

## Relationship between architectural design and sacred atmosphere in Reformed Church

Case study: GRII Bandung

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ARTICLE INFO	ABSTRACT
<p><i>Article history:</i> Received September 30, 2024 Received in revised form Oct. 08, 2024 Accepted November 09, 2024 Available online December 01, 2024</p> <p><i>Keywords:</i> Church Reformed Sacred Space atmosphere</p> <p>*Corresponding author: Purnama Salura Department of Architecture, Faculty of Engineering, Universitas Katolik Parahyangan, Bandung, Indonesia Email: <a href="mailto:purnama.salura@unpar.ac.id">purnama.salura@unpar.ac.id</a> ORCID: <a href="https://orcid.org/0000-0002-3652-7192">https://orcid.org/0000-0002-3652-7192</a></p>	<p>Reformed Christianity is one of the Protestant denominational branches in Indonesia. The Reformed tradition exhibits distinct theological and liturgical characteristics compared to other Christian denominations. Consequently, architectural design must accommodate Reformed theological concepts while supporting its liturgical practices and doctrinal views. Although Reformed churches share a unified theological belief, their architectural forms vary significantly, influencing the sacred atmosphere within these spaces. In 2024, the Gereja Reformed Injili Indonesia (GRII) in Bandung inaugurated a new church building. Preliminary observations indicate that this church's architectural design diverges from typical Reformed churches, impacting the spatial ambiance. This study focuses on the relationship between the sacred atmosphere and the architectural design of Reformed churches, specifically examining the new GRII Bandung church. The research investigates the connection between the sacred ambiance and the architectural design of the GRII Bandung church. It seeks to provide insights for the academic community, contributing to theories and concepts related to church architecture in general and Reformed church architecture in particular. The findings are anticipated to offer alternative design approaches for Reformed churches and provide valuable input for church management policies. Ultimately, this study aims to lay the groundwork for more comprehensive future research in this area.</p>

### Introduction

Reformed church is the oldest Protestant Christian denomination that entered Indonesia in the 17th century (Aritonang 1995). This denomination has different theological views and worship practices from other Protestant denominations differences such as the concept of worship and sacredness. Architectural design must be capable of integrating and supporting both the theological

concepts and liturgical practices of Reformed theology (Abrianti and Salura 2019).

In contemporary times, there is a notable phenomenon where churches of the same Reformed denomination exhibit diverse architectural designs and appearances. For instance, GRII Kemayoran in Jakarta features a dome-shaped structure with a white and blue façade. In contrast, GPIB Paulus in Jakarta presents a more vernacular impression with its white and brown façade and a cross-shaped floor



plan (2016). Although both churches belong to the Reformed tradition, their design forms and appearances differ significantly. These variations in architectural design can have a profound impact on the sacred atmosphere experienced within each space.

Gereja Reformed Injili Indonesia (GRII) Bandung inaugurated a new church building that commenced operations in early 2024. Preliminary observations suggest that the architectural design of this church significantly differs from those of other Reformed churches, which likely influences the overall spatial experience.

In light of this phenomenon, the focus of this research is to explore the relationship between the sacred atmosphere and the architectural design of Reformed churches. This issue is of particular significance, as it has been infrequently addressed in existing literature. Therefore, the primary objective of this study is to identify the connection between the sacred atmosphere and the design of the Reformed church at GRII Bandung.

This research aims to offer valuable insights to the academic community by contributing to the theoretical frameworks and concepts associated with both general church architecture and Reformed church design. The findings are anticipated to provide alternative design approaches for practitioners and serve as a basis for policy development within Reformed church management. Furthermore, it is hoped that the outcomes of this study will pave the way for broader and more extensive future research in this area.

## Methods

### Case study

The selected case study employs the following requirements: (1) a Reformed denomination, (2) actively operating (3) a stand-alone building (single-use building) that is specifically designed for church function.

Gereja Reformed Injili Indonesia (GRII) Bandung on Jl. Moh Toha with a capacity of  $\pm 1200$  people have a façade that is complex and contrasts with the surroundings. Rev. Dr. (H.C.) Stephen Tong, the principal architect of GRII Bandung, stated that the church has been designed to optimize both aesthetics and acoustics, effectively accommodating the liturgical practices of worship (Tong 2024).



