

Monochrome Color Strategies in Islamic Architecture: A Practice-led Study of Aesthetic, Spatial, and Perceptual Implications

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Abstract

Background: The use of monochrome color systems is established in the visual arts, but as an analytical and perceptual instrument in the representation of Islamic architecture is understudied. In this paper, we examine the role of monochromatic strategies in spatial perception, visual hierarchy, and aesthetic interpretation of Islamic architectural designs.

Method: The practice-based, studio approach was used and combined with systematic analysis of qualitative data. There were references to Islamic architectural parts, such as geometrical patterns, arches, domes, and others, which were picked and disassembled in an organized way to derive compositional and spatial characteristics. These sources were then remade into monochrome pieces through digital manipulation and analogue rendering. The images were created with the help of artificial intelligence-based image generation with the assistance of Midjourney during the exploratory stage, and the final results were then edited manually.

Results: The visual information obtained was examined through a visual analysis framework developed by Felderman (description, analysis, interpretation, and evaluation), in particular, tonal contrast, interaction of light, and spatial hierarchy. The visual analysis, repeated reflection, and out-of-band critique sessions were the means of triangulation to justify the interpretations.

Conclusion: The findings show that monochrome systems improve the legibility of the perceptions by boosting tonal contrast, which helps to improve the spatial hierarchy and structural understandability. Nevertheless, chromatic information reduces the range of feelings and expressiveness involved in comparison with polychromatic methods.

Keywords: Monochrome Colors; Islamic Architecture; Visual Perception; Aesthetics; Architectural Design; Spatial Perception; Arabic Calligraphy.

1. Introduction

The Islamic architecture has been analyzed extensively as a synthesis of geometry, materiality, light, and spiritual sense, whereby the spatial composition surpasses the functional needs to represent metaphysical and cultural stories. Although the previous literature has focused on ornamental complexity, symmetry, and calligraphic articulation as such to define the Islamic architectural identity, more recent literature has come to challenge the more experiential and perceptual aspects layered into these systems of space. (Abdalla & Yousif, 2026). But even with the richness of the literature concerning geometric and ornamental abundance, the importance of color, and especially in its impoverished or monochromatic manifestation, has been a relatively under-theorized and under-studied area, both systematic and critical.

Islamic architecture has long taken color as an expression and as a symbolic tool, and not as a variable under analysis. The use of color in the past, like the prolific use of blue, turquoise, and gold in tiles, has been generally linked with the symbolic uses of the infinite, divine, and sacred (Ameen & Kasem, 2025; Zhang et al., 2023). However, much of the literature that has been conducted has treated color as a product of stylistic or cultural process instead of the perceptual process that constructively influences spatial cognition and the experience of users. A major limitation since it limits the knowledge on the effects of color in combination with light and materials on human perception in created environments.

In contrast, modern architecture has turned more and more to monochrome strategies as a methodological and aesthetic paradigm in which reduction, continuity, and perceptual clarity have been given precedence. Through

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the limited application of one color and its different hues, monochrome architecture has been linked to minimalistic design thinking, which attempts to focus more on form, structure, and spatial relations as opposed to ornamentation (Pallasmaa, 2024). In this context, the lack of chromatic variety does not signify aesthetic restraint but is more a design approach to enhancing the use of light, shadow, and material texture to create spatial experience. In spite of this change in the conceptualization of the architectural theory, its use in the context of Islamic architecture has never been approached critically or systematically.

Critical analysis of the literature at hand shows that the research on Islamic architecture has been mostly based on morphological, historical, and stylistic analysis, with experimental or perceptual approaches (Ameen & Kasem, 2025). For example, the studies of the development of decorative systems have been generally focused on defining the typological and stylistic shift instead of assessing the effects of these aspects on the perception of space (Baydoun et al., 2024) In the same vein, the study of color utilization has been more inclined towards a historical approach, not empirically validated by an experimental rigor approach in determining perceptual performance. This is one of the major methodological holes in light of the increase in the importance of evidence-based design and human-focused architectural studies (Bakhsh, 2021).

Moreover, the linkage of color and human perception can be viewed through a critical theoretical prism, which is given by environmental psychology (Arora & Warsi, 2024). The factual research has shown that color can affect cognitive processing, emotional reaction, and spatial interpretation, especially in a setting that is aimed at consideration and spiritual interaction (Karakas & Yildiz, 2020). The control of the visual stimuli is of special importance in religious spaces, where tranquility, concentration, and transcendence are the main aims to be achieved, as in the case of mosques. Nevertheless, even with all these findings, there is a gap in the literature focusing on how monochrome color schemes mediated these perceptual and emotional reactions in the Islamic architectural contexts specifically.

The other important dimension is the interplay of light, material, and surface in forming the architectural perception. Historically, light in Islamic architecture has been understood as both a physical and symbolic object, which in many cases can be linked with the divine presence and spiritual lighting (Lee & Kim, 2025). Light can be used in combination with monochrome surfaces and interacts with material textures to create very slight variations of

tone and shadow, increasing the sense of depth in the space and the clarity of perception. New research has also started to recognize the role of light-material interactions in architectural experience, but these studies often fail to control color as a single variable, restricting the possibilities to understand its own contribution to the overall perceptual system (Arzate Quintanilla et al., 2026).

The lack of specific study of monochrome strategies is indicative of the larger epistemological inadequacy of architectural research in general, wherein complex phenomena of experience are seldom even approached in an analytical or experimental way. This is more pronounced in literature, where certain studies on the subject of Islamic architecture are mostly characterized by cultural and historical interpretation as opposed to the perceptual and cognitive analysis. This necessitates the need to redefine monochrome not only as the aesthetic option but as a critical analytical construct capable of being empirically tested in terms of its spatial perception, emotional reaction, and experience of the environment.

To fill this gap, there is a need to shift towards integrative and methodologically rigorous methods that would take a systematic review with an experimental framework. Whereas earlier research has credited the role of color and light in defining the architectural experience, it has failed to examine the monochrome strategies in terms of how they can be operationalized and measured in controlled or simulated settings. The new technologies, including virtual reality and computational visualization, allow testing perceptual reactions to monochrome spatial settings in an experimental fashion, which gives an opportunity to better understand their impact on human experiences.

