

SPIRITUAL VALUES BETWEEN SYMBOLISM AND SUSTAINABLE DESIGN STRATEGIES OF THE COPTIC ORTHODOX CHURCH ARCHITECTURE القيم الروحية بين الرمزية واستراتيجيات التصميم المستدام في عمارة الكنيسة القبطية الأورثوذكسية

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ABSTRACT

Religious beliefs significantly affect individuals' and groupings' behaviors, lives, and attitudes, shaping a sustainable future for new generations. In Egypt, the origin of forming Coptic Church architecture and urban design was revealed significantly in using sustainable factors as the environmental, economic, cultural, and political ones that shaped the Coptic Religious buildings from those brought from the West, in addition to enhancing the idea of God's home on earth.

The study approach enriched the development of Coptic Churches affiliated with their interaction with and between people, places, and epochs. Its significant idea is to address the question of attaining spirituality whenever socially sustainable strategies are utilized in Coptic buildings.

The research ends with a set of conclusions and recommendations that constitutes a list of design principles for the Coptic Church, addressing both sustainable design strategies and symbolism to promote its spiritual value towards a contemporary Coptic Church design approach.

KEYWORDS

Spiritual Values; Symbolic Coptic Orthodox Church; Sustainable Design Strategies

المخلص

للمعتقدات الدينية تأثير كبير على حياة و سلوكيات الأفراد والمجتمعات في التعامل معا فهي التي تشكل مستقبلاً مستداماً للحفاظ على الأجيال الجديدة. من الجانب المعماري في مصر ، ظهر أصول تشكيل عمارة و عمران الكنيسة القبطية الاورثوذكسية بشكل كبير في استخدام العوامل المحققة لمبدأ الاستدامة مثل الاهتمام بالنواحي البيئية والاقتصادية والثقافية والسياسية التي شكلت طراز مختلف لعمارة الكنائس القبطية في مصر عن تلك التي تم إحضارها من الغرب، بالإضافة إلى تعزيز الفكرة الأساسية للكنيسة و هي انها بيت الله على الأرض. و لذلك تهدف الدراسة الي ارتقاء تطور تصميم الكنائس القبطية من حيث ارتباطها بالافراد و المجتمعات في نطاق زمني و مكاني، فتتمثل الفكرة الرئيسية للبحث عن اجابة السؤال المتعلق بمدى تحقيق الروحانية للمبني كلما توفرت الاستراتيجيات المستدامة في تصميم الكنيسة القبطية. ويختتم البحث باستنتاجات وتوصيات قابلة للتطبيق من خلال وضع قائمة بمعايير تصميمية لعمارة الكنيسة القبطية فيما يتعلق بمنهج التنمية المستدامة والرمزية معا و التي من خلالها تعزز قيمتها الروحية في اطار عمل منهجية تصميمية معاصرة للكنيسة القبطية الأورثوذكسية في مصر.

الكلمات المفتاحية

القيم الروحية؛ رمزية الكنيسة القبطية الأورثوذكسية؛ استراتيجيات التصميم المستدام

1. INTRODUCTION

Religion is a collected belief system usually full of rites and rituals in support of the system and its core beliefs. It makes people feel they are a part of something and can be a great tool for many in life. Beliefs have no limits. They can be individual beliefs or be of common beliefs. Religion always worked as the main source of inspiration for brilliant masterpieces in various fields such as literature, philosophy, sculpture, painting, and architecture (Senge, 2006).

A worship place is particularly designed as a sacred space where individuals or a group of people perform acts of dedication, admiration, or religious studies, these places could be either temples, churches, synagogues, or mosques. Religious buildings worldwide have various types and ritual concepts always validate a very important role in resembling the nation's heritage through space and time (Körösvölgyi, 2017). Most of these buildings show up the interrelationship between the community's quality of life and their cultural background in addition to their religious beliefs, as religion is and will still be one of the most vital aspects that designate the spiritual dimension of the nation's culture. All our actions are based on our beliefs conducted out of several stages starting from simple observations then adding some sense according to our cultural backgrounds and ending with conclusions that are the seeds forming the surrounding built environment.

In Christianity, the Bible's Old Testament is considered to be the sacred scriptures of the Jewish faith, while Christianity draws on both the Old and the New Testaments, the church is figured and recognized to be a spiritual space for a group of people to cherish God in several and different ways as ***“Go up to the hills and bring wood and build the house, that I may take pleasure in it and that I may be glorified, says the Lord.”*** Haggai 1:8. Also, many verses by Jesus's Disciples in the New Testament are in Matthew 16:18 ***“And I tell you, you are Peter, and on this rock, I will build my church, and the gates of hell shall not prevail against it.”*** And also 1 Peter 2:5 ***“You yourselves like living stones are being built up as a spiritual house, to be a holy priesthood, to offer spiritual sacrifices acceptable to God through Jesus Christ.”*** (The Holy Bible, 2001). Both verses are a real witness to the direct relationship between God and people through his Church and that it's not only a simple building to gather people for *prayer*, but it is also the only way to enrich our inner spiritual soul through this space. It is believed that it is the link between God and his people. The prayers live at an earthly and a heavenly level both at the same time through the church. Thus, churches are designed with much of a religious symbolic spiritual form. Its architectural form conveys a network of different factors; all working together to formulate a great tangible message for Christian belief aligned with the idea of creating God's home on earth (R. Rajalakshmi, A. Adaikalaraj, 2016).

