

Exploring Human Perception in Sacred Spaces: A Case Study of Le Corbusier's Chapel of Notre-Dame-du-Haut in Ronchamp

Fatemeh Monzavi ^{1*} 

¹ Department of Interior Architecture, Near East University, Near East Boulevard, 99138, Nicosia, via Mersin 10, Turkey.

* Correspondence: fabahar.monzavi@gmail.com

Abstract: This study investigates the transformative role of daylight in shaping human perception and enhancing well-being within sacred architectural spaces, focusing on Le Corbusier's Chapel of Notre-Dame-du-Haut in Ronchamp. The research goes beyond conventional lighting paradigms to explore how the dynamic interplay of natural light and architectural form creates profound sensory and spiritual experiences. Employing a phenomenological methodology, the study integrates observational analysis and visual documentation to examine light's emotional and introspective effects in sacred contexts. The findings underscore daylight's capacity to serve dual roles: as an aesthetic feature that enhances the architectural composition and as a medium that fosters psychological comfort and spiritual engagement. By revealing the nuanced interplay between light and architectural form, the research provides valuable insights into designing environments prioritizing human-centered experiences. This work contributes to the discourse on architecture's potential to influence emotional and spiritual well-being, highlighting the need for innovative approaches in sacred space design. By emphasizing human comfort and the symbolic power of natural light, it offers guidance for creating contemplative environments that inspire connection and introspection. It extends its relevance to broader architectural practices that foster well-being in built spaces.

Keywords: Sacred spaces, Daylight, Sensory experience, Phenomenological analysis, Well-being.

1. Introduction

Architecture significantly shapes emotional and psychological well-being, particularly within spaces intended for spirituality and contemplation. In sacred architecture, design elements such as light, form, and spatial arrangements transcend mere aesthetics to function as tools that evoke profound emotional and spiritual responses. Le Corbusier's Chapel of Notre-Dame-du-Haut exemplifies this approach, blending modernist principles with symbolic and sensory features that enhance spiritual engagement.

This study examines the influence of daylight on human perception within sacred spaces, offering critical insights into how architectural design fosters introspection and spiritual connection.

While light is widely acknowledged as a fundamental element in the design of sacred architecture, the precise nature of its influence on sensory perception, emotional response, and overall well-being has not been thoroughly explored. Despite its recognized importance, much of the existing research tends to focus on light as a mere aesthetic feature, overlooking its deeper, more nuanced impact on human experience, particularly in

Received: 02 October 2024

Revised: 22 November 2024

Accepted: 27 November 2024

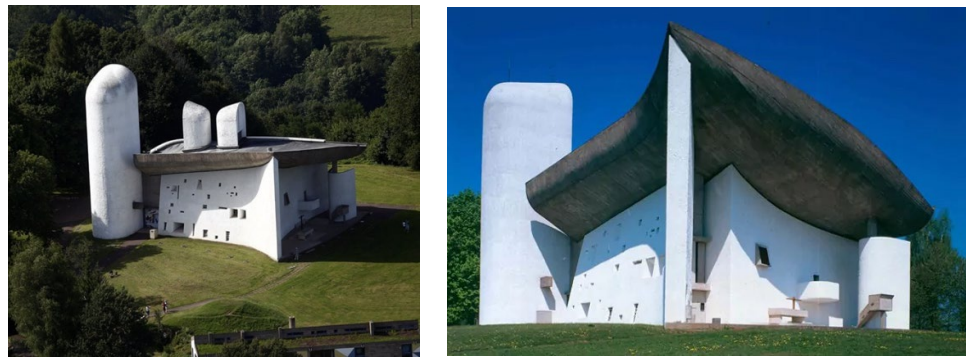
Published: 30 November 2024



Copyright: © 2024 by the authors.

This article is an open-access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

the sacred context. In particular, the intricate relationship between architectural form, natural light, and human perception remains insufficiently examined. Sacred spaces, by their very nature, are designed to evoke a connection to the divine, create moments of reflection, and inspire emotional responses in their visitors. However, little is understood about how architectural design—especially the role of light—contributes to these deeply human experiences. This study seeks to address this gap by investigating the ways in which Le Corbusier's Chapel of Notre-Dame-du-Haut integrates natural light with its architectural form to generate a profound sensory and spiritual atmosphere. By focusing on human perception and emotional resonance, the research aims to offer a deeper understanding of the pivotal role light plays in shaping the way individuals engage with sacred spaces. The interplay between light, space, and the human experience within the chapel exemplifies how light, when used thoughtfully and intentionally, can contribute to a heightened sense of introspection, spirituality, and psychological comfort (Figs. 1-2).