Therefore, this study aims to critically analyze Islamic architecture's use of monochromatic color schemes with an emphasis on its spatial and perceptual ramifications. It identifies theoretical and methodological constraints while synthesizing current knowledge rather than attempting to give a merely descriptive or historical account. As a result, this study investigates the possibilities of monochromatic systems as analytical instruments for comprehending architectural perception and as a foundation for further experimental studies utilizing modern visualization techniques.

This study contributes by integrating color theory, perceptual analysis, and Islamic architectural discourse into a unified conceptual perspective. It extends existing literature by reframing monochrome not only as an aesthetic strategy but as an analytical framework for examining spatial

perception, light interaction, and emotional response. Furthermore, it provides a foundation for future research by proposing a direction for experimental and simulation-based studies that investigate the relationship between monochrome environments and human experience.

Based on this framework, the study is guided by the following research question:

RQ1: What is the effect of monochrome color schemes in spatial perception and emotional response to Islamic architecture?

2. Literature Review

The analyses of form, symbolism, and ornamentation have historically dominated the study of Islamic architecture. These techniques have produced useful insights into the cultural and philosophical features of the built environment, but they frequently overlook the perceptual and experiential mechanisms by which architecture is perceived. The literature in five major areas, architectural aesthetics, color schemes, monochrome theory, light-material interaction, and environmental psychology, is critically assessed in this part. Through comparison and critique, it finds key theoretical and methodological gaps that support the current investigation.

2.1 Foundation of Islamic Architecture Aesthetics

The fundamental components of Islamic architectural aesthetics are geometry, symmetry, and calligraphy, according to both early and modern studies (Alshamsi & Jung, 2025; Rezasultani & Jafari, 2024). According to these studies, philosophical ideas like unity, infinity, and divine order are represented by repeating geometric systems. Similarly, calligraphy is viewed as both decorative and communicative, extending spiritual narratives within architectural surfaces (Osim, 2021).

However, this collection of works' primarily formalist emphasis is a significant drawback. These studies concentrate on symbolic meaning and compositional logic, but they offer little understanding of how users perceive these components. For example, although (Arzate Quintanilla et al., 2026) highlight the use of geometry to organize space, they do not conduct an empirical assessment of the effects of such arrangements on spatial interpretation or visual cognition. (Almasi, 2025).

However, more recent research starts to close this gap by considering geometry as a perceptual system as opposed to only a symbolic one (Almasi, 2025; Baydoun et al., 2024). These findings indicate that repeated patterns direct visual

movement, improve spatial continuity, and contribute to perceptual coherence (Abdalla & Yousif, 2026). Despite this progress, their assessments are still incomplete since they separate geometry from other important factors like light and color.

This fragmentation underlines a bigger issue in the literature: the tendency to look at architectural features as independent variables rather than as parts of a larger perceptual system. As a result, the relationship between geometry, color, light, and material is largely unexplored. This disparity is especially significant given that perception in architectural environments is essentially multimodal and relational, rather than discrete (Gün, 2025).

2.2 Chromatic Strategies in Islamic Architectural Design

The color has long been established as a characteristic of Islamic architecture, especially in terms of its symbolic and cultural connotations. Conventionally, blue, turquoise, white, and gold are the colors traditionally used to symbolize spirituality, purity, and transcendence (Abdulwahid Thannoon, 2012; Osim, 2021). Those interpretations are based on historical and theological foundations, as they place color as a symbolic channel of communication.

Nevertheless, it can be seen that a substantial methodological divergence is noticeable when compared to the current study of the environment and architectural science research. Investigations like (Jaglarz, 2023) and (Chen et al., 2022) show that the color is an important factor in the cognitive processing, emotional reaction, and spatial perception. Such discoveries rely on empirical techniques, such as controlled experiments or user evaluations, which present quantifiable data of the effect of color on human experience.

Nevertheless, these insights have not been completely incorporated into Islamic architectural studies, despite this empirical advancement. The studies in this field still depend greatly on descriptive and historical studies, with minimal use of experimental approaches (Ameen & Kasem, 2025). Therefore, the perceptual impacts of color are still assumed as opposed to being tested.

Another weakness is the preponderance of polychromatic analysis, in which more than one color is studied in compound compositions. Such studies are indicative of the richness of the Islamic architectural traditions, and it makes it difficult to isolate and assess the particular influence of individual color variables. Conversely, simplified chromatic systems (like monochrome) provide

the opportunity to be studied under control, and are much understudied.

This imbalance implies that the available literature gives us a thorough account of the meaning of colors, but a minimal account of the meaning of colors in perceptual terms.

2.3 Monochrome in Architecture: Aesthetic Reduction Vs Analytical Framework

The monochrome architecture has been intensively addressed concerning the modernist and minimalistic design. According to such scholars as (Pallasmaa, 2024), the color reduction is one of the attributes that increase sensory awareness by focusing on materiality, texture, and space. Similarly, Weber (2023) posits that monochrome spaces encourage visual consistency and decrease perceptual distraction.

Nevertheless, there is one important difference that appears upon the comparison of design-oriented literature and more recent theoretical work. Whereas previous studies consider monochrome as an aesthetic aspect, recent works present it as a methodological instrument that has the potential to isolate perceptual variables (Weber, 2023). This turn represents an increased appreciation of the analytic power of monochrome, especially in the experimental context.

Although there is this theoretical progress, there is limited empirical research. Available literature is unlikely to explore the effect of monochrome settings on spatial cognition, emotional reaction, or visual hierarchy in any quantifiable way (Praslova, 2020). Moreover, the monochrome has been used with little application in architecture where the discourse has been predominantly westernized with very little diversification of the same in non-western setting.

This is a major gap in literature. The architectural element of Islamic, in terms of its geometric abstraction, modulation of light and articulation of surfaces, offers a particularly pertinent setting to explore monochrome. However, no serious research has been done relating the influence of monochrome strategies and these conventional factors.

Therefore, though the concept of monochrome as a form of aesthetic and analytic is well established at the level of theory, its practical and contextual implementation has not been developed, especially in relation to Islamic architecture research.

2.4 Interaction Between Light, Material, and Surface

Light is widely acknowledged as a fundamental component of Islamic architecture, functioning both as a physical phenomenon and a symbolic representation

of divine presence (Afify, 2025). Traditional studies emphasize the dynamic nature of light and architectural parts like domes, arches, and perforated screens that create changing effects of light and shadow.