Nowadays, despite the high standards and calls for a sustainable built environment, in addition to essential aspects of local social values, identity, and character that should be highly respected, especially in the design of spiritual and religious edifices, Coptic Church designs are suffering from a missing development strategy for viewing this spiritual building in its ideal state. The Coptic Church faces a lot of external factors (Figure 1) which started to defect its architectural and urban design such as the building value ignorance, site location concerning surrounding context, high external symbolism with a repudiation of internal services function, prototypical church design with scale adjustments, denial of site considerations either with its cultural, social or environmental needs, strange random modern designs, in addition to the unawareness of the scope of designing a sustainable church not only to cope with the architectural future call but



Figure 1, Chaotic design actions affecting the spiritual essence and value of the Coptic Orthodox Church
 (Authors, Nativity Cathedral /NC Google images,2019)

also to apply one of the Christianity roles in the community. At the same time, concepts of climate, natural constraints, the influence of people, economics, and cultural background are considered the design form and function generators. In this sense, the research’s main purpose is to detect the design methodology of applying a socially sustainable strategic approach in Coptic Church design development as one of the most important Christianity roles for a sustainable community and the aim of influencing people by achieving building spirituality.

1.1 Research Problem

The main research problem is formulated due to the chaotic actions observed in the latest Coptic Orthodox Church features which lack the social sustainable design role of the Coptic Church and its sense of belonging between the building and its users and thus its spiritual value. The research also triggers (Figure 2) the explanations facing the development of a Coptic Church design strategy in Egypt that are not only in difficulties, quantitative problems, and insufficiency of Egyptian church building law, but also in the qualitative deficiency of these facilities and the failure to promote sustainable environmental concepts in the design of Coptic Church buildings about its symbolism and spiritual value.

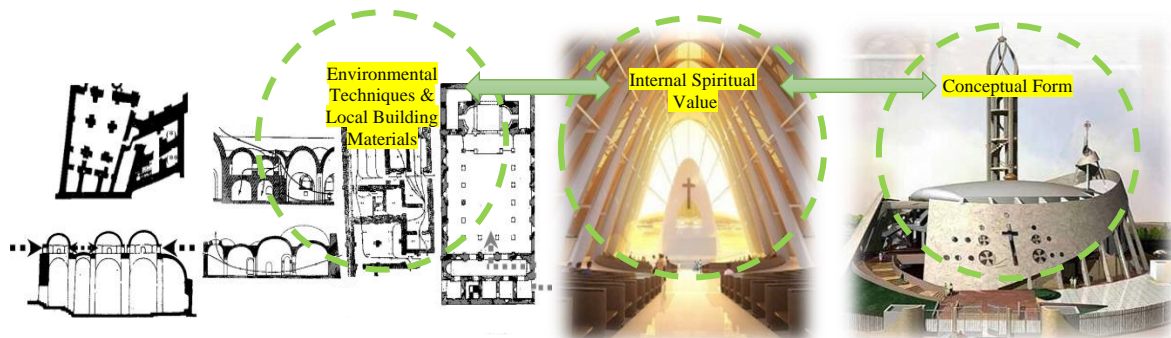


Figure 2, Contemporary Spiritual Coptic Church lost between Sustainability and Symbolism
 (Developed by Authors, 2022)

1.2 Research Objective

The research aims to promote the idea of a social sustainable design strategy for the Coptic Church development, by clarifying the role of the Coptic Church building in achieving a sustainable society, as well as access to a set of design standards and requirements that can be applied during the design phase of a sustainable spiritual Coptic Church building in Egypt, in respect to the governmental actions to attain the objectives of the sustainable development strategy in Egypt 2030.

1.3 Research Hypothesis

The research hypothesis depends upon the relationship between tangible and intangible essence, value, and the feeling that is hidden behind the architecture of the building, especially in the Coptic Church. In churches, we find this significance of symbolism is highly demonstrated in every single detail of the building, and in this research, the premise is achieving an additional approach in the development of Coptic Church design where the sustainable development program pillars which are the environment, society, and the economy of the building retake the place in design priority physically and emotionally. This paper is a new consideration for an effective social sustainable spiritual Coptic Church that will be tangibly seen on the building and another intangible effect on the users themselves as one of the main concerns of Christianity.

1.4 Research Importance

This research greatly influences societal improvement regarding the importance of the religious building role, especially in Egypt and the governmental awareness efforts for achieving a sustainable community that specifically reflects in five main fields which are the Environment, Aesthetic, Function, Economy, and Socio-Cultural sectors.

Through this research, a wide gate of other research will be opened in various fields besides architecture as it will affect multiple ranges such as religious studies, social behavior, humanities, sociology, laws and regulations, urban planning, civil engineering, environmental studies, etc. Considering the environment through a religious building is a vital start on all scales and not only for Christian groups in addition to shifting the understanding of a church building from different aspects as follows: Social-Cultural needs – Environmentally friendly – Form functionalism – Aesthetical values-oriented economically towards design priorities.

1.2 Methodology

The research contains a theoretical study established through an explanatory study of its ideas and keyword identification. Then followed by a comparative analytical study on the spiritual aspects of two case studies for contemporary modern Coptic Churches which are St. Virgin Mary Church in Zamalek and Shorook City. Both have the same form of Noa's ark to investigate the expressive effective elements and tools in the embodiment of spiritual values and to examine the existence of ideologies that goes along with the socially sustainable development framework that takes into consideration the morphological characteristics of the Egyptian Coptic Church. The research concludes with a set of design standards for the contemporary sustainable Coptic Orthodox Church.

1.3 Research Constraints

Many diverse variables have a great impact on the Coptic Church building's development. The researchers acknowledge that other variables affect the design of the Coptic Church, however, this research, focuses on the impact of social sustainable design that increases its spiritual value for its users in contemporary churches. Environmentally friendly, socio-cultural, and economic design concepts became the globe's main architectural perception; thus, this study is limited to the architectural spatial experience reflected in achieving a socially sustainable approach for adhering to the concept of the sustainable spiritual Coptic Orthodox church building.

