CATHOLIC DIOCESAN CENTRE
ZARIA

(AN ATTEMPT AT REVIVING ECCLESIASTICAL ARCHITECTURE IN A CATHEDRAL)

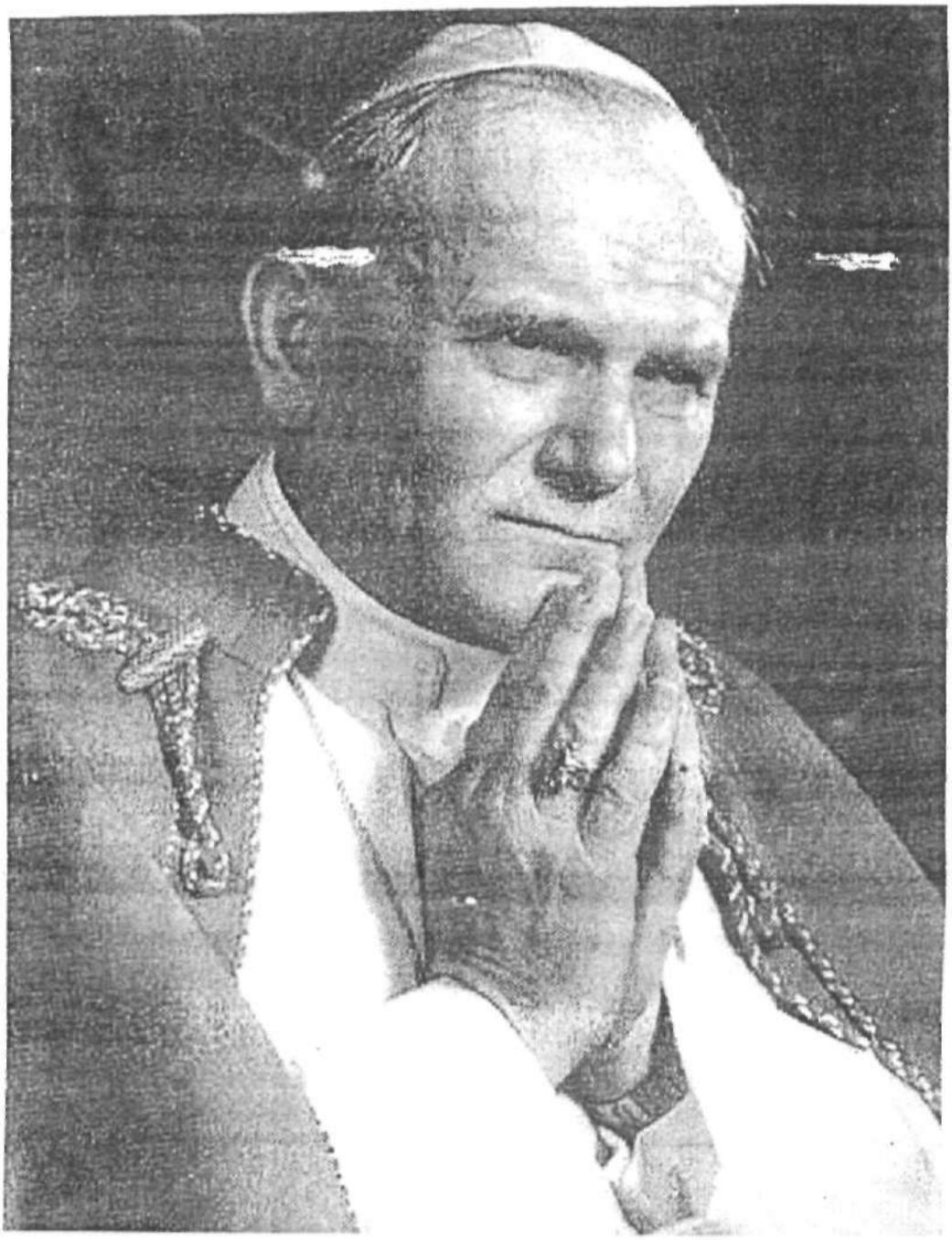
BY

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A THESIS SUBMITTED TO THE POST- GRADUATE SCHOOL, AHMADU BELLO UNIVERSITY, IN PARTIAL FULFILMENT FOR THE DEGREE OF MASTER OF SCIENCE IN ARCHITECTURE

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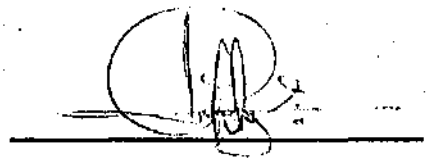
His Holiness Pope John Paul II



His Grace Most Reverend P.Y. Jatou, the Arch Bishop of Kaduna Diocese

DECLARATION

I, TITILOYE AMOS OLALEYE, do hereby solemnly declare that this thesis dissertation is an authentic and original documentation of my research for the award of Master of Science Degree of Ahmadu Bello University, Zaria, and that all references therein have been duly acknowledged.



Date 20/9/2001

TITILOYE, Amos Olaleye

MSc/Env.Des./17692/98-99

CERTIFICATION

This thesis entitled CATHOLIC DIOCESAN CENTRE; ZARIA (An Attempt at Reviving Ecclesiastical Architecture in a Cathedral) by TITILOYE AMOS OLALEYE meets the regulations governing the award of the degree of Master of Science in Architecture of Ahmadu Bello University, and is approved for its contribution to knowledge and literary presentation.

Chairman, Supervisory Committee — Date 25th MARCH 2002

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DEDICATION

We exist all in one world

Because of a being we all know as one word

Good or bad as sometimes we may be

Rich or poor every where as we see

We coexist not because we deserve to live

But because that being, life he has chosen to give

He cares through the rising to the setting of the sun

If only we knew he loves us all as a Father should a son

All thanks though, praise and exaltation

For unto God and His graces bestowed be this dedication

And this love I will always proclaim

Because mine I received and still claim

Though not all can show love 'cause they don't know love

I thank God my Family 'The TITILOYES' did and do

And I thank God for the love they've given to me

I will always cherish it to yield

We exist all in one world

Because of a being known to us all in one word

For unto Him consciously or otherwise do we call

Guiding and directing our hearts and thoughts, thanks to God

ACKNOWLEDGEMENT

For the possibility of this thesis ever to exist, first and foremost to God be all the glory, because I exist from God through my parents Michael and Esther Titiloye, thank God for you and through you for me.

For this thesis has become a reality, thanks to my able supervisor Arc. Henry Umeh, and for the lecturers that saw me through, Dr. W.B. Qurix, Arc. Yeboah, Arc. A. Adewolu, Arc. Badiru, Arc. Sagada, Proff. Tukur Sa'ad and our honourable H.O.D Proff. W. Schwardzfeigger, for this is a joint product of all your joint impact on this students' knowledge.

To my closest friends in trying times, now and always, Ozav Ukonga and Hilda Gambo Yahaya, my heart is your home.

To my friends that have put a smile on my face when I needed it or not, my classmates, the class of '92 and now (thanks for your inputs), my mens in Kariba for life you know who you are.