Recent studies contribute to this knowledge by concentrating on light-material interaction and have shown that the surface texture, reflectivity, and material properties affect spatial perception (Weber, 2024; Zhou et al., 2025). These investigations demonstrate the relevance of sensory integration, in which perception arises as a result of the interplay of various variables in the environment.

Nevertheless, there is still a critical weakness in the methodological approach. The majority of the literature compares light and material per se or in complicated chromatic conditions, and it is challenging to figure out the contribution of color (Wang et al., 2025). This is the absence of control that prevents the determination of a causal relationship between visual variables and perceptual results.

The monochrome systems will have a specific methodological advantage in this regard. They minimize chromatic differences and, because of this, allow one to better see the mechanism by which light interacts with surface materials to create spatial effects. Nevertheless, in spite of this possibility, the studies on light-material interaction implemented in the context of Islamic architecture are quite deficient in the use of monochrome frameworks.

This disparity creates the necessity of having controlled experimental methods, which can isolate and test the contribution of individual perceptual variables in the complex architectural systems.

2.5 Environmental Psychology: Empirical Validation Vs Architectural Application

Environmental psychology offers a solid piece of evidence indicating that visual stimuli, especially color, have a strong impact on human perception, emotion, and behavior (Mahvash, 2017; Zhou et al., 2025). These are studies that utilize experimental methodology, providing quantitative information about the way individuals react to various environmental conditions.

Nevertheless, in comparison with the architectural research, one can recognize a disciplinary gap. Controlled and abstract environments are part of psychological studies, and therefore, they do not apply to real-life architectural environments. However, architecture studies focus on contextual richness but not empirical, and are substantial

in terms of qualitative/descriptive studies (Shynu & Suseelan, 2023).

This paradigm shift produces an unequal methodological force between science measurement and the interpretation of space. Whereas psychology offers evidence-based knowledge, it does not offer an architectural specificity (Rezaultani & Jafari, 2024). On the other hand, architectural research provides contextual relevance but does not provide any measure of validation (Arora & Warsi, 2024).

Moreover, the current psychological research hardly pays attention to the monochrome setting, especially in religious or culturally meaningful spaces. There are initial signs that reduced visual complexity can benefit cognitive clarity and emotional stability (Jaglarz, 2023), but such knowledge has not been well studied in architectural settings. This is the gap that highlights the necessity of interdisciplinary methods, which combine experimental rigor and architectural relevance, especially in the investigation of perceptual experience in an Islamic setting.

2.6 Critical Synthesis

A critical review of the literature demonstrates that there are three major constraints.

First, architectural elements are not integrated. The study of geometry, color, light, and material is usually performed separately, even though their interaction in creating perception is interconnected. This disjointed practice does not allow one to have a full picture of architectural experience.

Second, there is an imbalance in the methodology. Architectural research is mainly descriptive and theoretical, whereas empirical research has no contextual richness. This gap inhibits the evolving knowledge in architecture.

Third, a lack of monochrome-oriented studies in Islamic architecture exists. Even though monochrome has been identified as a possible means of analysis, it has not been applied in this direction in a systematic manner or even empirically tried.

The gaps elicit the reason why a practice-based, experimental research approach becomes necessary, in which monochrome will be operationalized as a design strategy and a research instrument of perception. The evaluation of the limitations of the current research and the contribution to the overall understanding of the concept of the perception of space in Islamic architecture is achieved in the current study because it combines experimentation in the studio with theoretical analysis.

3. Theoretical Framework

This exploration is informed by the theory of color aesthetics, based on the work of Johannes Itten and Josef Albers, which is elaborated on but is not confined to description, and is put into practice as an analytical instrument in a monochrome architectural context. Instead of using color as a decorative element, theorists think of color as a relational and perceptual system, in which the meaning is created through contrast, context, and interaction (Lauder, 2024).

The theory of tonal contrast and harmony, as suggested by Itten, determines the analysis process, where tone is a leading tool of spatial perception. In this research, the tonal variation is employed to read the way the depth and hierarchy are created in monochrome compositions (Bätschmann, 2021). The darker colors are perceived as the progressing colors, and the light ones are recessed, so the spatial layers may be identified without the use of the diverse colors. This makes the principles of Itten a means of analysis of architectural structure by value relationships (Praslova, 2020).

The concept of color relativity by Albers also contributes to the analysis because it highlights the fact that perception is not absolute but relative. In the monochrome system, the same tones are perceived as different in the context of other values, and, therefore, the process of spatial interpretation can be interpreted as the result of relational contrast (Lauder, 2024; Zhou et al., 2025). This helps to discuss perception as a dynamic process affected by the context of visual perception.

These theories are operationalized using three major conceptual relations as follows: tone affects the spatial perception, light creates tonal hierarchy, and context affects the interpretation of the perception. Light is the most significant element of tonal change in monochrome settings, and it strengthens the spatial structure with shadows and light.

In Islamic architecture, the framework applies classic ideas of unity and rhythm as interpreted by perceptual processes, but not as described symbolically. Monochrome is thus placed as a critical approach, which separates and exposes the interaction of light, tone, and spatial organization to form the experience of architecture.

4. Methodology

4.1 Research Design

The study adopts a practice-based research design, which combines both theoretical interpretation and studio-

