm’s implicate order points to a notion of a higher-dimensional reality. He is led to propose a “… more comprehensive, deeper, and more inward actuality,
which is neither mind nor body but rather a yet higher-dimensional actuality, which is their common ground and which is of a nature beyond both.” (Bohm, 1980, p.4)

We call our conceptualisations of these realities, theories, but they might best be described as insights. “(O)ur theories are not ‘descriptions of reality as it is’ but, rather, ever-changing forms of insight, which can point to or indicate a reality that is implicit and not describable or specifiable in its totality.” (Bohm, 1980, p.17)

Karl Popper saw man approaching the world as a stranger with a thirst for explanation and an ability to create myths, theories, conjectures that at times turn out to be successful. (Tarnas 1996) His unsatisfying explanation was that these successful theories created by man were lucky guesses. Tarnas, however, offers another possible rationalisation, one that detects the quest for knowledge at a far deeper source. He believes that these bold conjectures and myths come “... from the wellspring of nature itself, from the universal unconscious that is bringing forth through the human mind and human imagination its own gradually unfolding reality.” (Tarnas, 1996, p.345)

Tarnas (1996) believes that there is a reciprocal existence between mind and world. The human mind does not reveal an objective truth in the world but rather that the world’s truth achieves its existence when it comes to birth in the human mind gradually in the form of new stages of human knowledge much as a plant that grows and blossoms. (Tarnas 1996) We could then see the mind as sharing a radical kinship with the cosmos, which would also reflect the pivotal role of our mind as the vehicle of the universe’s unfolding meaning. (Tarnas 1996) “[A]s Hegel emphasised, the evolution of human knowledge is the evolution of the world’s self-revelation.” (Tarnas, 1996, p.435) The universe and man constitute a living totality. This reality is unfolded in our consciousness; it exists within us. We are unconsciously aware of it as a boundary that invites us to engage with it in a perpetual dialectic, a creative boundary.

It becomes clear that, through this paradigm shift, a powerful archetypal dialectic is unveiled in the modern mind, a rebirth of man, a profound boundary between self
and other, experience and reality and ultimately us and the cosmos. There is a sense of a renewed consciousness of self. Man is searching for his legitimate place in this unity, this cosmic scheme of things. He is now reaching towards a new synthesis with his world through a dialectical opposition that has taken him from the primordial undifferentiated consciousness through to the dualistic alienation and back towards a redemptive synthesis and reunification of the individuated self within the universal matrix.

Science and philosophy, from their most general theoretic and cosmological edges to their most practical and detailed parts, have been the vehicles of our effort to provide a complete picture of our existence; leading us to challenge as well as reassure ourselves that our existence is an integral part, an ontological brick in this world. According to Anshen (1983), we are beginning to accept our convergence with the Cosmos by allowing the mystery of our surrounding world to be gradually revealed to us. “Mind and matter, mind and brain, have converged; space, time, and motion are reconciled; man, consciousness, and the universe are reunited since the atom in a star is the same as the atom in man. … We have reconciled observer and participant. For at last we know that time and space are modes by which we think, but not conditions in which we live and have our being. Religion and science meld; reason and feeling merge in mutual respect for each other, nourishing each other, deepening, quickening, and enriching our experiences of the life process. We have heeded the haunting voice in the Whirlwind.” (Anshen, 1983, p.xxii)

The scientific and philosophical paradigm shifts can thus be seen as a necessary part of a larger evolutionary process. No stage should be dismissed as a mistake; they are all integral parts of our unfolding being in its dynamic interaction with the cosmos. According to Tarnas, the Cartesian hero that has attempted the separation is a masculine, suffering hero, seeking redemption and unity, he embraces the ‘female’ cosmos. (Tarnas 1996) Could we not see this as the creative force that it is? Could we call this the archetypal Eros? Is longing for reunification not an act of love?
In Plato’s Symposium, Socrates and his guests attempt to decipher the nature and meaning of Eros. Socrates calls on Diotima, a priestess, who claims that the highest fulfilment of Eros is the philosopher’s conjugal union with the Idea of Beauty, which brings forth the birth of wisdom. (Vlastos 1981) Setting Eros against Beauty, Diotima identifies Eros as the in-between, something that is neither beautiful nor ugly, good or evil, ignorance or wisdom; instead she insists that Eros is capable of being either one. (Hyland 2008) Answering her own question, Diotima identifies the function, the *ergon*, of Eros as “giving birth in beauty, both in body and soul” binding together the divine and the mortal into a whole. (Hyland 2008) Ultimately, Eros is the philosopher whose quest, whose *telos*, though unattainable, is wisdom. Eros is thus manifested in the boundary with man inhabiting and driving this boundary.