Writing names of friends in life may probably exhaust another thesis, but you know who you are especially as you've opened this book, thank you and God bless.

Finally though, thanks to Ambassadors Nike Ukonga, Femi Owoaje and Olisemeka.

Also, thanks and special appreciation to Rev. George Daffi, Abraham Kunat and Peter Yakubu.

Thanks to every other person that has helped this thesis with or without me knowing, God rewards his children with Heavenly treasures.

ABSTRACT

The building structure referred to as a church, has its origins in Roman Catholicism.

"You are now Peter (meaning rock) and on this rock I shall build my church..."

Mathew Chapter 16, verse 18.

This was the origin of the church, a speech by our savior Jesus Christ to Peter his apostle. This referred to a body of spiritual believers or devotees, which has now become what many will refer to today as the building structure 'Church'.

A Cathedral is a church which by dictionary definition is "The principal church of a Diocese in which is the seat of or throne of a Bishop", and is the main focus of this thesis. The Diocese on the other hand, according to the Catholic encyclopedia is " the territory under jurisdiction of a Bishop comprising institutions and properties of the Church and people within the area.

The Diocesan center will comprise of other facilities that facilitate the proper set up and running of a Diocese.

The Cathedral structure as the main focus though will be approached with a view at harmonizing different traditions and design considerations from early ecclesiastical architectural layouts of the four major Epochs that gave birth to an architecture referred to as ecclesiastical. These were the Early Christian, Byzantine, Romanesque and Gothic Epochs. These will be fused together and expressed in a modern architectural design.

These Epochs and their contributions will be discussed according to their contributions in a systematic way of literary review in this write-up.

TABLE OF CONTENTS

Title page----i
Declaration ----iv
Certification----v
Dedication ----vi
Acknowledgement----vii
Abstract----viii-ix
Table of contents----x-xii
List of figures ----xiii
List of plates----xiii
List of tables----xiv

CHAPTER ONE: INTRODUCTION

1.0 PREAMBLE----1
1.1 PREFACE----2
1.2 PROBLEM STATEMENT----4
1.3 AIM AND OBJECTIVES ----5
1.4 SCOPE OF WORK ----6
1.5 METHODOLOGY ----7
1.6 CONSTRAINTS AND LIMITATIONS----8
1.7 MOTIVATION ----9

CHAPTER TWO: LITERATURE REVIEW

2.0 INTRODUCTION ----10
2.1 DIOCESE ----10
2.1.1 Diocesan Boundaries----10
2.2 BRIEF HISTORY ON CATHOLICISM----13
2.3 EVOLUTION OF THE CATHOLIC CHURCH IN NIGERIA ----14
2.4 GROWTH OF THE CATHOLIC CHURCH IN NORTHERN NIGERIA ----17

CHAPTER THREE: EPOCHS AND THE THEORETICAL FORMULATION OF PROBLEM

3.0 IDENTIFICATION OF EPOCHS ----21
3.1 EARLY CHRISTIAN ARCHITECTURE ----22
3.1.1 Characteristics ----24
3.1.2 Influences ----31
3.2 BYZANTINE ARCHITECTURE----35
3.2.1 Characteristics ----36
3.2.2 Churches in the Byzantine Empire (Components) ----41
3.2.3 Building Materials and Methods ----45
3.3 ROMANESQUE ARCHITECTURE ----47
3.3.1 Characteristics ----48
3.3.2 Building Types ----50
3.3.3 Building materials and Methods ----51
3.4 GOTHIC ARCHITECTURE ----55

3.4.1 Gothic Form ----56
3.4.2 Characteristics ----57
3.4.3 Gothic Cathedrals ----60
3.5 INFERENCES ----62
3.6 DESIGN PROCESS PROBLEM----66
3.6.1 Environmental Problem ----66
3.6.2 Functional Problem ----66
3.6.3 Building Forms ----67
3.6.4 Economy and Time ----67
3.7 DESIGN CRITERIA ----68
3.8 UNITY OF LITURGY AND FORM ----70
3.9 MASS ----71
3.9.1 Service of the Word ----71
3.9.2 Service of the Eucharist ----71
3.10 THE EASTER LITURGY ----72
3.11 BAPTISM ----74
3.12 MARRIAGE ----75
3.13 BURIAL OF THE DEAD ----75
3.14 DEVOTIONS ----76

CHAPTER FOUR: CASE STUDIES
4.0 CRITERIA FOR SELECTION ----77
4.1 ROMAN CATHOLIC SOCIAL CENTRE KADUNA----77
4.2 HOLY CROSS CATHEDRAL LAGOS ----83
4.3 OUR LADY OF PEACE BASILICA YAMMOUSSUKRO IVORY COAST --87
4.4 SAINT MONICA'S CATHOLIC CHURCH KADUNA ----94
4.5 THE ARK CATHOLIC CHURCH NETHERLANDS ----97
4.6 INFERENCES ----100

CHAPTER FIVE: SITE
5.1 CLIMATIC CONDITION FOR ZARIA ----101
5.2 SITE SELECTION CRITERIA ----105
5.3 SITE PLANNING CRITERIA ----107
5.4 SITE PLANNING RELATIONSHIP ----107
5.5 ZONAL CONCEPT ----108
5.6 SITE PLANNING CONCEPT ----108

CHAPTER SIX: SCHEDULE OF ACCOMMODATION
6.0 ANALYSIS OF SPACE ----109
6.1 WORSHIP FACILITIES ----109
6.2 ACCOMMODATION FACILITIES ----109
6.3 SERVICE FACILITIES ----110
6.4 RECREATIONAL FACILITIES ----111
6.5 ADMINISTRATION ----111
6.6 DIMENSIONAL ANALYSIS ----112

CHAPTER SEVEN: CONCEPTUAL DEVELOPMENT
7.1 DESIGN PARAMETERS ----------118
7.1.1 Diocese Stature ----------118
7.1.2 Site Motivation Factor ----------118
7.1.3 Psychological Factor ----------118
7.2 DESIGN TASK ----------119
7.3 SITE ZONING CONCEPT ----------119
7.4 DESIGN PROPER ----------122
7.4.1 Form ----------124
7.4.2 Structure ----------125
7.4.3 Finishes ----------126
7.4.4 Services ----------127

CHAPTER EIGHT: CONCLUSION AND RECOMMENDATIONS
8.1 CONCLUSION ----------129
8.2 RECOMMENDATIONS ----------130
BIBLIOGRAPHY ----------131

List of Figures

Fig. 2.1.1- Summary of the administration of the diocese.
Fig. 4.1.1- Site layout of the Catholic social centre Kaduna.
Fig. 4.4.1- Plan of Saint Monica church Kaduna.
Fig. 4.5.1- Plan of the Ark church Netherlands.
Fig. 4.5.2- Elevation of the Ark church Netherlands.
Fig. 5.2.1- Land use map for Zaria.
Fig. 7.3.1- Site zoning concept one.
Fig. 7.3.2- Site zoning concept two.
Fig. 7.3.3- Site zoning concept three.
Fig. 7.3.4- User activity zoning.
Fig. 7.3.5- Noise level zoning.