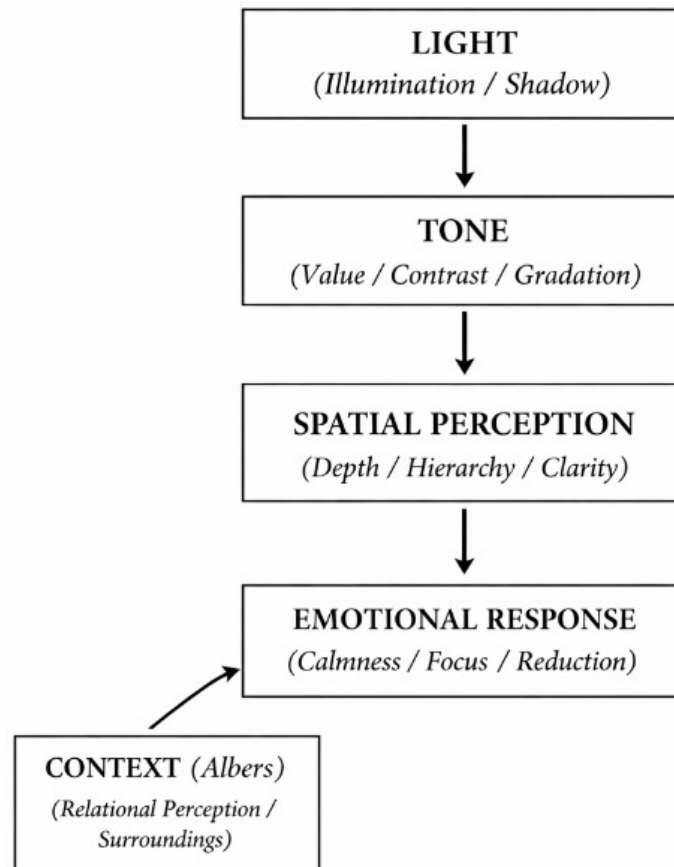


Figure 1. Conceptual Framework Diagram

based experimentation to examine the implications of the perceptions of monochrome color systems on the representation of Islamic architecture. The methodology is designed to go beyond the descriptive inquiry by creating and interpreting visual information in the form of an iterative process that consists of making, reflecting, and evaluating (Abdalla & Yousif, 2026; Pallasmaa, 2024).

The data obtained in the studio practice was evaluated with the assistance of a visual analysis framework that is based on the Feldman Method of Art Criticism (description, analysis, interpretation, and evaluation). This model was chosen because it is an effective way to organize the analysis of visual products in a critical and systematic way. The three main perceptual variables that were targeted by the analytical process based on the theoretical framework were:

- Tonal variation (value and contrast)
- Light-shadow interaction
- Spatial hierarchy and depth

These variables have not been discussed in a descriptive manner but rather served as the analytical prisms to

understand the effects of monochrome composition on the perception of space. All the works of art were analyzed in the context of tonal relationships, which determined visual hierarchy, the use of light to define spatial boundaries, and compositional context, which adapted perceptual interpretation (Al Dein, 2022).

The main facts of this work are a series of black and white visual compositions that are the results of experimentation in the studio. Original photographic sources of Islamic architecture, such as arches, domes, and geometrical designs, were chosen and dismantled (Alshamsi & Jung, 2025). These sources were processed by means of repetitive processes of abstraction, layering, and tonal manipulation. Replication was not the objective, but the systematic experimentation of the variables of perception, especially the separation of color in monochrome systems (Al Dein, 2022; Hettithanthri & Hansen, 2022)

The exploratory phase of the research was assisted by artificial intelligence technologies. In particular, Midjourney was applied to create a variety of compositions and variations of compositions depending on the starting

visual cues. AI served only to generate the ideas and experiment with the variations, and spatial settings and tonal compositions could be tested quickly. Nevertheless, AI results were not obtained as the final results. All the images were critically assessed, manually improved, and re-read using drawing and digital editing. This provided that AI acted as an aiding tool and not an authoritative force, conceptual control, and methodological integrity in the study.

The study is conducted to achieve a high analytical rigor, minimize subjectivity, and utilize a triangulation approach, which consists of three mutually supportive methods of validation. To analyze images, the systematic interpretation of each composition was provided, and firstly, the visual analysis was given on the framework of the structured approach identified above. Second, the critical self-reflection was used during the studio process, and the design decisions could be evaluated repeatedly in connection with the theoretical concepts. Third, peer and supervisor critique sessions also offered other insights, and assumptions were challenged and interpretations refined. The combination of the three methods made the results more reliable as there were no conclusions made based on one mode of analysis, but rather on multiple and interrelated assessments.

4.2 Studio Investigation

The studio investigation documents the practical and conceptual development of the artwork through a systematic process of visual experimentation, material exploration, and perceptual analysis. The studio functioned as a research environment in which monochromatic aesthetics were explored as a primary visual strategy for interpreting Islamic architectural forms. Instead of viewing color as a tool of decoration, monochrome was experimented with as an instrument of both conceptual and spatial action that can impact the perception and emotional reaction, as well as symbolism (Mahvash, 2017; Pallasmaa, 2024)

The analysis involved photographic sources about Islamic architecture, including archways, domes, and minarets. As the major visual evidence, these pictures were analyzed in terms of architectural design, space organization, decoration of surfaces, and light behavior (Arzate Quintanilla et al., 2026; MahdiNejad et al., 2016). All these gave a background reference to the design process, tonal study, and artistic interpretation, and the resulting artwork was abstract but related to real architectural forms (Baydoun et al., 2024).



Figure 2. <https://share.google/CIG2UXOzaReSwr4i5>



Figure 3. <https://share.google/2tgeDIAJvF0ILsote>

The compositional process involved cropping and rearranging architectural elements from multiple source images (Figure 2) to construct cohesive and balanced visual compositions. Critical elements of architecture were transferred and restructured to create a visual balance. The

purpose of such a process was to develop new compositions that would convey the aesthetic and symbolic peculiarities of Islamic buildings with the help of abstraction instead of direct representation (Bakhsh, 2021).



Figure 4. <https://share.google/fLwew7wn4SZjZLodk>

During the exploratory stage, Midjourney was utilized to create preliminary design iterations utilizing artificial intelligence (AI). Its function was restricted to producing different spatial and compositional possibilities for comparison. To ensure that AI-aided ideation, rather than determining final results, all outputs were rigorously assessed and carefully adjusted. The chosen outputs were

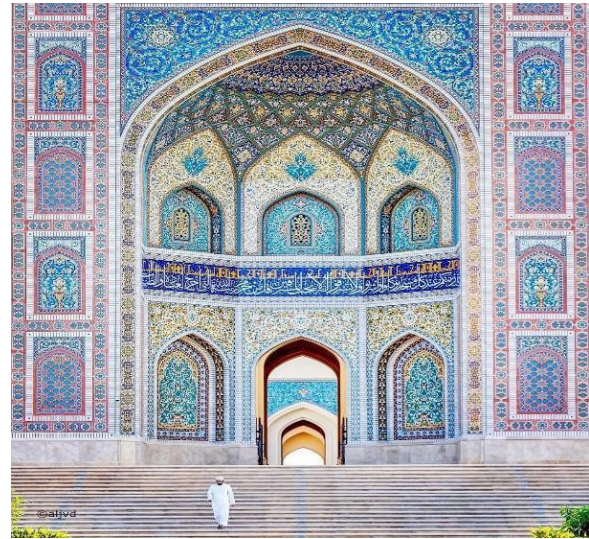


Figure 5. <https://share.google/0vaGswvXJeZ8EzYfm>

subsequently further enhanced by digital refinement and drawing with a pencil (Dahab, 2023; Puadi et al., 2020). The proportional inaccuracies, alignment problems, and compositional imbalances were corrected with the help of digital tools, whereas artistic interpretation was improved with the help of manual sketches.