This emerging synthesis, this archetypal boundary is indeed the purpose, the direction, the Aristotelian ‘*aitia*’ of our being. And it is finally leading us to reunite with our alienated but not lost other. In the words of Wolfgang Pauli, from his ‘*Writings on Physics and Philosophy*’: “Contrary to the strict division of the activity of the human spirit into separate departments - a division prevailing since the nineteenth century - I consider the ambition of overcoming opposites, including also a synthesis embracing both rational understanding and the mystical experience of unity, to be the mythos, spoken and unspoken, of our present day and age.” (Pauli, ca.1957, quoted in Brockelman, 1999, p.3)

**The rediscovery of the self within the cosmos as the timeless task of architecture**

In choosing these architectural examples, I attempted to reveal how these architects and thinkers are consciously and unconsciously searching for and responding with their designs and insights to the ultimate question of the purpose of our existence. The ultimate aim can be seen as a rediscovery of the self. According to Neil Spiller (2010), there is a danger in ‘forgetting’ the human element and subtracting it from the architectural product by focussing architectural discourse to issues of instrumentality. I attempted to oppose this trend and identify the numerous nuances
that architecture possesses, by presenting a polemic for the complexity in architecture that includes the unnamed, innate mystery of man’s relation to the cosmos. The built environment, like language, has the power to define and refine sensibility, in the same way that words contain and intensify feeling, sharpening and enlarging consciousness. (Tuan 1977) Man possesses endowments with which to apprehend the world and find meaning in it and we should, therefore, not be affected by blindness to experience but instead try to comprehend what being-in-the-world is truly like. (Tuan 1977) This will provide a vital insight into the essence of architecture as a profound manifestation of the man-cosmos boundary.

In his celebrated analysis of the ‘house’, Gaston Bachelard (1964) attempted to distil a permanent message out of the transient notion of habitation, insisting that people need houses in order to dream and to imagine. He asserts that the house we were born in is physically inscribed in us, so much so, that whenever we read about or experience space we are transported to that particular, original experience of space that we first encountered. According to van Schaik (2002), Bachelard’s work continues to be compelling because it points towards an architecture that affects people by touching their own ‘lost’ knowledge and awareness. Bachelard’s analysis provides insight into why certain experiences of architecture seem to touch us in a deep and unexpected way through to our very core, by awakening the intense memories of being in the world that well up in us as ‘involuntary memories’. (van Schaik 2002)

Bachelard (1964) sees the dialects of inside and outside as informing the nature of being, confronting man’s being with the world’s being. The nature of the concept of boundary reflects this challenge through the attraction of the other in order to define the self. Massumi urges that: “The equilibrium of the physical environment must be re-established, so that cultures may go on living and learn to live more intensely, at a state far from equilibrium.” (Massumi, quoted in Massey, 2005, p.160) He suggests that the unpredictable and essential transformation of being is felt before it is thought; reaching a critical boundary it emerges reborn through an immanent limit. In these thoughts, I could discern the universality of the concept of boundary. It is in
the boundary that the event horizon is located triggering a potential dynamic transformation.

Throughout the thesis, I attempted to reveal that there is an inherent dynamic between man and cosmos. Man seeks that which completes him, for the unifying other that urges and invites him to know. Their relationship is that of part to whole. In Merleau-Ponty’s vision the flesh of the world is fused with our flesh. Through his insights we can surmise that it is impossible to separate the idea from the phenomena, they are intertwined. Our body and mind is united in the experience of life. According to Merleau-Ponty, every thought occurs to flesh; we do not possess ideas, they possess us. It is this ‘bodily’ intentionality that brings the possibility of meaning to our existence and commands our collective existence, our past and present. Man thrives on this as an organism in a state of pre-established harmony with its environment.