List of Plates

Plate i------His Holiness Pope John Paul II
Plate ii-----His Grace Most Rev. Dr. P.Y. Jatou, Arch Bishop of Kaduna Diocese.
Plate iii-----View of Catholic social centre from main road.
Plate iv-----Drive in situation at Catholic social centre Kaduna.
Plate v-----View of ongoing construction at Catholic social centre Kaduna.
Plate vi-----View of Papal altar and Media training centre.
Plate vii----View of Holy Cross Cathedral Lagos from main road.
Plate viii---Internal view of Holy Cross Lagos.
Plate ix ----View showing pointed arches and buttresses.
Plate x------Site plan of the Basilica at Yamoussoukro.
Plate xi-----Birds' eye view of the Basilica grounds.
Plate xii----Exterior view of the Basilica.
Plate xiii---Interior of Basilica.
Plate xiv---Approach view of Saint Monica church Kaduna.
Plate xv----Interior view of Saint Monica Kaduna.

List of tables

Table 5.1.1- Temperature extremes in Zaria.
Table 5.1.2- Humidity readings for Zaria.
Table 5.1.3- Wind speed data for Zaria.
Table 5.1.4- Rainfall data for Zaria.

CHAPTER ONE
1.0 INTRODUCTION

An Architect builds a pulpit as well suitable as possible to its purpose; he seeks the most suitable position in the church, raises the level of its floor, and builds steps, a rail, and a sounding board. The purpose of the pulpit is that, sermons shall be preached from it. The sermon, too, has a purpose; it is intended to instruct, to edify, and to confirm belief, but its meaning lies in what is preached. To understand the meaning of a pulpit, it is sufficient to understand its purpose, but to understand the meaning of a sermon, it is not enough to understand that its purpose is to edify: one must actually understand what the preacher says.

"Purpose is a limited case within the wider concept of meaning".

The same is true of a Church. An Architect must arrange it to fulfill its function, so that mass can be said and a congregation to attend, but the meaning of this arrangement lies in the mass itself. Ecclesiastical Architecture embraces a number of purposes, which are the products of various actions of the Christian deity. The overall purpose of the church is to serve the whole deity, but its meaning lies in religious devotion. The meaning embraces the whole gamut of religious ideas and feelings- contemplation, repentance, and the resolution not to sin anymore, consolation and hope. The meaning of a church lies in belief, and only the differentiation between all the activities of this 'faith' splits this meaning into a number of individual functions, facilities and personalities.

1.1 PREFACE

Ecclesiastical as a word in its entirety, means anything, human, form or object that has to do (identify) with the Christian religion.

With the above definition, Ecclesiastical architecture will therefore mean an architectural piece that has identity with the Christian faith.

To totally understand what the Christians derived to be an ecclesiastical architecture we shall see in preceding chapters of this work, but first a premonition into an idea of what ecclesiastical architecture should be. Ecclesiastical architecture should be at its best deeply rooted and expressive of the Christian faith, its forms and concepts should owe first to the teachings of Christianity. If as anyone will rightfully understand, the forms that evolve therein constructing a church (in this specific case), does not totally tell the tale of the whole Bible, it could tell at least one or two, expressive in its concepts, with one or more elements that has peculiarity or originality in the Christian faith.

In the earlier eras of Christianity we shall come to realize that most of the Cathedrals and Churches in general, expressed a tale or two in the Bible, if not in plan, it would reflect in the elevational elements or in the murals that did a lot of justice to the idea of expression.

Ecclesiastical architecture could be an architecture served to God's Devine glory, an edifice that at its minimal humbles an observer or a worshipper within its walls. Ecclesiastical architecture could also be an edifice that psychologically ensures a prayer answered, in other words, the worshipper should have the feeling, due to the enclosed

space of worship, that his or her prayer has found root in God's presence, the enclosed space of the church,

> **"Where two or more of you are gathered in my name, there amongst you I shall be..."**
> **Mathew Chapter 18, verse 20.**

The incidence of ecclesiastical architecture can be traced as far back as the life of the Apostles. According to the book of Acts (chapter 28 verses 30-31):"and Paul dwelt two whole years in his own house, and received all that came unto him. Preaching the Kingdom of God, and teaching those things that concerned the Lord Jesus Christ, with all confidence, no man forbidding him". Domestic churches like this continued in use far into the 3rd and 4th century. However, when Christianity became publicly avowable under Constantine the Great (306-37) and was clearly favored by him, it felt the need for more formal places of worship. For this the Roman market Basilica was taken and adapted to local and liturgical needs.

Ecclesiastical architecture, a communion of faith and form taking place as a result of a laity (a congregation of believers in a faith) of Christianity. A Cathedral as a form of ecclesiastical architecture which by definition is, a church that contains the seat of the Bishop or his throne and also being the mother church of a Diocese.

A church as some will say is mystically and liturgically, an image of heaven, this image is left to one's own imagination. Little wonder why many Architects over time being adamant to the originality of early ecclesiastical architecture, concentrating on an originality of their own, in trying to create a unique Architectural Masterpiece, thereby

diverting emphasis from the original expressions of the church (buildings which were designed to depict the manner of worship in Catholicism).

Cathedrals are landmarks, which all over the world proclaim the triumph of the 'Una Sancta Ecclesia Catholica' of the Christian Early and middle Ages. The great walls of these structures and the towers atop city scapes and they embody even now, that unity of Christianity and that place fit for the worship and dwelling of God, worldwide.

1.2 PROBLEM STATEMENT

Every building type in architecture has an origin. If we look closely at most building types, their early designs and construction, and their current appearances, there will be noticed a unique relationship. Both the early types and modern types of each building type can be linked by an identity, which distinguishes them from the character of other building types.

In ecclesiastical structures however, one would notice a decline in appearance of church structures like the Cathedral, infact one could say that the identity is being lost.

> **"The general impression of ecclesiastical architecture at the close of the twentieth century is that most architects are not quite sure what to do. Many want to design a church, it still retains ascertain 'cache' and prestige as a building, but as they are not quite sure of what goes on inside (apart from what is in the brief), it becomes an exercise akin to designing a new 'arts gallery'. In fact I would say that the art gallery has become the twentieth century equivalent of ecclesiastical space..."**

Heathcote (1999: 77)

The questions that arise therefore are, what differentiates ecclesiastical architecture from the others, what characters are symbolic to ecclesiastical architecture that sets it aside from other building forms (apart from the usual spires), and how does one design a twentieth century church (cathedral), using the vocabulary of early and original ecclesiastical structures.

1.3 AIM AND OBJECTIVES

The aim of this thesis work is to revive the legacy of early ecclesiastical Cathedral structures in present times, using a modern approach to preserving original design concepts and traditions.

Therefore the objectives of this study are as follows:

To identify historic events surrounding the evolution of the Cathedral

To identify the roles of different empires in the architectural development of the Cathedral

To fuse modern methods of construction and technology in the revival of an original ecclesiastical architecture in Cathedral (building),

To cater for the special requirements of the proposed Catholic Cathedral of the Diocese of Zaria, through the provision of supporting infrastructure to adequately carry out the functions of the laity,

To properly harmonize (without alterations of original ideology), the legacies of ecclesiastical Cathedral of early Christianity with the architecture of the twentieth century.