Figures 1 & 2: Site, looking south exterior of Le Corbusier's Chapel of Notre-Dame-du-Haut, photo: Anna Winston, 24 July 2016 [1]

The study explores several dimensions of this relationship, particularly focusing on how the design of lighting in sacred spaces influences emotional and sensory experiences. It aims to examine which architectural elements, such as the strategic placement of windows, the use of materials, and the overall spatial arrangement, contribute most significantly to enhancing the well-being of individuals within these spaces. Furthermore, the research will consider how light, through its modulation and interaction with architectural features, can intensify spiritual and sensory engagement, creating an environment where the divine and the sensory merge to evoke a deeper sense of reverence and personal connection. This approach will provide insights into the profound effect that light can have on sacred architecture, offering valuable lessons for future designs that aim to foster reflection, healing, and a sense of peace.

2. Theoretical Framework and Contextual Exploration

The integration of daylight within sacred architectural spaces plays a critical role in human-centered design, impacting emotional and spiritual well-being. Architecture, particularly in sacred settings, transcends mere functionality by evoking deep sensory, psychological, and spiritual responses. Sacred spaces utilize architectural elements such as light, form, and spatial arrangement to inspire reflection, tranquility, and a connection to the divine. Le Corbusier's Chapel of Notre-Dame-du-Haut exemplifies this principle, where the interplay of natural light and architectural form fosters an immersive sensory and spiritual experience.

2.1 Role of Light in Sacred Spaces

In sacred architecture, light is not only an aesthetic element but also a profound symbolic and emotional medium. As Abdelhamid (2020) observes, light plays a phenomenological role in creating dynamic sensory experiences that resonate deeply with visitors, enriching their spiritual engagement [2]. For instance, the manipulation of natural light within mosques, as highlighted in *The Phenomenology of Light in Mosques*, emphasizes light's ability to craft an atmosphere that transcends the physical realm, fostering spiritual experiences [3]. This insight resonates with Le Corbusier's approach, where light is a key component in the sensory and spiritual design of the chapel. Similarly, Shah (2009) explores how light in sacred interiors deepens introspection and fosters a sense of connection with higher realms [4]. The chapel's design exemplifies this by using natural light to amplify the emotional and contemplative journey of its visitors.

Natural light, in line with biophilic design principles, is also a vital component in promoting psychological and physical well-being. Ulrich (2022) highlights the connection between daylight and improved mental health, revealing how exposure to natural light enhances mood and cognitive function [5, 6]. This concept is echoed in Bayatmaku's (2022) work, which emphasizes how integrating biophilic elements such as light into architectural environments enriches human well-being [7]. Le Corbusier's Chapel of Notre-Dame-du-Haut demonstrates these principles, where daylight serves dual roles—enhancing the aesthetic and sensory qualities of the space while simultaneously fostering a deeper emotional and spiritual connection.

2.2 Sensory and Phenomenological Perspectives

The phenomenological approach offers a useful framework for understanding the transformative effect of light in sacred spaces. Stone (2011) and Kilrea (2013) investigate how intentional lighting strategies influence the lived experiences of individuals in such spaces [8, 9]. Stone's phenomenological inquiry emphasizes how light shapes mood, perception, and spatial engagement, while Kilrea's study examines how light contributes to spiritual enlightenment and sensory awareness [8]. Both perspectives align with the design of Le Corbusier's chapel, where light is not only an aesthetic element but a tool for guiding visitors through a profound sensory experience. Furthermore, Michailidou (2017) explores how spatial qualities like light, color, and materiality create environments conducive to relaxation and introspection [10]. Parthasarathy (2009) adds that the interplay of light, color, and material can enhance healing and psychological comfort [11]. These findings underscore how Le Corbusier's minimalist approach to materiality and form heightens the symbolic and sensory impact of daylight, contributing to the chapel's transcendent experience.

2.3 Light as a Tool for Emotional and Spiritual Connection

The symbolic significance of light in sacred spaces is profound, with its ability to evoke emotional and spiritual responses. Glanville (2005) emphasizes how the integration of architecture, culture, and nature fosters spiritual well-being, with light playing a crucial role in this process [12]. McClarty (2021) extends this by examining how light, when connected with nature, can inspire tranquility and spiritual unity [13]. Le Corbusier's Chapel demonstrates this by incorporating carefully designed apertures and textured surfaces that amplify the transformative effects of light. Thompson, (2021) further explores the role of light in enhancing bodily and sensory experiences in mosques, underscoring how light fosters a sense of connection to the sacred [14]. This idea resonates with Monzavi's (2020) exploration of meditation interiors, where spatial arrangements prioritize well-being and spiritual connection [15]. Monzavi's (2020) exploration of meditation interiors highlights the importance of designing spaces that prioritize well-being and spiritual connection. By carefully considering elements such as light, materials, and spatial