2. THEORETICAL FRAMEWORK

2.1 Identification of the Contemporary Coptic Orthodox Church

The Coptic Church can be recognized in two attempts, as a worshipping place and as a community-serving building as identified below:

2.1.1 Symbolic: The Coptic Church as a worshipping Space

The Coptic Church is a manifestation of the Christian religion. It represents the core of the Holy Bible, the doctrine of faith, ascetic life, and the sacred outlook on human beings' lives and souls, all that work together to lead to "life in Christ". This holy life is not exclusive to the clergies or monks only, but it is for every member of the church. Everybody participates in worship and performs through organized church services and liturgies. They worship in the church collectively not individually act as one entity in spirituality (An Introduction to The Coptic Art of Egypt, 2020). As shown below (Figure 3) one of the first oldest churches in Egypt “The Hanging Church – Old Cairo” and how the considerations of the philosophy of the design affected all its architectural features plan, ceiling, façade, and internal design altogether gave a great value and till this moment it is considered a great example of the integration between symbolism and sustainable design achieving a high spiritual effect (Adamantius|, 2019) (Morgan S. , 2016).



Figure 3, Virgin Mary (The Hanging) Church Architectural Spaces Analysis (Morgan. S, 2016)

2.1.2 Sustainable: The Coptic Church serving the community

A church is also identified as serving its community's wide range of various activities that engage the communities together at the local, national, and international levels. This determines the relationships (Figure 4) that lead toward a greater understanding, fellowship, unity, and cooperation. Since then, the function of a church building doesn't stop at the worshipping of God, but architecturally, the building started to be developed and reshaped into an architectural complex composed of several buildings for engaging activities besides the main massive hall, the church (Beatley, 2011). Even lately the church became a lively building that works not only on Sundays and Friday's prayers, but it works daily, not only morning times but also all day and till night times due to the multiple activities besides being a church such as Sunday schools, educational centers, scientific courses classes, labs, youth activity center, health care centers, elderly social activities, recreational areas... etc. All these activities are combined to frame a new image of the Coptic Church as it later appeared with its serving attached buildings and their direct relation to each other. Thus, many observations are realized among every church through the services it offers and how it is directly attached to everyone no matter his/her points of interest or age, but it is measured by the given service besides being mainly the home of God on earth.

Believing in God through a certain religion act as a vital part of people’s daily life that can reach the level of the proper time to cook eggs by saying a certain number of prayers!! When the concept of a church is deep-rooted in its community, and its inclusion is running as a public servant, the church will endlessly impact the lives of the people and will fulfil Jesus’ mission on earth. The fundamental function of the church is to be involved in every side of the believer’s life. Moreover, the Coptic architecture did appear in multiple examples resembling great thoughts and beliefs that significantly appeared in its churches and monasteries (Fares, 2017).

Coptic Orthodox Church Architectural Classification

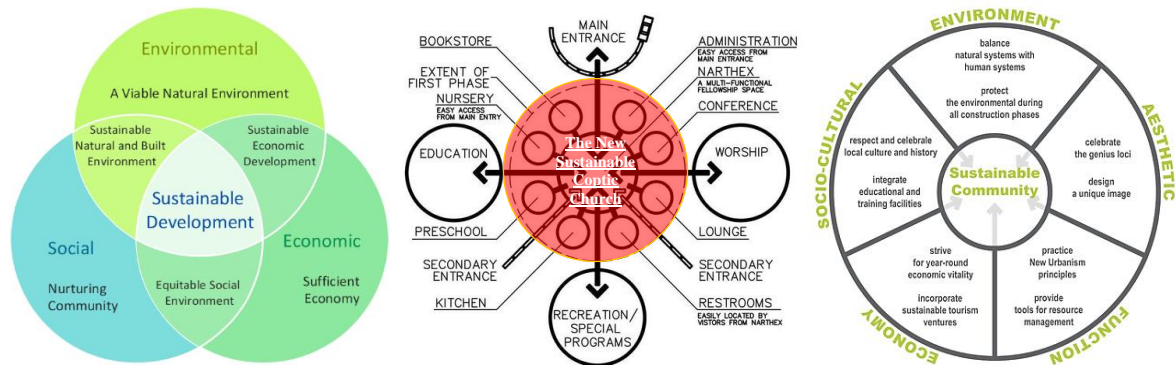


Figure 4, A combined illustration for the 3 Main Factors completing the ideology of Sustainable Design Strategies and The Oneness of the Coptic Orthodox Church for achieving a sustainable community (<https://jmburchall.wordpress.com/key-points-of-sustainability-2/>,2022) (Rev. L. Gordon Bucy,1971), Developed by Authors, 2022

In the sense of the dialogue between art and architecture, Copts were naturally influenced by their ancestors in their churches in every detail of the building from the scale to its artefacts. Various scholars have detected similarities between the categorization of Coptic worship places and the ancient Egyptian temples in terms of the hierarchy of its building program (M. Nabil Guirguis, K. M. Dewidar, S. M. Kamel, and M. F. Iscandar, 2020). Moreover, the location and use of every element was the main aspect of functional inspiration to deliver the Christian liturgies’ correct meaning in the right space and moment. Thus, the applied signs and symbols in the church are used in three categories holding the building’s religious-spiritual senses can be shown in (Table 1).

Table 1: Classification of Coptic Church architecture according to its origin (Authors based on Guirguis M.,2020)

Coptic Orthodox Church Art & Architectural Elements Classification		
Coptic Church Compositions	Architectural Spaces	Architectural Elements
	Furnishings & Artworks	
The Aler and its contents	Elements in both the exterior and the interior of the building, such as openings: Doors & windows	Sanctuaries
Choir area and its development	Arches	Icons
Nave and Aisles	Columns	Frescoes
Transept in the cross forms of churches	Roof cover structures: domes & vaults	Mosaics,
Gallery (mezzanine level)	Iconostasis	hangings
Baptistery	Ciborium	Pews
Priests Rooms	Apse / Niches	Lecterns
Additional service areas	Ornamentations	ambos
Bell towers		Candle basins
		Reliquaries

2.2 Spiritual Values of Sacred Architecture

2.2.1 Spirituality Definition in Religious Architecture

The spiritual nature of a design can only be applied when the spiritual experience in the built environment is identified in the architect’s image. There are various sources from literature that interpret sacred texts, as there have been various psychological studies into what establishes a ‘spiritual experience’ (Figure 5). Maslow identified 15 types of people who were influenced by a great experience to what is called “self-transcendence” such as: Feeling responsible, active, being the creating centre of activities; being a prime mover, self-determined, etc. (R. Rajalakshmi, A. Adaikalaraj, 2016).