1.4 SCOPE OF WORK

The scope of this work in terms of enquiry will be limited to historic information on the evolution of ecclesiastical structures and not in any way be concerned with in-depth Catholic doctrines, but concerned with already laid down Catholic principles in the church. It will also be concerned with the evolution of the church structure in early Christianity.

The Diocesan Centre design will be aimed at achieving an optimum arrangement enabling it to perform amongst other functions viz:

i. Allow the laity (worshippers) perform their Christian obligations (worship),

ii. Allow the centre act as a unifying centre allowing Christians of all denominations perform or carry out different functions, by the use of some infrastructure on the Diocesan grounds,

iii. Allow the centre generate funds for it's own upkeep,

iv. To be a landmark that will serve as a tourist attraction to people of all walks of life.

Since the Diocese of Zaria is still one in the making, most of the infrastructures are lacking, except for the secondary school. This is the Junior Seminary located along the Basawa road Therefore the scope of this work will consider adequate provisions for the different other functions of the Diocese. Included in the Diocesan therefore will be:

i. Worship unit (Cathedral structure),

ii. Bishop's residence,

iii. Accommodation for residing Priests and Reverend Sisters,

iv. Guest accommodations,

v. Groundskeepers' accommodation,

vi. Conference and reception hall (multi-purpose auditorium),

vii. Administrative office block,

viii. Library

ix. Eatery.

x. Crusade grounds

1.5 METHODOLOGY

This study shall employ data collection to document the architectural features of Cathedral building with particular interest at reviving the architectural grammar of the early Christian architecture through:

1.5.1 Oral Sources

Oral sources as a means of data collection shall be in form of interviews. Interviews will be conducted with relative personalities of the church in line with this study, some of which are the Arc. Bishop of the Kaduna Diocese, priests of both the Kaduna and Proposed Zaria Dioceses.

1.5.2 Written Sources

Data collections from written sources are in form of pamphlets, journals, magazines, books and general publications pertaining to this study.

1.5.3 Visual Aids

Data collection in this form is going to be in form of pictures, slates and figures relative to this study.

1.5.4 Field Documentation

This will be in form of documentation of existing buildings of interest and information from relative personalities. This will be taken care of by case studies of different Cathedrals in existence and how they relate to this thesis work.

1.5.5 Analysis of Data

Analysis of data and classification according to influence.

1.6 CONSTRAINTS AND LIMITATIONS

Many of the sufficient materials needed to carry out this thesis work adequately, required more time and monetary commitment to find, as most of them are not in proximity. Also details will only be provided in drawings for mainly the Cathedral structure (worship area), this is also due to the inadequate time.

1.7 MOTIVATION

Motivation for this work stands in line of the injunctions of the spirit, to think of an appropriate structure to house a congregation for worship of the 'Supreme Being', a space worthy of praises unto Him by a congregation, if there has to be one. This coupled with the observation that, slowly but rather surely, ecclesiastical architecture as applied to early Christian architecture, the origin of ecclesiastical architecture generally, is being faced out, despite their great and immense influence to the origination of 'A Christian Architecture' as a whole.

CHAPTER TWO

2.0 LITERATURE REVIEW

This chapter is basically concerned with some catholic history. It will also be concerned with the evolution of Christianity in Nigeria, with a particular focus on Northern Nigeria. Also it will outline some basic facts about the diocesan activities.

2.1 DIOCESE

According to the Catholic Encyclopedia, "a diocese is the territory under the jurisdiction of the bishop, decided canonically by the Holy See (the Pope), which comprises the institutions and properties of the Church and the people within the area. The diocese is in turn divided into deaneries each with several parishes, and each having its own proper pastor or administrator appointed by the Ordinary."

2.1.1 Diocesan Boundaries

In revising diocesan boundaries, a first care should be the preservation of organic unity of each diocese, as in a healthy living body. This applies to persons, offices and institutions. Due weight being given in individual cases to the particular circumstances, the following general criteria should be put in mind:

i. In determining diocesan boundaries the variety of composition of the People of God should be taken into consideration as far as possible, since this may materially contribute to more effective pastoral care.

   At the same time an effort should be made to ensure as far as possible that the demographic groupings remain united with the civil offices and institutions, which constitute their organic structure. For this reason the territory of each diocese should be continuous. The limits of civil boundaries should also be

taken into account when they occur, as well as the special characteristics- psychological, economic, geographical or historical- of people and religions.

ii. The size of the diocesan territory and the number of its inhabitants should as a general rule be such that on the one hand the bishop himself, assisted perhaps by others, is able to duly exercise his pontifical functions and carry out hi pastoral visitations in it. He should also be in a position to control and coordinate effectively all the apostolic activities in his diocese, and especially to know his priests and all the religious and lay men who are involved in the diocesan activities. On the other hand a diocese should provide sufficient and suitable scope for the bishop and his priests to employ usefully all their energies in the ministry, taking into account the needs of the universal Church.

iii. Finally, for the more effective exercise of the ministry of salvation, each diocese should normally have enough priests capable of looking after the People of God. Those offices, institutions and activities should not be lacking, which are suited to a particular diocese and which experience shows to be necessary for its efficient administration and for its apostolate. Lastly, resources for the care of personnel and the maintenance of institutions should be already in hand or at least should be foreseen that they will be provided from elsewhere.

Accordingly, where there are believers of different rites, the bishop of that diocese should make provision for their spiritual needs either by providing priests of those rites, or special parishes, or by appointing Episcopal vicars, with the necessary faculties. If necessary, such a vicar may be ordained bishop. Alternatively, the bishop

himself may perform the functions of an Ordinary for each of the different rites. And if the Apostolic See judges that, on account of some special circumstances, none of these alternatives are practicable, a special hierarchy should be established for each different rite.