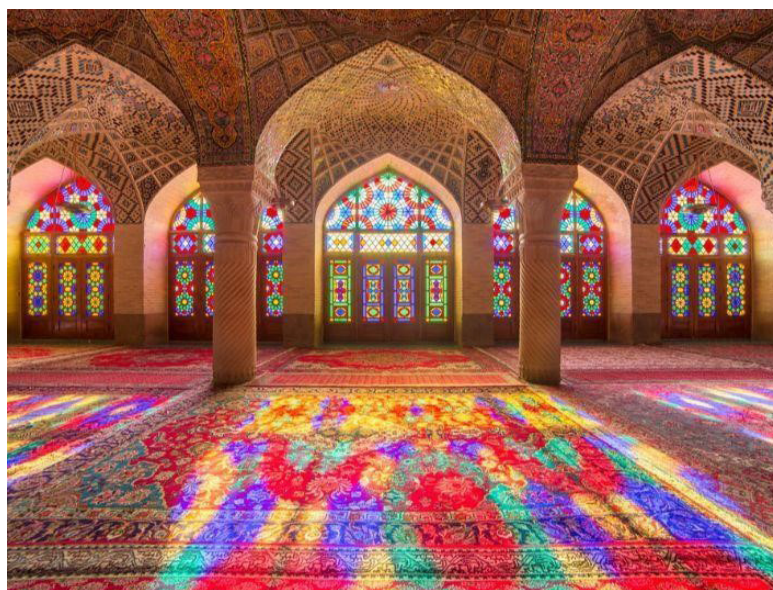


Figure 6. <https://share.google/Zbt0WMjMALauYMI5S>

The architecture of the buildings had been designed with arches, domes, and verticals to bring about depth by composition in layers and rhythmic arrangement. The studies also discussed the effect that a monochromatic design has on spatial perception and interpretation by the viewer (Chen et al., 2022; Dahab, 2023).

The practical work was opened with the surface preparation and the coating of the base layer with the monochromatic layer. The interaction of light, shadow, form, and depth to create visual elements was studied in black-and-white (Bakhsh, 2021). This was followed by a structural drawing with different layers of paint to create the volumetric space by achieving a gradual tonal shift.

The decorative features were developed with the help of controlled brushwork and layering techniques, perfecting the geometric patterns and calligraphic shapes. This technique improved the texture on the surface without altering the tonal value. The last refinements were done to highlights, shadows, and compositional balance to create the overall visual harmony, contrast, and clarity. Islamic architectural design was learned in an abstract form and not in its real form.

Architectural forms were chosen according to their spiritual and symbolic meaning and studied by drawing

and references. The process of design was focused on extracting the necessary qualities, establishing the balance and unity with the help of repetitions and abstraction, and finally depicting the spiritual space instead of physical structure (Afify, 2025; Alshamsi & Jung, 2025). The inclusion of visual documentation in this study functions as primary research data, ensuring transparency, traceability, and critical evaluation of the studio-based process.

4.2.1 Visual Documentation of Studio Process

The studio-based experimentation was methodically documented through a series of visual records in order to guarantee transparency and methodological rigor in the practice-led research. These photographs serve as primary data, demonstrating the transformation from source material to finished artwork and offering proof of the creative process.

Key phases of the investigation, such as the selection and analysis of architectural references, compositional restructuring, AI-assisted exploration, manual refinement, tonal development, and final execution, are all captured in the visual documentation. The iterative nature of the studio process is demonstrated by each step, which combines analytical decision-making with intuitive artistic response.



Figure 7a. Source architectural image of arches and domes used for initial visual analysis

First, images of Islamic architectural features like arches, domes, and interior spaces were chosen and analyzed (Figure 7a). After that, these photos were

disassembled and put back together using cropping and rearranging to create new compositional structures (Figure 7b).



Figure 7b. Cropping and compositional restructuring of selected architectural elements.

Artificial intelligence tools were used in the exploratory phase to produce various compositional variations, enabling quick testing of spatial configurations

and tonal possibilities (Figure 8). Rather than being final solutions, these outputs functioned as experimental prompts.

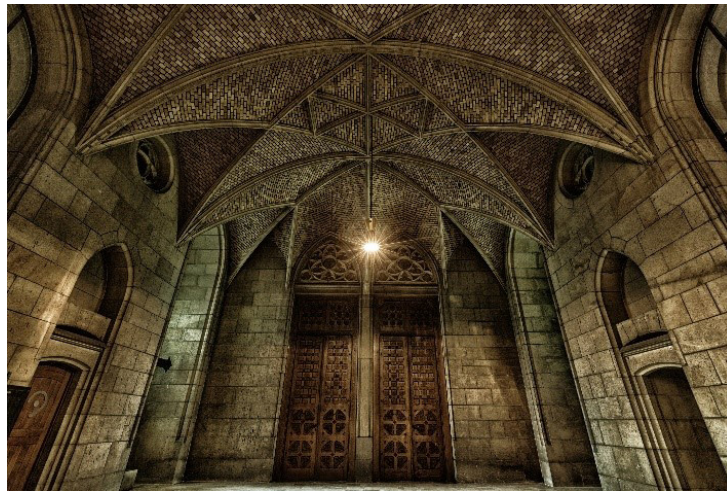


Figure 8. AI-generated compositional exploration (e.g., Midjourney outputs).



Figure 9. Manual refinement and digital adjustment of compositional balance.

Selected compositions were then manually refined using digital editing and sketch-based modifications to address spatial coherence, balance, and proportion issues (Figure 9). Beyond algorithmic generation, this step reaffirmed the artist's role in directing and interpreting the process.

Subsequent research concentrated on tonal studies, where depth and spatial hierarchy were created within a monochromatic framework by closely examining the relationships between light and shadow (Figure 10).



Figure 10. Tonal study examining light and shadow relationships.

Figure 11 provides a structured overview of the sequential process from initial reference selection to final

artwork production, summarizing the overall workflow of the studio-based experimentation.