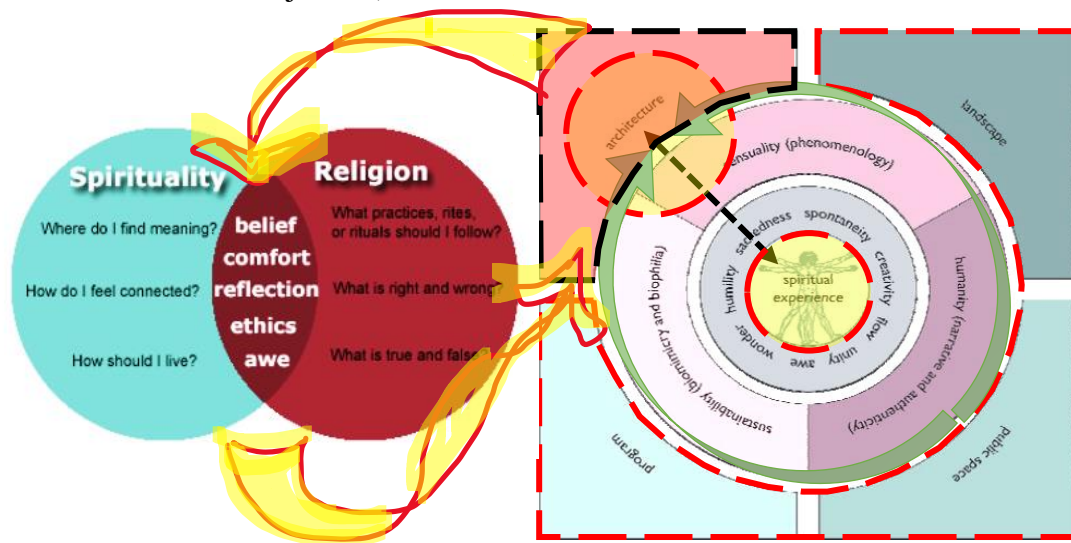


Figure 5, Common ground in-between Spirituality and Religion and its reciprocal relation application on spirituality on spatial experience in architecture (Robert Birch, Brian R. Sinclair,2013) (Adam Brady,2020), Developed by Authors,2022

Through these different mindsets, it is possible to develop the ideology of what a ‘spiritual experience’ might look like for worshipers, engaging in their surroundings at a certain time, and achieving a certain feeling. Accordingly, the role of the architect appears directly answers the question of how architecture and urban design correlate for individuals or groups of people fulfilling the higher-order need for a specific spatial experience. Hence this study is aiming at

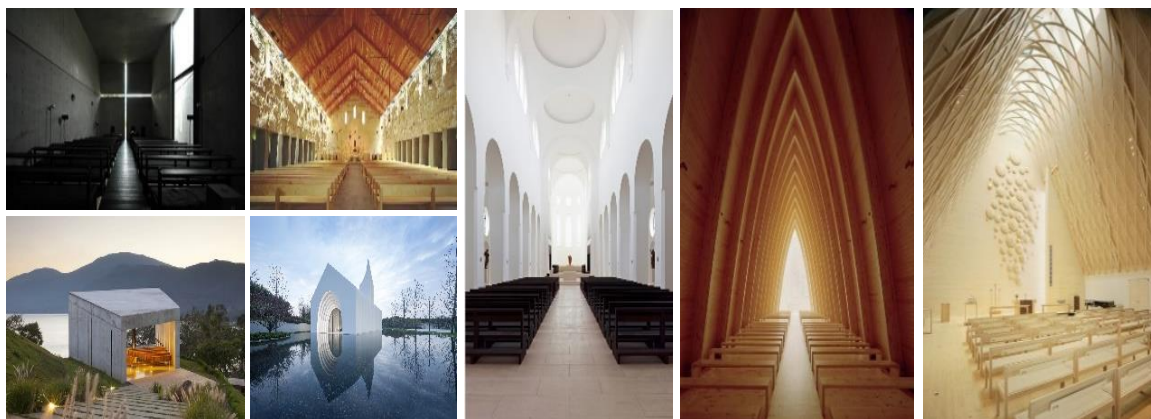


Figure 6, Integration of Natural environment in religious buildings enhances the spiritual value (Google images,2022)

the spiritual spatial experience (DeLiberis, 2019). Architecturally designed contemporary sacred spaces often avoid conventional religious imagery, lacking traditional symbolic elements such as the altar and pulpit and the grandiose, embellished exteriors of the past. Instead, elemental, restful, and modest spaces that often have a reverence for natural lighting and materials are slowly becoming the norm (Figure 6). In addition to being a place for worship, these contemporary religious buildings are increasingly becoming adaptable, multifunctional spaces that also serve the needs of the community (Walker, 2014).

The design of a space that brings comfort, peace and a real spiritual experience toward God while also addressing functionality, is not considered an easy task for an architect. The challenge is formed as feeling God can be found in nature also, so what can the built environment hold more than nature can do for attaining this spiritual effect?! One of the great approaches is the spiritual space found in the integration with a natural environment. It is a distinct space, a place whose character sets it apart from its surroundings, a space that moves the worshiper from the material world to the serenity of the divine. The designation of a place as spiritual comes from the human need to establish a connection with inner truth with the nature creator (LOUNGE, 2022).

