

# North Dakota State University Graduate School

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**Title**

Divinity Through Metaphor: A Poetic Observation of the Cosmos

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DIVINITY THROUGH METAPHOR: A POETIC OBSERVATION OF THE COSMOS

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## ABSTRACT

For centuries, the connection between cosmic phenomena and spiritual narratives has imbued celestial events with a sacred significance, integrating them deeply into the fabric of human culture. However, the rise of scientific rationalism and industrialization has shifted our perception, often stripped these celestial bodies of their divine essence, and reduced them to mere objects of study. Today, there is an increasing need to revisit and reinterpret these ancient narratives that have guided humanity, suggesting that by reshaping our linguistic and narrative frameworks, we can begin to dwell within a more spiritually enriched reality.

Architecture plays a pivotal role in this cultural and spiritual renaissance. By harnessing ancient narratives and metaphors, architectural interventions can blur the lines between the internal self and the external cosmos, fostering a unified and holistic experience of existence. This project epitomizes this approach with a network of spiritual observatories dedicated to the Moon and the Sun. These observatories are not only structures but sanctuaries that reconnect individuals to both the vast universe and their inner light of consciousness. Through this integration, the project not only addresses the modern disconnection from spiritual narratives but also repositions architecture as a critical tool in the reclamation of our cosmic divinity.

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# 1. INTRODUCTION

## 1.1. Problem Statement

There has been a consistent weakening of cosmic connection within the past three centuries. With the rise of positive science and industrialization many of us have come to feel as though we are cogs in a machine, just a part of a broader societal mechanism. Instead of seeing the broader frame of Earth's context we routinely feel as though we are lost in a sea of existence.

On an existential basis, architecture has degraded in its ability to connect us and the universe. The 18th-century theorist and architect Jean-Nicolas-Louis Durand solidified this loss of cosmic place in his treatise on the systemization and composition of architecture that solidified a break from the fundamental line of tradition and sense of place instituted through the buildings around us (Madrazo, 1994). Our structures have lost their storytelling ability to help us position ourselves.

In our contemporary, rapidly evolving world, the age-old sense of "cosmic connection" or the profound realization of our place within the grand tapestry of the universe faces a myriad of challenges. The overwhelming tide of materialism, which prioritizes tangible wealth often obscures our understanding of life's intangible and spiritual facets. Similarly, while technology's advancements offer undeniable conveniences, an excessive dependency on it can tether us more to artificial, virtual realms and less to the vast expanse of the cosmos. Environmental degradation, manifesting in pollution and deforestation, further alienates us from the innate rhythms and sublime beauty of the universe. There is also an intellectual dimension to this disconnection. In an era where empirical logic and rational thought are often held on a pedestal, there is a risk of sidelining intuition, spirituality, and mysticism, potentially diminishing the holistic understanding of our universe. As modernity progresses, the fading of time-honored

cultural and spiritual traditions threatens to sever the rich narratives and rituals that have historically anchored us to the cosmos.

With the loss of cosmic connection points, we have become separated from ourselves, others, and the broader cosmos. This loss and separation have led to what the US Surgeon General calls a social isolation epidemic within America. With the recent Covid-19 pandemic, this isolation has only increased further. For these reasons, it is important to create and institute more places of cosmic connection within our built environment to facilitate more connection in multiple facets.

## **1.2. Research Objective**

This project, through the establishment of two observatories in Pike Peak, Colorado, and Flam, Norway, counters the pervasive isolation felt in today's digital-centric society by promoting spaces of communal and individual reconnection. These observatories envisioned as non-denominational, meditative environments foster a balance between social interaction and introspective solitude. This center serves as a respite for busy urban life and our busy internal lives. In this way, the observational centers serve as a point for existential reflection. With physical viewing portals and natural elements throughout, the embodied consciousness or embodied place of ones being in the cosmos will become self-evident through the observatories.

The design of these observatories goes beyond functional architecture, integrating metaphorical elements into the form-making process to bridge the gap between the rational and the intuitive. By employing metaphorical architecture, the project taps into deeper, often unspoken human experiences and emotions, allowing visitors to access a more instinctual and less analytically driven understanding of their surroundings.

This metaphorical and intuitive approach is crucial in creating a space that truly resonates with the visitors, offering them not just a place to observe the stars, but also a space to reflect on their place in the universe. By moving beyond the strictly rational and embracing the intuitive, the observatories aim to foster a deeper, more meaningful interaction with the cosmos and with one another, nurturing a sense of belonging and understanding that is often lost in the hustle of modern life.

## **2. BACKGROUND**

### **2.1. Introduction**

The topics of social connection and isolation can be extended to a more spiritual connectedness pointing to our cosmic place within the universe. The concept of social connection transcends mere physical or emotional interactions. It delves into how our understanding of the universe and our position within it can profoundly influence our sense of connection with others. This perspective suggests that our relationships are not just grounded in physical proximity or shared experiences, but also in a deeper, more spiritual bond that connects all of humanity. The discussion of isolation takes on new dimensions when viewed through this cosmic lens. It is not just about physical solitude or emotional detachment but also about a perceived disconnection from the larger universe and our spiritual essence. This viewpoint encourages a broader understanding of isolation, encompassing not just individual experiences but also our collective consciousness. This literary exploration covers various ontological themes, pondering questions about the universal forces that bind us. These discussions often blend philosophical and theological perspectives, offering a rich array of ideas about how we relate to each other and the universe.

## **2.2. Literature Review**

### **2.2.1. Social Isolation Epidemic**

In the comprehensive report "Our Epidemic of Loneliness and Isolation," Vivek Murthy, the U.S. Surgeon General, raises a critical alarm about the escalating crisis of social disconnection in modern society. This report underscores the severe impact of loneliness and social isolation on public health, economic stability, and societal well-being (Murthy, 2023).

The absence of social interaction and connection significantly endangers individual health and longevity. The U.S. Surgeon General points out that the lack of social connection increases the risk of premature death by 26% and 29% for loneliness and social isolation, respectively. These risks are alarmingly comparable to the health impact of smoking around 15 cigarettes a day. Likewise, poor, or insufficient social connection is linked to a 29% increased risk of heart disease and a 32% increased risk of stroke. These conditions are also associated with heightened risks for mental health issues like anxiety, depression, and dementia, as well as increased susceptibility to viruses and respiratory illnesses (Murthy, 2023).

Central to the report's argument is the proposal that social connection is a fundamental human need, as crucial as food, water, and shelter. This need for connection is deeply embedded in human biology and psychology. Historically, the ability to rely on others has been key to human survival. In modern times, this need remains just as relevant, with social isolation significantly reducing one's chances of survival (Murthy, 2023).

From a public health standpoint, the lack of social connection is a critical concern. A 2022 study highlighted in the report found that only 39% of U.S. adults felt very connected to others, indicating a significant lack of social connection in society. This lack of connection is not merely a personal issue but a significant health risk, contributing to various negative health



outcomes (Murthy, 2023). Murthy emphasizes that enhancing social connection correlates with a reduction in risk across many health conditions. Additionally, it can lead to a more fulfilling and happy life, improving life satisfaction, educational attainment, and workplace performance, and contributing to healthier, safer, and more prosperous communities (Murthy, 2023).

The societal impacts of loneliness and isolation, such as decreased community engagement and a weakening of social fabric, can be paralleled in the broader context of cosmic disconnection. A society that feels disconnected from a larger purpose may struggle with collective goals, altruism, and a sense of global citizenship. Murthy's report on "Our Epidemic of Loneliness and Isolation" not only addresses the tangible aspects of loneliness and social isolation but also resonates deeply with the more abstract crisis of losing our sense of cosmic place. This existential dimension, characterized by a feeling of disconnection from the larger universe and our role within it, parallels the concrete issues of social isolation in significant ways (Murthy, 2023)

### **2.2.2. Weakening of Cosmic Place**

Since the beginning of humanity there has been a broader attempt to find our existential place within the universe or what can be defined as our “cosmic place.” Within the modern context there has been a marked weakening of cosmic place and the way we can triangulate our position through architecture.

For centuries theorists and practitioners sought to define a scientific approach to architecture. The end of the 1700s brought about an intense interest in a science of architecture which sought to get architectural theory into lockstep with the other scientific disciplines of the age. Jean Nicolas Louis Durand is the exemplar of this desire as evidenced in his work titled

*Précis of the Lectures on Architecture* (Madrado, 1994). This work fundamentally split architecture from its traditional narrative driven form into a more rational more objective pursuit.

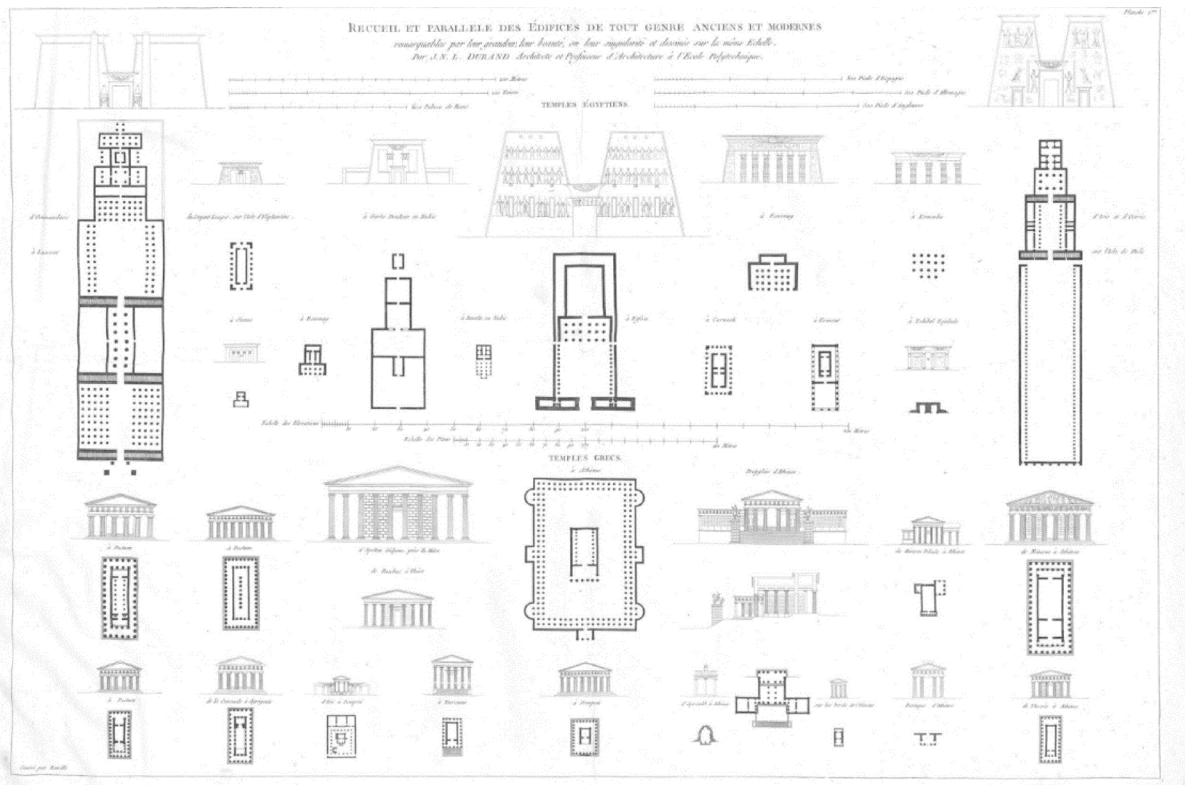


Figure 1: Jean Nicolas Louis Durand Systemized Architecture (Durand & Legrand)

With this objectification of architecture, the positioning of one’s place within the universal scope dramatically decreased. Instead of a feeling of belonging within the public sphere individuals started to feel as though they were lost, without a home. Alberto Perez Gomez speaks of this in his book, *Attunement*, mentioning that for centuries it was the architect’s job to make you feel a sense of home within the city, and that now, within the modern context, that triangulation has been lost (Pérez-Gómez, 2016). This loss of home and “social body” deprivation has the effect of alienating us from each other and the greater human collective.

The objectification of architecture, which transcends mere changes in design principles, mirrors a profound transformation in our relationship with our physical and societal

environments. This shift is not just architectural but also philosophical, affecting the very fabric of our communal and personal identities. Alberto Pérez-Gómez illuminates this issue, suggesting that a fundamental reevaluation of our architectural approach is necessary. By reviving architecture's role in cultivating a sense of home and belonging within the public realm, we can begin to address the pervasive feelings of alienation that characterize modern society (Pérez-Gómez, 2016).

In contemporary architectural practice, there is often a focus on aesthetics, functionality, and technological innovation. While these elements are undoubtedly important, this focus can sometimes lead to a disconnect from the human-centric purpose of architecture. Historically, architecture served not just as a means of shelter but also to express cultural values, foster community, and create a sense of place. Traditional buildings and public spaces were more than structures. These structures were integral parts of the community's narrative, facilitating social interactions and reinforcing a shared identity.

Architecture, in its essence, is a physical manifestation of human interaction with the environment. It reflects our understanding of and our place within the larger world. Just as buildings and spaces shape our daily lives, they also mirror our position in the cosmic order. When architecture loses its connection to human experience, it not only alienates us from each other but also from our sense of cosmic belonging. Our built environments, therefore, should not only serve functional purposes but also resonate with our deeper existential questions about our place in the universe.

Pérez-Gómez emphasizes the importance of this connection. The rekindling of architectural roots is not just a nostalgic return to the past, but an acknowledgment of our continual quest to understand our position in a universe that is vast and, at times, incomprehensible society (Pérez-

Gómez, 2016). In this way, architecture becomes a medium through which we express and explore our understanding of the cosmos. Thoughtfully designed spaces can inspire a sense of awe and wonder, akin to looking at the night sky. They remind us that we are part of a larger cosmic narrative, connected not only to each other but also to the universe at large.

### **2.2.3. Risks of Sacred Space Creation**

In *The Risk of the Ineffable* Karla Britton mentions that in our changing world the idea of spiritual spaces is dramatically shifting. Religious convictions, or at least the quest for deeper meaning, remain powerful driving forces in our lives, despite these societal changes. The diversity now seen in many global regions necessitates reevaluating how architecture corresponds to the multifaceted dimensions of religion (Britton, 2015).

Historically, sacred architecture drew inspiration from St. Augustine's notion of the "Civitas Dei", a blend of historical fact with spatial metaphor symbolizing two cities. Yet, in contemporary times, there has been a change in thinking from seeing religion as this shared "City of God" to viewing it as a deeply personal experience. This transition poses an intriguing challenge for architects (Britton, 2015). They no longer cater to a collective societal vision of the sacred but are instead tasked with presenting their own interpretation. Religious structures in a secular society can be seen as proactive, sometimes even controversial, entities in public spaces. The modern architect navigates a delicate balance. On one hand, there is the temptation to rely on established, easily identifiable forms, and on the other, the desire to challenge preconceived notions and introduce more inclusive designs.

Architects of religious spaces today are mediators. They stand at the crossroads between specific client needs and the broader, ambiguous expressions of religiousness situated for our diverse contemporary world. The challenge and potential of modern sacred architecture is

articulated more by expressing less or as Karla Britton writes, “Perhaps the ultimate risk the architect of sacred architecture undertakes is to say more even than the architect intended to say by saying less than anyone would initially understand” (Britton, 2015 p. 86).

The role of architects in crafting religious spaces is akin to that of a translator or interpreter, one who navigates the delicate terrain of spirituality, culture, and aesthetics. They must understand the specific needs and traditions of their clients, which often involve deep-rooted religious and cultural values. At the same time, they are tasked with translating these specificities into architectural expressions that resonate in our pluralistic and often secularized modern context.

In a world often filled with noise and chaos, sacred spaces are sanctuaries of peace and reflection. The architect, in this sense, becomes a conduit for translating spiritual tranquility into physical form. This process involves a careful stripping away of the superfluous to reveal the essence of the sacred, an architectural minimalism that resonates with the spiritual minimalism sought in many religious experiences.

Karla Britton's observation further illuminates the paradoxical nature of sacred space creation. The architect of sacred spaces, by embracing simplicity and restraint, may inadvertently communicate a profound complexity. This "saying more by saying less" is a subtle art, where the unspoken or the minimally expressed becomes a canvas for personal and communal religious experience. The spaces created are not just physical structures but vessels for spiritual exploration and expression, offering room for interpretations and meanings that may exceed even the architect's original intent.

#### **2.2.4. The Divine and the Mundane**

In his seminal work, *The Sacred and the Profane*, Mircea Eliade speaks of the fact that the split from religiosity is a relatively new concept within humanity. Religion went back to a primordial root and ever since the split from spirituality much of the modern context holds no position in dictating our spiritual position (Eliade, 1961).

In our contemporary, rapidly evolving world, the age-old sense of "cosmic connection" the profound realization of our place within the grand tapestry of the universe faces a myriad of challenges. The overwhelming tide of materialism, which prioritizes tangible wealth often obscures our understanding of life's intangible and spiritual facets. Similarly, while technology's advancements offer undeniable conveniences, an excessive dependency on it can tether us more to artificial, virtual realms and less to the vast expanse of the cosmos. Environmental degradation, manifesting in pollution and deforestation, further alienates us from the innate rhythms and sublime beauty of the universe. Moreover, as urban landscapes continue to sprawl, consuming nature in their wake, many find themselves estranged from the natural world, confined to concrete jungles devoid of genuine cosmic touchpoints. Eliade's perspective on the sacred as something inherent in the natural world becomes increasingly relevant here. He asserts that the sacred is often recognized through manifestations of the natural world (Eliade, 1961), suggesting that as we distance ourselves from nature, we also drift away from these sacred experiences. There is also an intellectual dimension to this disconnection. In an era where empirical logic and rational thought are often held on a pedestal, there is a risk of sidelining intuition, spirituality, and mysticism, potentially diminishing the holistic understanding of our universe. Eliade notes that traditional societies often perceived the world as layered with multiple meanings and symbols (Eliade, 1961), an approach that contrasts sharply with the modern

tendency to seek linear, rational explanations for everything. As modernity progresses, the fading of time-honored cultural and spiritual traditions threatens to sever the rich narratives and rituals that have historically anchored us to the cosmos. Eliade explains that in traditional societies, rituals and myths served to connect people to the cosmic order (Eliade, 1961). The decline of these practices in the modern world thus represents not just a cultural loss, but a loss of connection to the sacred dimension of life.

Eliade's insights provide a valuable lens through which to view the growing disconnection from the sacred in the modern world. As we grapple with the challenges posed by materialism, technology, environmental degradation, urbanization, and a shift towards empirical rationalism, it becomes increasingly important to recognize the potential loss of the deeper, sacred connection to the cosmos that has been a pivotal part of the human experience throughout history.

### **2.2.5. Breaking the Frame**

The overview effect is described by Frank White in his book, *The Overview Effect: Space Exploration and Human Evolution*, as an overwhelming, life-changing emotional experience that astronauts report after seeing Earth from space (White, 1987). This emotional experience fundamentally shifts the default frame within which these individuals operate. The astronauts have routinely remarked about the dissolution of country border conceptions and political squabbles because of this effect. We too can find solace within our everyday lives if we look at the world through such a perspective. This profound shift in perspective encourages a broader and more interconnected view of our world, transcending the limitations of political boundaries and divisions.