arrangement, these environments are crafted to foster introspection, tranquility, and a deeper connection to the self or the divine [15]. This idea aligns with Le Corbusier's design of the Chapel of Notre-Dame-du-Haut, where the integration of light and spatial configuration similarly guides visitors toward spiritual engagement and introspective experiences, demonstrating how thoughtful architectural design can enhance emotional and spiritual well-being. Le Corbusier's design, which directs light to specific areas of the chapel, guides the visitor's movement and engagement, embodying Fairbanks' (2008) concept of integrating psychological, social, and spiritual dimensions into design [16].

2.4 Contributions of Daylight to Well-Being

Daylight's influence on well-being extends beyond the sacred realm to broader architectural practices. Foster (2012) examines how built environments contribute to therapeutic experiences, with light serving as a key element in promoting emotional healing and relaxation [17]. These studies highlight the importance of incorporating natural light into architectural design to create spaces that nurture holistic health. Côté (2014) further discusses how the interplay of light and shadow in architectural spaces impacts human well-being, a principle evident in the chapel's dynamic visual narrative [18]. Le Corbusier's careful orchestration of light and shadow fosters a unique atmosphere that promotes both emotional and spiritual reflection.

2.5 Exploring the Sensory and Spiritual Impact of Light in Le Corbusier's Chapel

Le Corbusier's Chapel of Notre-Dame-du-Haut is a prime example of how architectural design can shape sensory and spiritual experiences through light. The chapel's use of light moves beyond traditional architectural forms, employing irregular and sculptural elements that invite contemplation. As noted in *The Phenomenology of Light in Mosques*, the manipulation of natural light fosters an atmosphere that enhances spiritual connection [2]. Le Corbusier's design deviates from symmetry, embracing asymmetry to create tension and release within the space, which encourages introspection and emotional engagement [19].

The strategic placement of windows further amplifies the dynamic role of light. The Chapel's south facade, bathed in soft natural light, offers a serene atmosphere conducive to contemplation. In contrast, the southeast facade, with its "starry wall" effect, evokes a sense of wonder and spiritual connection to nature. The chapel's east facade directs a concentrated stream of morning light onto the Virgin Mary, emphasizing its spiritual significance and enhancing the visitor's sense of awe. The west-north facade, without direct light, uses reflected light to create a meditative environment, highlighting Le Corbusier's nuanced understanding of light's emotional and spiritual impact. Each of these design elements contributes to a carefully orchestrated sensory journey, where light and architecture guide the visitor through moments of reflection and spiritual engagement. This dynamic relationship between light and space is central to the chapel's success in fostering profound emotional and spiritual experiences.

In conclusion, the integration of daylight within sacred architectural spaces, as demonstrated by Le Corbusier's Chapel of Notre-Dame-du-Haut, plays a crucial role in shaping human perception, emotional engagement, and spiritual connection. Drawing from phenomenological, biophilic, and sensory design theories, this review demonstrates how Le Corbusier's innovative use of light transcends aesthetic purposes to evoke a profound spiritual experience. By understanding the interplay of light and form, architects can create environments that promote well-being, inspire introspection, and foster a deeper connection to the sacred.

3. Methodology

This study employs a phenomenological, mixed-method qualitative approach to explore the experiential qualities of Le Corbusier's chapel. The research integrates observational

analysis and visual documentation to capture the impact of light on human perception and emotional response within a sacred architectural context.

A phenomenological framework grounded in phenomenological principles [4, 9, 20], this approach focuses on the subjective experiences of individuals within sacred spaces. By framing architecture as a “lived experience,” the study examines how design elements, particularly light and spatial form, evoke sensory engagement and foster emotional and spiritual resonance. Furthermore, observational analysis serves to document and interpret visitor interactions with the chapel’s lighting and spatial design. This method provides empirical insight into how variations in lighting influence human behavior, mood, and engagement within the space. As Suleman (2021) suggests, observing light interactions within different forms and areas of the chapel across various times and seasons adds depth to understanding the intentional role of light in Le Corbusier’s design [21]. These observations contribute to a broader phenomenological perspective by situating the chapel’s design within the embodied experience of its visitors.