2.2.2 Spiritual Values in Sacred Architecture

Sacred Architecture is found in all types of believers which were also described by the concepts of Buddhism and Taoism as having consequences for design related to their conceptions. Three conceptual areas have been identified that work together to enable the built environment to address self-transcendence as shown in (). The design, in spiritual architecture, is adhered to three main aspects: humanity, experiential, and sustainability.

Table 2: Three main Pillars of identification of spiritual architecture (Authors based on Brich R.,2013)

APPLICATIONS OF DESIGN ASPECTS IN SPIRITUAL ARCHITECTURE	
HUMANITY	<ul style="list-style-type: none"> ▪ Not only does architecture expresses the truth between us and applies sustainability to the lived world but also our recognition in our lives.
EXPERIENTIAL	<ul style="list-style-type: none"> ▪ Implications of all building materials and techniques authentically and truthfully to the observer.
SUSTAINABILITY	<ul style="list-style-type: none"> ▪ Achieving the feeling of oneness by the integration of nature in the built environment and the applications of biophilic design.

2.2.3 Spiritual Christian Inspirations in Coptic Orthodox Church

The sources of the signs and symbols are not only limited to the Holy Bible in Christianity, as shown in (Figure 7) but also, to other sources as well such as the Apostolic Tradition, liturgy, and the creed. Furthermore, some scenes can only be translated through parts of the liturgy, hymns, synaxarion, hagiographies, or daily prayers or offices (Agpeya). Their subjects are used all over the church to signify certain meanings (Khamis N., Tantawy D., 2021).

This is not limited to scenes on icons, but it also extends from the form of the space to detailed ornamentations, such as details in wooden carvings or stone inscriptions.

Thus, the following part of the study will hold the analytical framework by integrating the Coptic Church architecture design parameters (Figure 8) classification with the spiritual design aspects to trace the design strategy for a socially sustainable approach through two case studies of the same architectural form.

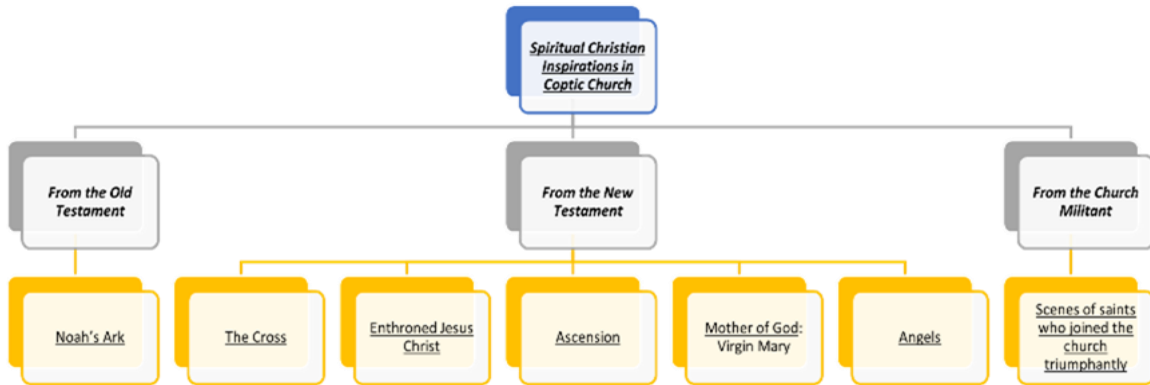


Figure 7, Design Parameters categories of religious spirituality in Coptic Church (Guirguis M., 2020)

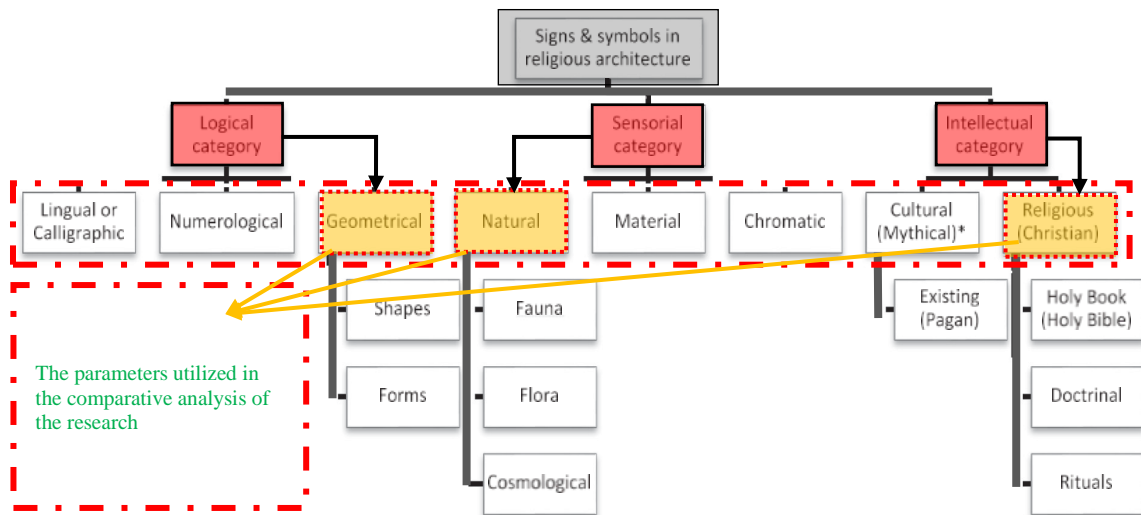


Figure 8, Research focusing on the Geometrical, Natural and Religious parameters utilized as signs and symbols that influences direct spirituality, Developed by Authors, 2022 based on (Guirguis M., 2020)

3. ANALYTICAL FRAMEWORK

This study relies on highlighting the effect of spiritual value in churches forms externally and internally and for this research; the researchers are examining this value through an analytical comparative study between two examples of its form inspired by Noa's ark symbol which resembles the only way of salvation from the world sins. The researchers chose the two cases that were selected depending on the following parameters: Coptic Orthodox churches in a residential context, the same conceptual form and basilica plan and, a modern school of design but formulated in two different ages the late 50s and 90s to examine the development of timeline scale. Moreover, the second recent new example is introducing added symbolic interpretations to the outer skin and the church plan which creates a modernized ideology for accepting the Coptic Orthodox church in a different view.