Figure 2: Blue marble.  
(NASA's Visible Earth catalog, 2001).

The significance of the overview effect extends far beyond the experiences of astronauts in space. It serves as a moving reminder of the transformative potential of perspective shifting in our everyday lives. While we may not have the opportunity to journey into space, we can cultivate a similar shift in perspective through mindfulness, contemplation, and a conscious effort to see the world differently. This shift encourages a broader and more interconnected view of our world, transcending the limitations of political boundaries and divisions. It prompts us to reconsider our priorities, emphasizing the well-being of our planet and all its inhabitants (White, 1987). It challenges us to recognize that the challenges we face, such as environmental degradation and global inequality, are global in nature and require collaborative solutions.



The overview effect has significant implications for human perspectives on Earth, our place in the universe, and how this transformative experience influences attitudes toward environmental and societal issues. White's book, combined with insights from astronauts and researchers, presents a comprehensive understanding of this phenomenon, highlighting its importance in shaping human consciousness and actions towards our planet and beyond.

#### **2.2.6. The Microcosm and the Macrocosm**

The microcosm and the macrocosm are not disparate aspects but part of a broader holistic understanding of the universe. There have been numerous texts and thought leaders throughout the centuries that have addressed these ideas and the interrelationships between the two. The primordial phrase “As above, so below” comes to the fore in relation to this (Ellcock, 2022). What this phrase encapsulates is how the small reflects the massive, how the micro reflects the macro. One can see this when looking at a series of natural structures such as the progression from a neural network to the canopy of a forest, to a large-scale river system. There are repeated fractal-like structures throughout the universe and the overarching cosmic order becomes apparent while studying these phenomena. Broader implications of this conceptual relation allow one to become more aware of their own bodily and spiritual place within the universe. By looking within one can see outside, for example, seeing the conception of a river within the veins of one’s skin. This ancient exploration allows one to see the broader cosmic scope and our collective consciousness as a species.

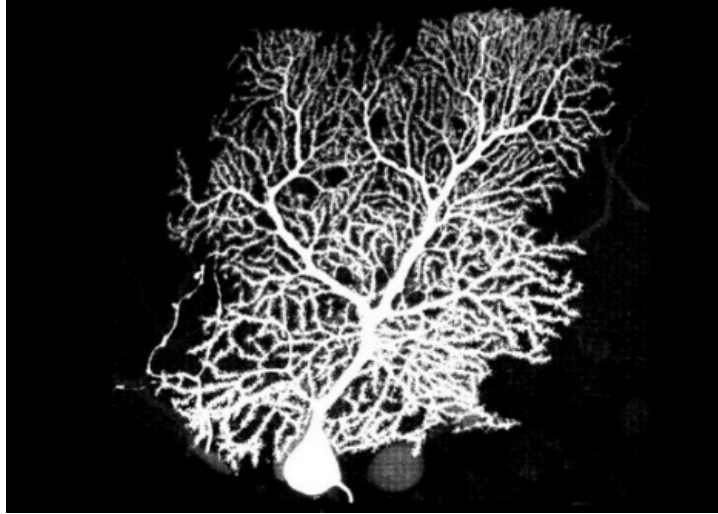


Figure 3: A Normal Purkinje brain cell.  
(Schuster, 2021)



Figure 4: A Tree Branch Network from the Perspective of a Canopy  
(Van Oort, 2022)



Figure 5: Dendritic Drainage: the Yarlung Tsangpo River, Tibet, Seen from Space: Snow Cover has Melted in the Valley System.  
(Nasa Earth Catalog)

#### **2.2.6.1. Robert Fludd**

The sixteenth century polymath, Robert Fludd wrote extensively on the micro and macrocosmic scales. Fludd believed there was a correspondence between the larger external universe and the inner world of the individual human being. He believed that the universe is structured in a series of descending layers, from the purest form of divine light at the top to the densest material reality at the bottom. Similarly, the human being is made up of a hierarchical structure of soul, spirit, and body (Ellock, 2022). Fludd posited that a divine light emanates from God and permeates the cosmos. This same light is present within humans, connecting them to the divine source. The goal for humans, according to Fludd, is to recognize this divine spark within and align with it, achieving spiritual enlightenment. As a physician, Fludd integrated the macrocosm-microcosm analogy into his medical practices. He believed that illnesses were the result of imbalances in the body's humors and that these imbalances could be understood by studying the greater patterns of the cosmos. By realigning the individual with the harmonies of the macrocosm, health could be restored (Ellock, 2022).

Fludd developed a series of engravings of his universal theories throughout two volumes titled the *Utrisque Cosmi* (Fludd, 1617). His hierarchical design, shown below, can be seen in a current theory of the universe whereby the universe is fractal-like, meaning that similar patterns repeat at every scale, from the largest cosmological structures down to the smallest particles. In this sense, each "layer" of the universe, when "opened," reveals another similar layer inside, much like how the Russian nesting doll reveals another doll inside.

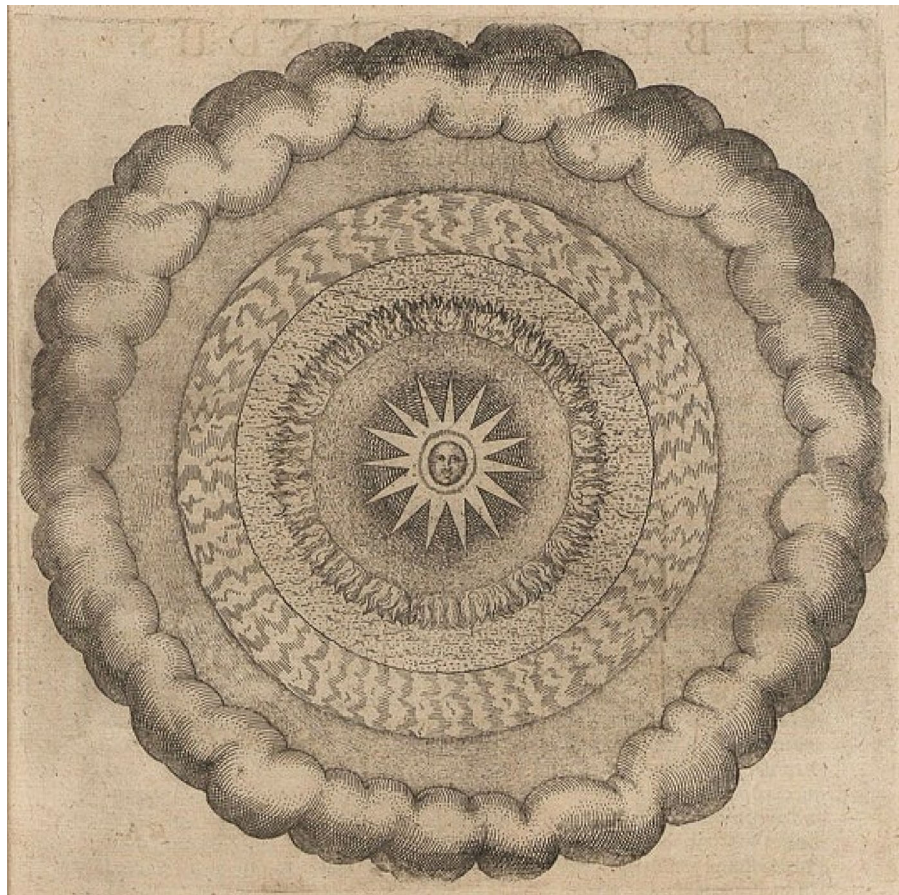


Figure 6: Macrocosmic and Microcosmic Description (Fludd, R. 1617-1619) Reprinted from Science History Institute

Fludd's work, including his engravings, often took inspiration from well-known works that came before him. He expanded on Leonardo da Vinci's famous "Vitruvian Man" drawing, which shows a man fitting perfectly inside a square and a circle, highlighting the ideal human proportions. This idea originally comes from the Roman writer Vitruvius, in his book *De*

*Architectura*. In a way Fludd was simply building on a concept that had already been evolving for hundreds of years, starting with Vitruvius, moving through Da Vinci, and then to him. This process shows how artists and thinkers have long been interested in figuring out the cosmic order and our place in it (Baugh, 2023).

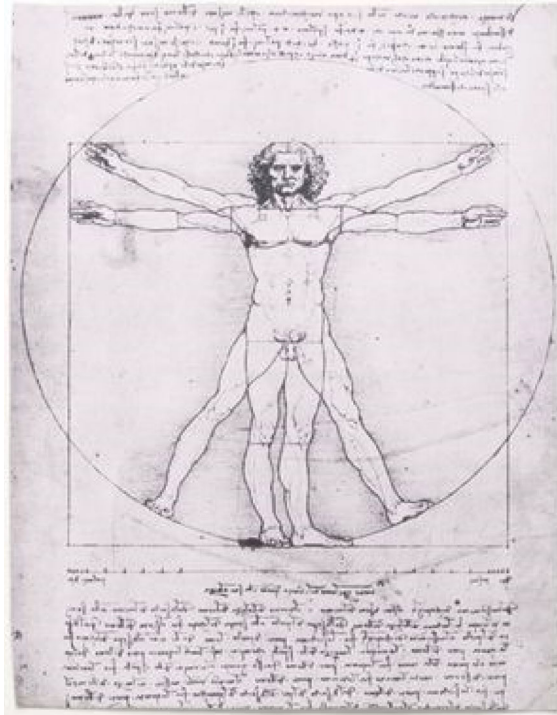


Figure 7: The Study of the Proportions of the Human Body, known as the Vitruvian Man (Da Vinci, 1490) Reprinted by Galerie Academia of Venice



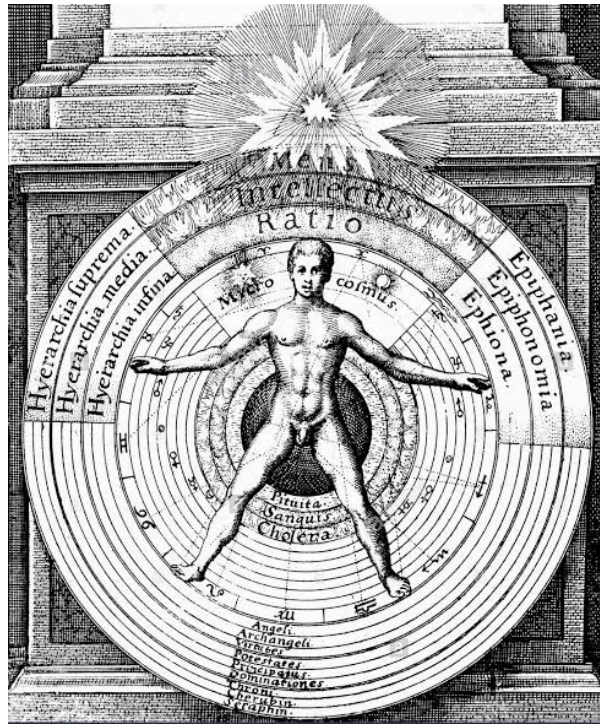


Figure 8: Diagram Showing Man's Position in the Universe (Fludd, 1617-1619) Reprinted by Hieronymus Galler

### 2.2.6.2. Anselm Keifer

Anselm Kiefer expertly captured Robert Fludd's sentiments through his work titled *Die Orden De Nacht (Orders of the Night)*. In this painting, Anselm Kiefer depicts himself as a figure beneath a sunflower bloom that reaches up high like a streetlamp, the artist lies gazing up into the array of dark seeds that look to him like a night sky. Seeds fall like stardust from the protective plant, and the figure is plunged into a chaotic vortex.



Figure 9: Orders of the Night by Anselm Kiefer  
(Seattle art museum, 1996)

(Werner- Jatzke, 2016) notes that in Keifer's spaces and images, the viewer inhabits the images, which also inhabit the viewer. This reciprocal relationship between the artwork and its audience is indicative of Kiefer's style. His paintings are not passive displays, they are interactive experiences that invite introspection and a reevaluation of one's relationship with the natural world. Through this immersive experience, Kiefer bridges the gap between art and life, urging us to see ourselves as integral components of a larger, more mysterious universe. In a similar way poetic architectural space can create an immersion that allows for a deeper understanding of our place within the cosmos.

### **2.2.7. The Axis Mundi**

The "Axis Mundi," also known as the World Axis, World Tree, or Cosmic Axis, is a central concept in various world mythologies and religions, representing an imaginary vertical

axis that connects Earth to the celestial realms and sometimes the underworld, acting as a conduit for communication between these different planes (Eliade, 1959). This symbol embodies the idea of cosmic harmony and the interconnectedness of all realms of existence.

This concept manifests in different forms across cultures such as in Norse mythology where Yggdrasil, a giant ash tree, links the heavens, the earth, and the underworld, bridging the realms of gods, humans, and the deceased. Sacred mountains like Mount Meru in Hindu, Buddhist, and Jain beliefs, or Mount Olympus in Greek mythology, are seen as points of connection between earth and heaven (Kinsley, 1985). Human-made structures such as the pyramids of Egypt, the Mayan temples, and medieval Christian cathedrals have been interpreted as earthly representations of the Axis Mundi, often aligned with celestial bodies (Lehner, 1997). Great trees, high mountain peaks, and specific rivers or lakes in various cultures are also viewed as manifestations of the Axis Mundi (Cooper, 1978).

In the psychological and philosophical realms, especially in Carl Jung's work, the Axis Mundi symbolizes the journey toward enlightenment and the connection between the conscious and unconscious mind (Jung, 1964). Additionally, The Axis Mundi concept appears in modern literature and art, symbolizing the quest for spiritual meaning and the connection between the individual and the larger universe (Eliade, 1959). The Axis Mundi serves as a testament to humanity's ongoing quest to understand its place in the cosmos and the interconnected nature of existence.



### 2.2.7.1. *The Oracle of Delphi*

The Oracle of Delphi was regarded as the center of the world throughout the classical and Hellenistic periods of Greek culture. The town of Delphi served as a central gathering point for people from Greece and beyond to hear prophecies, which were believed to be messages from the gods, emphasizing the interconnectedness of the divine, human, and cosmic realms (Scott, 2014). Delphi and the Oracle served as a physical hinge point of divine connection for the ancients.



Figure 10: Reconstruction of the Sanctuary of Apollo at Delphi (J. Paul Getty Museum, 1880)

This significance of Delphi extended beyond its role as a prophetic center; it was also a site of immense cultural and religious importance. The Temple of Apollo, which housed the Oracle, was a testament to this sacred status. The famous maxim "Know Thyself," inscribed at the temple, reflects the profound philosophical and spiritual influence that Delphi exerted on the ancient world (Bowden, 2005). The Oracle's influence was far-reaching, impacting political and

personal decisions. Leaders, warriors, and ordinary citizens alike sought guidance from the Pythia – the priestess of Apollo who delivered the oracles. Her cryptic pronouncements were interpreted by priests and had the power to shape the course of history (Maurizio, 2001).

Delphi's decline began with the rise of the Roman Empire, and the eventual spread of Christianity, which saw the Oracle and other pagan practices diminish in influence (Scott, 2014). Yet, the legacy of Delphi as a bridge between the mortal and the divine endures in literature, art, and the collective imagination, symbolizing the ancient quest for knowledge and divine connection.

#### **2.2.7.2. *Jacob's Ladder***

Jacob's Ladder is a significant biblical narrative found in the Book of Genesis. It recounts a pivotal dream or vision experienced by Jacob, the grandson of Abraham and son of Isaac, during his journey to Haran. Jacob, resting his head on a stone, encountered a profound dream that left an impression on Judeo-Christian thought. In this dream, he witnessed a ladder rooted on the earth with its top extending to the heavens. Along this ladder, angels of God were seen ascending and descending, symbolizing a connection between the earthly and the divine (Sarna, 1989). The Lord stood above the ladder, reiterating the covenant previously made with Abraham and Isaac. He promised Jacob that his offspring would be vast and would inherit the land upon which he was sleeping, along with assurances of God's unwavering presence and protection on his journey (Hamilton, 1995).

This narrative has profoundly influenced the conceptualization of angels as agents of cosmic mediation. Terrance Galvin aptly speaks of the fact in *The Angel and the Mirror* stating “Belonging to neither heaven nor earth, yet capable of fusing them together, angels form an axis

mundi Jacob's Ladder, which permits material transcendence" (Galvin 2011 p.72). This interpretation underscores the narrative's impact on the understanding of divine mediation.

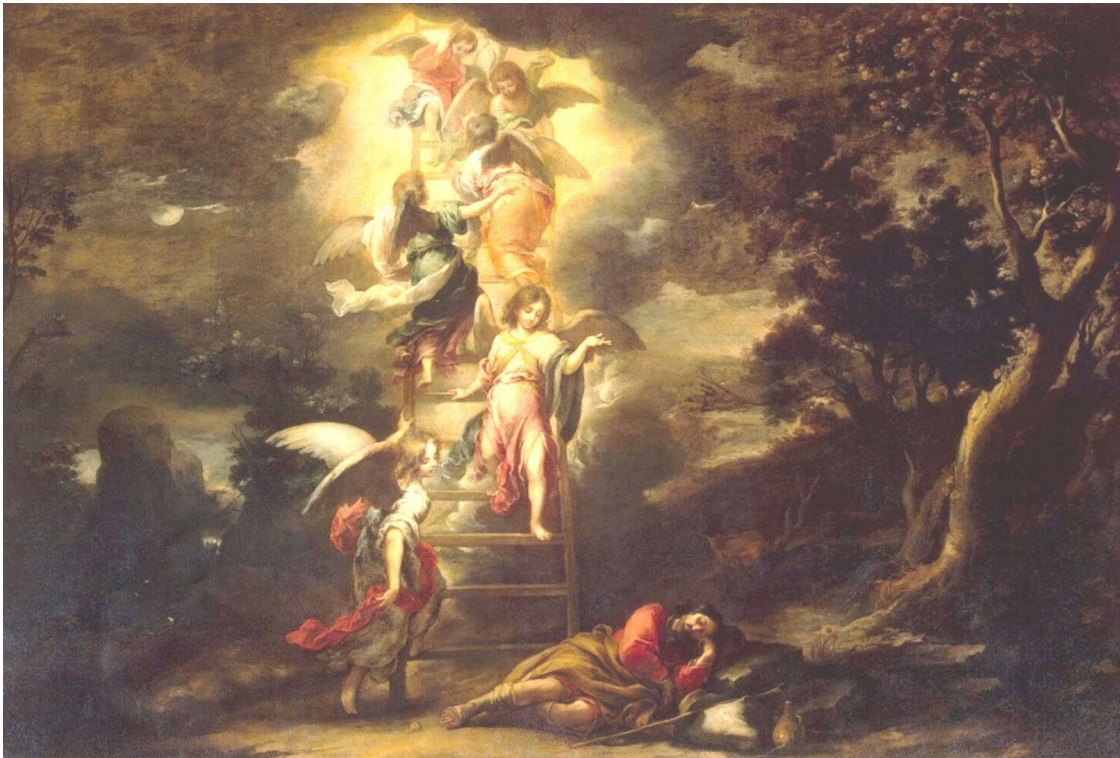


Figure 11: Jacob's Dream with Jacob's Ladder (Murillo, 1660-1665)

The story of Jacob's Ladder has had a tangible influence on architectural designs, particularly in Gothic cathedrals. These structures often embody the narrative's theme of verticality, symbolizing the connection between the earthly and the divine. The towering spires and arches of Gothic cathedrals can be seen as architectural representations of Jacob's Ladder, inviting those within to contemplate the connection between the human and the heavenly (Panofsky, 1951).