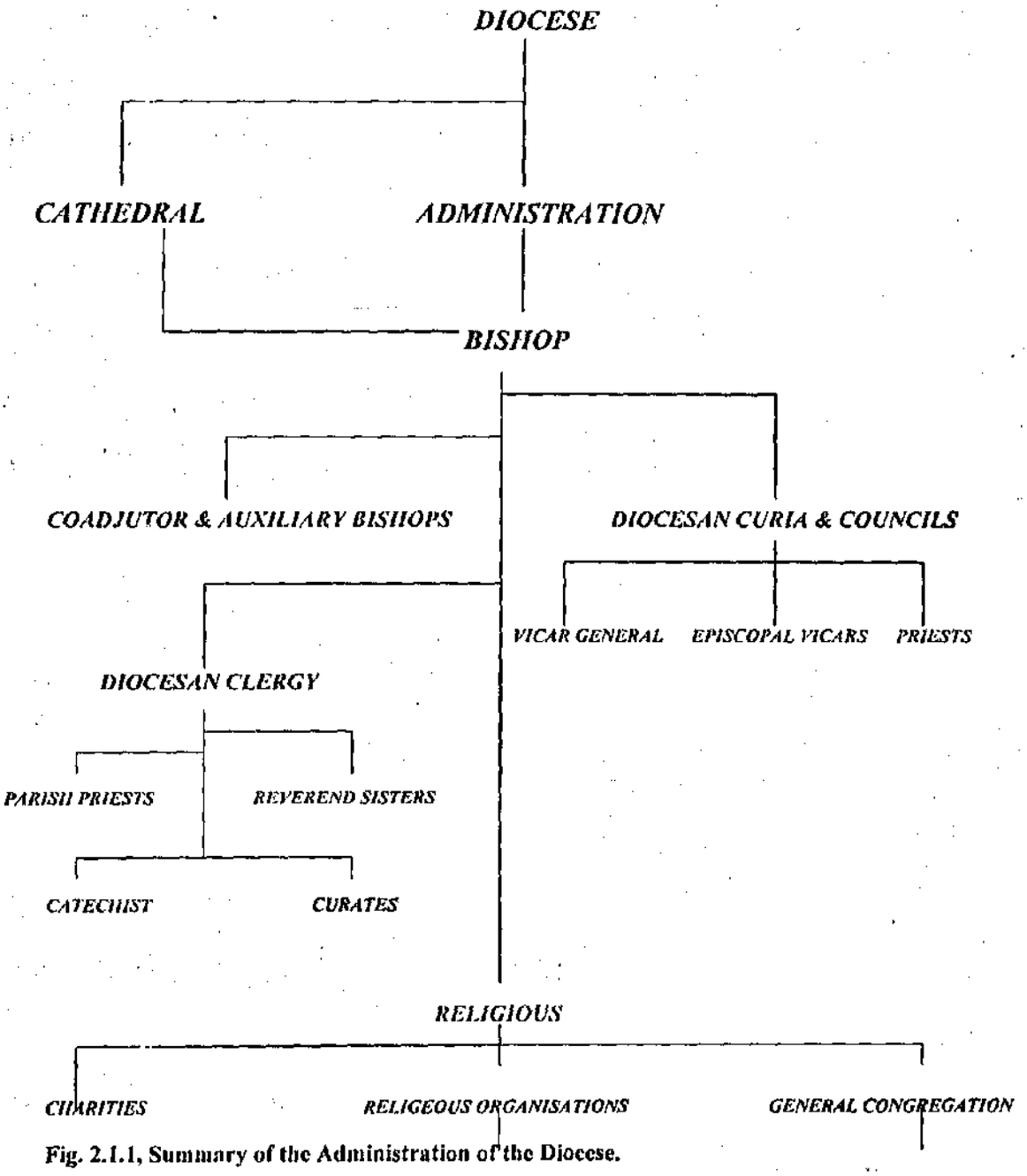


Fig. 2.1.1, Summary of the Administration of the Diocese.

2.2 BRIEF ANALYSIS OF THE HISTORY OF CATHOLICISM

During our Lord and Savior Jesus Christ's life on earth, he commissioned followers to carry on his work of faith on earth, communicating his good news to all mankind.

The Catholic Church's history from the very beginning has been punctuated with different crises; these can be summarized by the persecution by the Roman Empire, the rise of Arabianism, the barbarian invasions, and others. But of all the above it won't be exaggerated to say that the Luther's revolt had the most impact on the Catholic church than any other devastating force. Never was there so sudden desertion of the church, and never were there so many of the clergy abandoning their cloths. When it was all over, half of Europe was lost to the Roman obedience, and the unity of Christendom was merely a fading memory.

When the liberal Catholics and modernists attempted to work out a reconciliation of its traditional faith with the demand of modern culture, they were decisively put down. This entered our own century with a constantly increasing membership (nearly one-fifth of the world's population) - tightly disciplined under the highly centralized control of Rome. The Popes of the twentieth century enhanced its prestige by the able leadership they provided in an age of technological advancement and spiritual chaos.

Rome is today's the headquarters of the Catholic Church, and the Pope, the head. It is worth knowing that Saint Peter was the first Pope and the head of the disciples. The leadership of the first church, the Catholic church, is followed in the order; the Pope, the

Cardinals-who are like king makers-, the Archbishops, the Bishops, Monsignors, Reverend Fathers, Reverend Deacons, Reverend Brothers and lay Apostolate will follow in this order.

Rome as the headquarters for Catholics has its main Cathedral, The Saint Peter's Basilica, and a great architectural edifice in modern times. The Cathedral serves as a symbol of pride, glory and message from earth to God that He is all and only hope of mankind. Church architecture speaks the message in all languages.

Once a building has been set aside for worship, it acquires these meanings, as with the bread and wine, they are inherent. If the meanings were not made manifest in the architecture, then the symbolic means of architecture will be 'speaking' of something different, and there will be a conflict, an implied negation. If these meanings are not accepted, then the only way to accept the conflicts is not to have churches. Churches as we know cost a lot of money, the expense will only be justified, if one believes that the building in all its implications, can and should be creative in the life of the Church. It would rather be better to use a school hall or some other type of spacious building not necessarily set apart. But expenses for achievement of goals are usually no barriers and the tendency to make sacred a place the focal point of a locality in all minds.

2.3 THE EVOLUTION OF THE CATHOLIC CHURCH IN NIGERIA

Nigeria with a population of over one hundred and twenty million has the world's largest population of black people, made up of a heterogeneous complex of about five hundred

ethnicities. These ethnic groups have till date, jealously preserved the essentials of their cultural heritage in spite of social, economic, political and educational imposition from the West.

Of all attempts made by a number of religious orders and missionary societies to establish the Catholic faith in Nigeria around the fifteenth century, the Portuguese Priests of the Diocese of Lisbon were the first. The priests were sent with letters of accreditation to the Oba of Benin. It was not intended that the missionaries should settle in Benin and live among the Edo people, learn their language and customs and then evangelize them. Rather they were to convert the Oba and make him decree the Catholic faith as the religion of his realm. The strategy was for a mass conversion of the Benin Kingdom. This missionary approach failed to win converts to the faith to the extent that was envisaged.

Among other reasons, the priests were more representatives of the political authority of the King of Portugal than of the Catholic Church. They were ignorant of the religious customs of the people, which they labeled as the worship of the devil (diabolism). The political structure of the Benin Kingdom in which the Oba was the acclaimed divine ruler, rendered it difficult for "mere mortals" to gain frequent access to him.

Apart from the Portuguese priests that came to Benin kingdom, the established sacred congregation for the propagation of the faith as an arm of the Vatican Curia by the Pope, recruited missionaries from existing religious orders and founded new congregation of missionaries to facilitate the evangelization of the non-Christian lands. It also organized

and distributed funds to aid missionaries toiling to establish the Catholic faith in foreign lands. The creation of Benin prefecture in 1648. Rome gave him twelve priests of the same order to work with him in the new prefecture.