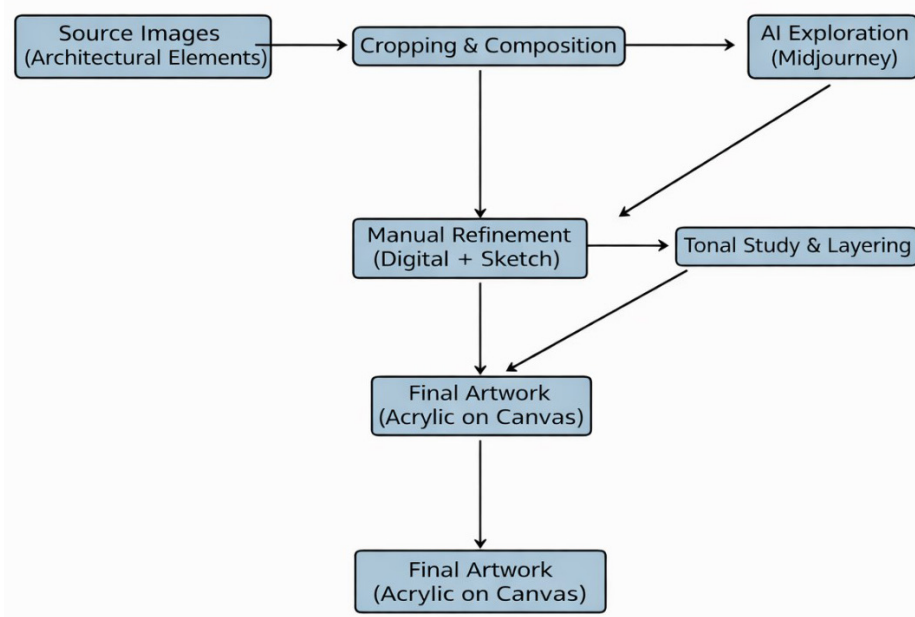


Figure 11. Studio-based experimental Workflow

The finished monochromatic composition (Figure 12) that results from this iterative process shows how

architectural abstraction, tonal manipulation, and material execution are all integrated within the studio setting.

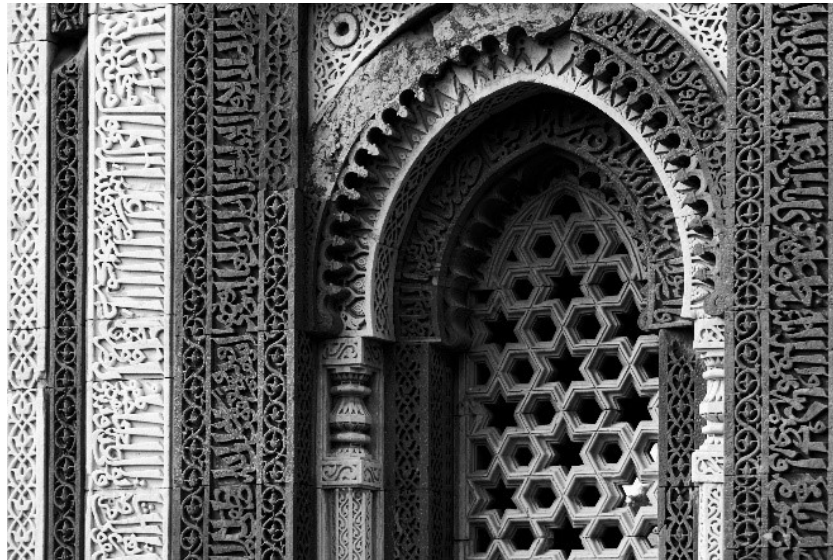


Figure 12. Final monochromatic artwork

4.2.2 Color Investigation

After the conceptual phase, the studio work was devoted to experimentation with the monochromatic color system. An ensemble of tonal changes within a single set of color was experimented with to create a sense of depth, movement, and emotion (Hettithanthri & Hansen, 2022). The palette used was a combination of turquoise and golden ochre because of its historical and symbolic meaning in Islamic art and architecture (MahdiNejad et al., 2016). Three major elements were used in the investigation: tonal gradation, value contrast, and chromatic harmony. The small number of colors provoked a concentration on space relations and the play of light between surfaces. The monochrome system acted as a binding aspect with a flowing image line across the composition. This solution was in line with the theories of color aesthetics, which postulate that the perception of colors depends on the surrounding factors and the contextual relationships (Mahvash, 2017).

4.2.3 Preparation of Surface and Layer

The practical process started with the preparation of the canvas and application of the base layer in monochromatic colors. The atmospheric base of the work was created with acrylic paint. This background formed visual balance and acted as a foundation for further elements in the composition (Feng, 2023). Smooth tonal effects were achieved through sponges and brushwork applied widely to the paint. The ground plane offered an orderly, but

flowing surface on which architectural shapes were created organically and not by strict design procedures (Laçınbay, 2026).

4.2.4 Material Experimental

A systematic approach of material experimentation was also employed in the studio inquiry to test the technical and aesthetic performance of different surfaces in a monochromatic context. The identification of the most suitable combination of materials that could successfully fulfill the aesthetic and structural requirements of the final piece of art was the key objective of this stage of the inquiry. Different forms of sand, binders, acrylic medium, and texture were experimented with in a systematic manner. The techniques of applying the materials, such as layering, scraping, rolling, embedding, spreading, and applying with palette knives, were also experimented with in each of these tests (Hosny El-Deeb, 2021). The tests involving the use of sand and diluted glue gave a textured look to the surface. However, the material lacked structural integrity and cracked during the course of drying.

Although texture development in the tests involving sand and PVA glue was more satisfactory, the durability of the results was limited. Further improvement in the tests involving the use of sand, gesso, and acrylic medium was more satisfactory in strengthening the bonding, tone transitions, and texture consistency.

Further research was carried out on the application of the

acrylic glaze layers to achieve depth and richness in the appearance using the control of light transition (Wischer, 2020). The incorporation of the small stones improved the materiality of the surface while maintaining structural integrity through the addition of texture.

The results obtained through the above research informed

the selection of the final materials and techniques to ensure the finished artwork would achieve both technical stability and artistic expression. A summary of the research on materials, techniques, and the results is presented in Table 1.