### **2.2.7.3. *The Cathedral***

The towering spires and high vaulted ceilings of Gothic cathedrals draw the observer's gaze upwards, symbolically directing thoughts toward the heavens and the divine, harkening

back to the hierarchy of Jacob's Ladder (Panofsky, 1951). This architectural design serves not just as an aesthetic choice but as a spiritual guide, echoing the biblical narrative of connection between the earthly and the divine.

Cathedrals, beyond their architectural grandeur, were significant as pilgrimage destinations. This pilgrimage, encompassing both physical and spiritual aspects, bears a resemblance to Jacob's journey. Pilgrims, upon entering a cathedral and gazing upwards at the soaring arches and spires, could experience a transformative revelation akin to the life-changing vision of Jacob in the biblical narrative (Sumption, 1975). This transformative experience is central to the purpose of Gothic cathedrals, offering a space where the mundane meets the mystical, and the human connects with the divine.

The experience of visiting these cathedrals was often seen as a journey towards spiritual enlightenment. The intricate stained-glass windows, sculptures, and the overall layout of the cathedral were designed not only for aesthetic appeal but also to educate and inspire the faithful, serving as visual sermons (Frankl, 1960). These elements of the cathedral worked in concert with its architectural height, leading visitors through a narrative that reinforced key religious teachings and offered a sense of connection to the divine.

Gothic cathedrals were more than mere structures of worship; they were embodiments of spiritual and religious ideology, designed to elevate the human spirit and remind visitors of their place in a larger cosmic order. This architectural style represents a tangible interpretation of Jacob's Ladder, providing a space where one could metaphorically ascend towards the heavens, seeking a closer connection with the divine (Von Simson, 1956).

#### **2.2.7.4. *Angelic Light***

Cathedrals served as one of the most potent axis mundi to the people of the Middle Ages. The pioneering use of stained glass within this period was one of the first usages of light as a metaphorical relation point to the divine. The idea of light flickering through the glass can be likened to the divine revelations in Jacob's dream, bringing with it a sense of the divine (Caviness, 1983). This use of light was not just an architectural or artistic feature; it was a profound spiritual statement, symbolizing the presence and the accessibility of the divine.

The architecture of these cathedrals, with their soaring heights and grandeur, served as physical manifestations of the heavenly realm on earth. They were designed to inspire awe and reverence, to lift the spirits of the faithful towards the divine (Von Simson, 1956). The concept of the Axis Mundi was embedded in their very structure, with the building itself acting as a bridge between the human and the divine, like the ladder in Jacob's dream connected earth to heaven (Eliade, 1959).

The intricate designs and patterns found in the stained glass often depicted biblical stories and saints, serving as visual sermons for the congregants. These images, illuminated by the natural light, brought the narratives to life, allowing the faithful to contemplate and connect with these divine stories in a more intimate and tangible way (Caviness, 1983). The acoustic properties of these cathedrals were also carefully considered. The reverberation and echoes within these vast spaces created an auditory experience that complemented the visual spectacle of light and glass, further enhancing the sense of the divine presence (Fitchen, 1961). Every aspect of the Gothic cathedral from its towering spires and luminous stained glass to its resonant acoustics was designed to create an experience that transcended the mundane, connecting the worshipper with the divine and echoing the transcendental experience of Jacob's dream.



Abbot Suger of Saint-Denis in Paris is often credited with pioneering Gothic architecture.

He held a profound belief in the transformative power of light, both architecturally and spiritually. His renovations of the Basilica of Saint-Denis placed a strong emphasis on infusing light into sacred spaces, setting a precedent for later Gothic structures and influencing the design of sacred spaces even today. In the essay *The Sacred Stones of Saint-Denis*, Abbot Suger is quoted as stating “They are breathed upon by the radiance of the true sun, that is, Christ, or handled and warmed by the fingers, that is, by the gifts of the Holy Ghost, through the word of their preaching and by the example of their goodness” (Crow, 2011, p 63). This statement underscores the revelatory power of light and, symbolically, the revealing power of Christ.

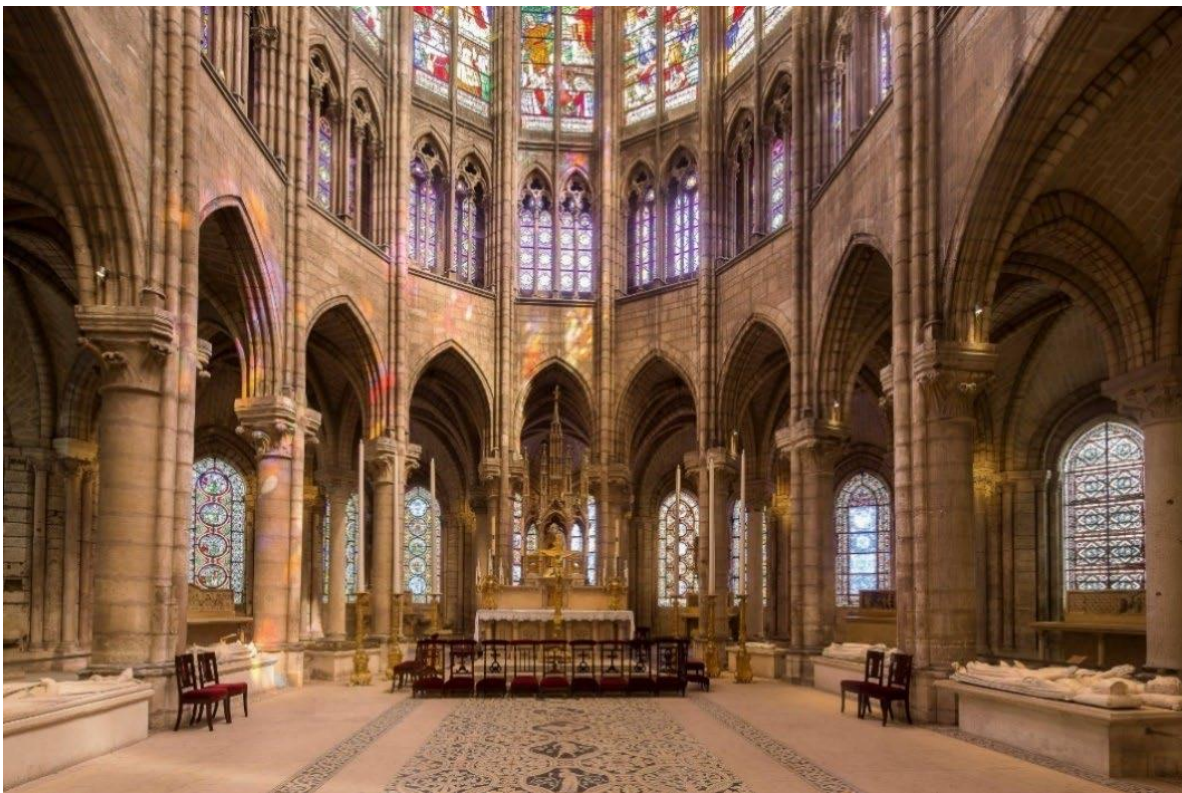


Figure 12: Interior of Saint Denis  
(Ministère de la Culture)

Suger's philosophy extended to the metaphorical significance of sunlight in spiritual perception. He believed that as the sun brightens the world, its rays strengthen our visual

capacity, enhancing our ability to see. To Suger, the light of the sun was synonymous with Christ, implying that it is Christ who enables our vision. Expanding on this notion, Jason Crow later asserts, “The light of the sun, equated with the lumen of Christ, enables the light sent forth by the eye to receive the impression of material objects in the world. The unification of light and material is critical” (Crow, 2011, p 66). This perspective emphasizes the significance of light in creating a cosmic connection, suggesting that the interplay of light and material in Gothic architecture is not merely a physical phenomenon but also a deeply spiritual one. Abbot Suger's architectural innovations at Saint-Denis were much more than aesthetic enhancements; they were embodiments of his theological vision, using light as a medium to symbolize and facilitate a divine connection.

Abbot Suger's ideas around light and spirituality, pioneering in the context of Gothic architecture, have continued to influence the design of sacred spaces well into the modern era. His concept of using light as a medium to symbolize and facilitate a divine connection finds resonance in contemporary architectural works, such as the Church of Light by Tadao Ando and St. Nicolas's Church by Santiago Calatrava.

Tadao Ando's Church of Light, located in Ibaraki, Osaka, Japan, is a prime example of modern architecture's engagement with light as a spiritual element (Figure 13). Ando's design is minimalist yet profound, with a crosscut out of the concrete wall allowing light to penetrate the otherwise stark interior. This interplay of light and shadow is reminiscent of Suger's intention to use light to create an ethereal, divine presence in a sacred space (Frampton, 2007). Ando himself has often emphasized the importance of light in his work, seeing it as a crucial element in creating a contemplative and spiritual atmosphere (Uffelen, 2010).

Similarly, Santiago Calatrava's St. Nicolas's Church in Valencia, Spain, displays a dynamic use of light and structure to evoke a sense of the sacred. Calatrava, known for his sculptural bridges and buildings, employs light in his design of St. Nicolas's Church to create a space that feels both modern and transcendent (Figure 14). The way light interacts with the fluid, organic forms of the structure creates a sense of movement and transformation, echoing Suger's belief in the transformative power of light (Levy, 1996).

Both Ando and Calatrava, in their unique ways, have embraced the legacy of Abbot Suger, demonstrating that the principles of Gothic architecture and its emphasis on light as a conduit to the divine can be effectively translated into contemporary architectural language. These modern sacred spaces highlight the enduring relevance of Suger's vision, showing that the pursuit of spirituality through architecture and light is a timeless endeavor.



Figure 13: The Church of Light by Tadao Ando (Fujii, 1999)





Figure 14: The Recently Rebuilt St. Nicolas Greek Orthodox Church (Karchmar, 2007)

This continuity of thought from medieval to modern times reflects a deep-seated human desire to connect with something greater through the built environment. In Ando's Church of Light, the stark simplicity of the space, combined with the dramatic use of natural light, creates a profound sense of serenity and introspection (Frampton, 2007). The light itself becomes a sculptural element, altering the mood and character of the space throughout the day, a concept that resonates with Suger's intention to make light a dynamic and transformative feature of the sacred space (Uffelen, 2010).

The influence of Suger's ideas on modern architects like Ando and Calatrava underscores the lasting impact of his vision. It highlights how contemporary architecture continues to explore and reinterpret the relationship between space, light, and spirituality. In a world that often feels disconnected, these sacred spaces offer a retreat, a place to pause and reconnect, like the Gothic cathedrals of the past served as spiritual havens for their communities.

### **2.2.7.5. *The Cosmic Mountain***

The idea of the mountain as a cosmic and spiritual symbol extends deeply into human history and consciousness, resonating across cultures. Ancient Greek mythology revered Mount Olympus as the abode of the gods, a place where the divine touched the earth. Similarly, in Hinduism, Mount Kailash is held sacred, revered as the abode of Lord Shiva and a focal point of pilgrimage, embodying spiritual significance (Eliade, 1954). Mircea Eliade (1954), in *The Myth of the Eternal Return*, emphasizes this symbolic nature in Mesopotamian culture, where a central mountain was seen as a bridge joining heaven and hell, illustrating the mountain's role as a connector of different realms.

These cultural depictions align with the philosophical concept of the “Great Chain of Being,” a hierarchical structure of all matter and life, with origins in the teachings of Plato and Aristotle (Lovejoy, 1936). This metaphysical order is poetically mirrored in the form of a mountain, its ascending peaks representing a natural hierarchy stretching from the terrestrial to the celestial. The verticality of a mountain, rising from the earth and pointing towards the sky, symbolically reflects this chain, suggesting a path from the mundane to the divine.

As mentioned before, this symbolism is also echoed in the architectural domain, particularly in Gothic cathedrals. These structures, with their lofty spires and vaults, are designed to direct the observer’s gaze and spirit upwards, symbolizing a journey from earthly existence to heavenly realms (Frankl, 1960). The architectural verticality of cathedrals serves a similar purpose to the natural elevation of mountains, both guiding towards a higher spiritual plane.

The mountain's symbolism extends to its role as a bastion against chaos. In various mythologies and religious traditions, mountains are often depicted as centers of the world or axis mundi, providing a stable and sacred point around which the cosmos is organized (Eliade, 1954).

This aspect of mountains as centers of order in a chaotic world resonates with the human desire for stability and understanding of the universe.

#### ***2.2.7.6. Superstring Theory***

An example of a modern axis mundi, or a representation of universal microcosmic and macrocosmic order, can be seen in the ongoing advancements in string theory. This scientific concept seeks to connect incompatible realms, such as gravity and quantum mechanics, into a single unified theory. String theory posits that the fundamental building blocks of the universe are not static particles but rather vibrating "Strings" (Greene, 1999). These strings' oscillations give rise to the diverse particles and forces observed in the physical world.

In a discussion with the White Cube gallery in London, physicist David Berman remarked, "String theory is the explanation of how we live in a world of immense beauty and richness, but perhaps we can explain it with a harmony built around one thing just vibrating differently" (White Cube Gallery, 2020). This perspective highlights the elegance and simplicity underlying the complex nature of the universe, resonating with the ancient Greek concept of indivisible points as the basic elements of reality. The Greeks theorized that these points, akin to pixels of reality, were so small as to be almost dimensionless, forming the foundation of all matter (Zaslow, 2005).

String theory's approach to explaining the fundamental nature of reality mirrors the philosophical and spiritual quest for a unified understanding of the cosmos. Just as the axis mundi symbolizes a connection between the different planes of existence, string theory endeavors to unify the diverse forces and particles of the universe into a coherent framework.

This modern scientific exploration can be seen as a continuation of humanity's long-standing pursuit to decipher the mysteries of the universe. The quest for a grand unified theory

reflects not only a scientific ambition, but also a deeper philosophical yearning to understand our place in the cosmos, much like the ancient and medieval interpretations of the axis mundi as a bridge between the earthly and the divine.

In the same way Robert Fludd illustrated his theories of the universe, the German artist Anselm Kiefer beautifully illustrated an analogous connection point between Superstring Theory, Runes, The Gordian Knot, and The Norns in an eponymously named exhibit. Kiefer, known for his deep engagement with history and mythology, used a variety of materials and unique application methods, such as burning a canvas, to create temporality and unique depth in his pieces throughout this show (Hughes, 2014).

The Runes within Kiefer's work referred to the ancient Germanic language, symbolic of a primordial form of knowledge and communication (Figure 12). Meanwhile, the Norns, in Nordic mythology, represented the female beings who ruled the destiny of gods and men, often depicted as three sisters weaving the tapestry of fate, thereby deciding the lifelines of all beings (Davidson, 1965). The Gordian Knot, another element in Kiefer's work, referred to a complex knot tied by Gordius, the King of Phrygia. Its undoing by Alexander the Great, who cut it after hearing an oracle's prediction, has become a metaphor for solving a complex problem through bold action (Stoneman, 1994).



Figure 15: Superstring Exhibit by Anselm Kiefer  
(White Cube Gallery, 2019)

By integrating these diverse elements, Kiefer demonstrated how ancient mythologies and metaphors find echoes in contemporary scientific theories like Superstring Theory. In bringing together these concepts, Anselm Kiefer displayed the continuity and relevance of past narratives in our modern understanding of the universe. His work suggests that the metaphors and stories of ancient cultures continue to offer profound insights into contemporary scientific and philosophical inquiries.

### **2.2.8. Poetry as Cosmic Connection**

In observing how Anselm Kiefer uses metaphor in his work to connect ancient and modern concepts, we can expand the concept further and see how metaphor can be used to tie



everything together. In *The Children of Mire*, Octavio Paz speaks of the fact that poetry has been around from even before the religions took root in the human context. Paz sees the universal religion as the universal religion bridging the distance between the external and internal worlds (Paz, 1991). For Paz, analogy is not merely a literary device or a cognitive tool. Analogy reflects the intricate tapestry of existence, where everything is interconnected, and beauty arises from recognizing these connections. Paz argues that everything is a metaphor, emphasizing the co-dependence and interconnectedness of all things. Poetry, in this sense, allows us to see these connections in a more intuitive manner.

Through poetry, the hidden connections between things are unveiled, including the profound relationships between humans, nature, and the cosmos. This perspective suggests that poetic metaphor is a key to understanding the deeper truths of our existence and the universe at large. It highlights the importance of metaphor in not only literary and artistic contexts, like Kiefer's work, but also in our broader conceptualization of the world and our place in it.

Paz's view on metaphor and poetry aligns with the idea that art and literature are not just forms of expression, but also vehicles for exploring and understanding the fundamental nature of reality (Donoghue, 1998). This approach resonates with Kiefer's artistic practice, where he blends mythology, history, and modern scientific concepts to explore and express complex ideas and emotions. Both Paz and Kiefer, through their respective mediums, underscore the power of metaphor in revealing the unseen and often overlooked connections that bind the tapestry of our existence.

This exploration is not limited to intellectual or artistic realms. It also extends to the personal quest of finding one's place in the universe. Through metaphor, both artists and poets like Paz and Kiefer provide avenues for individuals to contemplate their role in the grand

scheme. By drawing on universal themes such as creation, destruction, and rebirth, their works encourage introspection and a deeper understanding of our relationship with the world and beyond.

The metaphorical language employed by Paz in poetry or Kiefer in visual art acts as a bridge between the individual's inner world and the external universe. It allows for a personal interpretation of universal concepts, facilitating a connection between the microcosm of individual experience and the macrocosm of the larger universe. In doing so, these artistic expressions become tools for navigating the complexities of existence, helping to locate a sense of self within the broader context of the cosmos.

### **2.3. Project Type**

In defining the project type, it is important to understand how this thesis manifestation will encompass two disparate domains across two separate sites in Colorado and Norway. The two observatories are part astronomical and partially spiritual. This dual nature is at the heart of the project's purpose and design. On one hand, the technological components of the project serve as a window to the vastness of the cosmos, allowing us to peer into the sprawling, infinite macrocosm. This aspect of the project aligns with the traditional role of observatories such as studying celestial bodies, understanding cosmic events, and unraveling the mysteries of the universe.

The Pikes Peak site serves as a scientific research center, specifically housing an atomic fusion reactor, delves into the fascinating world of the microcosm. Here, the focus shifts to the subatomic level, where atomic fusion processes mirror the very reactions that power stars. This fusion reactor is not just a piece of scientific equipment. The reactor is a symbol of the project's

commitment to understanding the fundamental forces and particles that constitute the universe's building blocks.