3.1 1st Case Study: Virgin Mary Church – Zamalek

It is located on Marashly street, Zamalek. The church is designed by Arch. Ramses Wissa Wassif was designed in the late 50s of the twentieth century based on the late modern school of design – The neoclassical style. The church plan is rectangular and follows the Basilican plan typology (Yassa K., Nagy G., 2021). The church is raised by flights of stairs as it is on the first floor due to the site conditions and to adhere to the greatness of god’s home. The roof structure of the church is combined with a ribbed vaulted roof and domes. The form design is inspired by Noah’s ark the symbol of salvation in Christianity. Virgin Mary church depended on natural ventilation through the openings and the occurrence of the roof structure enhancing the airflow within the space, this motivated the sense of integrating the natural environment inside the building in different techniques. Moreover, the large windows allow a huge amount of light to penetrate the space but the louvres are placed on the windows to attain some spiritual sense in the nave zone (Figure 9) (Fares, 2017).

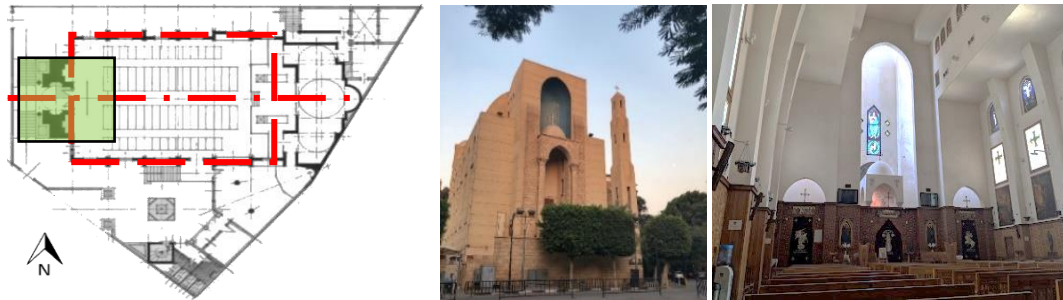


Figure 9, Virgin Mary - Zamalek church plan, external and internal view (Authors, 2022)

3.2 2nd Case Study: Virgin Mary & St. George Church – El-Shorouk City

It is in the heart of El-Shorouk City - Cairo, designed by consultant Architect Nader A. Goubran - NG Design Office in 1999 based on the modern style elaborating several Christian signs, symbols and ideas as Noa’s ark in its form which was highly observed as a normal tradition in the Coptic Orthodox churches. Based on the designer’s concept; the plan symbolized the fish (a Christian old symbol) and the outer skin walls were inspired by the praying hands oriented to God, which were all integrated and inspired utilized in the Coptic Churches in Egypt and this is interrelated to Noa’s ark form which is the most and highly observed (Figure 10). The church started prayers in 2009 and was still under construction. Also, the roof is a one-shell structure placed on a ribbed vaulted roof and a central dome above the sanctuary along the main spine of the church (كنيسة السيدة العذراء مريم و الشهيد مار جرجس بمدينة الشروق, ٢٠٢٢) (Goubran, 2022).

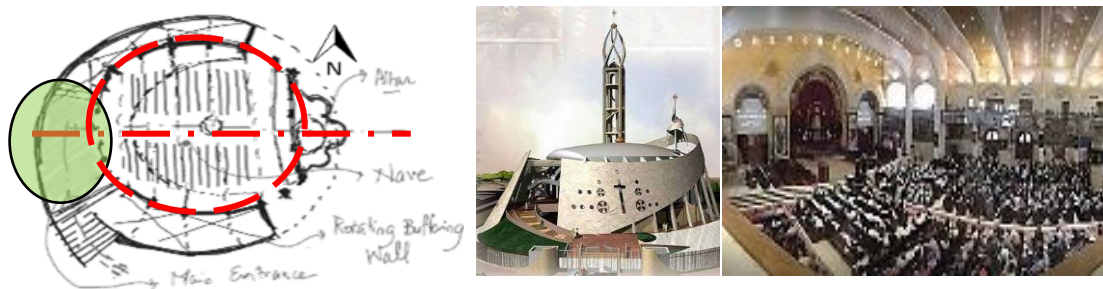
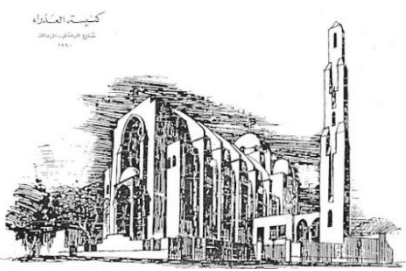


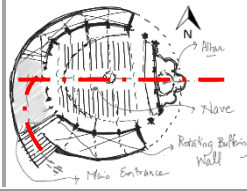
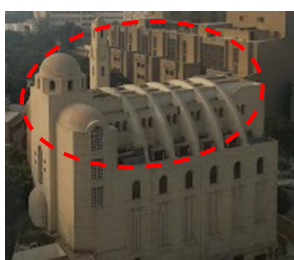
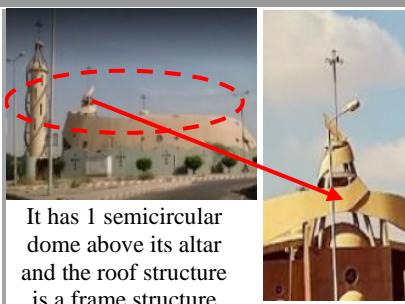


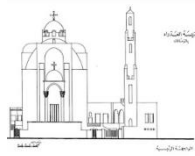
Figure 10, An anticipated plan for Virgin Mary & St. George Church and its external and internal experience of design (Authors & Google, 2022)

3.3 Comparative Analysis between the two case studies of the same design typology and form but the different impact and spiritual value:

Table 3: Case-Studies Comparative Analysis (Authors, 2022).