Table 1. Summary of Studio Material Experiments

Experiment	Materials Used	Application Technique	Visual Outcome	Technical Outcome	Decision
Test 1	Sand + diluted glue	Brush spreading	Rough and uncontrolled texture	Cracking after drying	Rejected
Test 2	Sand + PVA glue	Palette knife	Dune-like texture	Moderate stability	Modified
Test 3	Sand + gesso	Layering and scraping	Natural gradient surface	High bonding strength	Adopted
Test 4	Sand + acrylic medium	Rolling technique	Smooth dunes with rhythmic texture	Strong stability	Adopted
Test 5	Acrylic glaze layers	Brush application and blending	Subtle light transition effects	Stable color depth	Adopted
Test 6	Small stones + adhesive	Pressing into the surface	Realistic tactile surface	Secure embedding	Adopted

4.2.5 Light and Shadow

Light and shadow were critical to the study of tonal values and space relationships. Reference images were also turned to black and white so as to examine contrast and tonal distribution without interference of color (Edensor & Hughes, 2021). This procedure enabled the determination of the important tonal regions between dark shadows and light highlights, which underlie further experimentation (Abdalla & Yousif, 2026). The sketchbooks were also done tonally, in black and white acrylic paint to simulate depth, form, and volume. This allowed experimenting with the quality of contrast and the overlay of colors to create a three-dimensional effect (Arzate Quintanilla et al., 2026; Mahvash, 2017).

4.2.6 Layering, Depth, and Perceptual Construction

The exploration at this point shifted towards laying depth into the spatial plane via stratified layers of paint. It was done with tonal variation, overlapping shapes, and play of light and shadow instead of using the traditional

linear perspective to create depth (Abdalla & Yousif, 2026). Such a strategy showed how the perception of space can be affected by visual and psychological criteria (Karakas & Yildiz, 2020; Lee & Kim, 2025). The visual movement was achieved through repetitive geometric patterns, helping the viewer work through the composition. This effect was augmented by the monochromatic palette, which removed the distraction of colors and highlighted the relationships of values. Consequently, the architectural space became a perceptual experience that stimulated extended visual interaction (Wischer, 2020).

4.2.7 Final Artwork Development

The final phase involved balancing tones, fine-tuning the composition, and decorating it to achieve exceptional art. Manual arts were evaluated and improved, with references to artificial intelligence. The studio exercise consisted of multiple variations, which were aided by the critique and professional perspective (Sun & Lin, 2020). An architectural arrangement of elements developed

a visual hierarchy with the minimum complexity of decoration. The sculpture reflected the way of conceptual and practical application of monochromatic aesthetics. The last piece was an abstraction with digital experimentation and tonal manipulation of an Islamic architectural element (Al-Azzawi and Al-Hadithi, 2023). It demonstrated the effectiveness of using monochrome as a means to reach visual coherence and expressiveness.

This was painted on a 120 cm x 100 cm acrylic-painted canvas. The texture and layered effects were achieved using both the flat and round brushes and palette knives. Composition and tonal studies were first created using digital tools, and the painting was then built up in layers of monochrome. The piece made use of the most important visual elements, such as line, shape, tone, texture, space, and color. Lines led the eye through the architecture, and geometric and calligraphic forms moved. A tonal contrast provided a sense of depth and space, and surface texture provided the richness of touch.

The painting adhered to the principles of design, such as unity, balance, rhythm, emphasis, and harmony (Hosny El-Deeb, 2021). The visual coherence was determined by a monochromatic palette, whereas balance was achieved by symmetrical architectural structures. Light and shadow were used to emphasize and direct the attention of the viewer, and to provide a meditative experience. In the end, the piece showed the potential of the monochromatic aesthetic to convert the traditional Islamic components of architecture into the modern forms of art without losing cultural and spiritual values (Feng, 2023; Osim, 2021).

4.3 Critical Reflection and Contextual Review

A structured process of critical reflection was included in the research, and it was based on the Feldman Method of Art Criticism, which included description, analysis, interpretation, and judgment. This model allowed a logical and repetitive review of the art at every level of its progression, therefore, facilitating endless polishing of the work created (Wang et al., 2025). Moreover, there were contextual review meetings with supervisors, lecturers, and peers at regular intervals. These critique meetings gave constructive feedback based on the critique, and this was used in the further development and refining of the work. This process of feedback was done repeatedly to make sure that the artistic results were consistent with the research goals and had methodological consistency. This reflective practice was in line with ideal practice-led research paradigms, where the knowledge was constructed

through the synthesis of making, reflection, and critical evaluation (Hettithanthri & Hansen, 2022).

4.4 Data Analysis

The analysis of the data was qualitative and interpretive in terms of the appearance of the visual results of the studio-based experiments and the thoughtful recording of the creative process. The discussion was aimed at studying the compositional aspects, such as tonal change, space arrangement, form, and interplay between light and shadow.

The results were discussed within the theoretical background of the work, especially focusing on the laws of tonal harmony and the laws of color relativity. This helped gain a better insight into the way monochromatic color systems had an impact on spatial perception, visual hierarchy, and emotional reaction within the compositions (Kandinsky, 2020; Itten, 2022).

The analysis made a consistent connection between theory and practice due to the combination of theoretical viewpoints with the results of the studio. This method allowed a thorough explanation of the work of monochromatic systems as structural and perception tools in the development of visual and spatial experiences in an architectural environment (Hosny El-Deeb, 2021).

5. Result and Discussion

The results of the present study are arranged under three mutually supporting topics of analysis: clarity of space and hierarchy of visual images, restriction of emotions and reduction of expressiveness, and interaction of light with the material and depth of perception (Arora & Warsi, 2024). The systematic interpretation of the studio-based outputs in this thematic structure can be made, and at the same time, can be aligned to the research question on the influence of monochrome color systems in Islamic architectural representation in terms of perception and emotion.

5.1 Theme 1: Spatial Clarity and Visual Hierarchy

As it is observed in the analysis, the monochrome compositions are much more effective at increasing the clarity of the space when they do not use chromatic contrast but instead complement it with tonal differentiation. The play of grayscale values creates a distinct boundary separating architectural layers, enabling the viewer to see depth and hierarchy in a more accurate way. Brighter areas move to the front of the picture, and the lighter ones shift to

the background, creating a presentable and ordered spatial composition (Afify, 2025)

This restrained hierarchy leads the eye through the composition, leading the viewer through architectural details in a logical and orderly way. The lack of competing colors suppresses the noise of the perceptions, making structural relationships stand out. Consequently, spatial organization looks more purposeful and analytically understandable.