By combining these two facets, the project transcends the conventional boundaries of scientific research facilities. It is not just about looking outward to the stars or inward to the atom; it is about drawing connections between these disparate scales of existence. This hybrid facility is designed to be a physical manifestation of the concept that the microcosm and macrocosm are intrinsically linked that the processes governing the tiniest particles are also at play in the vast reaches of space.

Another component part of this architectural manifestation involves a spiritual observational center, floating amid the majestic fjord in Flåm, Norway. This setting provides not just a stunning backdrop but also a profound symbolic context. The choice of a floating structure in this serene and powerful landscape can be seen as a physical representation of the Buddhist concept of groundless existence or Anatta, which implies the absence of a permanent, unchanging self (Trungpa, 1973).

In Buddhism, Anatta or 'no-self' is a fundamental principle that suggests the transient nature of existence. The floating observatory, untethered and dynamically positioned in the fjord, mirrors this idea. It's not anchored to a specific point, much like the Buddhist understanding that individuals are not fixed entities but are continually in a state of flux and interconnection with the surrounding world (Batchelor, 2010). This structure, in its floating, transient state, becomes a metaphor for the ever-changing, interdependent nature of existence.

The observatory's location in Flåm, surrounded by the natural beauty of the fjords, adds a spiritual dimension to the scientific exploration. The serene environment is conducive to contemplation and meditation, inviting visitors and researchers not only to observe the stars and



study atomic processes but also to reflect on their place in the universe. This intertwining of scientific exploration with spiritual introspection is akin to the poetic merging of the outer physical reality with the inner spiritual journey.

The idea of observing the cosmos and the microcosmic atomic processes from a structure floating in a Norwegian fjord creates a powerful adjacency. It connects the grandeur of the cosmos and the intricacy of atomic particles with the sublime beauty of Earth's landscapes. This setting reinforces the notion that understanding our universe and our existence is not just a scientific endeavor but also a spiritual and poetic journey.

Situating this hybrid observatory in a floating structure in Flåm aligns with the Buddhist notion of groundlessness, offering a unique space where spirituality, and nature converge. It becomes a place where the pursuit of knowledge is seamlessly integrated with the quest for spiritual understanding, where observing the universe is as much an introspective experience as it is a scientific one.

#### **2.4. Project Issues**

While approaching this architectural thesis, which poetically merges astronomical observatories across sites with a scientific research facility at Pike's Peak, Colorado, and a spiritual observational center floating in Flåm, Norway, several project issues emerged that required careful consideration.

Firstly, the environmental and geographical challenges were of utmost importance. Pike's Peak presented a unique set of difficulties due to its high altitude and variable weather, which could impact both the observatory's astronomical observations and the fusion reactor's operations (Smith & Jones, 2015). Similarly, in Flåm, designing a floating structure necessitates a delicate

balance between stability and environmental sustainability, ensuring that the natural beauty of the fjords is preserved.

The project's technical and operational complexity cannot be understated. Incorporating a fusion reactor within an astronomical observatory is no small feat, requiring advanced technology and stringent safety measures (Johnson, 2020). The operation of a floating center in Norway adds another layer of complexity, particularly in terms of engineering and maintenance in an aquatic environment.

Conceptually, the goal of this project was to intertwine scientific questioning with spiritual exploration. The intent was to make tangible the connections between the macrocosm of the cosmos and the microcosm of atomic particles, along with the introspective spiritual journey inspired by the Buddhist concept of Anatta, or 'no-self'. Ensuring that these diverse elements combine into a unified and meaningful experience for visitors and researchers alike was a significant challenge. The cultural and spiritual aspects of the project needed to be handled with sensitivity and understanding to avoid cultural misappropriation and to ensure that these elements were respectfully and accurately represented.

While this thesis presented a fascinating blend of science, spirituality, and architecture, it also brought a complex array of challenges. Addressing these demanded a combination of technical expertise, cultural sensitivity, innovative design, and strategic resource management. The project's dual locations, the rugged terrain of Pike's Peak and the tranquil waters of Flåm, added another layer of complexity, necessitating environmentally responsive and contextually appropriate architectural solutions.

### **3. METHODOLOGY**

#### **3.1. Approach**

This venture, a combination of an astronomical observatory, a nuclear fusion reactor, and a spiritual center, brought forth a complex methodology. The project called for a blend of architectural design, astrophysics, nuclear engineering, environmental science, and cultural studies. Collaboration was vital, as experts' opinions from various fields came together to ensure the project's vision was realized cohesively and comprehensively.

From a design perspective, the methodology was iterative and dynamic. The design process was not just about creating functional spaces but also about crafting experiences that resonated with the spiritual essence of the project. Cultural and philosophical considerations formed the backbone of the approach, this project was not just about building structures but also about respecting and reflecting philosophical underpinnings in a sensitive and meaningful way.

The technological and scientific aspects of the project were possibly the most challenging facets. Tasked with harmonizing the advanced requirements of an observatory with those of a nuclear reactor, all while maintaining the highest safety standards. Innovation and cutting-edge technology are at the forefront of the concept for this endeavor. This thesis project represents a mixture of scientific rigor, architectural innovation, environmental stewardship, and cultural depth. It challenges the conventional boundaries of architectural design by integrating advanced scientific functionality within aesthetically profound and culturally significant structures. This unique blend contributes to the broader discourse on how modern structures can embody and facilitate the intersection of diverse knowledge realms and reveal technology in a spiritual way.

### **3.2. Project Location 1 (Pikes Peak or Tava-Kaavi, USA)**

For the local Ute people of Colorado, Pike's Peak the mountain known as Tava-Kaavi, or the "Mountain of the Sun," has long been a spiritual connection point, deeply embedded in their culture for thousands of years. Mountains, in Ute culture, are not just physical landmarks but revered as homes of spirits, and Tava holds a special place due to the Ute's profound reverence for the Sun (Gulliford, 2000). The sun, in many Indigenous cultures, including that of the Ute, is far more than a life-sustaining force; it is a spiritual entity, embodying guidance, vitality, and often representing a connection to the divine (Salmón, 1997). The sun is integral to their cosmology, influencing not only their agricultural practices but also their spiritual beliefs and rituals.

Tava-Kaavi is a towering figure in the region, visible from great distances, much like the omnipresence of the Sun in the sky. The mountain's commanding presence in the landscape is reminiscent of the Sun's dominant position in the sky, a daily reminder of its power and significance. For the Ute people, this underscores a deeper spiritual connection with Tava, intertwining their reverence for the Sun with the mountain's ethereal presence (Ambler, 2006). Tava-Kaavi's visibility from great distances makes it a geographical and spiritual anchor for the region. Just as the Sun is a universal marker of time and direction, Tava-Kaavi is a constant in the landscape, a point of orientation, and a symbol of stability in an ever-changing world. This relationship with the mountain encapsulates the Ute's deep connection with the land and the natural world, where physical landmarks carry profound spiritual and cultural significance.



Figure 16: Picture of Tava-Kaavi or Pike's Peak (Oldfield, 2013)

Acknowledging the cultural and spiritual importance of Tava-Kaavi, it is essential that the construction of the observatory at the base of Pike's Peak would be conducted with utmost respect for its sacred status among the Ute people. This decision is not only a nod to the astronomical benefits the location offers but also a conscious effort to honor the Ute's spiritual relationship with the mountain. The project, therefore, would become an exercise in cultural sensitivity and respect, aiming to preserve the spirit of Tava while advancing scientific exploration.

This dual focus transforms the project into an exercise of balancing advancement with reverence, innovation with tradition. It sets a precedent for how scientific installations can coexist with cultural heritage sites, proposing a model of integration rather than dominance. By engaging with the Ute community, seeking their input, and incorporating their spiritual perspectives into the planning and operational phases, the project aims to create a collaborative space that respects and reflects the values of all stakeholders involved.



Figure 17: The Ute River Crossing  
(Southern Ute Archives)

This approach serves as a model for how modern scientific endeavors can coexist with and respect Indigenous cultural and spiritual practices. By situating the observatory in a manner that is mindful of Tava's significance, the project not only pays homage to Ute traditions but also fosters a dialogue between modern science and Indigenous knowledge systems. This mutually beneficial relationship highlights the potential for mutual respect and understanding between diverse worldviews, enriching both scientific inquiry and cultural heritage. The inclusion of Tava-Kaavi in this architectural thesis goes beyond mere location selection. The project becomes a statement of integrating and respecting the deep spiritual and cultural connections that indigenous peoples, such as the Ute, have with the natural world. Additionally, The Ute Tribe's creation story about Pike's Peak is a central element of their cultural heritage, reflecting the deep spiritual connection they have with the land. According to Ute oral tradition, Pike's Peak is a

sacred site where the Great Spirit crafted the earth through a cosmic funnel and gave the Ute people their home (Smith 1995). This story is not only a tale of creation but also a testament to the spiritual significance of natural landmarks, which are seen as places of power and renewal for the tribe. Narratives like this one highlight the importance of geographical features in tribal culture, serving both as a link to the spiritual world and as critical components of their identity and history.

### **3.3. Project Location 2 (Flåm, Norway)**

Situated in the heart of Aurlandsfjord, an arm of the Sognefjord, Flåm, Norway boasts an impressive natural landscape that is both inviting and awe-inspiring. The fjord's deep waters, surrounded by dramatic cliffs and lush greenery, provide an idyllic backdrop for a spiritual retreat. Flåm is marked by a temperate oceanic climate, with mild winters and cool summers. The fjord's depth and scale are defining factors of the site and are key points that need addressment when creating a structure (Bakken, 2018).

Flåm's rich cultural tapestry, marked by a small yet vibrant community, demands respect and sensitivity in the observatory's design and operation. Integrating aspects of local architecture and traditions could enrich the project and foster community engagement. According to the Norwegian Tourism Board, Flåm is known as a popular tourist destination within Norway renowned for its scenic railway and natural vistas (Norwegian Tourism Board, 2020). Flåm presents an opportunity for the observatory to add a unique attraction to the region, potentially enhancing its tourism sector while offering enriching experiences.

Flåm, with its captivating landscape of fjords, mountains, and seas, is a place where the echoes of Norse mythology are deeply interwoven. This region, characterized by its dramatic natural beauty, has long been associated with the realms of gods and mythical creatures, as



described in ancient Norse tales (Davidson, 1965). In these mythologies, the natural elements were not mere physical features but were often seen as domains inhabited by divine beings.



Figure 18: Aurlandsfjord, Town of Flam at Dawn (Cookema, 2019)

Water holds a significant place in Norse mythology. The sea, with its vast and mysterious expanse, was believed to be the domain of the god Njord, a deity associated with the sea, wind, and fishing, reflecting the importance of these elements in Norse culture (Lindow, 2002). Additionally, the immense serpent Jormungandr, a pivotal figure in Norse legends, is said to encircle Midgard, the world of humans, lying deep within the ocean's depths. This portrayal of Jormungandr not only highlights the Norse people's fascination with the sea but also their perception of it as a realm of formidable power and mystery (Orchard, 1997). Norse cosmology is indeed a tapestry of richly interconnected worlds, with the World Tree, Yggdrasil, standing as a central figure. Yggdrasil connects the various realms of Norse mythology, much like the fjords and mountains of Flåm connect the land and sea. This cosmic tree symbolizes the structure of the



universe, with its branches and roots extending into various realms, creating a link between the worlds of gods, humans, and other beings (Cruz, 2018). In the context of Flåm, this mythological background was a profound source of inspiration for the design and concept of the floating spiritual observatory. The observatory could potentially embody the essence of Norse mythology, drawing upon the symbolism of Yggdrasil and the mythological significance of water and mountains. Such an approach would not only provide a deep cultural and historical context to the project but also create a space that resonates with the mythological and spiritual significance of the landscape. This integration of mythology into modern design could offer visitors a more holistic experience, connecting them not only to the stars above but also to the ancient stories and traditions of the land.

### **3.4. Case Studies**

Observatories, both scientific and spiritual, have long served as crucial triangulation points for humans, aiding in their quest to understand the universe and their place within it. From ancient stone circles to modern astronomical facilities, these observatories have provided vital insights into our world and beyond. In ancient times, these structures were often aligned with astronomical events like solstices and equinoxes, serving as calendars to mark time and as places of spiritual significance (Aveni, 2001). They reflect an understanding that celestial bodies and their movements were integral to life on Earth, influencing everything from agriculture to religious practices.

The advent of telescopes and other technological advancements led to the establishment of modern observatories like the James Webb Space Telescope. These high-tech observatories have significantly broadened our cosmic perspective, allowing us to peer beyond the visible universe and delve into previously unexplored territories. They have been instrumental in

unraveling cosmic mysteries, enhancing our understanding of complex phenomena like black holes, dark matter, and the ongoing expansion of the universe (Moskowitz, 2021). This journey from ancient stone circles to innovative space telescopes illustrates the evolution of human curiosity and our unending quest to understand the cosmos. These observatories, bridging the gap between ancient and modern times, demonstrate the myriad ways humans have endeavored to connect with, comprehend, and explore the vastness of space.

#### **3.4.1. Göbekli Tepe**

Göbekli Tepe, an ancient site in Turkey, has been dated to around 9500 B.C., making it one of humanity's earliest known temples. Its discovery and subsequent studies have provided profound insights into the spiritual life of early Neolithic cultures. This site not only underscores humanity's longstanding quest to connect with the cosmos and the divine but also offers a glimpse into how these early people wove the divine into the fabric of their daily lives.

The massive stone pillars and intricate carvings found at Göbekli Tepe suggest that it was a place of significant spiritual and ritualistic importance. The site's alignment with celestial bodies hints at an early form of astronomy or sky-watching, indicating an advanced understanding of the cosmos for its time (Scham, 2008). This celestial alignment could point to rituals or practices centered around solstices, equinoxes, or other astronomical events, reflecting a deep-seated human need to find meaning and order in the universe.

This celestial orientation suggests that rituals conducted at the site were deeply intertwined with the movements of the sun, moon, and stars. Such practices served multiple purposes like marking time and seasons, agricultural planning, and understanding the natural cycle. Celebrating the solstices and equinoxes could have been a way to honor divine forces or

seek their favor, reflecting a belief system in which celestial and terrestrial life were intricately linked (Scham, 2008).



Figure 19: Gobekli Tepe  
(Oyaboya, 2022)

Göbekli Tepe's complex structure (Figure 16), with its circular and rectangular buildings, points to a sophisticated level of social organization. The efforts to build such a monumental site imply a community working together towards a common spiritual goal, suggesting that religious beliefs were integral to the social fabric of these early societies (Curry, 2008).

The carvings and reliefs on the pillars, depicting animals, humans, and abstract symbols, also provide clues about the spiritual and mythological beliefs of the time. These images could represent deities, spiritual guides, or mythological tales that were central to the community's

belief system (Curry, 2021). While Göbekli Tepe is an archaeological marvel it is also a testament to the early human endeavor to understand and connect with something greater than themselves. Its existence challenges previous notions about the development of religion and complex societies, suggesting that the desire to connect with the divine may have been a driving force behind the formation of early human communities.

### **3.4.2. Stonehenge**

Stonehenge, renowned as one of humanity's earliest observatories, is a prehistoric monument that has significantly contributed to our understanding of the astronomical knowledge of ancient societies. Constructed between 3000 and 2000 BC, this structure has captivated both archaeologists and astronomers for its sophisticated alignment with celestial events (Pearson 2013).



Figure 20: Stone Henge at Sunset  
(Pawel, 2019)

The precise positioning of Stonehenge's massive stones aligning with the summer solstice sunrise and the winter solstice sunset reveals an intricate understanding of solar movements by its Neolithic builders (Pearson, 2013). This architectural feat is not merely a testament to their understanding of astronomy but also indicates the importance of these celestial events in their cultural and ritual practices. The solstices marked critical points in the annual cycle, serving as indicators for agricultural activities or spiritual ceremonies. Stonehenge was an integral part in the life of the community marking the passage of time and seasons.

The site's lunar alignments are equally compelling. Studies have shown that certain stones at Stonehenge align with extreme lunar positions, such as the major and minor standstills of the moon's orbit. These alignments suggest that the monument also served as a lunar calendar, tracking the moon's nearly 20-year cycle (Ruggles, 1999). This capability to observe both solar and lunar cycles underscores the complexity of Stonehenge's design and its multifaceted role in Neolithic society. It was a place of convergence where the cycles of the sun and moon were observed and celebrated, linking the earthly realm to the celestial.

This dual capacity to mark both solar and lunar cycles highlights the complexity and importance of Stonehenge in the lives of Neolithic communities, serving not only as a religious or ceremonial site but also as a tool for astronomical observation. Stonehenge's enduring legacy as an ancient observatory underscores the ingenuity and astronomical knowledge of prehistoric societies.

### **3.4.3. James Turrell's Roden Crater**

James Turrell, a renowned contemporary artist, has significantly contributed to the exploration of light as a medium for artistic and spiritual expression. His work emphasizes the "Thingness" of light, a term he uses to describe the physical and tangible qualities of light that go

beyond mere illumination (Meuli, Grotzer, Zajonc, & Andrews, 2018). Turrell's fascination with "Old Light," the ancient light emanating from the depths of the universe, forms a core aspect of his artistry. This concept relates to the idea that the light we see from distant stars and galaxies is ancient, having traveled across vast stretches of time and space to reach us. By engaging with this "Old Light," Turrell creates a palpable connection between the viewer and the far reaches of the cosmos, making the enormity of the universe feel more accessible and tangible.

The Roden Crater project in Northern Arizona (Figure 18) is a prime example of Turrell's exploration of light and space. This large-scale artwork, created within a dormant volcanic cone, is designed to facilitate the observation of celestial phenomena in a unique and immersive environment (Meuli, Grotzer, Zajonc, & Andrews, 2018). Turrell's intent with Roden Crater was to create a space that would not only serve as an observatory but also as a sanctuary for experiencing and contemplating the qualities of light, time, and space. This project draws inspiration from ancient observatories and sacred spaces, connecting contemporary art with historical practices of sky-watching and celestial contemplation.

Turrell's approach to art closely aligns with the construction and use of ancient cathedrals, which were architecturally designed to enhance spiritual experiences through the manipulation of light (Meuli, Grotzer, Zajonc, & Andrews, 2018). Cathedrals often utilized stained glass and strategic architectural elements to create awe-inspiring light effects, aiming to connect worshippers with the divine. Similarly, Turrell's Roden Crater project can be seen as a modern-day cathedral of sorts, a place where visitors can experience a spiritual connection with the cosmos through the medium of light.

James Turrell's artistic work, particularly the Roden Crater project, exemplifies a modern exploration of light, not just as a physical entity but as a medium for spiritual and philosophical



inquiry. His art transcends traditional boundaries, allowing viewers to experience a deeper, almost metaphysical connection with light. Turrell harnesses the natural and celestial light, inviting contemplation about our place in the universe and the nature of perception. The Roden Crater epitomizes this approach.