The beginning of what is today known as the Catholic Church in Nigeria was the pioneering work of a missionary congregation founded in Lyons, France, December 8th 1856 by Bishop Melchoir de Marion Bresillac. He was the first member of the SMA (Societe de Mission Africaines) to reach Lagos and founded the mission there. When he came to Lagos, he found Christians there who had come from Brazil after the liberation of slaves. With time, the Lokoja mission was founded, on the confluence of rivers Niger and Benue on November 9th 1884. The prefecture of Western Niger was founded in 1886. In December 1885, Fr. Joseph Lutz traveled from the Vicariate of Gabon into the commercial town of Onitsha to begin the Holy Ghost mission in Eastern Nigeria. And for four years the Holy Ghost Mission spread like wild fire in Eastern Nigeria, and in July 1889, the prefecture of the Lower Niger was founded.

Schools established in this period were a means of evangelization, not only because catechism was taught as a part of the curriculum, but also because the village school building, more often than not, served as the church for liturgical worship on Sundays.

The priority placed on education by the Nigerian Catholic Hierarchy has influenced the standard of Seminary formation. The three regional seminaries (major) of Enugu, Ibadan and Jos have been affiliated to Urban University in Rome since 1969 and nearly all-graduate priests of these seminaries have been able to obtain a Bachelor's degree. Each Diocese arranges for a further study programme overseas for its priests.

2.4 GROWTH OF THE CATHOLIC CHURCH IN NORTHERN NIGERIA

The first Christian missionary attempt to evangelize the northern part of Nigeria was probably carried out by a Franciscan brother, Peter Farde OFM, from Belgium. He was captured at sea and made a slave to a Muslim master in Agadez, north of Kano. At the end of his two years there, he succeeded in converting his master and his household to Christianity. He was able to escape to Europe. It is fair to think that brother Peter Farde was the first Christian missionary to come to the north in 1688.

In June 1710, Fr. Carlo Maria and his companion Fr. Severino left Tripoli for Agadez and then to Borno. Fr. Carlo was vested in Arabic and that qualified him for the mission. They died in 1711 in Katsina the present Katsina state; this gave the impression that the Christian mission to the north of Nigeria had forever ended. But 1850 another missionary, Fr. Philip of Segni who was based in their mission in Tripoli, decided to visit a Catholic Maltese family. He was well received by the Sheik of Borno. He was there with the Maltese Catholic family for twenty days. River routs, an easy access to the north was discovered and the southern Nigerian missionary bodies had the opportunities to establish mission stations in Northern Nigeria.

The next attempt to bring Catholicism to Northern Nigeria was not from across the Sahara Desert but from the south of the country. As already mentioned, river routes were used instead of the caravan routes. The Holy Ghost Fathers and SMA Fathers made another unsuccessful attempt to establish a mission in Ibi and Dekina. It was Holy Ghost

Fathers and SMA Fathers in the South of Nigeria that made attempts to establish Catholic Church among the Tiv, Idoma, Igala, Ebira, Kabba and Ilorin.

In 1907 the struggle to evangelize the North was continued by the SMA missionary priests who established their headquarters in Shendam.This marked the beginning of the real establishment of the Church in Northern Nigeria.

For food they started an agricultural project and bought sheep and donkeys. Donkeys were used in the ploughing work. They introduced the cultivation of yams, cassava and sweet potatoes. Shendam is still a big yam producing area till date. A new prefecture North of the River Benue was established in1911 with its headquarters in Shendam. Because of poor access to surrounding districts, this headquarters was moved to Kaduna in 1934. It was then the civil administrative capital of the North.

In 1934, another prefecture of Jos was formed along with Kaduna prefecture, which included Sokoto, Katsina, Kano, Niger and Zaria. Jos prefecture comprised of Plateau, Bausch, Borno and part of Benue and Adamawa highlands. Jos and Kaduna towns were real strategic centres for the expansion of the Catholic Church in the North. Neither of them had Emirs or traditional Muslim elders. Other small missions like Zaria, Minna, Bukuru and Kafanchan began to spring up along the railway lines. Immigrant Catholics came from the Southern provinces and increased the numbers of indigenous Catholics. In 1935 a new Prefect-Apostolic of Benue was established and new missions were opened in Gboko, Oturkpo and Idah in 1938.

With the rapid growth of the Catholic Church in Northern Nigeria, more and more prefectures were formed. Some of these were those of Yola established in 1950 as a prefecture Apostolic and later as anew prefecture in 1953; Maiduguri in 1953 and Sokoto, the same year. That of Kabba was established in 1955.

The year 1954 marked another important stage in the life of the Catholic Church in Northern Nigeria, in that the prefectures of Kaduna and Jos were raised to the level of 'Diocese'. Bishop John Reddington SMA was ordained Bishop of Jos Diocese in June 29th 1954. Bishop McCarthy SMA was ordained Bishop of Kaduna Diocese on August 15th 1954.The Church in Northern Nigeria was growing concurrently with the political development in Nigeria, for in 1954, the new constitution of Nigeria was promulgated in preparation for the coming of independence on October 1st 1960.

In 1959, the North under the Late Premier, Sir Ahmadu Bello, attained self-rule. At the same time, the Catholic Church there was constituted an ecclesiastical province of the Catholic Church in Nigeria. This new ecclesiastical province, with Kaduna as its metropolitan headquarters, comprised the Diocese of Kaduna, Jos and Makurdi which was constituted a Diocese in 1960.The prefecture of Yola, Maiduguri, Sokoto and Kabba were also grouped into the new Northern Province.

Education was the new way by which it was possible to for the people to get both government and church jobs easily. For this, many Christian's religious instruction (CRI)

classes and primary schools were established all over the parishes of the Diocese and prefectures in the North.

With the rapid increase in the funding of primary schools, it became necessary to build post-primary institutions. The Vernacular Training College (VTC) was opened in Shendam in 1931 to supply trained teachers to the whole of Northern Nigeria. This was later moved from Shendam to Kwa in 1947.This continued till 1955.

Among the early post-primary institutions in the then Northern Nigeria region were: St. Joseph's College, Vom; St. Louis College Jos, St. John's College Kaduna, College of Mary Immaculate Conception (CMIC) Kafanchan, St. Louis College Kano, Queen of Apostles Secondary School Kaduna, Our Lady of Apostles (OLA) College Akwanga, St. Murumba's College Jos, St. John Vianney's Barakin Ladi, Mount St. Michael Aliade, St.Kizito Lafia, Teachers' College Zawan and a few others.

CHAPTER THREE

EPOCHS AND THE THEORETICAL FORMULATION OF PROBLEM

3.0 IDENTIFICATION OF EPOCHS

An epoch is a time marking the beginning of a new period in history or development of a style. Applied to Ecclesiastical Architecture, it is the marking of new beginnings in the changing styles of architectural features of this form of architecture (ecclesiastical).

The periods we shall be looking at will be from the very beginning of what is ecclesiastical to the 16th century. A period characterized by the following:

The Early Christian Architecture

This was an era in which an identity was still being sought for a Christian architectural type. This was from after the death of our Lord and savior Jesus Christ (c.33 –330 AD).

Byzantine Architecture

Immediately following or almost concurrently with the end of Early Christian architecture was the Byzantine form of architecture, this evolved in the east of the Roman Empire in 330 AD and lasted till about the 6th century.

Romanesque Architecture

This was a style originated by the Romans, and was a modification of the classical Roman forms. This style was introduced between the 8th-12th centuries.