Points of Comparison		Spiritual Value Comparative Analysis of Virgin Mary Churches in Cairo-Egypt		Observations	
Points of Comparison		1. Virgin Mary Church – Zamalek - Cairo	2. Virgin Mary & St. George Church El Shorouk City - Cairo	Observations	
Coptic Orthodox Church Art & Architectural Elements Classification	Form Concept			<p>In both churches, the volume of the church was dominant on the whole site but in different volumes and spirits.</p>	
	Spiritual Value Reflection:	<p>Both Churches were inspired in form by Noa's ark in the old testament in the bible as a sign of salvation for Christian believers. Just as the ark was how Noah and his relatives were freed from demolition, so also the Church is the only way by which Christians are saved from the world's sins.</p>			
	Plan	 <p style="text-align: center;">Basilica – Orthogonal Plan Type</p>	 <p style="text-align: center;">Basilica – Elliptical Shape Plan</p>		<p>1st church has an axial centre line of design starting from the entrance to the altar but in the 2nd church, the entrance is perpendicular to the central axe of design.</p>
	Spiritual Value Reflection:	<p>Church plans are always to the East direction oriented as it symbolises that Jesus is the Sun of faith that rises daily and renews believers' lives.</p>			
Roof Structure	 <p style="text-align: center;">It has 2 domes in its roof structure, one above the altar and the other one located at the main entrance of the church supported by two large columns in addition to the ribbed vaults all over the nave and part of the roof is flat.</p>	 <p style="text-align: center;">It has 1 semicircular dome above its altar and the roof structure is a frame structure all over its nave, besides the sidewall structure rotating all over the periphery of the church and rising to cover its dome holding the cross.</p>	<p>The structure of the roof is highly observed in the exterior of the 1st church but in the 2nd church, the roof structure is not observed externally due to the rotating wall around the body of the church.</p>		
Spiritual Value Reflection:	<p>Each roof structure in every case study were representing the idea of the salvation ship in different methods but in the 2nd church, the wall surrounding the building defected the continuity of the architecture and whole spiritual image.</p>				

Elevations & Main Entrance



A magnificent scale of the main elevation uses one monumental, pointed arch embracing a dome structured on 2 large-scale columns. In addition, the location of the bell tower on the right side of the elevation enhances its balance.



The main entrance is formed by the wall surrounding the church body in addition to the surrounding fence of the church ending by a wave line weakening the form identity.



The main entrance elevation in the 1st church is highly observed within the surrounding context and in the 2nd, it's not well defined in the elevation composition

Spiritual Value Reflection:

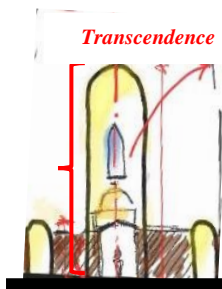
The massive grandiose scale of elevation and its integration with the skyline reflects a spiritual feeling in the entrance of sacred architecture.

Architectural Spaces Influence

Interior Experience



The same design treatment is also utilized in the interior experience of the church to verify the awe effect of God's house by the extravagant arch framing the altar in addition to one-third smaller ones in scale at each side at the end of the church central axis facing the east while in the opposite side in the west direction same pointed arch in 2 smaller in size framing the entrance/exit main door of the church.



Scale and proportion also have a great impact on the spiritual value of the internal spatial experience.



The curvy stretched arched frames in the transverse direction is the more dominant feature in the interior of the church nave, and its reputation towards the altar ends with a semicircular 3 arches at the altar, while the other direction a mezzanine floor acting as a gallery that gives an impression with dividing the height of church and decreasing its proportion in relevance to the church width.

The height of the last part of the church is greatly affected negatively because of the gallery and not experiencing the same scale as the nave height.

The second church lost the message of sacred architecture due to the proportion of the height and width together. In addition to the different scheme of lines inside the nave doesn't help the image of the interior to be one entity.

Spiritual Value Reflection:

The compatibility of the interior experience of the church to its exterior mood is important to verify the same message of the design.

Ventilation & Lighting Treatments



The church depended on natural installations of light and ventilation techniques using a pattern of longitudinal windows on the sides of the church and also the clearstory in the upper part of the roof. Very fine artificial light to sustain the essence of place sacredness.



Despite the large scale of elevations and the great opportunities of the site, the church depended greatly on the artificial lighting systems and ventilation even during the praying services in the morning times.

Regardless of the sustainable awareness nowadays and being environmentally friendly, the newly achieved public projects especially spiritual architecture still lack a huge deficiency of implementing sustainable techniques compared to old ones.

Spiritual Value Reflection:

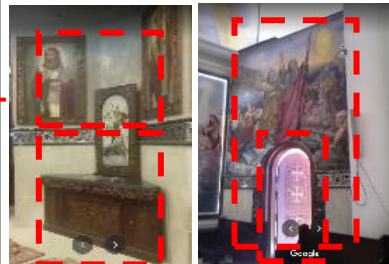
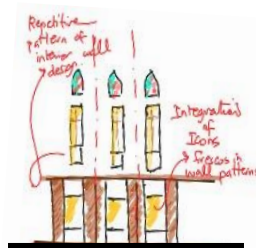
A sustainable spirit of sacred architecture is highly appreciated and applicable in design concepts through the integration of the natural environment in the church building techniques

Architectural Building Additions Influence

Furniture & Artifacts



The design of artwork or coloured windows adhering to religious facts in Christianity are well placed within the architecture of the building and complete the design of the internal experience. Even the colour of the furniture acts as a masterpiece of the Church nave relevant to the wooden cladding of walls.