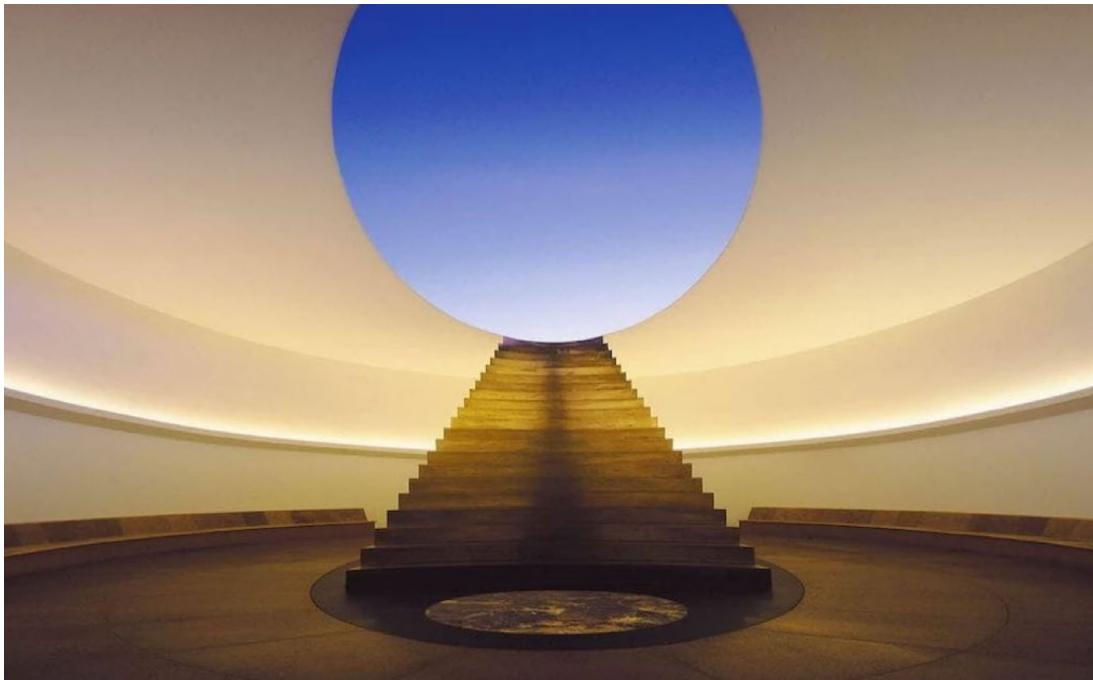


Figure 21: Interior Shot from the Roden Crater Complex (Holzherr, 2010)

While it is an observatory for celestial events it is also a space where light and form converge, creating an immersive experience that blurs the lines between the earthly and the cosmic.

Through this and other works, Turrell demonstrates how light can serve as a powerful tool for exploration and connection, linking the tangible world we know to the vast, intangible mysteries of the cosmos. James Turrell's work embodies the human quest for deeper understanding through the medium of light, bridging art and science, and the physical with the spiritual. By manipulating light, Turrell not only challenges our perception of space and reality but also invites introspection about our existential place in the universe.

### 3.4.4. James Webb Telescope

The James Webb Space Telescope (JWST) represents a significant scientific leap in our exploration of light and the universe. Developed collaboratively by NASA, the European Space Agency (ESA), and the Canadian Space Agency (CSA), it features a large, gold-coated primary mirror, about 21 feet across, designed to collect substantial amounts of light and observe distant, faint objects (Moskowitz, 2021). As an infrared observatory, the JWST is crucial for studying distant galaxies whose light shifts into the infrared spectrum due to the universe's expansion (Mather & Stockman, 1996). This capacity to observe "old light" from the early universe not only enhances our understanding of cosmic history but also provides insight into our place in space and time, highlighting the interconnection between scientific advancement and our quest to comprehend the cosmos.

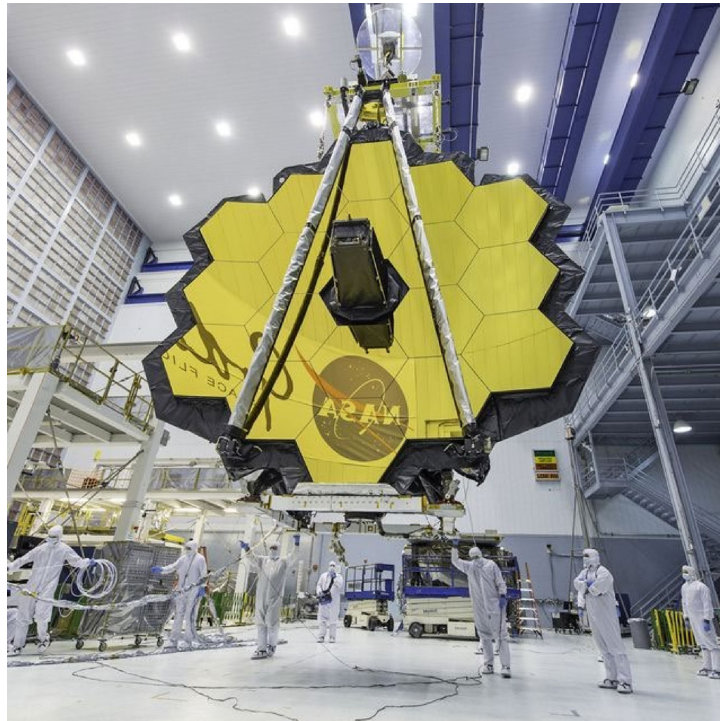


Figure 22: James Webb Space Telescope Under Construction  
(Nasa and Desiree Stover)



The JWST's advanced instruments, such as its near-infrared camera (NIRCam) and mid-infrared instrument (MIRI), are pivotal in advancing our knowledge about various cosmic phenomena. These instruments allow detailed observations of the chemical composition, temperature, and other physical properties of celestial bodies (Moskowitz, 2021). The JWST's ability to detect faint infrared light enables a closer look at the atmospheres of exoplanets, potentially revealing signs of habitability or even life (Mather & Stockman, 1996). Its studies of star and planet formation offer critical insights into the processes that shaped our own solar system. By exploring the roles of dark matter and dark energy, the JWST will address some of the most fundamental questions in cosmology, rewriting our understanding of the universe's structure and destiny (Mather & Stockman, 1996). The JWST stands as a beacon of our scientific endeavor, a symbol of our unquenched curiosity and our relentless pursuit to unravel the secrets of the universe.

### **3.5. Pertinent Research (Atomic Fusion)**

The concept of atomic fusion energy, central to understanding the energy production in stars, was first developed in the early 20th century by astrophysicists like Eddington and Bethe (Bethe, 1939). It involves the fusion of light atomic nuclei to form heavier nuclei, releasing immense energy. The pursuit of controlled nuclear fusion for power generation began in the mid-20th century, driven by its potential as a clean and abundant energy source. However, achieving the required high temperatures and pressures for fusion has been challenging, necessitating advanced containment technologies like magnetic confinement in tokamaks (Dean, 2005).

Tokamaks are devices used in nuclear fusion research. They are doughnut-shaped chambers designed to confine plasma using powerful magnetic fields. The primary goal of a tokamak is to achieve the necessary conditions for nuclear fusion, specifically the high

temperatures and pressures required to sustain fusion reactions (U.S. Department of Energy 2022). Magnetic confinement in tokamaks helps maintain plasma stability and keeps it from touching the chamber walls, which would otherwise cool the plasma and interrupt the fusion process (U.S. Department of Energy 2022). Tokamaks represent a leading approach in the pursuit of controlled fusion energy.

Recent developments in atomic fusion energy have marked significant milestones in the quest for a sustainable and clean energy source. One of the most notable recent advancements in fusion technology is the JT-60SA reactor in Japan (Figure 20), the world's biggest experimental nuclear fusion reactor. This reactor, inaugurated in December 2023, represents a significant step forward in investigating the feasibility of fusion as a safe, large-scale, and carbon-free source of net energy (AFP, 2023). The JT-60SA, a joint project between the European Union and Japan, is considered a forerunner to the International Thermonuclear Experimental Reactor in France. Both projects aim to mimic the fusion process that occurs inside the Sun, with the goal of achieving net energy gain (AFP, 2023).

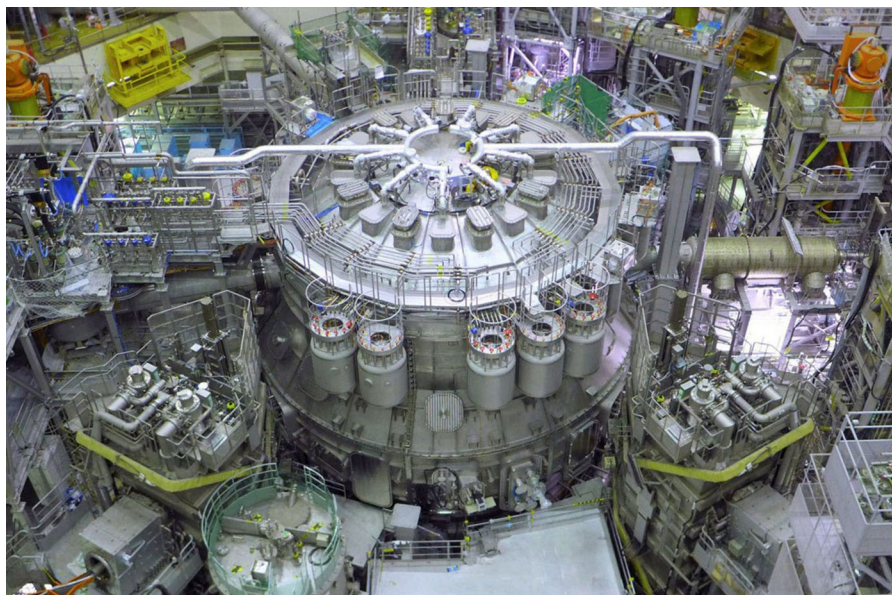


Figure 23: Japan's JT-60SA fusion reactor (National Institutes from Quantum Science and Technology, 2020)

Additionally, the United States achieved a breakthrough in December at the National Ignition Facility at Lawrence Livermore National Laboratory, where they managed "net energy gain" through a method known as inertial confinement fusion (AFP, 2023). This method uses high-energy lasers directed into a cylinder containing hydrogen, differing from the approach used in other fusion reactors (AFP, 2023). This achievement was hailed as a landmark in the quest for a source of unlimited, clean power.

These developments indicate that fusion energy could potentially become a significant component of the global energy mix in the future, contributing to the decarbonization and diversification of energy generation. As research and technology continue to advance, the realization of practical and efficient fusion energy seems increasingly within practical reach.

### **3.6. Space Programing**

The architectural programming of the observatory in Colorado and its sister site in Flåm, Norway, create a blend of spiritual, technological, and natural elements. Nestled in Colorado, the observatory would not just be a scientific hub but also a communal beacon and spiritual center. Encapsulating four poetically driven temples. Each with their own technological and spiritual backing this site would engage the visitor through a series of rituals experientially inviting them to become part of a broader cosmic collective. The pivotal points of technological engagement would be the atomic fusion generator and infrared telescope of the sun. Allowing the visitor to see both the macrocosmic sun in the distance and a microcosmic sun beneath their feet.

In contrast to this scientifically based project, the site in Flåm, Norway was designed to offer a more introspective experience, deeply rooted in the surrounding natural landscape and cultural ethos. Introspective rooms encourage individual reflection, surrounded by the serene beauty of Norway's natural landscape. Extrospective observational points would allow for

connection with the natural environment. Strategically placed throughout the site these reflection points further emphasize this connection and lead one to a deeper sense of presence. Communal spaces would allow for shared experiences and discussions, emphasizing the value of community in our understanding of nature and energy. The site within would focus primarily on the intangible aspects of universal connection with strong emphasis on community and intrapersonal reflection.

Both sites share a common goal, to deepen our understanding of and connection to the world's energy resources, fostering a sense of awe. These structures serve as reminders of our role in preserving both the natural and spiritual resources of the planet. Through macrocosmic and microcosmic reminders, visitors to the site would experience a deep sense of embodied universal triangulation, and a broader sense of connection with themselves and others.

### **3.7. The Artefact**

Art is often known to unveil the invisible, reveal the unseen. For this thesis, an exploration into artistic form helped develop the end programming in multiple dimensions. This artefact embodies the transcendental voyage that encapsulates our existence, highlighting the passage we navigate throughout our lives. The spiraling path serves as a metaphor both in the physical and spiritual sense. By utilizing the imagery of earth spiraling, the piece invites viewers to contemplate the cyclical nature of life and the universe. This spiral is a shape that recurs in nature from galaxies to the pattern of seeds in a sunflower symbolizes growth, evolution, and the eternal return to origins.



Figure 24: An Observatory for Our Inner Light: Close Up Image



Figure 25: An Observatory for Our Inner Light: Far Out Image

Drawing inspiration from William Bryant Logan's "Dirt: The Ecstatic Skin of the Earth," the artefact reflects on dirt's celestial beginnings. Logan's insightful observation, "The truth is we

don't know the first thing about dirt. We don't even know where it comes from. All we can say is it does not come from here. Our sun is too young and cool to manufacture anything larger than helium," serves as a profound reminder of our elemental connections to the universe (Logan, 1995 pg 1). This notion is further reinforced by the biblical verse from Genesis, "Remember that you are dust and to dust you shall return," illustrating the cycle nature of existence and our humble role within the vast tapestry of life (King James Version, 1611, Genesis 3:19).

This perspective fosters a deep spiritual grounding, acknowledging our parallel relationship with the earth's elemental makeup. The exchange of carbon dioxide and oxygen between us and the plants exemplifies a fundamental interconnectedness, where our very breath is intertwined with the life force of the planet.

The artefact transcends mere rational analysis, inviting engagement with the intuitive and the metaphorical realm. Entering the spiral, one moves beyond rigid logical structures into a realm where poetic analogies illuminate our place within the cosmos. The celestial illumination throughout, reminiscent of Anselm Kiefer's "Sunflowers," symbolizes cosmic petals cascading upon us, immersing us in a universe that merges the internal and external.

Architecturally, this piece manifested itself in myriad ways including utilizing the processional component of the journey to the center. In a series of poetic collections, the user of the sacred space would feel transformed from the journey itself and realize the power of the process as opposed to just the end destination. The inner light draws one in, but the realization once you step outside is the power of pilgrimage in and of itself. Drawing from the ethos of subsuming into the celestial realm this sacred space included areas where one would metaphorically feel the light of the universe around them, and in doing so become more attuned

to the light within. Light uniting with materials showed the power of unifying one's external light to the light internal.

This piece is a testament to the power of integrating the celestial with the terrestrial, offering a sanctuary where one can metaphorically bask in the universe's light, thereby fostering a deeper connection with the internal radiance that guides us. Through this harmonious relationship, the artifact not only celebrates the journey of self-discovery but also the universal pilgrimage we share in seeking understanding and enlightenment within the cosmos.

### 3.8. Design Process

The Artefact research methodology transferred into a more formalized design process with the incorporation of hand sketching and mass modeling. This approach at first led to more orthodox forms of sacred observatory spaces but through iterative design the buildings began to change, reflecting something more reminiscent of modern spirituality.



Figure 26: Initial Design Sketch of Observatory





Figure 27: Design Sketches of the Observatory Bowl and Dome

Originally conceived as separate entities focusing on distinct ritual practices, these observatories evolved into unified spaces that blend multiple spiritual traditions. This integration reflected a more holistic view of spirituality. The design process of these observatories intentionally eschewed digital technologies, favoring physical and analog methods. This choice significantly influenced the architectural outcome, allowing the structures to develop organically. Without the rigid constraints typically imposed by digital design software, this project took on a form more indicative of the narratives that served as foundational guideposts throughout the design process. By allowing the architecture to develop more naturally, the observatories could better reflect the spiritual and communal intentions they were meant to foster, creating environments that enhance contemplation and spiritual connectivity.



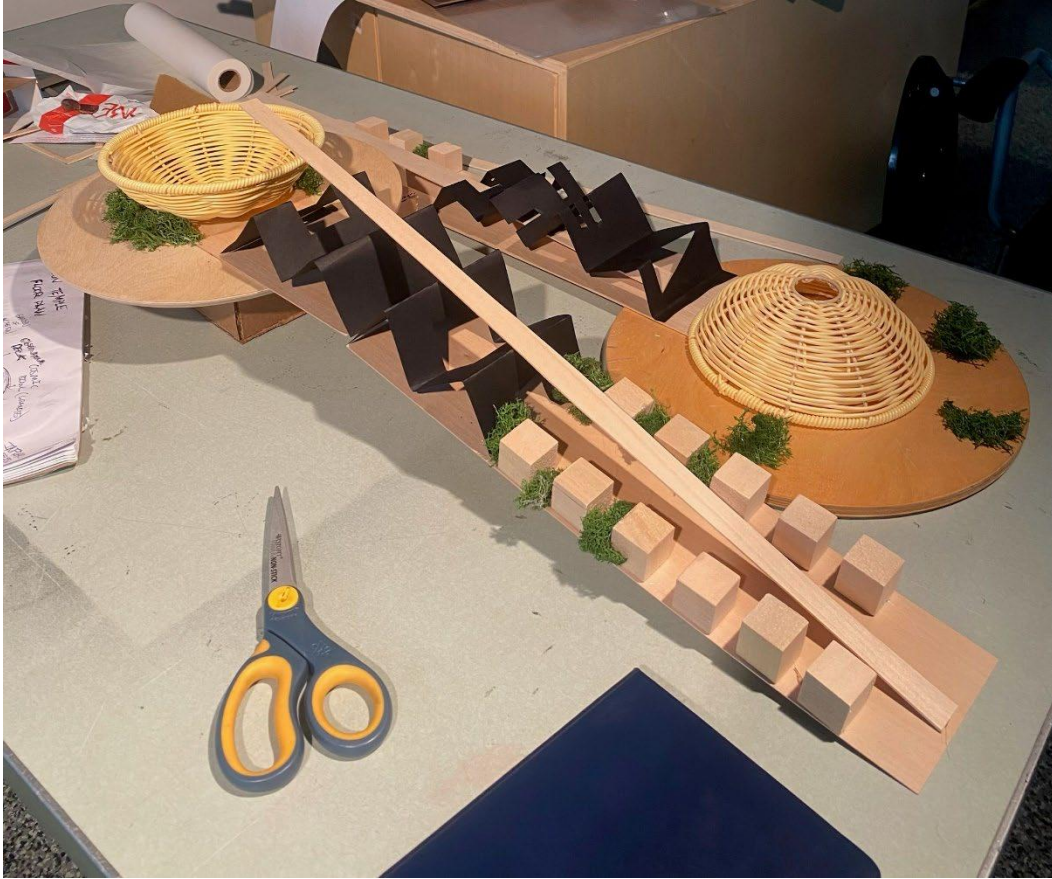


Figure 28: Physical Mass Modeling of the Two Observatories

Through mass modeling this amalgamation was fragmented. On one occasion, the building models were cut with a scissors and spread throughout the room creating a much more interesting composition.