In addition, visual documentation, including site photographs, sketches, and architectural layouts, supports the analysis of light’s role in shaping the chapel’s sensory experience (Figs. 3& 4). This method, as noted by Groat and Wang (2013), enables a detailed exploration of how the interplay of light, form, and color enhances the spiritual and sensory aspects of the space [22]. Visual documentation also aids in examining the way natural light highlights certain architectural features, guiding the observer’s perception and creating moments of introspection. The combination of observational insights and visual documentation offers a holistic view of the chapel’s experiential qualities, revealing how Le Corbusier’s use of light fosters sensory depth and emotional resonance within a sacred architectural environment (Figs. 3-6).



Figures 3& 4: Chapel interior wall, colored glass windows, photo by N, Maher 2017, showing daylight enters the space and interacts with architectural elements [23]



Figure 5: the color of light, close up, photo by N, Maher 2017 [1]



Figure 6: painted glass detail, close up, photo by N, Maher 2017 [1]

4. Analysis of the Chapel of Notre-Dame-du-Haut: A Phenomenological Perspective

The analysis of Le Corbusier's Chapel of Notre-Dame-du-Haut explores how architectural design, particularly the use of natural light, shapes sensory experience and emotional engagement within a sacred context. Using a phenomenological framework, this study captures the "lived experience" of visitors as they interact with the chapel's spaces, guided by the dynamic qualities of light and form. The analysis is grounded in observational insights and visual documentation, providing a comprehensive understanding of how the chapel's design resonates with visitors on sensory, emotional, and spiritual levels.

4.1 Phenomenological Experience of Light

At the heart of the chapel's design is Le Corbusier's intentional use of light as both a material and a symbolic element. Light transcends its functional purpose, acting as a medium that creates a rhythm within the space, shifting throughout the day and transforming visitors' experiences. Observational data reveal that visitors often respond to these changes in light, which evoke moments of profound introspection. As light enters the space through asymmetrical openings and uniquely angled windows, it interacts with the thick concrete walls, casting shadows and accentuating textures that evoke a sense of enclosure and calm. Through a phenomenological lens, these effects allow visitors to experience the chapel as a dynamic space, with light serving as a bridge between the physical and the spiritual. The evolving patterns of light and shadow throughout the day create a visual narrative that invites reflection, embodying Moustakas' (1994) concept of architecture as a "lived experience" [20]. This rhythm, imbued with symbolic resonance, encourages visitors to engage with the space not only visually but also emotionally and spiritually (Figs. 7-8).



Figures 7 & 8: Wide angles of the Chapel, showing light beams entering through the asymmetrical windows, photo: Anna Winston, 24 July 2016 [24]

4.2 Observational Insights

Observational analysis highlights that visitors are naturally drawn to areas where light is most pronounced. These illuminated zones serve as focal points within the chapel, subtly guiding movement and engagement. Observers noted that visitors often pause and linger near the distinctive apertures where light enters in irregular yet captivating patterns. This

behavior supports the idea that light functions as an organizing element within the chapel, shaping how people interact with the space. As Sia and Suleman (2021) discuss, light in sacred architecture has the potential to evoke tranquility and introspection—qualities vividly evident in the chapel’s design [25]. Dimly lit areas foster quiet contemplation, while brighter areas often evoke a sense of openness and connection. These nuanced interactions with light confirm the phenomenological approach, situating the chapel’s design within the embodied experiences of its visitors (Figs. 9-10).



Figures 9 & 10: Visitors and users interact with light-filled spaces, photo: Anna Winston, 24 July 2016 [24]

4.3 Visual and Spatial Dynamics

Visual documentation, including photographs, sketches, and architectural layouts, provides deeper insights into light’s role in shaping sensory experiences within the chapel. The interplay between light, color, and form is evident in the thick concrete walls, textured surfaces, and irregularly shaped windows. These elements work together to amplify the contrast between light and shadow, creating an immersive sensory experience. The minimalistic interior allows light to dominate as a visual feature, directing attention to the subtleties of natural illumination. Le Corbusier’s muted color palette enhances this effect, as the light takes on different hues depending on the time of day, transforming the interior ambiance. This aligns with Groat and Wang’s (2013), assertion that visual documentation reveals the nuanced interplay of architectural elements and their collective emotional impact [22] (Figs. 11-12).