The intertwining of man and the cosmos, body and mind, points towards a new type of being, a ‘being of porosity and pregnancy’. This potentiality of our consciousness leads to a revelation of self within the cosmos. Sharing a radical kinship, man and the cosmos interpenetrate each other. This intertwining, which reflects the indissoluble bond between our lived body and the world, flesh and idea, mind and world, is essentially materialised in the experience and creation of architecture. According to Pallasmaa, the human body is a knowing entity and the medium of existential knowledge. Through our thinking senses we reach deeper realms of understanding. Architecture’s ability to become an emotional, phenomenal and intellectual medium is unique. In its poetic nature “... architecture incorporates life.” (Unwin, 1997, p.23)

Pallasmaa believes that architecture does not invent meaning, but has an inherent capacity to direct us to experience our own existence with a unique intensity by touching what is already buried deep in our embodied memories. (Pallasmaa 2005) “The body is not a mere physical entity; it is enriched by both memory and dream, past and future.” (Pallasmaa, 2005, p.45) Within each one of us we carry what Hans-
Georg Gadamer called a ‘fusion of horizons’, which moulds us and enriches our understanding. (Leach 1997) According to Pallasmaa, “[w]e transfer all the cities and towns that we have visited, all the places that we have recognised, into the incarnate memory of our body. Our domicile becomes integrated with our self-identity; it becomes part of our own body and being.” (Pallasmaa, 2005, p.72) Our subconscious bodily memory, left to us by our ancestors is also called upon.

Searching into the nature of the relationship between body and place, Michel de Certeau (1984) compared the nature of movement with language, asserting that there is a rhetoric of walking within the palimpsest that is place. In her attempt to define a new, progressive, global sense of place, Doreen Massey (1994) asserts that place is not a static entity but a process, without a unique identity whose specificity is continually reproduced. In addition, Yi-Fu Tuan (1977) saw that the built environment, like language, has the power to define and refine sensibility and to sharpen and enlarge consciousness. He identifies place as security and space as freedom wondering whether “… space and place [are] the environmental equivalents of the human need for adventure and safety, openness and definition.” (Tuan, 1977, p.202) Space is defined through architecture, it becomes place, acquires structure, spirit and meaning. In our creation and experience of architecture, we are taking part in an act of defining, consciously and subconsciously diffusing together the different horizons of the past and the present continuously interpreting and re-interpreting them through our body and mind.

Infusing our mind with both mental and physical structures, memorable architecture directs our consciousness back to the world and towards our own sense of self and being. (Pallasmaa 2005) Through its material existence of space, structure, matter, gravity and light coming in contact with our fused body and mind, architecture has the ability to expose and develop existential and lived metaphors, giving human dimensions to space and time. In embodying our constant interaction with the world, our being – body and mind –, architecture reflects our fundamental bond with it. Architecture initiates, directs and organises behaviour and movement. It allows us to read our surrounding world and feel united with it, framing our existence and
defining the horizon of understanding of the human existential condition, the boundary between us and the world.

Through the chosen examples, the dual nature of architecture is revealed, on the one hand reflecting the unsettled, inquiring mind of man, materialising his struggle to understand and to belong; and on the other, its silent, unconscious beauty and its ability to stir our emotions. This dual nature of architecture is important to uphold.

Whether carried by a concept or born from the site, one thing remains shared. It is man that exists in the in-between. Man is the one that crosses the threshold. It is through man that the world is given meaning but it is the world that invites him to act. He is ultimately revealed as the embodiment of boundary. As seen throughout the thesis, man needs doubt in order to evolve. The universe issues this invitation. The sense of belonging is indeed achieved through struggle. Deep inside us, though, we know we belong in this world and that we are an inherent part of it. At times the world unquestionably presents itself to us and embraces us with its unconscious beauty. We need this reassurance, this magical encouragement in order to go on, just as much as we need doubt. We thrive in this in-between, in this boundary.