Figure 1. GRII Bandung existing

### Research method

According to John Calvin, the definition of the church extends beyond being merely a physical structure; it encompasses a fellowship of believers united in faith (Calvin 1960).

This issue pertains to the domains of sacred meaning and form, necessitating the incorporation of theories related to sacredness, meaning, and spatial form. To explore the concept of sacredness, this research will draw upon the theories of sacred architecture developed by (Geva 2011; Hoffman 2010; Eliade 1957; Jones 2000). To elucidate the concepts related to meaning, this research will also incorporate theories of spatial ambiance, particularly those articulated by Juhani Pallasmaa. (Palasmaa, Steven Holl, and Alberto Perez-Gomez 1994; Zumthor 2006). To study the space-form using the concept of ideogram architecture (Wirakusumah 2022). All of these theories are elaborated and carried out with research steps. The formulation of the steps is as follows.

#### a. Step 1: Mapping the sequence of Reformed Churches

The case study's sequence is mapped with the description of worship liturgy and guided by the Reformed liturgy from 'The Worship Order' (GRII 2004) and the Bible or 'Directory of Public Worship' (Assembly 1644). The literature review reveals a categorization of Reformed church spaces, highlighting the thematic elements associated with each sequence. This sequencing and thematic analysis will be further examined in the case study. The result of this step will be a comprehensive mapping of the sequences,

accompanied by their corresponding atmospheric themes.

b. Step 2: Analyzing the sacredness of each stage of the sequence in the case study

The next step is to analyze the sacredness of space in the case study, which begins with a literature review related to the atmosphere of space and sacred architecture with ideogram architecture (Wirakusumah 2022) and assisted by elaboration with property and composition theory (Salura 2018). The result of this step will be an ideogram representing the sacred architectural forms and spatial ambiance associated with each sequence.

c. Step 3: Summarize the relationship between sacred atmosphere and Reformed Church design

Building on the two previous steps, conclusions can be drawn regarding the relationship between the sacred atmosphere and the architectural design of Reformed churches. To finalize this relationship, the formulated ideogram will be tested against the case study.

## Results and discussion

The analysis is conducted based on the steps described in the discussion method section which is divided into three research steps.

Step 1: Mapping the Reformed Church sequence

John Calvin was a pivotal figure in the Reformation movement, contributing significantly to its expansion and dissemination. In his work “The Form of Church Prayers: Strassburg Liturgy”, Calvin provides a comprehensive overview of the liturgy of worship. The components of this liturgy can be categorized into several activities, including the

call to worship, prayer, the reading of Holy Scriptures, preaching and hearing the Word, the singing of Psalms and hymns, the collection of tithes and offerings, confessions of faith, the administration of sacraments, and the issuing of benedictions (Assembly 1644).

According to James White, the church is divided into six separate spaces: gathering space, movement space, congregational space, choir space, altar-table space, and baptismal space (White 1988).

The six spaces correspond with the liturgical practices of the Reformed church, leading to the conclusion that Reformed churches are structured into three distinct divisions of space: the gathering space, the congregation space, and the pulpit space. Each of these three divisions includes a transition space.

Based on the grouping of spaces above, the sequences and themes are formulated with the help of architectural anatomy theory which is divided into 4 scopes (Salura 2015). The scope includes the environment, site, building, and form.

The sequence in the Reformed church is categorized into five distinct parts. The first sequence embodies the theme of initiation, transitioning from the profane outside to the sacred interior. This transition encompasses two phases: the movement from the surrounding neighborhood to the church grounds (environmental scope) and from the church grounds to the church building itself (site scope). The second sequence consists of a horizontal gathering space. The third sequence marks the transition from this horizontal space to the sacred space. The fourth and fifth sequences represent areas that engage in reciprocal and continuous interaction, specifically the pulpit area and the congregation area.

