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Phenomenology of Light in Architecture: Experiencing Space Through Luminous Intuition

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Abstract—**This paper explores the phenomenological dimensions of light in architecture, focusing on how light shapes spatial experience, perception, and emotional response. Moving beyond functional and aesthetic considerations, it examines light as a medium through which architecture is felt, embodied, and remembered. Drawing from the philosophical underpinnings of phenomenology, particularly the works of Maurice Merleau-Ponty, and architectural theorists such as Juhani Pallasmaa and Peter Zumthor, the paper presents a theoretical lens on the sensory and atmospheric qualities of light. Through the analysis of seminal architectural works like Tadao Ando's Church of Light, Peter Zumthor's Therme Vals, Fariborz Sahba's Lotus Temple, and Charles Correa's Jawahar Kala Kendra, this study reveals how light fosters intimacy, awe, and memory within architectural spaces. The research contributes to a deeper understanding of architecture not as static form but as a lived, luminous experience.**

Index Terms— **Light in architecture, Phenomenology, Spatial experience, Tadao Ando, Peter Zumthor, Sensory design, Embodied perception**

I. INTRODUCTION

Light has always been integral to architectural experience. From the divine light filtering through Gothic cathedrals to the stark shadows of modernist structures, light has served as both a physical and metaphysical agent in shaping architectural meaning. This paper investigates the phenomenology of light, a framework that considers how individuals perceive and inhabit architectural space through sensory engagement. Rather than merely illuminating form, light constructs emotional and spatial narratives that transcend visual aesthetics.

II. LITERATURE REVIEW

The phenomenological approach to architecture gained prominence in the 20th century through philosophical and architectural discourses. Maurice Merleau-Ponty emphasized the body as the primary site of knowing the world, positing perception as inherently embodied. Juhani Pallasmaa (2005) echoed this in his work The Eyes of the Skin, advocating for a multisensory architectural experience where light participates in shaping the tactile and atmospheric qualities of space. Peter Zumthor, in Atmospheres (2006), discusses how light contributes to the emotive tone of space, influencing memory and feeling. Tadao Ando's works demonstrate a deep understanding of light's ability to sculpt form and evoke the sacred.

Further studies such as Steven Holl's writings on “anchoring” and the sensory poetics of light, and Christian Norberg-Schulz's exploration of “genius loci” deepen the discourse on how light participates in place-making and existential experience. Thomas Schielke's architectural lighting theory (2013) also provides a comprehensive view on the conceptual design of light.

III. THEORETICAL FRAMEWORK

Phenomenology in architecture emphasizes the lived experience of space, focusing on how architectural elements are perceived through the body and senses. Light, in this context, is not just a tool for visibility but a conduit for emotional and psychological resonance. Phenomenological light is characterized by its temporality (changes throughout the day), spatiality (how it defines form and void), and subjectivity (how it is felt).

Merleau-Ponty (1962) argued that perception precedes cognition. Light, therefore, becomes a pre-cognitive phenomenon that embeds itself in memory. As Pallasmaa (2005) notes, "Architectural light is not conceived as illumination or brightness, but as a sensuous material."

IV. CASE STUDY

A. CHURCH OF LIGHT BY TADAO ANDO:

Church of Light by Tadao Ando Located in Ibaraki, a suburb of Osaka, Japan, the Church of Light is a minimalist concrete structure completed in 1989. It comprises three identical concrete volumes intersected by a freestanding wall set at a 15-degree angle, guiding visitors into the space.

The central feature of the church is the cruciform cut into the eastern wall, through which natural light penetrates to dramatically illuminate the interior. This singular beam of light transforms the dark space, creating a profound spiritual and contemplative experience. The concrete surfaces are smooth and bare, allowing the light to animate the architecture through intense contrast. The church's minimal materiality and the deliberate manipulation of light demonstrate Ando's philosophy that "light is the origin of all being."

The freestanding angled wall does not touch the ceiling, heightening the visitor's awareness of spatial orientation and the journey from darkness to light. This spatial choreography, coupled with the silence and emptiness of the space, enhances introspection. The cruciform light is not only a visual experience but also a deeply emotional and existential one.