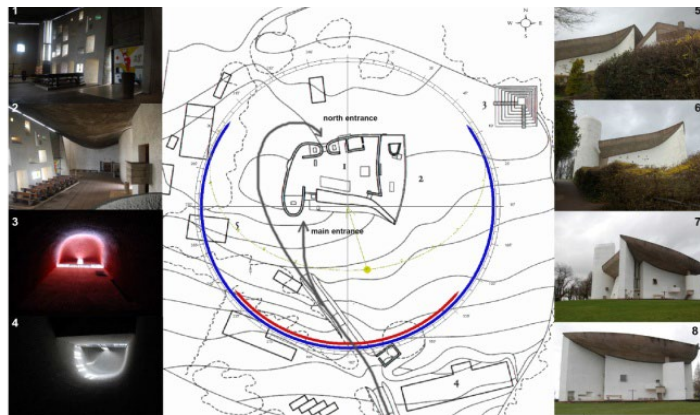


Figure 11: demonstrating the temporal evolution of light within the space, from Kaimakliotis, 2008 [24]

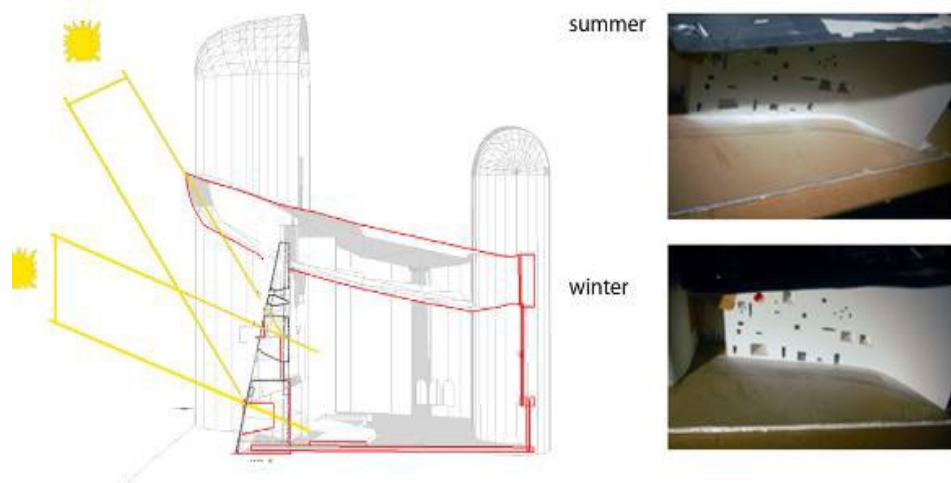


Figure 12: Section through south wall, images from physical model showing how roof works in winter and blocks the sun in summer—from kaimakliotis, 2008 [24]





The light within the chapel serves as a medium for emotional and spiritual connection. By directing light to specific areas, Le Corbusier creates an environment where light assumes a symbolic dimension, suggesting a divine presence. Observational notes reveal that visitors frequently experience moments of quiet reflection in response to the interplay of light and shadow, fostering an emotional bond with the space. These moments resonate with the spiritual nature of the chapel, emphasizing the transformative potential of light in sacred architecture. By enhancing sensory awareness and fostering introspection, the chapel's design aligns with biophilic principles that advocate for the use of natural elements to promote mental and emotional well-being. This analysis contributes to a broader understanding of architecture's role in fostering spiritual engagement and emotional resonance (Figs 13-15).



Figures 13-15: To illustrate the symbolic and sensory impact of light with irregular windows, from Kaimakliotis, 2008 [24]

In summary, the experiential qualities of Le Corbusier's Chapel of Notre-Dame-du-Haut are profoundly shaped by the interplay of light, form, and spatial arrangement. Through observational analysis and visual documentation, this study demonstrates how light transforms the chapel into a dynamic and contemplative space. The phenomenological framework reveals that light serves as both a sensory and symbolic medium, inviting visitors to explore the chapel as a space for spiritual reflection. By emphasizing the role of natural light in fostering emotional and spiritual engagement, this analysis offers valuable insights for future designs of sacred and reflective spaces. It underscores how architecture can transcend functionality to become a medium for introspection and connection.


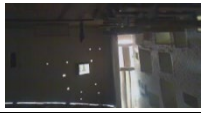


Table 1: Shows façades, their characteristics, and how light affects them.

Façade Walls	Characteristics	Light Effects
South Façade 	The first wall to be seen with light, a horizontal glimmer of light between the roof and the east wall Many sprinkled holes, diffuse lighting, in winter full coverage of the sun	Creative & dynamic atmosphere, peaceful feeling of heaven
South East Façade 	Stream of light, glimpse of daylight	Starry wall
East Façade 	Glaring morning light on the Virgin Mary deliberately	Managing of lighting
West North Façade 	The only blind facade	Using the reflecting light of other walls opening

According to Table 1, Le Corbusier's Chapel of Notre-Dame-du-Haut masterfully integrates architecture and light, with each façade playing a distinct role in shaping the spiritual and emotional atmosphere of the space. The south façade, bathed in natural light, creates a serene, welcoming ambiance that invites contemplation. The southeast façade, with its "starry wall" effect, maintains a connection with nature while enhancing the sacred experience. The east façade directs intense morning light onto the Virgin Mary, emphasizing its spiritual significance and evoking awe. In contrast, the west-north façade, blind to direct light, serves as a reflective surface, generating a meditative, introspective atmosphere. Together, these façades use light to deepen the visitor's emotional and spiritual connection to the space.