Gothic Architecture

This style was evolved through the jointly Greek and Etruscan styles, which formed the Roman, this later evolved to the Romanesque and finally to the Gothic form of architecture, and this characterized the period between the 12^{th} to 16^{th} centuries.

Although it can be seen as stated above, that every epoch mentioned above had a particular time frame, it will however be necessary to note that these periods were in some way than not, interwoven at their beginnings and ends to each other.

3.1 EARLY CHRISTIAN ARCHITECTURE: Introduction

The architecture of early Christianity is at the same time nascent and decadent. It is the product of a growing faith and a dying civilization. The highest expression of structural ability and artistic skill had been reached in Rome in the time of Trajan; and the extent of the decline in the following two centuries can be measured by comparing the sculptured relief which Constantine, the first Christian Emperor, took from the demolished Arch of Trajan, to those adjoining, which were expressly designed for his own triumphal arch. We cannot, therefore, in Early Christian architecture, look for the crude and early stages of design with which we associate the beginnings of a style, but instead we can trace a gradual decline in skill and in craftsmanship as Christianity developed, which was coincident with the subsidence of the Empire itself. On the other hand, one cannot help

noticing one fundamental difference in outlook which distinguished all Early Christian buildings from classical precedents.

An important difference between the buildings of the pagan Empire and those now under consideration is that most of the former were secular, whereas the latter were built almost entirely for the purposes of the new religion. Only in the growing centers of population, such as Syria, were new houses and civic buildings necessary. In Rome and in other Italian cities the existing buildings were more than sufficient to provide for a diminishing population. The result is that the only buildings of the Early Christian period in Italy, which have been preserved, are churches, baptisteries and tombs.

Early Christian architecture was almost wholly dependent for its forms and details upon Greek, Roman and Oriental traditions. From a technical stand point there were no significant innovations. Its development, especially in Rome, was determined largely by the poverty of the latter-day Roman Empire, which prescribed the most economical methods of building in preference to the monumental lavishness of Imperial Roman times. To speak of development at all may be misleading, because it seems from existing evidence as though the Christian type of basilica came into being as a fully developed architectural form as soon as Christianity was recognized, an this form persisted without change from the fourth to the ninth century. This does not necessarily prove the incompetence of architects to device new forms, but suggests that the basilican plan entirely satisfied the needs of the Church in the West.

It is possible that the basilican plan had a long, though unrecorded, history during the centuries of persecution. The idea that no Christian churches were built before legalizing of Christianity is a mistaken one, which is proved by the edicts published by different Emperors, notably one by Diocletian in ad. 303, commanding that all churches should be destroyed and all Christian books burnt. Further, it cannot be assumed that the basilican church form was particularly Christian. The remarkable discovery of a pagan temple, 50 feet below the ground near the Porta Maggiore, Rome, dating from the first century and having all the essential features of a Christian basilica – nave, aisles and apsidal end – indicates that this form was already in existence in Rome before Christianity had taken root.

3.1.1 Characteristics of Early Christian Architecture: Examples

The character of Early Christian architecture is chiefly to be seen in buildings of the fourth to ninth century, though the style persisted in Rome up to the Renaissance. The Early Christians, as Roman craftsmen, continued old Roman traditions, but prosperity was declining and it was natural that for their old buildings they should utilize as far as possible the materials from Roman temples that had become useless for their original purpose. Further, in their churches, modeled on Roman Basilicas, they used old columns, which by various devices were brought to a uniform height. On this account, although extremely interesting from an archeological point of view, Early Christian buildings hardly have the architectural value of style produced by the solution of constructive problems. Basilican churches had either closely spaced columns carrying the entablature, or more widely spaced columns carrying semicircular arches. The Basilican church with

three or five aisles, covered by a simple timber roof, is typical of Early Christian style, as opposed by the vaulted Byzantine church with its central circular dome placed over a square by means of pendatives.

The architectural character of the basilican churches is rendered impressive and dignified by the longer perspective of columns which carry the eye along to the sanctuary; a treatment which, combined with the comparatively low heights of interiors, makes these churches appear longer than they actually are. An "arch of triumph", figurative of the transition through death to eternal life, gave entrance to the sanctuary with the high altar in the center standing free under its baldachins upheld by marble columns. The vista was rounded off by an apse rounded with marble slabs and crowned with a semi-dome encrusted with glittering golden mosaics in which Christ appears surrounded by prophets saints and martyrs. Timber roofs covered the central nave, and only simple forms of construction, such as king and queen post trusses, were employed. It is believed that the visible framework was of later date, and a casing of richly gilded coffers was often added in the Renaissance period. The narrow side aisles were occasionally vaulted and the apse was usually domed. Walls were still constructed according to Roman methods of using hand-laid rubble-concrete faced with brick or stone and sometimes plaster. Mosaic decoration was added internally, and sometimes also externally on west facades; though little regard was paid to external architectural effect. Pavements were formed from the abundant store of old marbles in Rome, and slices of columns were laid as centres to surrounding bands of inlay in intricate geometric patterns.

Basilican Churches

Basilicas or Roman halls of justice probably served the early Christians as models for their churches, which thus form a connecting link between buildings of pagan classic times and those of the Romanesque period which followed. Some authorities, however, believe early Christian churches to have been evolved from Roman dwelling houses, where the community had been in the habit of assembling, from the 'scholae' or lecture rooms of the philosophers, or even from pagan temples. Others traced the plan and arrangement to the catacombs outside Rome, where some of the earliest Christian services were held. A Basilican church was usually erected over the burial- place of the saint to whom the church was dedicated. Arcades through an atrium or open forecourt surrounded the approach to the church. Next came the covered narthex, between the atrium and the church, which was assigned to penitents. The narthex opened into the nave, lighted by a clerestory of small windows, with an aisle on either side, usually half the width of the nave. Occasionally there are two aisles on each side of the nave, as in the basilicas of Old Saint Peters' Cathedral, Saint Paolo Cathedral, and Saint Giovanni Cathedral in Laterano. Galleries for women were sometimes placed over the aisles, but otherwise the sexes sat on opposite sides of the nave. 'Bema' (Greek for platform) was often found in these basilicas, and may have been the germ of the mediaeval transept, which later converted the plan into a Latin cross. Some consider, however, that this cruciform plan was derived from buildings, which had been erected for sepulchral purposes. A choir, which became necessary owing to the growth of ritual, was enclosed by low screen walls or 'can celli' (hence 'chancel') and was provided with an 'ambo' or

pulpit on either side, dating from the first church, from which the Gospel and Epistle were read. In the apse or sanctuary the Bishop took the central place, which had been that of the 'proctor' in the Roman basilica, and the presbyters, or members of the church council, occupied seats on the either side corresponding to those of the Roman 'assessors'. The alter, in front of the apse, which in the basilica had been used for libations or sacrifices to the gods, was placed immediately over the burial place of the titulary saint and adapted for the celebration of Christian rites. A ciborium, also known as a tabernacle or baldachin, was erected on columns over the altar.