Overall, the initial design research process pushed the traditional orthodox forms of spirituality into a new dimension. Through fragmentation and a reassessment of how narrative could turn into form these observatories took on new forms through the different iterations creating something that was much more indicative of a spiritual center situated for modernity.

## **4. RESULTS AND CONCLUSIONS**

### **4.1. Final Project Description**

The project featuring two poetically inspired observatories located in Pike's Peak, Colorado, and Flam, Norway, exemplifies a blend of art and science for the modern context. These observatories formed a poetic constellation, each site enriching the network with its unique narrative and design yet interconnected through a shared vision of metaphorical and celestial exploration. This approach was reminiscent of ancient architectural practices where narrative and analogy shaped spiritual spaces, reviving these elements to meet the perspectives of the modern world.

Each site hosts a series of temples and stations, which while being structural entities, are also sanctuaries of thought and reflection. These spaces were designed to reinterpret ancient myths and contemporary stories, weaving them into the fabric of modern spirituality and scientific inquiry. This reinvention of narrative spaces within the observatories allows visitors to experience a profound connection with the cosmos, urging them to explore both the external universe and their internal celestial being.

The design process itself was deeply influenced by the concept of reimagination, ensuring that every element of the observatories from the overall layout to the smallest architectural details reflected a fusion of traditional and contemporary ideologies. The use of modern technology in tandem with spiritual motifs enhances the visitor's experience, making the exploration of cosmic phenomena both an intellectual and an existential journey.

The narrative depth and analogical richness of the sites offer a diverse range of experiential rituals that resonate on various intuitive levels with visitors. This variety ensures that every individual can find a connection, whether through a specific story, a visual element, or a

moment of quiet reflection. The observatories do not merely serve as places to observe the stars but as venues where technology and spirituality converge, deepening our understanding of our place within the universe and inviting an engagement with the cosmos that is both personal and universal.

#### **4.2. Project Objective**

The project aimed to construct spiritual centers that serve as beacons for cosmic observation, transforming the typically objective view of the cosmos into a more divine and intuitive experience. These centers were designed not just as buildings, but as embodiments of poetic and metaphorical expressions, crafted to engage people who are deeply embedded in the rational, often commercialized mindset of contemporary society. These individuals, who might often overlook the subtle marvels of the world and universe, are the primary audience for these centers.

The core concept behind these spiritual centers is the integration of internal and external realities. By illustrating how external cosmic patterns mirror our inner landscapes, the project bridges the gap between the seen and the unseen, the empirical and the emotional. This approach draws on the historical role of religion in connecting humanity to a larger existence, utilizing poetic analogies to deepen this connection.

The design of these centers physically manifests these poetic analogies, creating spaces that not only provide new perspectives on our place in the cosmos but also challenge the visitors' preconceived notions about the universe. By engaging with these centers, visitors are invited to explore a broader, more integrated view of the cosmos, fostering a reconnection with the awe-inspiring aspects of our world that modern life often obscures. This project, therefore, is not just about creating buildings, but about crafting experiences that resonate with spiritual,

philosophical, and cosmic dimensions, aiming to enrich the modern individual's understanding of their place within the universe.

### **4.3. Project Design and Documentation**

#### **4.3.1 A Poetic Constellation**

The two sites of poetic exploration manifested as a sort of abstract constellation of various spiritual temples across a distance. The collection emphasizes the concept of metaphor bridging two disparate concepts across a distance. In the same way these two sites converge with one another, cosmic entities converge with one another. Stars collapse and come together reemerging in diverse ways. Experientially the visitor to these two spiritual sites would poetically engage on a cosmic, spiritual journey creating their own unique constellation internally. This engagement mimics the overarching intention of this project to bridge the external and internal worlds, poetically. The overall layout between the two sites is a sort of pilgrimage with the initial exploration of the Observatory of the Sun site in Colorado followed by the Observatory of the Moon site in Norway. The two sites mimic or internal Sun and Moon. The inner light of consciousness and the reflection on the light. Just like the Moon reflects the light of the Sun so to do we reflect on our inner light. This is a poetic relation between the planets and us.

This poetic interplay between the two celestial bodies and the human experience enriches the understanding of how we perceive ourselves and our place in the universe. By engaging with these sites, visitors would experience a tangible representation of their inner selves through the lens of cosmic symbolism. The observatories serve not only as places for astronomical observation but also as sanctuaries for exploring the dual aspects of human nature.

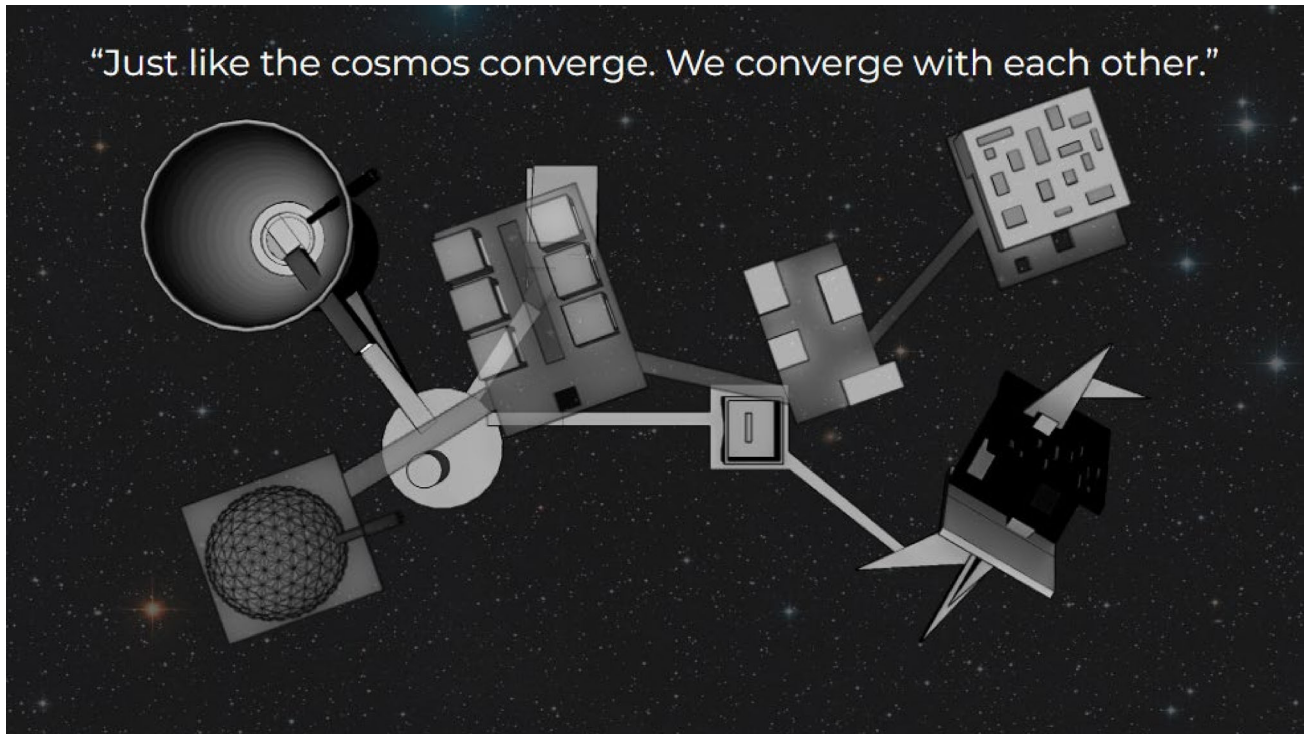


Figure 29: A Poetic Constellation

#### 4.3.2 In Reverence to the Sun (Mountain Sanctuary)

The first site on the astronomical pilgrimage is in reference to the life force of our solar system, the Sun. Sited on the mountainside of Pike's Pike Colorado. This location would allow the visitor to see the vast vistas of the world around them as well as the vast views within. This spiritual center contains four poetically driven temples all tied to our inner light of consciousness. The visitor would proceed through the site in a comparable way to how an astronaut might explore the cosmos. The progression through these temples is intentionally sequential, guiding visitors through a holistic growth in awareness. This design ensures that each step builds upon the last, fostering a deep, evolving understanding of both the universe and oneself.

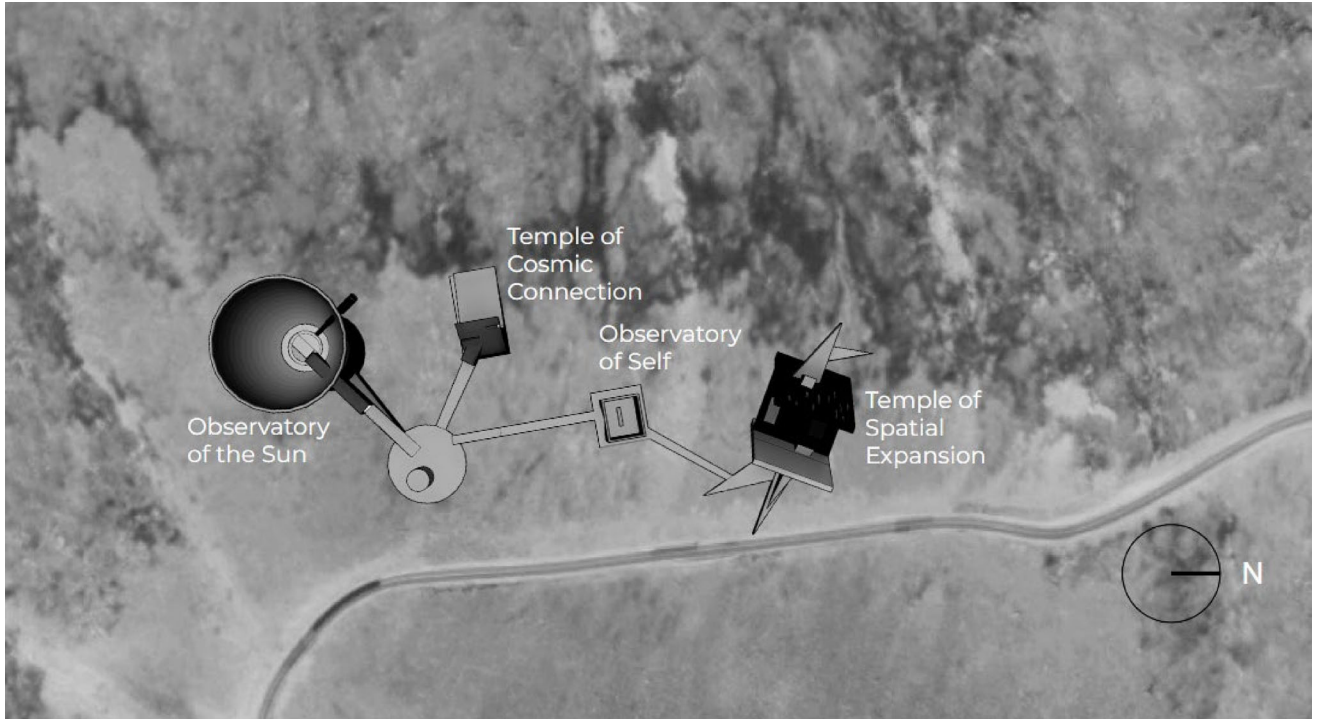


Figure 30: The Site of the Sun Site Plan

**4.3.2.1 The Temple of Spatial Expansion**

The first temple within this site reflects our place in an ever-expanding universe. The two diagonal planes of the building invite a shifting of perspective and the flow of the building converts the user into a sort of poetic atomic particle shooting out into space. The flow of the building is equally significant. It guides visitors along a path that mirrors the trajectory of an atomic particle being propelled into space. This journey through the temple is designed to be transformative, converting the mundane experience of moving through a physical space into a poetic exploration of one’s existence and essence.





Figure 31: The Temple of Spatial Expansion Render

The second facade of the building is an architectural embodiment of the sunflower, designed with portals of light that transform the structure into a metaphorical representation. This design choice is not merely aesthetic but deeply symbolic, aligning the natural geometry of the sunflower with the building's purpose, thereby creating a space that speaks to the interconnectedness of nature and the cosmos.

This building is dedicated to hosting two distinct yet thematically connected rituals. The two are the planting of a sunflower and the dropping of a stone into a pond. Each ritual is imbued with rich metaphorical significance. The act of planting a sunflower beyond cultivating a plant, symbolizes an individual's integration into the broader cosmic collective, reflecting the sunflower's role in nature as a seeker of light, drawing energy from the sun and thriving in

unison with its environment. This ritual encourages participants to consider their place within the larger universe, promoting a sense of unity with the vast energies and entities that compose it.



Figure 32: The Temple of Spatial Expansion Section Cut

Additionally, the ritual of dropping a stone into water serves as a powerful visual and kinetic metaphor for the impact of individual actions on the broader cosmos. The resultant ripples symbolize the waves of universal energy expansion each wave echoing outwards illustrates how a single act can influence an extensive range of existence. This phenomenon visually represents the concept that every small action contributes to the larger dynamics of the universe, resonating through the cosmic fabric in ways seen and unseen.

Together, these rituals engage participants in a contemplative exploration of their roles within the cosmos, facilitated by a space that architecturally and symbolically captures the essence of connectivity and influence in the universe. The second facade, with its sunflower-inspired portals of light, not only enhances the thematic depth of these rituals but also reinforces



the building's role as a conduit between the earthly and the cosmic, the individual and the collective.

#### ***4.3.2.2 The Observatory of Self***

The Observatory of Self is an architectural embodiment of the concept of time, uniquely designed to translate temporal progression into a tangible experience. This observatory features a copper-coated exterior, which was purposefully chosen for its ability to oxidize and visually evolve with time. As the years pass, the copper would develop a patina, changing in color and texture, symbolically reflecting the natural aging process and the passage of time. This external transformation would serve as a living narrative of the observatory's existence within its environment, marking the passage of seasons and years in a visually tangible form.

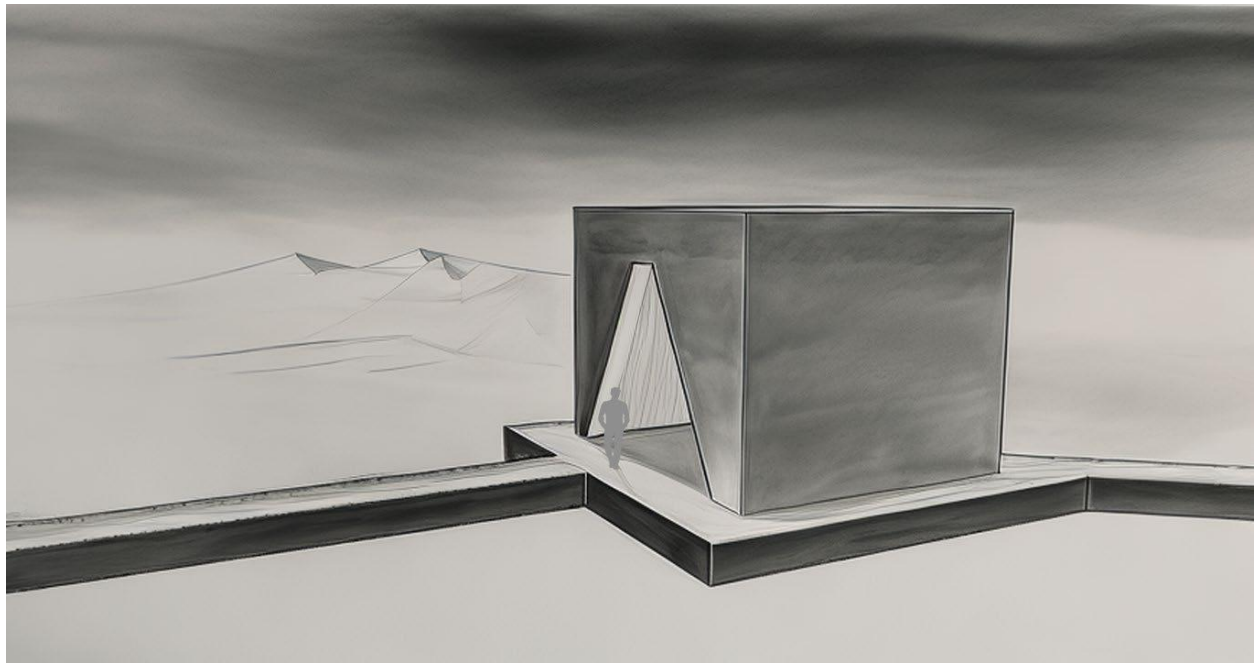


Figure 33: Observatory of the Self Render

Inside the observatory, the walls would be lined with highly reflective mirrors, designed to confront visitors with their own images as they age. Each return visit to the pavilion would offer an opportunity for introspection, as individuals are faced with the temporal changes in their appearance, prompting them to reflect on their personal growth and the passage of time in their

lives. This experience is deepened by the knowledge that just as they have changed, so too has the building itself changed alongside them.

Drawing a parallel to astronomical exploration, the mirrors within the Observatory of Self can be compared to those used in the James Webb Space Telescope. Just as the mirrors in the observatory allow individuals to see their changing selves, the mirrors on the James Webb Telescope were engineered to peer into the farthest depths of space, capturing light from the early universe (Mather & Stockman, 1996). This powerful imagery underscores a profound connection between the microcosm of individual existence and the macrocosm of the universe. The mirrors thus serve a dual purpose as tools of self-reflection and symbols of cosmic exploration, highlighting the universality of aging and change.

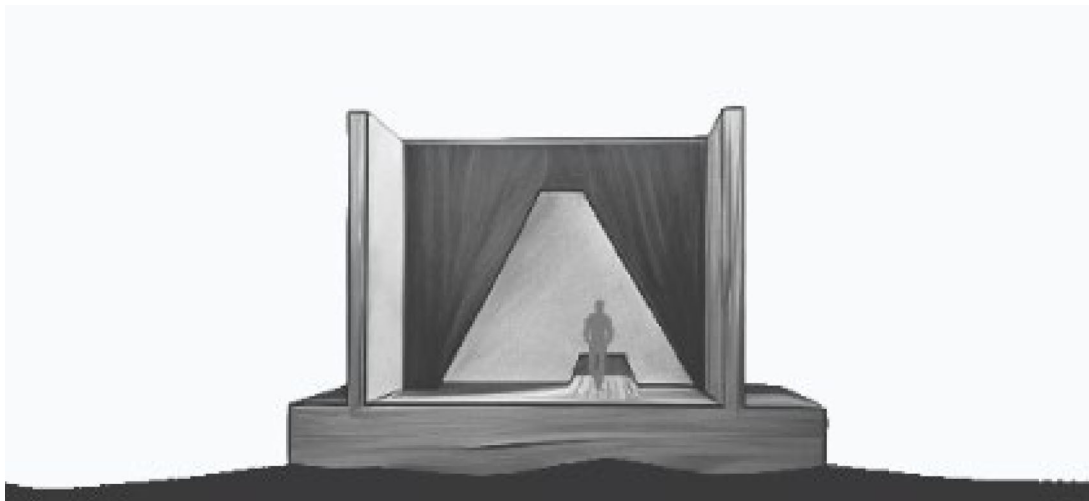


Figure 34: Observatory of the Self Section

Through this unique architectural and philosophical approach, the Observatory of Self would invite visitors to contemplate deeper questions of existence, legacy, and place within the universe. It would be a space where the personal meets the cosmic, where the passage of time is both a personal and universal experience, mirrored by the natural aging of the pavilion's copper skin and the reflective journey each visitor undertakes within its walls.