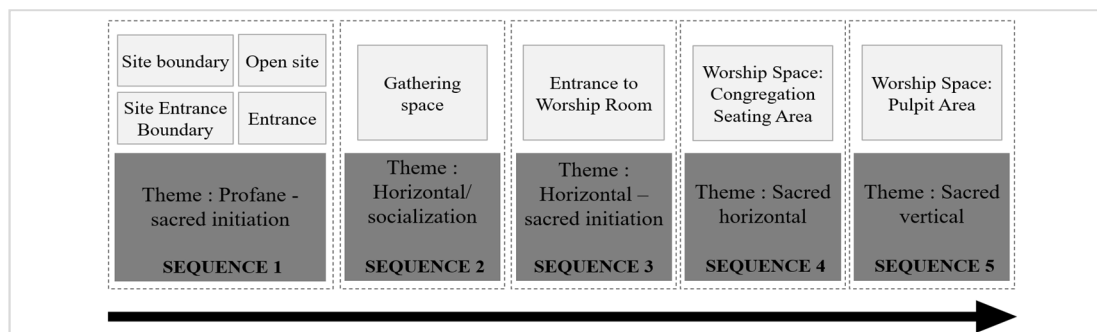


Figure 2. Reformed church room sequence diagram

In GRII Bandung, five sequences have been identified and formulated. The first sequence encompasses the transition from the outside environment into the church grounds, followed by the progression from the church area to the entrance of the church building. The second sequence occurs within the church lobby, serving as a gathering space. This gathering space leads to the third sequence, which consists of several distinct transition spaces. Sequences four and five are located in Stephen Hall, the main worship area. The space for sequence four is further divided into the main seating area and the balcony seating area, while sequence five is designated for the pulpit area.

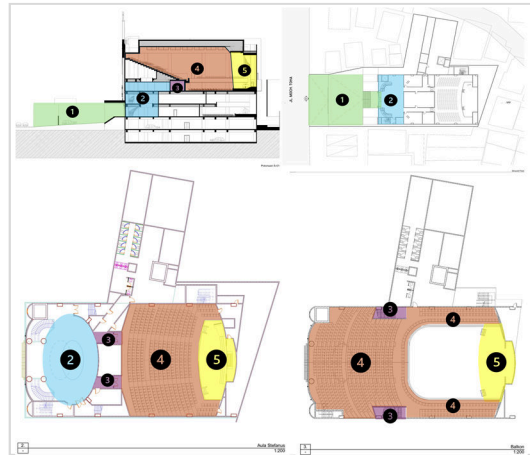


Figure 3. Sequence diagram of GRII Bandung

Step 2: Analyzing each stage of the sequence

First, start with the formulation of the concept and standard of the sacredness of the spatial atmosphere in each sequence. This is done by elaborating the theory of spatial atmosphere (Zumthor and Pallasmaa) and elaborating theory of sacred architecture (Geva 2011; Hoffman 2010; Eliade 1957; Jones 2000). Formulated concept results are sequence, light, horizontal orientation, vertical orientation and architectural design property.