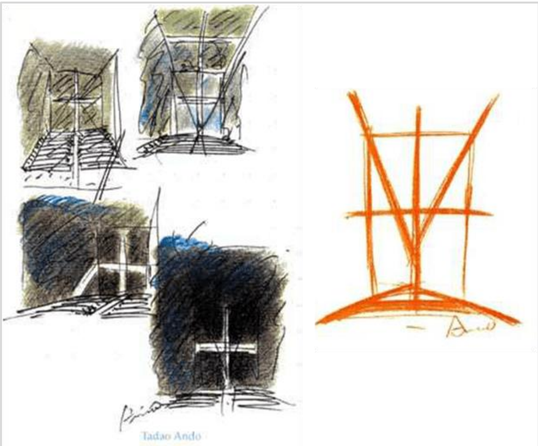
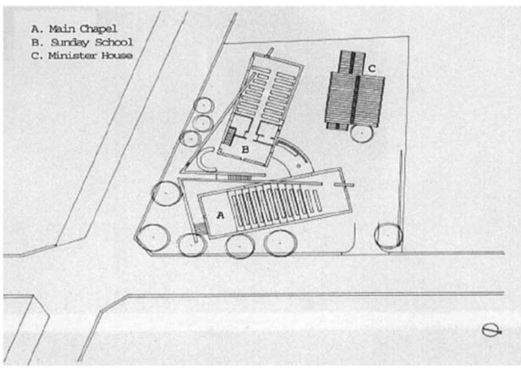


Figure 1. Conceptual section of the Church of Light, illustrating the angular wall and the directional penetration of sunlight, a key architectural element used by Tadao Ando to manipulate space and light. (archestudy, 2021)



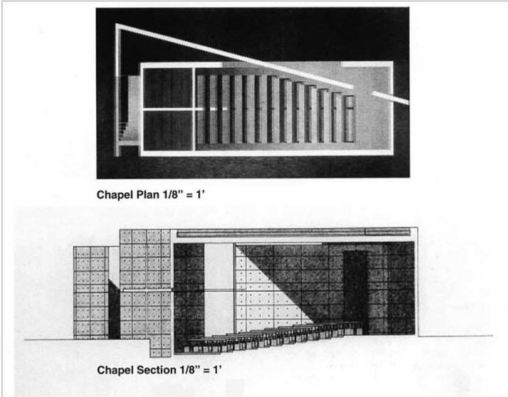


Figure 2. Plan and elevation drawings showing the spatial organization of the Church of Light and the strategic positioning of the cruciform cut-out that defines the structure's visual and symbolic axis. (archestudy, 2021)

Figure 3. Diagrammatic analysis of natural light movement through the cruciform cut-out, demonstrating changing patterns of illumination during different times of the day. (archestudy, 2021)

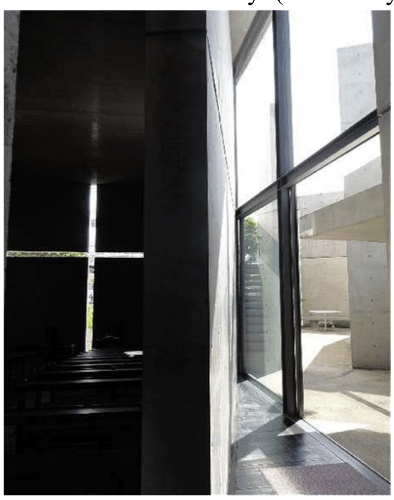


Figure 4. Exterior approach view depicting the slanted concrete wall, separated slightly from the main chapel, reinforcing the sense of spiritual transition before entering the sacred space. (archestudy, 2021)

Figure 5. Interior photograph capturing light as it penetrates the cross-shaped aperture, highlighting the raw texture and craftsmanship of Ando's exposed concrete surfaces. (archestudy, 2021)

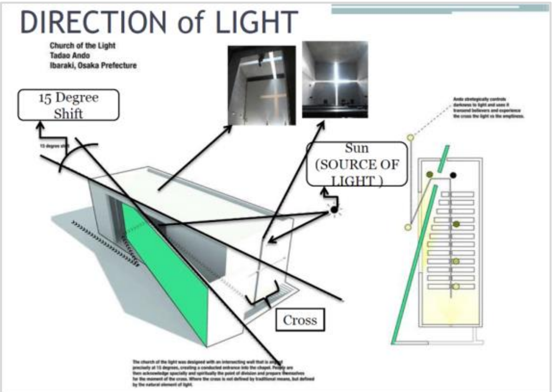


Figure 6. Perspective from the seating area, facing the illuminated cruciform feature, emphasizing Ando's use of minimalism, scale, and emptiness to evoke emotional and spiritual resonance. (archestudy, 2021)

B. THERME VALS BY PETER ZUMTHOR:

Therme Vals by Peter Zumthor At Therme Vals in Switzerland, light seeps through narrow slots and skylights, caressing stone surfaces and diffusing into mist-filled air. Zumthor's design harnesses light to create a sensory journey that blurs boundaries between architecture, body, and landscape. The spatial experience is orchestrated through gradients of brightness and shadow, contributing to a heightened state of awareness and immersion.