### *4.3.2.3 The Temple of Celestial Connection*

The Temple of Cosmic Connection redefines the concept of prayer and contemplation through a modern lens, drawing inspiration from the biblical story of Jacob's Ladder. This story, which features a ladder reaching from earth to heaven with angels ascending and descending, symbolizes a direct connection between the earthly and the divine (Sarna, 1989). In a similar vein, the Temple designed to facilitate a profound connection between its visitors and the cosmos serves as a physical and spiritual conduit to the universe.

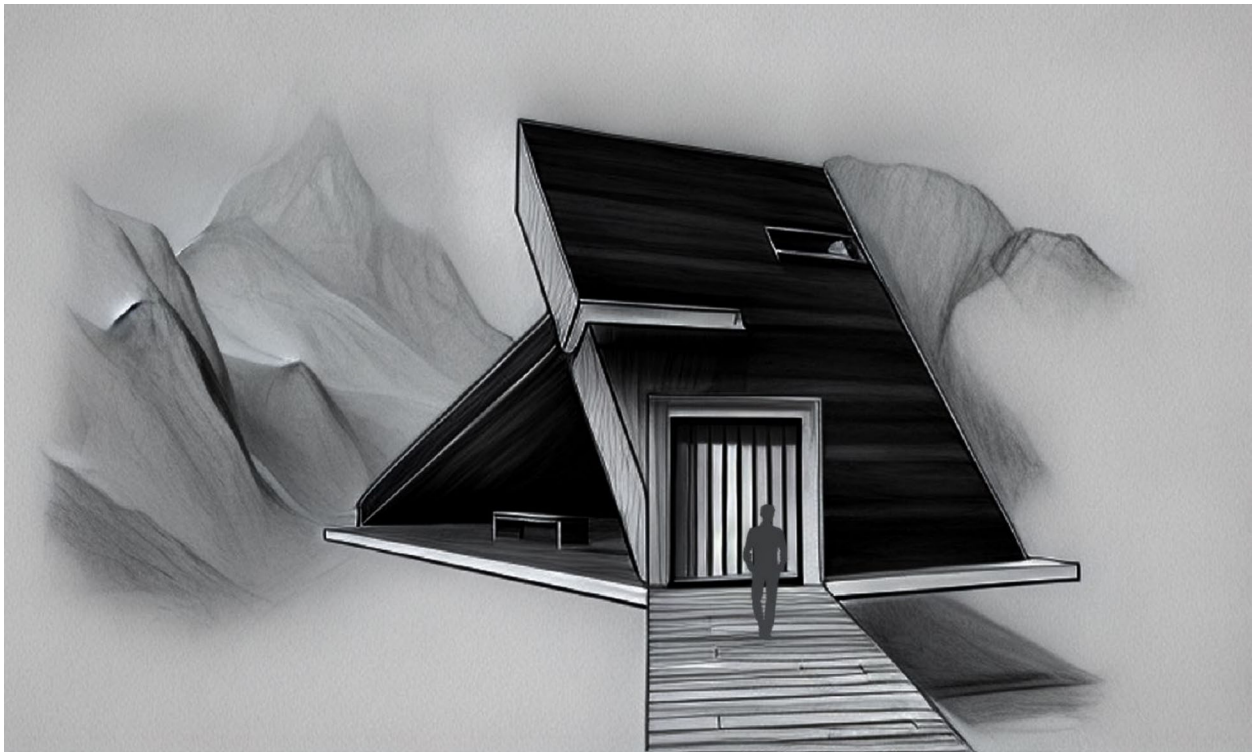


Figure 35: Temple of Celestial Connection Render

The Temple of Celestial Connection the Temple's structure subtly embodies the form of hands joined in prayer. Visitors entering the Temple would find themselves in a serene environment where they could sit on strategically placed benches that enhance the contemplative experience. From these benches, they would be immersed in the sounds of the cosmos, a

carefully curated auditory experience that might include actual recordings of cosmic sounds, like those captured by space agencies, and transmitted messages from the Observatory of Moon. These sounds would serve to elevate the senses and connect the individual's immediate experience with the vastness of space.

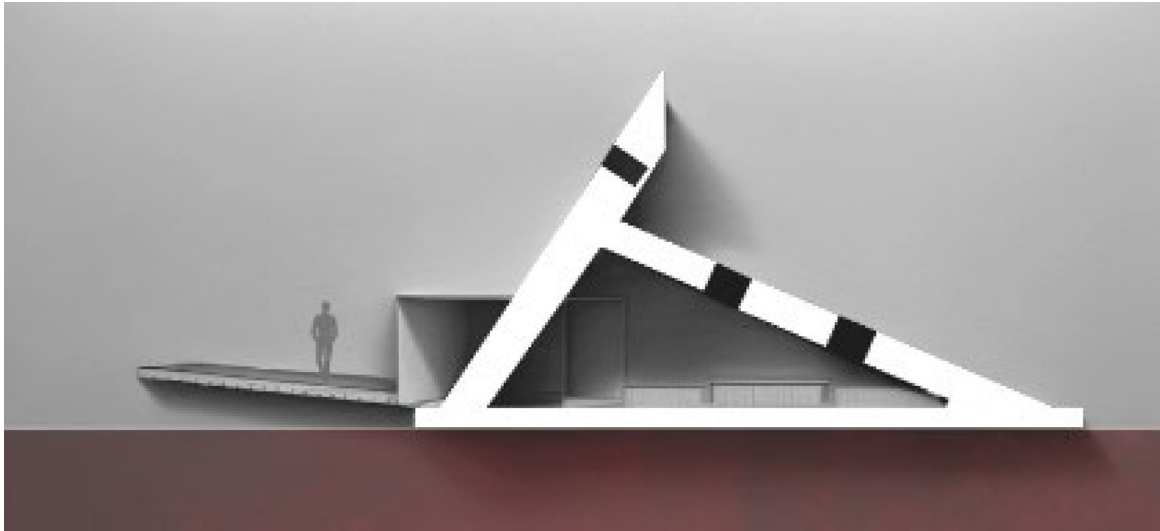


Figure 36: Temple of Celestial Connection Section

The Temple enhances the sense of connection using technology and design, enabling interactions not just with the cosmos but also with other users across different sites. This would be achieved through an integrated network of radio transmitters that allows messages or prayers sent from one location to be received at another, mirroring the way Jacob's Ladder connected different realms. This design element highlights the facility's role in linking individuals and communities, like metaphors connect disparate concepts across distances. The Temple of Cosmic Connection would stand as a modern sanctuary where the ancient and the contemporary, the personal and the universal, the physical and the metaphysical are intertwined, offering a new way to understand and appreciate our place in the universe.

#### ***4.3.2.4 The Observatory Bowl of Cosmic Subsumption***

The procession of the site of the Sun would culminate with the entry into the Observatory Bowl of Cosmic Subsumption and the Telescope of the Sun, where visitors would be invited to engage directly with cosmic phenomena. This observatory, constructed from granite, a nod to the natural composition of Pike's Peak, would embody a deep connection to the earth while simultaneously reaching towards the celestial given its amalgamation of elemental components. The choice of granite would not only resonate with the local geology but also impart a sense of timelessness and durability to the structure.

At the heart of this observatory would be an infrared telescope, a sophisticated instrument that safely would allow visitors to observe the sun with their naked eyes. This feature would dramatically enhance the visitor experience by bridging the macrocosmic scale of the sun with the microcosmic human scale, creating a direct, tangible connection between the cosmic forces and personal perception. This connection is deepened by the observatory's design, which aims to encapsulate and translate significant cultural narratives into its physical structure.

The observatory's design and function were also inspired by Anselm Kiefer's sunflower paintings (Figure 9), which often explore themes of regeneration, life, and cosmic connections through the motif of the sunflower aligning towards the sun. Similarly, the observatory reflects the Ute Tribe's Funnel Creation story, which narrates the cosmos funneling life forces into the formation of the earth (Smith 1995). This blending of art and indigenous mythology into the architecture would allow visitors to experience a form of cosmic subsumption, as they are enveloped by light within the bowl-shaped observatory, metaphorically and literally drawing them closer to the cosmos.



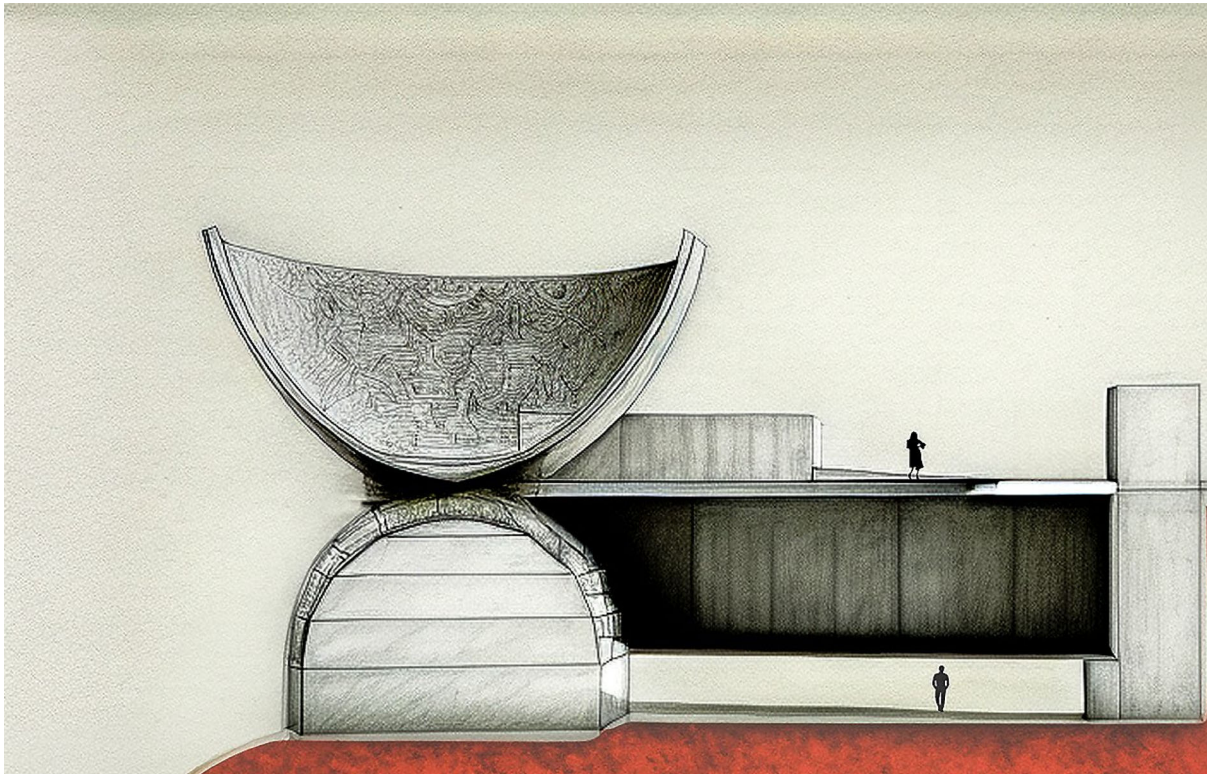


Figure 37: Observatory Bowl of Cosmic Subsumption

With technological advancement there would be a plan to incorporate a fusion reactor at the base of the building. This technological advancement would not only exemplify human ingenuity and our quest to harness the power of the sun but would also allow for a true observation of a sun on earth, mirroring the celestial one. Such a development would transform the observatory not just into a site of passive observation but into a dynamic hub of energy production and scientific exploration, further blurring the lines between the celestial and the terrestrial.

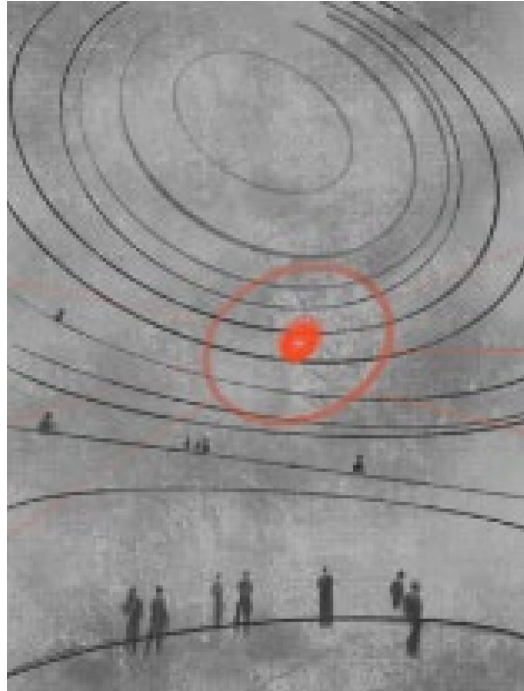


Figure 38: Observatory of the Atomic Fusion Reactor

The observatory would not only house scientific tools but also would become a living, evolving symbol of how human creativity, technological advancement, and cosmic forces intersect. It would invite visitors to step into a space where they could feel subsumed into the sunlight which metaphorically engages the light within and the light of the external world.

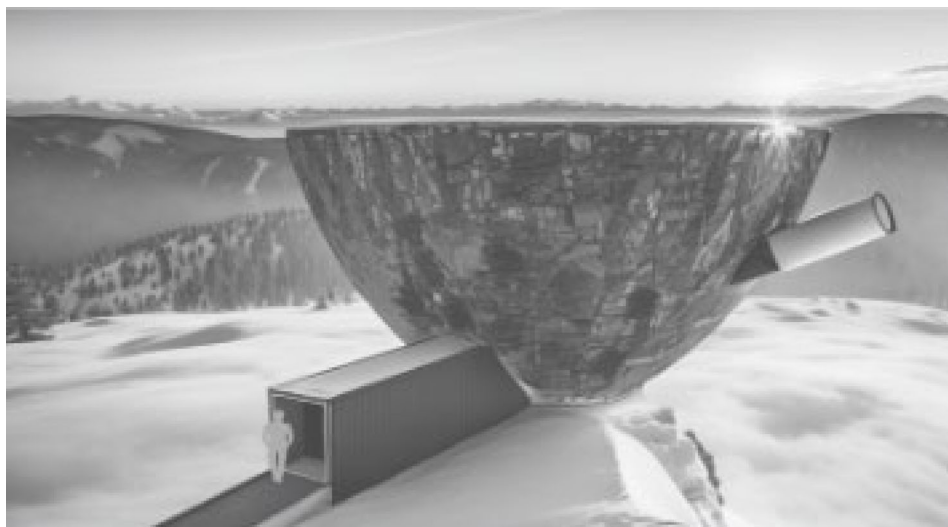


Figure 39: Telescope of the Sun

### 4.3.3 In Reverence to the Moon (Floating Sanctuary)

The second site within the celestial pilgrimage would be in reverence to moon. This is a metaphorical relation to the awareness we have of consciousness. One can see this concept when they meditate, there is an initial consciousness or monologue and then there is an awareness of that monologue. The overall inspiration for the floating nature of this collection of temples came from the Buddhist concept of Annata or an impermanent self (Trungpa, 1973). Just like everything changes and floats with the waves of time so does the sanctuary. The floating nature of the site also speaks to the transient nature of religion for many in the modern context and the way faith allows one to let go control and connect to something greater. Just like everything changes and floats with the waves of time so would the sanctuary. The floating nature of the site also speaks to the transient nature of religion for many in the modern context and the way faith allows one to let go control and connect to something greater.

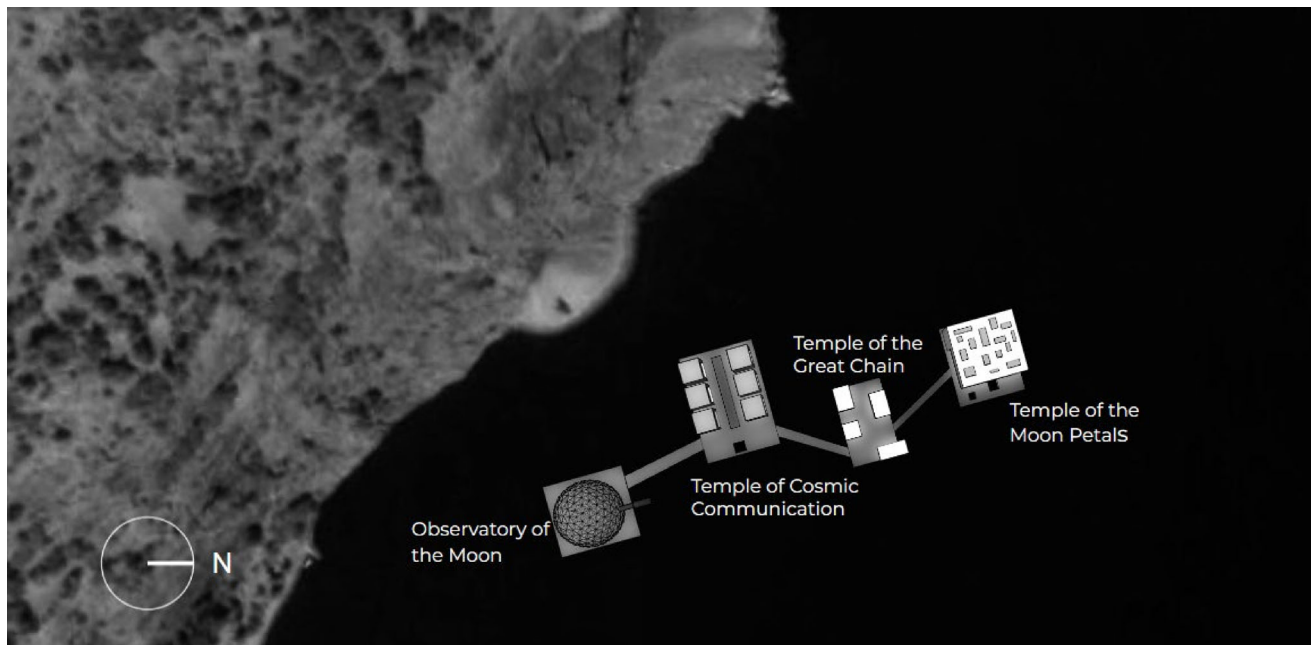


Figure 40: Site Plan of the Site of the Moon



#### ***4.3.3.1 The Temple of the Moon Petals***

The Temple of the Moon, envisioned as an entry point in the lunar procession, is architecturally designed to integrate the symbolism and essence of the moon into a transformative visitor experience. At this initial stop, users would be invited to participate in the ceremonial planting of a moonflower, an act that symbolically incorporates them into a lunar collective. This ritual would serve as an initiation, marking the beginning of their journey through the temple and fostering a sense of community among the visitors. The act of planting a moonflower would invite visitors to literally and figuratively put down roots in the space, integrating themselves into the temple's ongoing narrative. By participating in this planting, visitors would not just be observers but become active contributors to the life of the temple. This communal gardening acts as a powerful initiation ritual.