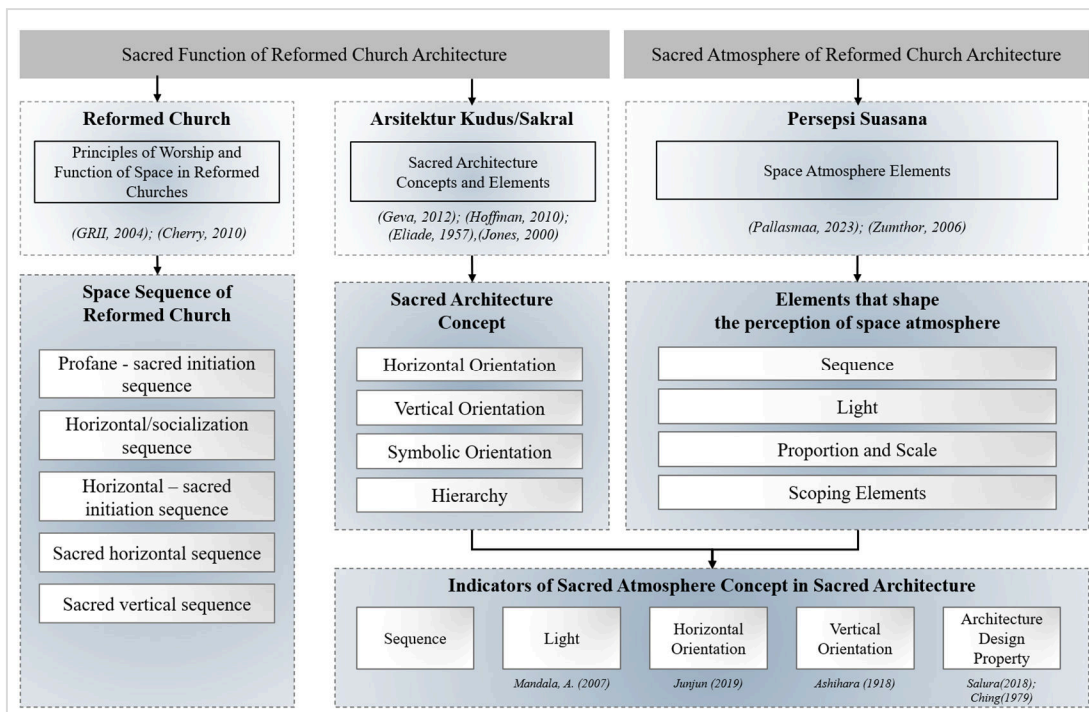


Figure 4. Conceptual framework of sacred atmosphere in sacred architecture elaboration

Space atmosphere is a state where a building can 'move' humans as users (Zumthor 2006). In summary, the atmosphere of a space is a response to external human factors, which are then interpreted through perception and behavior, creating a reciprocal relationship. The ambiance theories proposed by Peter Zumthor and Juhani Pallasmaa suggest that spatial ambiance can be

influenced by various elements, including the sequence of spaces, light, scale and proportion, orientation, and the design of individual architectural components. The design of these architectural elements significantly impacts the perceptual system, thereby affecting the overall ambiance of the space.

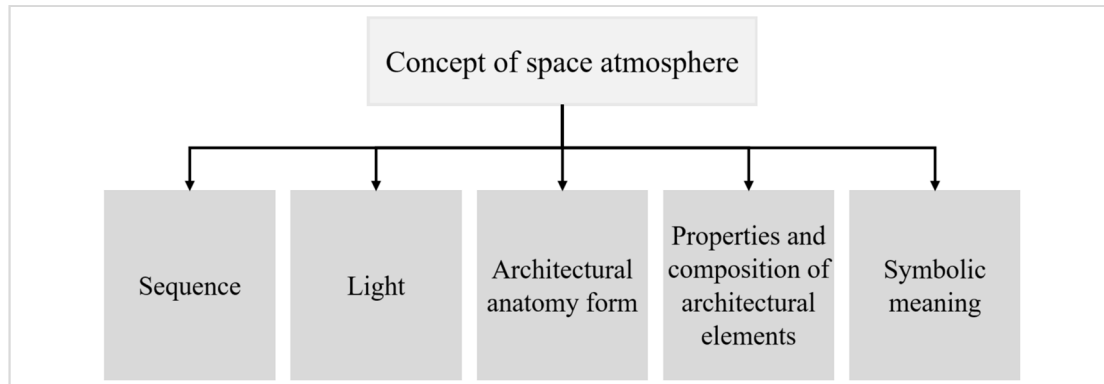


Figure 5. Space atmosphere concept elaboration diagram

The three approaches to the concept of sacred architecture, as articulated by Anat Geva, Mircea Eliade, and Hoffman and Jones, highlight several key elements, including vertical orientation, horizontal orientation, symbolic identification, and the hierarchy of forms and activities. Anat Geva explores axial orientation through the concepts of sacred plan (horizontality) and sacred verticality (verticality). In contrast, Eliade addresses sacred orientation in terms of axial,

geometric, and locational orientations. Symbolic identification is examined by Hoffman, who categorizes it into architectural, archetypal, and atmospheric dimensions. Geva also discusses the aspect of symbolic identification concerning light and acoustics. The final aspect of the architectural concept is hierarchy, which encompasses discussions related to both the hierarchy of activities and the hierarchy of forms.