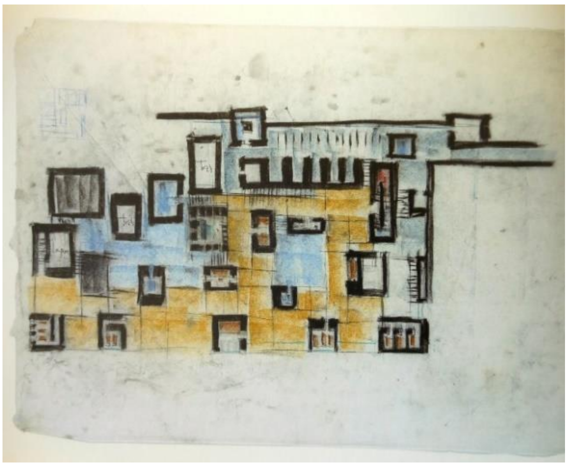


Figure 7: Conceptual color sketch of Therme Vals by Peter Zumthor (tumblr, n.d.)

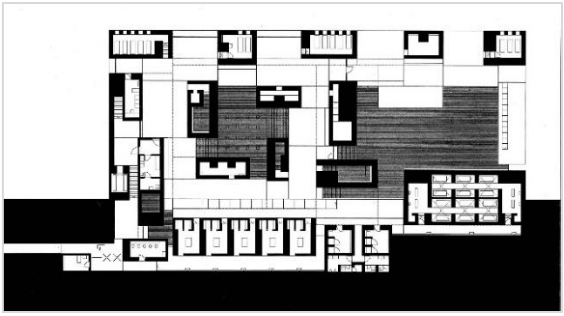


Figure 8: Floor plan sketch illustrating spatial organization (archeyes, 2024)

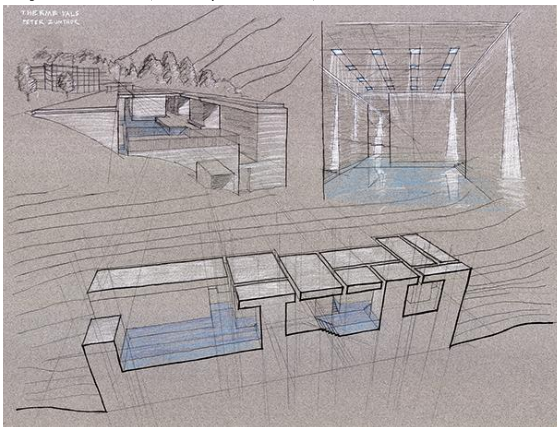


Figure 9: Section showing materiality and light modulation (behance, 2013)

C. LOTUS TEMPLE, NEW DELHI BY FARIBORZ SAHBA:

Lotus Temple, New Delhi by Fariborz Sahba The Lotus Temple, inspired by the symbolic purity of the lotus flower, transcends religious iconography and instead emphasizes the experiential spirituality of light. The nine-sided structure, composed of 27 free-standing marble-clad petals arranged in clusters of three to form nine entrances, leads visitors into a central prayer hall suffused with diffused light.

The design avoids conventional religious symbols, letting light itself become the sacred element. The interplay of white Makrana marble and ambient daylight—filtered through skylights and reflected within the petal interiors—creates a soft, uniform glow. This absence of sharp contrasts supports a meditative atmosphere, aligning with the Bahá'í emphasis on unity, calm, and inward reflection.

Light Analysis:
Here are four interior views of the Lotus Temple that beautifully capture the soft, diffused daylight cascading through the central oculus and petal apertures:
•Central Oculus Illumination: In first image, a bright circular oculus crowns the dome, with gentle shafts of sunlight filtering through, casting a serene glow across prayer hall. Interplay of light and architectural geometry enhances meditative ambiance.
•Petal Aperture Diffusion: The second image highlights how narrow skylights between the marble-clad petals allow daylight to seep in subtly, creating a uniform softness. This prevents harsh shadows and emphasizes the seamless texture of Makrana marble.
•Radiant Glow at Petal Intersections: The third shot, taken from directly below the dome, showcases the overlapping ribs of the petals. Sunlight filters through these ribs, producing a peaceful pattern of light that seems to awaken the surfaces of the interior.
•Ambient Upward Light: Lastly, the fourth image focuses on the smooth dome interior, where daylight entering through petal gaps illuminates the curves of the petals. Light gradually diffuses inward, enveloping the space in a calm, even luminescence.