The setting of the wall drawings is not identified within the total design, and both are contradicting each other. The artefacts and the style of drawings were out of the general design scope, and the toning of wall paintings doesn't match the whole image of the church to define the oneness of the internal spirit.

In addition, the furniture used is separated from the modernized essence of the Church.

The artefacts and furniture elements used in Coptic Churches have to complete the holiness effect of the spiritual internal experience in colour, scale, material, and effect.

Spiritual Value Reflection:

The furniture and artefacts are no less important than the architecture of the internal experience as they both complete the approach of the design and derive the spirituality of the space.

Internal & External Dual effect	<p>This church had the Same effect of architectural elements that helped to adhere to the spiritual design aspect of the church between the outside and the inside feeling of the church.</p> 	  <p>The modernized developed form of the exterior didn't affect the architectural style and elements used in the interior.</p>	<p>The visual effect of sacred spiritual architecture is highly observed when the image from the exterior is completed and verified in the interior morphology of space and not acting as a separate form for a certain concept and is then filled with different design elements.</p>
	<p>Spiritual Value Reflection:</p>	<p>The dual effect of the external and internal spiritual experience has to act together forming the solidarity and coherence of the form, function and identity of the Coptic Orthodox church.</p>	
Externals Additions	  <p>Some additional elements such as louvres and mashrabeya screens were used as external additional fixtures on the windows serving the environmental and aesthetical value of the architectural elements of the church elevation.</p>	 <p>Utilizing useless external additions on the elevation and bell tower as the wall and the steel revolving frame was not implemented in its function which decreases the value of the church design.</p>	<p>Fake treatments on facades of spiritual sacred architecture don't help in the delivery of religious messages but it's a weak point in building spiritual value.</p>
	<p>Spiritual Value Reflection:</p>	<p>Every single detail added to the church building has to be functionally implemented and completes the aesthetical and efficiency value both together.</p>	

3.4 Analytical Study Findings

The result of the previous study (Table 3) is figuring out a strategic design framework to elevate the spiritual value reflection and how they can create a meaningful, thoughtful, and intense exterior and interior spatial experience for the Coptic Orthodox Church. The research findings are listed as follows:

- The first step of the analytical study was to the effect of Christian theology articulation on architectural spaces and elements in both case studies of the same conceptual religious form.
- The variables of the functional, aesthetic, spiritual, symbolic, and ideological system are the most influential in the formulation of the Coptic Orthodox Church.
- The environmental and cultural factors affecting the symbolic features of the archaeological system of the Coptic Church are no less important than the study of the factors affecting the structural features, each complements the other and affects the formation of the architectural output in terms of form and content.
- The absence of some architectural elements in contemporary Coptic Churches such as domes does not diminish the aesthetic values as they can be replaced by other

mechanisms of expression appearing in the reservoir of the spiritual and symbolic purpose of design.

- The modernization of the Coptic Orthodox Church has to follow the spiritual values of the external and interior spatial experiences together.
- The case study comparative analysis summarizes the existence of architectural spaces and elements resembling symbolism and sustainable design approach in the church design and their different significance levels in articulation.
- Provide a ground-level analysis for a spiritual approach to analyzing and interpreting the values in the architectural spaces and elements employed in Coptic Orthodox churches.

4. CONCLUSION AND RECOMMENDATIONS

4.1 Research Conclusion

While today's world struggles with the consequences of climatic changes, political struggles, population growth, and other means by which people are displaced, it becomes increasingly important to consider how architects and planners might pervade places with meaning, poetics, and atmosphere that enhances the spiritual spatial experience.

Currently, not all churches accommodate their users' spiritual and social needs. By verifying the Coptic Church as a worshipping space and taking a significant part as a shared sustainably social service for the community, its architecture must respond to a dual role of being spiritual and socially well-developed to serve its users' needs. An expressive functional architecture can contribute to both delivering an inspiring experience and an impressive image. While expressing spirituality in material form, it is essential to cater to an amplified spiritual-social experience of both the form and the spiritual spatial dimensions.

4.2 Recommendations

Further studies in this field would consider a more detailed and meticulous application of the framework to real-world examples in addition to more elaborative three facets of recommendations as follows:

4.2.1 Legislative Recommendations

- Setting requirements for connecting utilities to the Coptic Orthodox Church as a communal building within articles of law applying green architecture standards, which contribute directly towards achieving a sustainable integrated church.
- Issuing religious building codes to support the ideology of symbolism linking the effects of socio-cultural and religious background that would create direct relations in the human response in the field of sustainability, promotes awareness and compliance with the application of its principles and qualities.
- Amending the Coptic Orthodox Church Building Law and adding a section regarding the necessity of defining architectural spaces according to the environmental treatment according to the conditions of each site to enhance the idea of spirituality through the integration and conservation of the natural environment.

4.2.2 Operational Recommendations

There is a need to further study and develop the following:

- Identify social design strategies for every community that could be changed according to which is easiest, low cost, and fast change.
- Setting the variables and parameters of spiritual architecture as a checklist in the design goal of the developed Coptic Orthodox Church through environmental, social, and economic methods in design.
- Creating architectural competitions for developing design concepts to adhere to a new creative ground for a new sustainable Coptic Church adapting to the natural environment and social needs besides its religious symbolism.

4.2.3 Regulatory Recommendations

There is a need to further study and develop the following:

- Develop an assessment checklist for existing churches regarding the sustainable aspects applied and their level of confrontation with the environmental and social factors.
- Concentrate on the design of contemporary Coptic Churches and familiarity not only with morphological and symbolic factors in design but also with applying sustainable design guidelines in the church building as natural lighting and ventilation.
- Focusing on developing strategic design formulation of spiritual values in the design of contemporary Coptic Churches in Egypt that suit the means of symbolic expression on the foundations of the orthodox Christian doctrine and its principles in line with the social aspects in the sustainable development attempt.

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