The table illustrates how Le Corbusier's use of façade walls and light effects plays a critical role in shaping the sensory and spiritual experience within the Chapel of Notre-Dame-du-Haut. The design of each façade wall, from the welcoming glow of the south to the contemplative darkness of the west-north, enhances the sacredness of the space. The strategic manipulation of light not only defines the chapel's aesthetic but also deepens the emotional and spiritual connection that visitors experience. Through these architectural elements, Le Corbusier successfully integrates the natural environment with the sacred, fostering a space where light, form, and perception converge to create a profound atmosphere of reverence (Table 1).

Table 2: Indicates interior walls, furnishings, and light effects on them.

Interior Walls & Furnishing	Furnishing & floor	Light Effects
South Wall 	Penetrating light through the small opening of colored glasses, directing light with thickness, countless sparkling luminous figures, interpretation of nature, penetrable wall interior	Creative & dynamic atmosphere, peaceful feeling of heaven
East wall 	Small windows from inside look like stars	Shiny starry wall
Chapel's wall 	Indirect wall, curved walls, provides highness, elevation & sublimity atmosphere	Managing lighting via form and thickness of walls
Furnishing & floor 	Light emphasized by their simplicity and austerity in them	Using reflecting light of all the walls on furniture to be visible

Concerning Table 2, the interior design of Le Corbusier’s Chapel of Notre-Dame-du-Haut emphasizes the interplay between light, architectural elements, and furnishings to create a spiritually immersive experience. The south wall’s colored glass openings cast radiant, dynamic light that evokes a sense of nature and serenity. The east wall’s small windows create a subtle "starry" effect, enhancing the chapel’s meditative atmosphere. Curved walls manage light indirectly, elevating the space and reinforcing a sense of awe. Simple furnishings and flooring amplify the light, ensuring it remains the focal point, thus fostering a harmonious environment that deepens the spiritual experience.

The interplay between the interior walls, furnishings, and light in Le Corbusier’s Chapel of Notre-Dame-du-Haut contributes significantly to the atmosphere of reverence and transcendence within the space. The south wall's radiant, penetrating light evokes a connection to nature, while the east wall's starry effect fosters a peaceful, meditative ambiance. The chapel’s curved walls, managing light through form and thickness, heighten the sense of elevation and sublimity, enhancing the sacred atmosphere. The simplicity of the furnishings ensures that the light remains the focal point, creating a harmonious environment where light, form, and texture work together to evoke a profound spiritual experience (Table 1).

Table 3: Characteristics of important elements of the chapel

Elements	Characteristics of Chapel
Roof	Like a crab’s shell, blocking summer sun, controlling the luminous interior
Walls	Stability & stress, anxiety & peace
Forms	Continues elements
Figures	Dynamic & tranquil
Direct & Indirect Light	Mysterious & glowing, sometimes variable sometimes not
Chapels	Extraverted & introverted, light machines & solar clocks, register the sun's movement, outside devices mirrored inside, avoided glare with culottes, doors, splayed apertures

In accordance with Table 3, Le Corbusier's Chapel of Notre-Dame-du-Haut masterfully blends contrasting architectural elements, creating a dynamic and emotionally charged atmosphere. The roof, designed like a crab's shell, shields the interior from intense sunlight while allowing for a balanced interaction with light. The walls evoke both stability and stress, generating a complex emotional response that reinforces the chapel's sacred nature. Continuous forms within the space create fluidity and movement, contrasting with traditional rigid designs. Figures within the chapel balance dynamism and tranquility, enhancing the spiritual ambiance. The interplay of direct and indirect light adds a mysterious, ever-changing glow, while the chapel's structure functions as a "light machine" and solar clock, mirroring the outside world inside and fostering a deep connection to nature. Strategic design elements, such as calottes and splayed apertures, control glare, ensuring a harmonious lighting environment.

The contrasting characteristics of the Chapel of Notre-Dame-du-Haut reflect Le Corbusier's innovative approach to architecture, where opposing elements are balanced to create a dynamic and sacred space. The roof and walls manipulate light and create emotional tension between stability and movement. The forms and figures enhance the sense of fluidity and calm, while the interplay of direct and indirect light generates an ever-changing, mysterious atmosphere. The chapel's extraverted and introverted qualities, embodied in the light machine and solar clock, reinforce the connection between the sacred space and the natural world, enhancing the spiritual experience of visitors (Table 3).