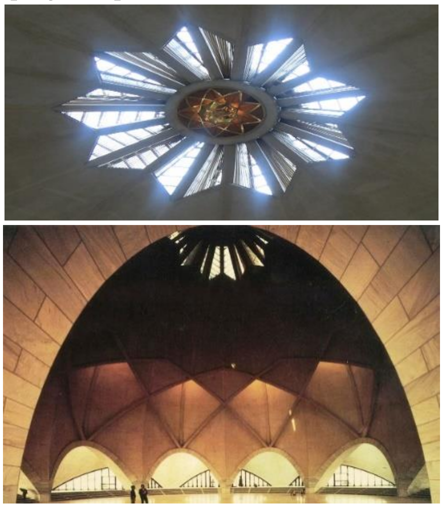


Figure 10: Interior View of the Lotus Temple Showing Diffused Light through Central Oculus and Petal Apertures. (worldarchitecture, 2025) (travelsnwrite, 2022)

D. JAWAHAR KALA KENDRA, JAIPUR BY CHARLES CORREA:

Jawahar Kala Kendra, Jaipur by Charles Correa Built in 1991 by Charles Correa, the Jawahar Kala Kendra (JKK) is a cultural center that draws upon the Navagraha Mandala, ancient Hindu cosmic diagram. The building plan consists of nine squares (one of which is left open to the sky), creating an experiential sequence of light and space. Each square or "house" features distinct light strategies—from deeply recessed windows to skylights and courtyards—that modulate daylight in symbolic and sensory ways. Correa uses light not just to illuminate but to evoke mood and memory, guiding users on a journey through time, myth, and geometry. Materials such as red sandstone and plaster respond dynamically to Rajasthan's harsh sunlight, with shadows amplifying the tactile richness of surfaces. Use of colored light filters in some galleries heightens sensory engagement, aligning with Correa's vision of architecture as both narrative and experience.

Figure 11: Painted dome with central oculus – Natural light enters through the oculus, gently illuminating the richly colored murals and creating a sacred, celestial ambiance. (architectuul, 2020)

Figure 12: Pergola-filtered daylight – A slatted roof casts intricate shadow patterns that shift throughout the day, animating the smooth red-sandstone walls and evoking the solar symbolism of the Navagraha mandala (Architecture of Charles Correa, 2008)

Figure 13: Transitional gallery with aperture and reflection – Daylight subtly filters through high wall openings, softly washing the plastered interior and guiding movement through spiritual sequence. (charlescorreafoundation, 2022)

Figure 14: Courtyard light interplay – Light dances across walls and floors, accentuating material textures and connecting the visitor to the symbolic geometry of each Navagraha block. (charlescorreafoundation, 2022)

V. DISCUSSION

These case studies demonstrate that light, when used phenomenologically, transcends style and function. It creates atmospheres that invite introspection, comfort, and sometimes awe. Light personalizes architecture, allowing each inhabitant to experience it differently based on time, emotion, and memory. The phenomenological approach thus aligns architecture with human experience rather than abstract ideals.

Comparative Analysis of Case Studies

Criteria	Church of Light (Ando)	Therme Vals (Zumthor)	Lotus Temple (Sahba)	Jawahar Kala Kendra (Correa)
Architectural Intent	Spiritual, symbolic, meditative	Sensory immersion, material atmosphere	Spiritual unity, icon-free sacred space	Cultural narrative, cosmic symbolism
Use of Light	Dramatic, singular beam through cruciform	Diffused, ambient through slits and openings	Diffused light from petals and central oculus	Varied skylights, deep recesses, colored light
Material Interaction	Light defines rough concrete surfaces	Light caresses stone, interacts with mist and texture	White marble reflecting light softly	Red sandstone absorbing and shaping shadows
Phenomenological Impact	Evokes awe, silence, inner reflection	Encourages tactile engagement and deep immersion	Evokes stillness, openness, meditative calm	Triggers memory and spatial discovery
Symbolism	Cross-shaped light = Christian symbolism	Light = emotional and sensory connector	Light = divine presence, inclusive spirituality	Light = temporal journey, mythological symbolism
Light Behavior Over Time	Static composition, strong contrasts	Dynamic diffusion changes with	Constant diffused glow, soft	Complex and dynamic, responsive to

		day and weather	shadows	sun's angle

VI. CONCLUSION

Light in architecture is not merely a tool for visibility or aesthetics; it is an existential medium. Through a phenomenological lens, we understand that light constructs meaning, memory, and mood within built environments. Architects who engage with light as an experiential substance—like Ando and Zumthor—create spaces that are not just seen but lived. As we move toward more human-centered and sustainable design paradigms, this understanding of light becomes ever more vital.

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