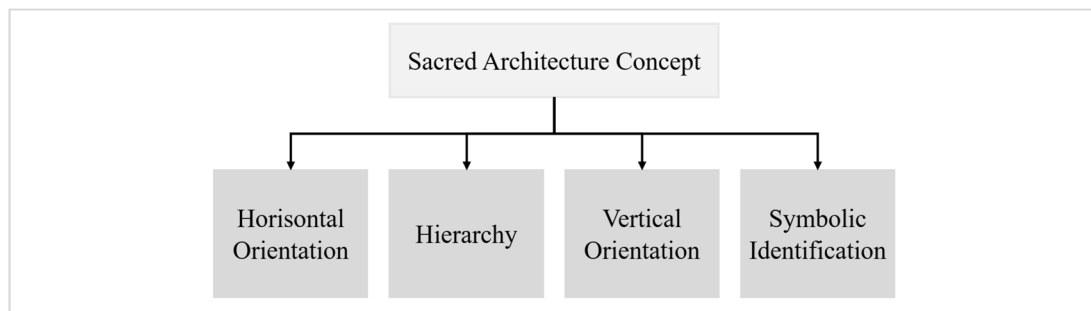


Figure 6. Sacred architecture concept elaboration diagram

The formulation of the concepts of spatial atmosphere and sacred architecture is further elaborated to develop a comprehensive concept of sacred atmosphere. This formulation involves integrating elements that constitute the aspects of both the building atmosphere and sacred architecture. The sequential aspects within the

concept of atmospheric space correspond to the hierarchy found in sacred architecture, specifically relating to the hierarchy of functions and activities. Additionally, the discussion of anatomical forms in the concept of spatial atmosphere aligns with the orientation of space within sacred architecture. Furthermore, the

composition of architectural elements and their symbolic meanings in the spatial atmosphere parallels the concept of symbolic identification in sacred architecture. The elaboration of each

concept is supported by established standards and benchmarks, which are illustrated in the accompanying diagram and table below.

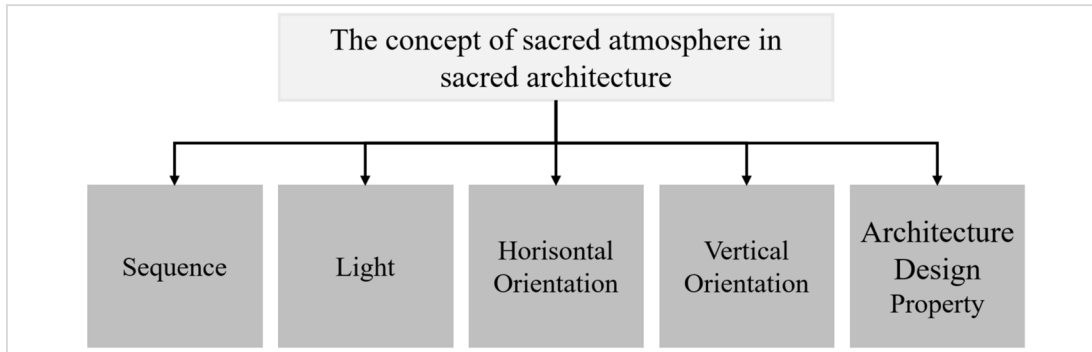


Figure 7. The concept of sacred atmosphere in sacred architecture elaboration diagram

Table 1. Standard concept of sacred atmosphere in reformed church sacred architecture




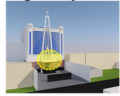
Sacred atmosphere concept in sacred architecture	Benchmark	Concept of sacred atmosphere in reformed church sacred architecture standard
Space sequence	-	It has a division of space based on the five sequences.
Light	The quantity and quality standards of light (Mandala 2007)	Each light design was designed to fulfill the theme of each sequence. (1) Profane - sacred initiation sequence → contrast light from the surrounding environment. (2) Horizontal/socialization sequence → warm lighting. (3) Horizontal – sacred initiation sequence → dim, warm. (4) Sacred horizontal sequence → dimmer than the pulpit area. (5) Sacred vertical sequence → contrast to congregation area.
Horizontal orientation	Axial symmetry in sacred architecture (Junjun 2019)	Each horizontal orientation design was designed to fulfill the mood theme of each sequence. (1) Profane - sacred initiation sequence → building mass has a symmetrical axis. (2) Horizontal/socialization sequence → orientation is horizontal and centralized. (3) Horizontal – sacred initiation sequence → gateway to the worship space. (4) Sacred horizontal sequence → space orientation to the pulpit. (5) Sacred vertical sequence → the center of the worship space and the church.
Vertical orientation	Theory of human scale (Ashihara 1918)	Each vertical orientation design was designed to fulfill the mood theme of each sequence. (1) Profane - sacred initiation sequence → monumental scale. (2) Horizontal/socialization sequence → intimate or normal in scale. (3) Horizontal – sacred initiation sequence → normal scale space. (4) Sacred horizontal sequence → normal scale space. (5) Sacred vertical sequence → monumental space and the center of the church.