To sum up, the Chapel of Notre-Dame-du-Haut exemplifies Le Corbusier's innovative approach to architecture, where each element—from the façades to the interior walls and furnishings—works in harmony with light to create a spiritually and emotionally enriching space. The design of the façades, with their interplay of light and shadow, establishes distinct atmospheres: from the welcoming and serene south façade to the contemplative, reflective west-north façade. Inside, the light-filtering elements of the walls and furnishings, such as the colored glass of the south wall and the "starry" effect of the east wall, further deepen the sacred ambiance, fostering a sense of nature and tranquility. The contrast between architectural elements—such as the stability and stress of the walls, the dynamic yet tranquil figures, and the fluidity of the forms—enhances the chapel's spiritual significance, creating a space where light and form come together to evoke awe and reverence. The strategic use of direct and indirect light, alongside the manipulation of architectural forms like the roof and curved walls, not only shapes the physical space but also imbues it with a profound, ever-changing light that reflects the passage of time and connects visitors with the natural world. Through these thoughtful contrasts, Le Corbusier successfully merges architecture with spirituality, crafting an environment where light, form, and perception converge to create a deeply moving experience.

5. Findings

This study of human perception in sacred spaces, with a focus on Le Corbusier's Chapel of Notre-Dame-du-Haut in Ronchamp, illustrates how architectural design significantly influences emotional and spiritual experiences. The chapel's distinctive form, characterized by irregular geometry, dynamic interplay of light and shadow, and seamless integration with the surrounding landscape, demonstrates how architectural elements can stimulate sensory engagement and evoke a heightened emotional response. The careful manipulation of light, materiality, and spatial arrangement alters human perception, inviting reflection and creating an environment that goes beyond the conventional role of a religious structure.

A critical finding is the role of irregularity in sacred architecture. In contrast to traditional religious spaces that emphasize symmetry and order, the Chapel of Ronchamp employs asymmetrical, sculptural forms that disrupt conventional expectations. These deviations from uniformity induce a sense of tension and release, leading to intensified awareness and contemplation. The chapel's distinctive design, in which light enters through strategically

positioned windows, accentuates the spatial experience, guiding visitors through a journey of emotional and spiritual reflection. The architecture thus fosters a direct, experiential understanding of the sacred, moving beyond symbolic representation to an active, sensory engagement with the space.

Furthermore, the chapel's spatial boundaries play a significant role in shaping human perception. The integration of interior and exterior spaces blurs the traditional divisions between sacred and secular, enhancing the immersive quality of the space. Visitors experience the building not as a contained, isolated entity, but as an extension of the natural world, where the sacred is not confined to the interior, but resonates through the broader context of the environment. The chapel's relationship with its surroundings thus supports a unique form of spiritual engagement, where the perception of the divine is felt not only within the building but also in its interaction with the landscape. This seamless integration of architecture, nature, and light elevates the spatial experience, creating a profound connection between the individual and the sacred.

6. Conclusion

Le Corbusier's Chapel of Notre-Dame-du-Haut exemplifies the potential of architecture to shape and elevate human perception of sacredness. Through its non-traditional forms, strategic use of light, and fluid integration with nature, the chapel defies conventional notions of sacred space, proposing a new language for spiritual experience in the modern age. By focusing on the sensory and emotional impact of architectural elements, Ronchamp challenges us to reconsider how space can transcend its physical boundaries and influence the perception of the divine. It becomes clear that sacred architecture, at its most effective, is not just a container for rituals, but a transformative environment that fosters a deeper connection between the individual and the metaphysical world.

In the context of modern architectural design, Ronchamp remains a groundbreaking example of how human perception can be sculpted and refined through spatial interventions. This exploration underscores the need for architects to think beyond functionalism and symbolism, embracing a more holistic approach to the creation of spaces that are capable of influencing emotional and spiritual experiences in profound ways. Through its innovative design, the Chapel of Notre-Dame-du-Haut invites us to explore the intangible relationship between space, light, and human consciousness—an experience that continues to inspire and challenge architectural paradigms to this day. In the words of Le Corbusier himself, "Architecture is the masterly, correct, and magnificent play of masses brought together in light" [26]. The Chapel of Notre-Dame-du-Haut stands as a testament to this philosophy, where light, form, and space converge to create an experience that transcends architecture itself, leaving an indelible mark on the soul.