Lost in the complexity of his rapidly changing modern world and confronted by the challenges of the megacity and of diminishing natural, social and national boundaries, man is more and more in need of inspiration, awareness and coherency in complexity, in his efforts to attain a sense of self. According to Holl, the architect has an inspirational duty for his architecture to explore the not-yet-felt and arouse man to a higher plane. Architecture needs “... to remain experimental and open to new ideas and aspirations. ... Rather than simply solving for a given program, what architecture contributes beyond the program is important.” (Holl, 1996, p.16)

Holl believes firmly in the humanistic element of architecture and its potential to put essences back into existence. He calls for architects to clarify a purpose, articulate a vision through building and to avert from contributing to a detachment from natural phenomena which gives rise to nihilistic attitudes. (Holl 1996) Anchored in the
place, merging our phenomenal and intellectual essence, architecture has this capacity to reattach man back to the world, to the place where he belongs revealing its nature as an existential manifestation of our being. “Architecture can shape a lived and sensed intertwining of space and time; it can change the way we live. ... Architecture, with its silent spatiality and tactile materiality, can introduce essential, intrinsic meanings and values to human experience.” (Holl, 1996, p.11)

Architecture is thus revealed as a fundamental manifestation of our existence within the cosmos. It has the power to awaken man’s sensibilities, by creating a transparent language of built form that enables and guides the revelation of our holistic unity with the environment. Architecture has the capacity to inspire by calling to our united mind and body. Material and abstract space becomes the source of this emotive power in our attempt to understand and read a model of the world. This experience of becoming aware of our indissoluble connection with the world, materialised in architecture, educates, stimulates and activates people to change in our modern environments, making us conscious of the forces that shape it, enabling the creation of a complex, integrated, contradictory and meaningful future.

An architecture that upholds these conditions, that engages the boundary between man and the cosmos, is an architecture that is true to its nature as a fundamental manifestation of our existence. It is important to aspire to such architecture. The rediscovery of our self is dependent upon it. In the words of Juhani Pallasmaa: “The timeless task of architecture is to create embodied and lived existential metaphors that concretise and structure man’s being in the world. ... Architecture enables us to perceive and understand the dialectics of permanence and change, to settle ourselves in the world, and to place ourselves in the continuum of culture and time.” (Pallasmaa, 2005, p.71)

Architecture exists in this boundary between earth and sky. Within this boundary the essence of man penetrates towards the cosmos and the essence of the cosmos penetrates towards man. Neither action, nor thought or sense is beyond or external to the world, we are bound as one. Man is here indeed revealed as inhabiting the
boundary. It is through him, his body and mind united, that the universe is unfolded
and architecture is the medium of this revelation.

Throughout the thesis, the concept of boundary has provided the hidden thread, the
‘limited concept’, the seed that has guided me towards the building of this paradigm
to unravel the mind’s fundamental kinship with the cosmos and its role as the vehicle
of the universe’s unfolded meaning. The ontological holistic identity of the concept
of boundary and its dynamic nature can finally be revealed as a powerful insight, in
our natural and urban environment; in our attempt to achieve a continuum of culture,
as well as a realisation of a coherent world picture, where nature and man can coexist
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BIBLIOGRAPHY


Doumas, Prof. Ch. (1994) Santorini, A guide to the island and its archaeological treasures. Athens, Ekdotike Athenon S.A.


Hawking, Prof. St. (1998) *The Theory of Everything: No boundary Proposal*. My notes from Prof. Hawking’s lecture (Professor Emeritus of Mathematics at Cambridge University) at the University of Crete, August.


Kofou, A. (1992) *Crete. All the Museums and Archaeological Sites*. Athens, Ekdotike Athenon. (illus.)


Kumar, S. (2002) *You are Therefore I am: A Declaration of Dependence*. Dartington, Green Books Ltd.


Reader’s Digest. (1964) *Great Encyclopaedic Dictionary*, vol. 1 Oxford University Press.


Tuan, Yi-Fu (1977) **Space and Place: The Perspective of Experience.** Minneapolis, University of Minnesota Press.


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