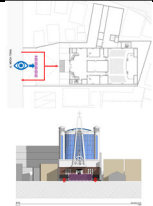
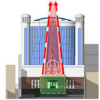
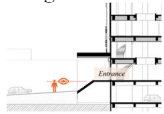

Sacred atmosphere concept in sacred architecture	Benchmark	Concept of sacred atmosphere in reformed church sacred architecture standard
Architecture design property	The concept of property and composition (Salura 2018)	Each architectural element design is designed to fulfill the mood theme of each sequence. (1) Horizontal/ socialization sequence → warm and interactive, incorporating natural elements and light. (2) Horizontal – sacred initiation sequence → designed as a switch. (3) Sacred horizontal sequence → symmetrical and hierarchical to pulpit area. (4) Sacred vertical sequence → symmetrical and contrasting, giving the impression of the highest hierarchy and majestic.

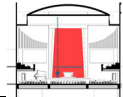
After formulating the standards and benchmarks, the five concepts are applied to the case study. Method, a reading tool based on ideogram elaboration (Wirakusumah 2022). The

discussion is divided by scope and discussed with the property and composition theories (Salura 2018) and benchmarks formulated in the previous section.

**Table 2.** Ideogram table of sacred atmosphere sacred architecture in Reformed Church of GRII Bandung

Sequence	Church property	Sacred atmosphere concept in sacred architecture	Properties and composition of the case study (form and environment scope)
Profane - sacred initiation sequence	Form, entry, church boundary	Light	Contrast to the surroundings, especially at night. 
		Vertical orientation	The building mass is tall and large, in contrast to the surrounding buildings.
		Horizontal orientation	The site orientation to the church entrance is symmetrical.
		Architecture design property	The cross symbol is located above the building with large size and bright color. 
			The body of the building at the human level uses dark colors and the head of the building uses light colors. 
			The shape of the canopy abstracts the shape of a book (context: The Bible) and uses light colors. The canopy color gives the impression of a journey to the top where the building body uses light color. 
Sequence	Church property	Sacred atmosphere concept in sacred architecture	Properties and composition of the case study (site scope)
Profane - sacred initiation sequence	Church site	Light	Uniform lighting
		Vertical orientation	-
		Horizontal orientation	The symmetric axis in the church site to the building entrance is less noticeable because the axis is dispart by a wall.

Sequence	Church property	Sacred atmosphere concept in sacred architecture	Properties and composition of the case study (building scope)
		Architecture design property	Floor: The site level is higher than the surroundings.
			
Profane - sacred initiation sequence	Entrance	Light Vertical orientation	Lighting as a direction to the church. Drastic floor elevation has an ornament above the canopy that rises to the building.
			
		Horizontal orientation	Symmetrical impression because it is placed in the middle axis of the building.
		Architecture design property	Floor: The elevation comparison is drastic, above the height of the human eye. It provides the impression of entering into a more sacred space.
			
			Wall: The eye-level walls use darker colors, in contrast to the lighter upper building's body. Ceiling: bright color canopy, providing hierarchy from the church site which is dominated by dark colors at the human-eye level.
Horizontal/ socialization sequence	Gathering hall	Light Vertical orientation	Uniform lighting, warm temperature. Horizontal space, with a low ceiling. However, there is a void which gives a spacious space impression.
			
		Horizontal orientation	Horizontal space orientation with central space characteristics.
		Architecture design property	Flooring: Has a light but warm color (warm tone). Wall: There are openings, providing natural light to enter. Ceiling: The ceiling height tends to be low.
Horizontal – sacred initiation sequence	Transition room to Worship Space	Light Vertical orientation	Uniform lighting, is sufficient. Short horizontal hallway.
		Horizontal orientation	The main transition space is a short horizontal hallway while the transition space to balcony seating is a staircase corridor (less horizontal).
		Architecture design property	Wall: dark and warm colors. Ceiling: dark colors with a low ceiling.
Sacred horizontal sequence	Ruang duduk jemaat	Light Vertical orientation	Warm light using uniform lighting and natural lighting from the openings at the top of the wall. The main seating area has a lower ceiling than the pulpit.
		Horizontal orientation	The orientation is towards the pulpit. The size of the congregation area is much larger than the pulpit with a scale of 1:10.
		Architecture design property	Flooring: bright and warm tone floor. The floor elevation (main seating area) is lower than the pulpit.