References

- [1] Lo, M. Y. (2020). *Within and Without: Redefining Boundaries by Acknowledging the Liminal* (MSc thesis, Pratt Institute, New York, USA).
- [2] Abdelhamid, I. (2020). The phenomenology of light in mosques. *International Journal of Architectural Research*, 14(3), 323–334.
- [3] Gifford, R. (2013). *Environmental Psychology: Principles and Practice*. (5th ed.). Optimal Books.
- [4] Shah, R. (2009). Contemplative experiences in sacred interiors: A phenomenological study. *Journal of Architectural and Planning Research*, 26(2), 152–169.
- [5] Ulrich, R. (2022). The connection between daylight and enhanced mental health. *Journal of Environmental Psychology*, 42, 89-101.

- [6] Ulrich, R., Wang, D., & Xiao, Y. (2022). Biophilia and Mental Health: A Review of Architectural Interventions in Sacred Spaces. *Health and Place*, 65, 102418.
- [7] Bayatmaku, S. (2022). Biophilic design efficiency on human well-being in daily life with an atmospheric approach. Retrieved from <http://polen.itu.edu.tr>
- [8] Stone, E. (2011). A phenomenological investigation of lighting. *International Journal of Qualitative Studies in Education*, 24(4), 457–471.
- [9] Kilrea, A. (2013). Light and spiritual enlightenment: A phenomenological exploration of lighting in contemplative spaces. *Journal of Interior Design*, 38(2), 47–61.
- [10] Michailidou, A. (2017). Sensory qualities in space design: Focusing on relaxation and internal balance. (MSc thesis, International Hellenic University, Thessaloniki, Greece). Retrieved from <http://repository.ihu.edu.gr>
- [11] Parthasarathy, D. P. (2009). The intangible aspects of architectural spaces that influence human well-being. *Citeseer*.
- [12] Glanville, P. (2005). *The effect of the interaction of architecture, culture, and nature on well-being and spirituality*. (Doctoral thesis, University of Calgary, Calgary, Canada). Retrieved from <https://prism.ucalgary.ca>. doi:10.11575/PRISM/11653
- [13] McClarty, B. A. (2021). *Exploring the essence of a meaningful or spiritual connection to nature: A qualitative study using a phenomenological approach and photo-elicitation techniques*.
- [14] Thompson, G., Truelove, C., & Berry, P. (2021). *Design for Well-being: The Healing Power of Biophilic Architecture*. Springer.
- [15] Monzavi, F. (2020). *Meditation Interiors: Exploring Spatial Qualities for Well-Being and Spirituality* (MSc thesis, Eastern Mediterranean University (EMU), Famagusta, TRNC).
- [16] Fairbanks, M. A. (2008). Spiritual practice and its influence in architecture: The design of a meditation center for Chatsworth. Retrieved from <http://search.proquest.com>
- [17] Foster, I. (2012). Design for wellbeing: Investigating the relationship between built environments and art therapy experiences. Retrieved from <http://scholarworks.umt.edu>
- [18] Côté, O. (2014). The intangible aspects of architectural spaces—light and shadow. *Environmental Science, Sociology*.
- [19] Roberts, C., & Patterson, J. (2024). The Role of Light in Sacred Spaces: Enhancing Emotional and Spiritual Connection. *Journal of Environmental Psychology*, 50, 113-129.
- [20] Moustakas, C. (1994). *Phenomenological Research Methods*. Sage Publications. <https://doi.org/10.4135/9781412995658>
- [21] Suleman, F., & Sia, A. (2021). Natural light as a conduit for contemplation in sacred spaces. *Journal of Sacred Architecture*, 29(3), 65–81.
- [22] Groat, L., & Wang, D. (2013). *Architectural Research Methods*. (2nd ed.). John Wiley & Sons.
- [23] Geva, A. (Ed.). (2018). *Modernism and American Mid-20th Century Sacred Architecture* (1st ed.). Routledge. <https://doi.org/10.4324/9781315161433>
- [24] Kaimakliotis, D., & Lau, B. (2011). The poetics of contemplative light in the Church of Notre-Dame-du-Haut designed by Le Corbusier. In *Proceedings of PLEA 2011: Passive and Low Energy Architecture Conference*. Louvain-la-Neuve, Belgium.

[25] Sia, A., & Suleman, F. (2021). Natural Light as a Conduit for Contemplation in Sacred Spaces. *Journal of Sacred Architecture*, 29(3), 65-81.

[26] Le Corbusier. (1954). *Notre-Dame-du-Haut, Ronchamp: The Chapel at Ronchamp*. Oeuvre Complete (Vol. 4). Ed. Cerf.