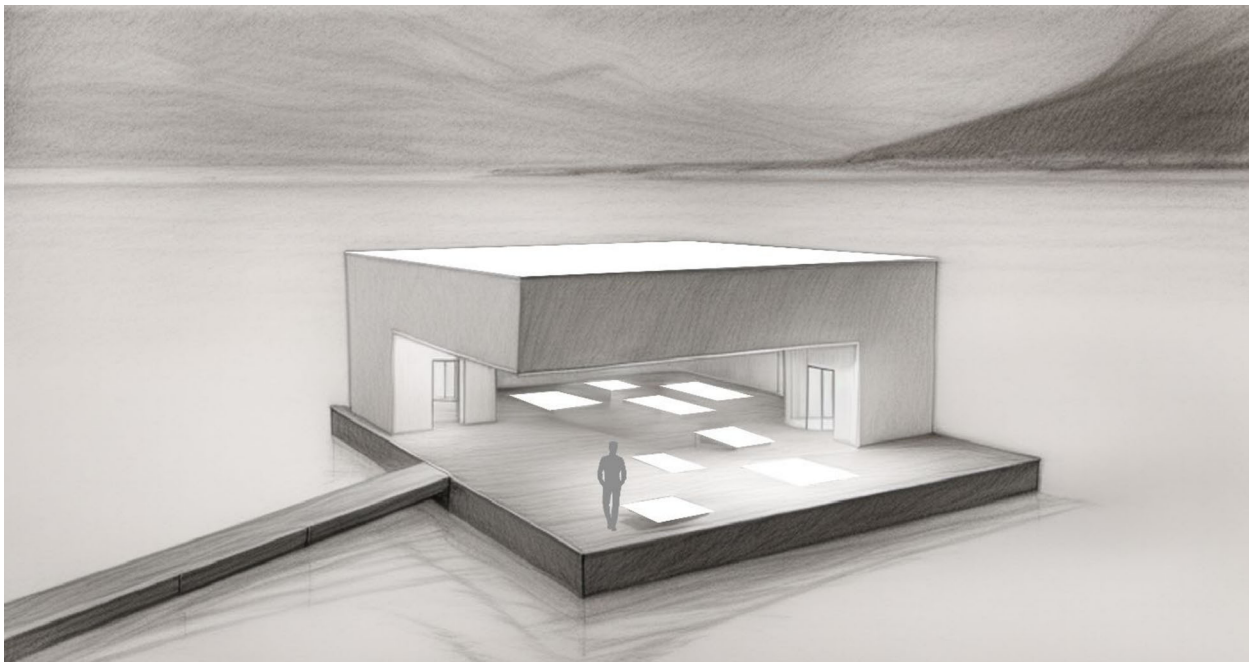


Figure 41: The Temple of the Moon Petals Render

Inside, the temple would feature craters of light which are specialized architectural elements that function like skylights but would be crafted to diffuse light in a way that emulates

the soft glow of moonlight. These craters would be strategically placed throughout the temple to enhance the ambience and to bring the cosmic qualities of the moon down to Earth.



Figure 42: Interior Shot of the Temple of the Moon Petals

The floors of the temple could be inlaid with reflective materials or designed with embedded lighting that mimics the surface of the moon, enhancing the thematic elements of the space. As visitors would move through the temple, these design elements would collectively create an environment that is not only visually captivating but also deeply immersive, encouraging personal reflection and a profound connection to the lunar landscape.



Figure 43: Section Cut of the Temple of the Moon Petals

#### ***4.3.3.2 The Temple of The Great Chain***

The Temple of the Great Chain embodies an architectural manifestation of Robert Fludd's metaphysical ideas, specifically his notions of macrocosm and microcosm (Fludd, 1617). This concept is translated into the physical structure of the temple, which utilizes a series of elevating glass platforms that extend both above and below the water surface, enabling a literal and metaphorical exploration of these interconnected realms.



Figure 44: Section Cut of the Temple of the Great Chain

Incorporating elements of water within the temple would not only enhance the thematic expression of interconnectedness but also draw a parallel to the ritual of baptism. This association is deepened by the design of the platforms, which would enable a process of submersion and emergence that mimics the baptismal act of entering and rising from spiritual waters. The technological aspects of these platforms utilizing hydraulics or engineered buoyancy systems would add a modern twist to this ancient ritual, offering a fresh interpretation of spiritual renewal and purification.

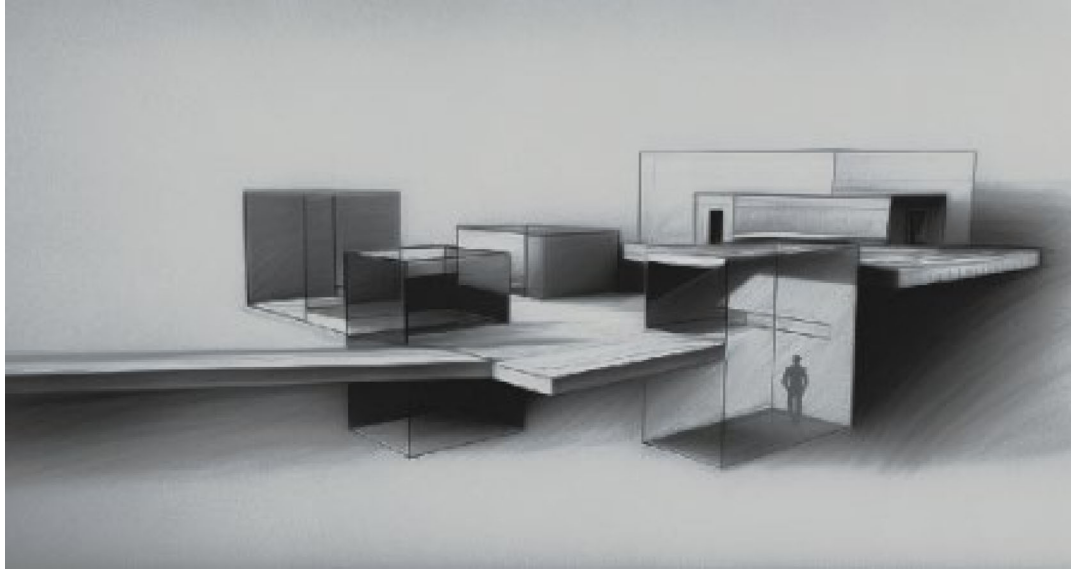


Figure 45: Temple of the Great Chain Render

Overall, the Temple of the Great Chain reimagines ritual for the modern age. By translating the ancient stories into the modern day, the participants would be invited to engage in a cross-cultural dialogue that would enhance their understanding of the broader world and the interconnectedness of all aspects of the universe.

#### ***4.3.3.3 The Temple of Cosmic Communication***

The Temple of Cosmic Communication is a retranslation of the Temple of Celestial Connection (Figure 35), Jacob's Ladder, and Prayer. The intention of the sanctuary would be to facilitate a dialogue between the individual and the broader cosmos. The temple would be a

multi-layered experience that would engage the individual in experiential capacities to operate within a broader spiritual perspective.



Figure 46: Temple of Cosmic Communication

At the core of the temple's design would be a large reflecting pool that would serve both as a focal point and a symbolic separator for the meditative chambers positioned around its perimeter. This pool would reflect the sky above and the temple's architecture, creating a serene and contemplative environment. The visitors, placed within individual chambers, would see others across the water, being visually connected yet secluded enough to foster personal reflection. This design element echoes the concept of Jacob's Ladder, with thoughts and prayers ascending toward the heavens, while the reflections suggest a bridge or a ladder connecting the chambers, embodying the spiritual connection across physical space.

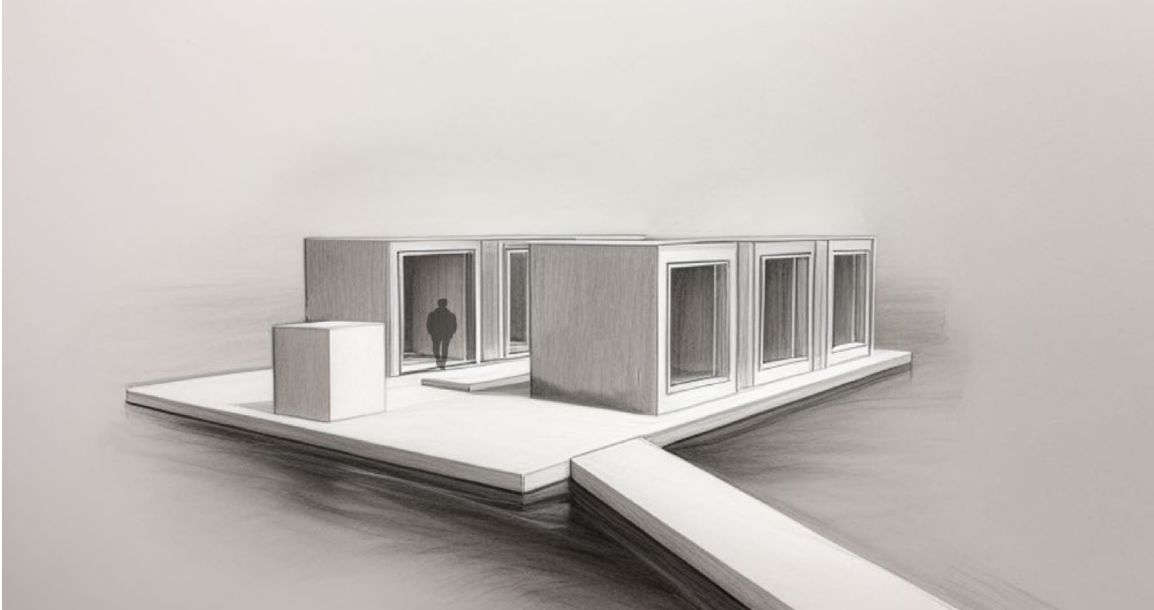


Figure 47: Temple of Cosmic Communication Render

Incorporating advanced technology, the temple would allow visitors to send messages not only to the cosmos via a sophisticated radio wave transmission system but also to a corresponding observatory in Colorado. This system would be designed to broadcast structured radio messages toward targeted areas of the cosmos where extraterrestrial life might potentially be found.

This dual capability of communicating both terrestrially and celestially would enhance the temple's role as a hub of cosmic dialogue. It would allow participants to engage in a unique form of communication that transcends traditional verbal and written methods, entering the realm of cosmic interaction. Through this feature, the temple would become a beacon of human thought and spirituality, casting messages out into the void in hopes of reaching both the known and the unknown.

#### ***4.3.3.4 The Observatory Dome of The Moon***

The lunar procession, a journey designed to deepen the visitor's connection with cosmic themes, would culminate at the Telescope of the Moon. This structure would be housed within a geodesic dome, chosen not only for its aesthetic appeal and structural efficiency but also for its profound symbolic significance. The dome's design, characterized by a complex network of triangles, mirrors the fractal-like structure of the universe, where each part reflects a self-similar pattern within the larger whole. This architectural choice enriches the observatory's purpose, embodying ideas of unity and transcendence that resonate deeply with those seeking a connection with the cosmos.

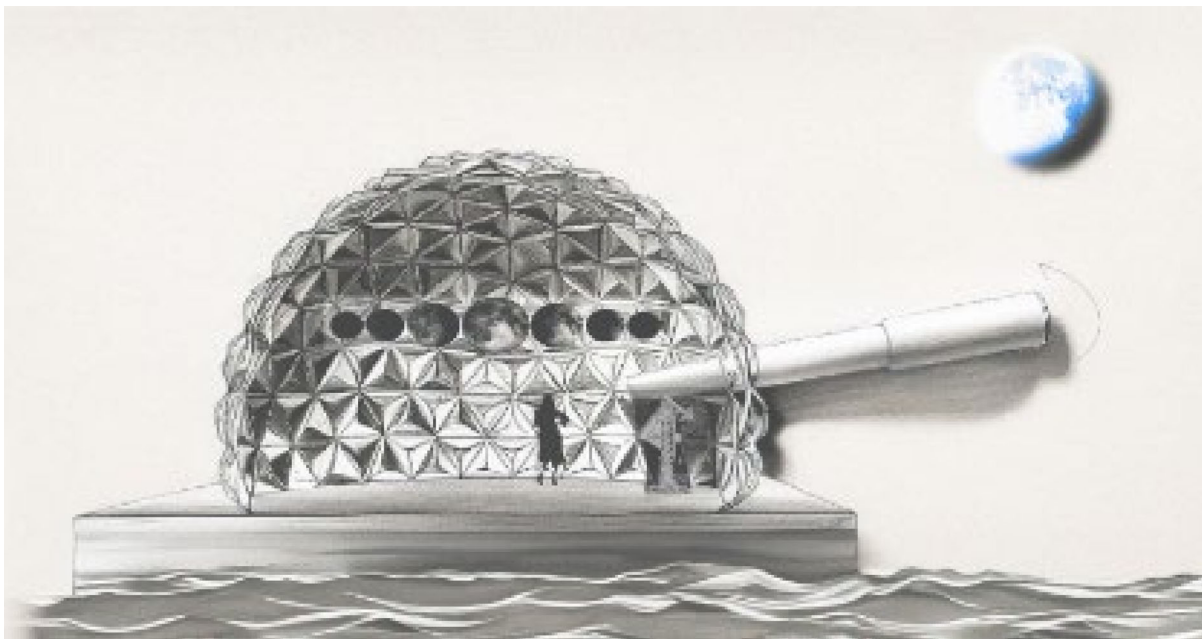


Figure 48: Observatory Dome of the Moon Section Cut





Figure 49: Observatory Dome of the Moon Render

In this space, the act of looking outward to the moon would become a meditative experience, a physical and symbolic act that would mirror the introspective journey each visitor undergoes. The Telescope of the Moon would not just be endpoint for the lunar procession but a beginning to deeper personal and cosmic discoveries, making it a place of both observation and profound revelation.

#### **4.4 Conclusions**

The main intent with the creation of the observatories of Pike's Peak and Flam was to create a more spiritual, less rationally based way of cosmic observation. Fusing spiritual and scientific exploration through experientially based architectural design the more subconscious understanding of one's place within the universal cosmic web was of utmost importance when embarking upon this architectural endeavor.

The sites would engage with the visitors in a comparable way to how a more orthodoxly based religious space would engage with a spiritual pilgrim. A visitor would engage with the sites in a ritualistic fashion collecting spiritual and intuitive experience

throughout the process. With processes such as the planting of a sunflower seed or the dropping of a stone into a pond of water the observatories would invite the visitors to experience ritual reimagined for the modern age. The temples within in the sites are successful in the way they integrate narrative and metaphorical analysis through experience to bridge the intuitive and empirical worlds.

Key Architectural innovations within the program include the reformation of traditional observatory forms to speak to a more spiritually based view of the stars. For example, the Observatory Bowl of Cosmic Subsumption (Figure 37) reframed the concept of solar observation to include a more holistic and sensual understanding of sunlight with an experiential process that allowed one to haptically feel the light of the sun in a unique way. In furtherance to this point, various temples such as the Temple of Spatial expansion (Figure 31) reframed the usage of circulation within architectural form to allow to feel more like a celestial particle engaging with the universal processes around them. Overall, the architectural interventions reframed observation through a multi-sensory experience that moved observation beyond a solely optical extent to something more holistic.

Various technologies were integrated within this project to serve the more intellectually based visitor to the collected constellation between the two sites. For instance, an infrared telescope within the Observatory Bowl of Cosmic Subsumption allows one to look at a star, the Sun, with the naked eye (Figure 37). The integration of technology for ritualistic purposes reinterpreted the pilgrimages of the past for the modern age. Rituals such as the sending of messages into space would allow for the visitors of these spaces to engage with the cosmos in new and tangible way allowing for a deeper connection to the universe at large.

For centuries observatories have served as places of cosmic triangulation and the collection of temples across Flam and Pike's peak reinterpreted those structures for the modern age allowing for an understanding of cosmic place on both an intuitive and technological level. The observatories modernized ancient ritualistic practice for the modern age with examples such as the Temple of Celestial Connection (Figure 31) modernizing the concept of prayer with the sending and receiving of cosmic messages or the Temple of the Great Chain (Figure 47) reinterpreting the concept of baptism with technological submerging and reemergence into water through elevating platforms. These programmatic elements would invite the user to see things on a deeper level in an experiential fashion.

One of the main challenges of the project was the need to step beyond rational form making to speak to something more connected to the universe. Early in the process the forms were rooted in traditional orthodoxy and forms, which instigated too much of direct and shallow understanding of spiritual form. With further exploration and fragmentation, the forms developed into a more modernized manifestation of the spiritual context within the contemporary age.

In addition to the shift beyond rational form making, the integration of spiritual narrative proved a challenge due to the need to reference the spiritual stories of the past without directly mimicking them. This process was helped with the integration of technology to modernize past narrative into architectural intervention. The discoveries this project led to include the foundational component of starting with narrative to inform the overall design process. Having strong metaphorical backing allowed the project to shift and form technically while keeping to the same spiritual guideposts that allow the visitor to see the divinity of their everyday lives. Shifting to a more intuitive design process allowed for a more intuitive development of form. The usage of poetry as inspiration points also helped to create an evidence-based approach that

still held a more oblique and indirect approach to spiritual understanding of architectural form making.

Future expansions of this project could include additional sites on other planets. For example, the creation of a spiritual observatory on Mars could allow for a deeper reflection on the way metaphor can across a distance while also allowing for potential early Martians to feel a sense of place within the cosmos. The project could also develop into smaller temples that could be placed across sites around the world, connecting many across different countries and continents. With further scientific development and technology these two observatories could potentially incorporate more technologically based rituals that allow for a deeper understanding of cosmic place. The conceptual guideposts of the project allow for flexibility in further iteration of the design and the broadening of what spiritual ritual can look like within the modern context.

This project, through its design and integration of spiritual motifs and astronomical science, stands as a testament to the power of architecture in bridging the divide between the individual and the cosmos. The observatories at Pike's Peak and Flam would not only serve as venues for celestial observation but also as sanctuaries where visitors can reflect on their place in the universe. These spaces would encourage a deep, personal connection to the cosmos, moving beyond the confines of traditional scientific observation to touch upon the more existential questions of our existence. By doing so, the project would fulfill a crucial role in modern society, helping individuals break free from the mundane and reconnect with the awe-inspiring complexities of their everyday lives and the universe around them.

The fusion of artistic and scientific perspectives within these observatories illustrates the value of approaches in creating spaces that are not only functional but also transformative. The poetic architecture and narrative depth of the sites enhance the sensory experience of the visitors,

fostering an environment where science and spirituality coalesce to inspire awe and wonder. Projects like this one pave the way for future endeavors where art and science can be integrated to explore and express our celestial connections, making them essential in cultivating a more holistic understanding of our place within the world and the universe.

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