Sacred vertical sequence	Mimbar	Light	Wall: dark wall colors which are dark brown. Ceiling: light colors ceilings and has a repetitive grid pattern design.
		Vertical orientation	Contrast lighting using spotlights. A lot smaller in length and width but has monumental height.
		Horizontal orientation	
		Architecture design property	The placement is symmetrical to the congregation's area. Floor: dark floor colors and fairly high elevation compared to the congregation seating area. Walls: The back wall of the pulpit uses a red color that contrasts. Ceiling: The ceiling pattern is radial.

Step 3: Concluding the relationship between the sacred atmosphere and reformed church design

Based on the findings from steps one and two, conclusions can be drawn regarding the relationship between the sacred atmosphere and the architectural design of the Reformed church.

This relationship is presented in the table formulation created in the second step. The most pronounced connection is identified in the degree to which a dominant concept impacts the atmosphere of the established spatial theme.

**Table 3.** Table of the relationship between the sacred atmosphere and sacred architecture of reformed churches

Sequence	The concept of sacred atmosphere in the sacred architecture of the Reformed Church				Description
	Light	Horizontal orientation	Vertical orientation	Architecture design property	
Profane - sacred initiation sequence	FR	SR	SR	FR	The theme sequence is significantly influenced by the horizontal and vertical orientation. These two concepts define the figure of the building concerning its surroundings. The concept of light is moderately related because the light outside the building is very uncertain. Meanwhile, the architectural properties are moderately related because they play a greater role in the building.
Horizontal /socialization sequence	FR	MR	FR	FR	The four concepts are fairly and moderately related because the nature of the space is more flexible.
Horizontal - sacred initiation sequence	FR	FR	FR	FR	All concepts play a role but the space is not as essential as the worship hall.
Sacred horizontal sequence	SR	SR	SR	SR	In this sequence, the lighting must be specifically designed to enhance and emphasize the pulpit area. The concept of horizontal orientation is important because the orientation of the congregation's seating affects the quality of worship. The vertical concept in this area must be designed so as not to steal the hierarchy. The design of architectural properties must be designed to support the theme and

The concept of sacred atmosphere in the sacred architecture of the Reformed Church					Description
Sequence	Light	Horizontal orientation	Vertical orientation	Architecture design property	
					atmosphere of light according to the sequences.
Sacred vertical sequence	SR	SR	SR	SR	This sequence is the main hierarchy in worship activities, so the entire concept must be given close attention to obtaining the primary spatial image.

The table above indicates that the most robust relationship between sacred atmosphere and architecture is established within the space exhibiting the highest functional hierarchy, specifically the worship space, which encompasses the fourth and fifth sequences. All sequences and their corresponding designs are intentionally structured to reflect this hierarchical progression. Although the other sequences are influenced by the five concepts, they primarily serve as supportive elements that facilitate the journey toward the fourth and fifth sequences.

## Conclusions

Each church denomination possesses its distinct liturgy and principles of worship, which significantly influence the atmosphere required for worship activities. Notably, variations in the form and ambiance of spaces can be observed among churches within the same denomination. These differences reveal underlying concepts that impact the sacred atmosphere in church design, one of which is the division of space into five sequences.

The sacred atmosphere is established through the sacred design of the Reformed church. To achieve a sacred atmosphere in Reformed church architecture, it is essential to incorporate concepts related to the design of sacred architecture. The five key concepts that contribute to the sacred atmosphere in sacred architecture are sequence, light, vertical orientation, horizontal orientation, and the design of architectural elements. These concepts are particularly relevant to the fourth and fifth sequences, which represent the hierarchy of activities within the worship space of the Reformed church.

This research aims to offer valuable insights to practitioners in the form of alternative church designs. It is anticipated that the findings will also guide Reformed church managers regarding

church policy management. Furthermore, the results of this study are expected to serve as a foundation for more extensive future research.

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**Author(s) contribution**

**Gianina Ariella Timothea Hakim** contributed to the research concepts preparation, methodologies, investigations, data analysis, visualization, articles drafting and revisions.

**Purnama Salura** contribute to the research concepts preparation and literature reviews, data analysis, of article drafts preparation and validation.

**Aldyfra Luhulima Lukman** contribute to methodology, supervision, and validation.

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