The critical perspective of this finding is that it supports and extends previous literature. Archaeological investigations highlighting geometry as the main structuring agent of Islamic architecture maintain that repetition and symmetry are what lead perception (Abdulwahid Thannoon, 2012; Dahab, 2023). However, has been shown that it is not entirely geometry that determines spatial clarity. Rather, tonal contrast is used together with a geometric structure, which supports the visual hierarchy and depth.

Unlike traditional polychromatic spaces, which enhance visual richness with multiple hues, monochrome eases the complexity and prevents a shift in priorities towards the structural legibility on the one hand. This implies that perception of space in architecture is not an entirely form-related phenomenon, but it is largely tonal. The results thus point towards the necessity of reevaluating the concept of color not as a peripheral effect, but as a dynamic part of creating the perceptual experience.

5.2 Theme 2: Emotional Limitation and Expressive Reduction

Although monochrome adds to the perception, the examination suggests that it also restricts the intensity of emotions and the variety of expression. Lack of various colors limits the scope of visual impressions the observer is exposed to and leads to a less dramatic and more restrained experience of the atmosphere. The compositions are reflective but relatively emotionally detached.

This loss of expressive power is especially clear when contrasted with the traditional Islamic architectural spaces, where color is the primary image maker of symbolic and spiritual meaning. Bright chromatic colors have been equated with transcendence, cultural identification, and sensory involvement (Ameen & Kasem, 2025). In black and white systems, such symbolic associations are reduced, and the experience of the image is more analytical than emotional.

Comparatively, these results are consistent with the research in environmental psychology that has placed

cognitive clarity and overstimulation reduction under the simplified visual environment (Edensor & Hughes, 2021). Nonetheless, there is a cost to this gain in the form of the loss of emotional variety, which is a trade-off in terms of concentrating perception and expressiveness.

The examination indicates that grey is not a reproduction of the experience of a traditional color-rich setting but rather a redefinition of it. It values clarity, abstraction, and structural emphasis whilst avoiding symbolic richness. It illustrates the significance of contextual application, because the performance of monochrome is determined by the desired balance between the perception accuracy and emotional appeal.

5.3 Theme 3: Light-Material Interaction and Perceptual Depth.

The results also show that when compositions are in monochrome, light turns out to be the major influence on spatial perception. Without the difference in color, depth, and form is created by the play of highlights, shadows, and tonal gradation (Chen et al., 2022). Spatial boundaries are characterized by areas of high contrast, whereas tonal transition is gradual and builds up volume and continuity. This increased sensitivity to light increases the feel of material surfaces such that texture and reflectivity are more visually meaningful. Small changes in lighting make the focus of the recognition of space, and the viewer is able to understand the space not based on the contrast of colors, but through luminance (Lee & Kim, 2025).

Importantly, this discovery supports the existing studies on the topic of the interaction between light and materials that define luminance contrast as a determining factor of visual hierarchy. Nevertheless, the effects on these variables have been generally analyzed in complicated chromatic conditions in the past, and it is impossible to isolate them. This study takes the monochrome approach that enables one to observe light as an independent perceptual factor more clearly (Laçınbay, 2026).

Simultaneously, the examination shows a weakness. Tonal contrast may be overused without enough variation, which may create the effect of flattening the image and decrease the sense of depth (Lee & Kim, 2025). This means that although monochrome enhances the power of light, it can also be easily distorted to preserve spatial depth.

In general, this evidence shows that monochrome does not reduce the visual richness, but reallocates it, replacing the importance of color with light and shadow as the main source of spatial experience.

5.4 Integrated Discussion

Combined, the three thematic results show that monochrome is a restructuring mechanism of the perception of architectural representation. It creates more spatial clarity through better tonal hierarchy, less emotional variability through less chromatic diversity, and increases the contribution of light to the development of a sense of space.

These results directly respond to the research question because they reveal that monochrome affects the cognitive understanding of space as well as the emotional experience of the viewer. Findings suggest that geometry and ornamentation, which have dominated the focus of Islamic architectural studies, are less significant than tonal and perceptual variables.

The analysis also puts special emphasis on the need to view architectural experience as a unified system, in which form, color, light, and material interact dynamically. The study isolates color by using a monochrome structure to uncover underlying mechanisms of perception that are usually not noticeable in more visually complicated settings.

6. Conclusion

This study repositions monochrome as an analytical framework and design technique in Islamic architectural discourse. Monochrome improves compositional coherence and spatial readability by emphasizing tonal connections and perceptual clarity. However, its reductionist nature constrains both emotional and symbolic complexity, emphasizing the importance of context-sensitive application. The findings help to bridge the gap between architectural theory and artistic practice, laying the groundwork for future multidisciplinary and empirical inquiries into perceptual design. Monochromatic systems focused on tonal associations, light-shadow play, and geometric abstraction, thus supporting the major tenets of the Islamic architecture aesthetics, including rhythm, repetition, and harmony. Nevertheless, the study also revealed critically that such a diminished outcome might end up limiting the emotional spectrum and symbolic fullness that is commonly linked to polychromatic traditions. In general, the research redefined the monochrome as a conceptual and analytical process, and it led to the development of studies on perception in architecture. The results indicate that black and white must not be considered solely as an aesthetic strategy but also as a methodological instrument of exploring the issue of spatial perception. Nevertheless, the drawbacks found in the emotional and

symbolic expression show that monochrome cannot be applied in all situations. It has to be employed contextually, especially in the environment where cultural meaning and sensory richness are paramount in the experience of the architecture.

7. Limitations and Future Research

There are a few restrictions on the study. The use of a practice-led, interpretive methodology involves subjectivity, lowering repeatability and generalizability. Furthermore, it is difficult to evaluate perceptual outcomes objectively in the absence of empirical user-based validation. Perceptual results could not be objectively validated because there were no empirical user-based studies, unlike audience perception research and empirical tests. Also, the studio exploration made real architectural settings simpler, in which color, material, and light are more continuously interacting and changeable. Authorial authorship and sensitivity to context also raised concerns because the artificial intelligence tools that were used in compositional exploration were also useful. Future research should adopt mixed-method techniques that include experimental design, user perception studies, and immersive technologies such as virtual reality. The simulation of spatial experiences could be even more realistic with the use of virtual reality environments. It can also be enhanced to expand the study into a wide range of cultural and architectural settings to augment the applicability of monochrome strategies in modern architectural design and theory.

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