The Basilican Church of Saint Peter, Rome (330), erected by Constantine near the site of the martyrdom of Saint Peter in the circus of Nero, was pulled down to make way for the present Cathedral. The atrium led through the narthex to the great nave with double aisles terminating in five arches, the central horizontal architrave. Two central columns and a cross wall give additional support to the main roof timbers. It is possible that originally a dome of very light materials roofed the central space. This, and the arrangement of the outer ambulatory, can be seen in suggested reconstruction.

Saint Apollinare Cathedral in Classe, Ravenna (534-9), was erected by Emperor Justinian on the site of a temple of Apollo and, was probably built by Byzantine craftsmen, for here the influence of Constantinople was strong. The simple plan forms a single-aisled basilican church, 45.7m X 30m. The atrium has disappeared, but a narthex leads into the church. The eastern apse, which is circular internally and polygonal externally, is raised above the crypt and contains a high altar with ciborium. On the north is one of the earlier

circular campanili, of the same date. The interior is impressive with nave arcade of Cipollino, Byzantine capitals, and desert blocks supporting arches, above which is the band, 1.5m high, of portraits of Bishops of Ravenna. The apsidal mosaics, among the finest in Ravenna, are of sixth and seventh centuries. In high symbolical form the Transfiguration and the Last Judgment share the apse semi-dome.

Baptisteries

Separate buildings used only for the sacrament of baptism were features of Early Christianity. For this rite, Roman circular temples and tombs were occasionally used. As the rite was administered only on three great Christian festivals-Easter, Pentecost and Epiphany-these buildings had to be of considerable size, and until the end of the sixth century of our era they sometimes adjoined the atrium or forecourt of the church; but after this period, and especially with the introduction of infant baptism, the baptistery was replaced by a font in the church, close to the entrance. When circular Roman temples or tombs were modified to meet the new requirements, these sometimes had to be enlarged. It was difficult to cover the enclosed area with one roof supported only by outside walls, and therefore, whereas the Romans had used internal columns attached to the walls in a decorative way, the Early Christians used columns constructively to support the central roof, and surround the whole with a one-storied aisle enclosed by an outer wall, which supported a lower roof.

The Nave and Aisles

The essential characteristics of Early Christian Architecture in basilicas is an oblong plan divided lengthwise into a nave and aisles by rows of columns, or piers, which supports a

low-pitched wooden roof above the nave, and lean-to roofs over the aisles. Occasionally these rows of columns are duplicated to provide additional aisles parallel with the nave. At the sanctuary end the nave terminates in an apse, covered by a semi-dome, which projects beyond the rectangular plan, and occasionally additional apse mark the ends of the aisles. The nave roof is always raised sufficiently to admit of clerestory lighting along its length. The windows are large and numerous, and were filled originally with a latticework of bronze, or with pierced slabs of marble, alabaster or plaster. When glass was substituted in the ninth or tenth century, many of the windows became redundant and were blocked up.

Old columns and capitals were often used for the nave arcades, and this accounts for the unsatisfactory proportions so conspicuous in many of the basilican churches. The columns and capitals being of marble and neatly carved, and the column monoliths of either marble or granite; these elements rarely agreed with each other, either in height or diameter, therefore differences had to be made up by raised bases or omitting the bases altogether. The capitals were often of different Orders; it was not uncommon to see Corinthian and Ionic capitals side by side in the same church, and even when all are of the same Order, they are often strangely dissimilar. In a very few churches piers instead of columns were introduced at regular intervals.

Lintels sometimes span the openings between the columns and piers, sometimes by arches. The arches are generally molded so as to form entablatures, proportionate to the height of the columns. When the spaces are arched, cornices, and sometimes-whole entablatures, follow the curve of the arches as in late Roman work.

Ceilings

The timber roofs were always of low pitch, and of simple construction. They are now concealed inside by flat, deeply coffered ceilings, richly painted and gilded, most of which date from the fifteenth to the sixteenth centuries, but there are reasons suggesting that they were originally ceiled in a similar manner and that the trusses were never intended to be seen from the inside. This would be in accordance with the old Roman traditions, where roofs were generally open with timbers showing and no ceilings.

Floors

The floors at first were original marble mosaic, such as was common in Rome in Imperial days; but about the twelfth century many were re-laid with 'Opus Alexandrinum'. These were large slabs, surrounded by bands made up of small cubes of marble of different colours forming delicate patterns, these in turn framed in by broad bands of white marble. The contrasts between these patterns presents a very striking picture, the secrete being the value of the white framework, this pattern not applying to floors alone. This work was especially popular in Rome, because Rome possessed large stores of marble, mostly broken and chipped, which could be sawn into slabs or shaped into minute cubes. Some of the slabs were of great size.

Exteriors

The churches externally possessed little of richness of the interiors, since the walls were generally plastered and the introduction of mosaics only occasionally. Of architectural ornamentation there was very little, but the aisles and clerestory walls of the church of Saint Apollinare in Classe, Ravenna, were arcaded, the arches springing from slightly

projecting pilasters. This arcade treatment afterwards became universal, and the churches of the eleventh and twelfth centuries in all parts of Europe present many effective varieties of it. Like most other features of Romanesque work, it owes its origin to ancient Rome.

3.1.2 Influences

Geographical

Christianity had it's origins set in Judea, an eastern province of the Roman Empire, but directly became a living organism it was naturally carried by St. Peter, St. Paul and other missionaries to Rome, as the centre of the World- Empire. There at the fountain-head of power and influence, and in spite of opposition and persecution, the new religion took root and grew, till it was strong enough to become the recognized universal religion of the whole Roman Empire. Early Christian architecture in Rome was influenced by, and was the logical out come of, existing Roman art, and it was modified in other parts of the Empire according to the type already recognized as suitable for the geographical situations of those countries, such as Syria, Asia Minor, North Africa and Egypt.

Geological

Geological influences may be said to have acted indirectly rather than directly on early Christian architecture, for the ruins of Roman buildings often provided the quarry whence materials were obtained. This influenced the style, both as regards construction and

decoration; for columns and other architectural features, as well as fine sculptures and mosaic from other buildings, were worked into Basilican churches of the new faith.

Climatic

The climatic conditions of such Roman provinces as Egypt, Syria and North Africa where Christianity was established naturally modified the style. The fiercer sun and hotter climate necessitated small windows and other eastern features.

Historical and Social

The early Christian period is generally taken as lasting from Constantine to the coronation of Charlemagne (c. 800). The incursions of the Huns into Europe about c. 376 eventually brought about invasions from the north into Italy, and in c.410 the Goths under Alaric sacked Rome itself. So many conflicting forces were at work in Europe that the spread of the new religion was arrested during this period of change and upheaval, until c. 451, when the defeat of Attila, King of the Huns, at the battle of Chalons aided in the consolidation of Christianity in Europe. In c. 568 the Lombards penetrated into Italy and held the northern part for 200 years. Then in c.800 the Pope in Rome crowned Charlemagne, and from this date the Empire was styled the Holy Roman Empire, a title that survived until 1806. From c.800-1000, the dominant architectural influence was no longer Rome but Lombardy, and the style which developed there was Romanesque.

Constantine changed the capital of the Roman Empire from Rome to Byzantium in c. 330, when the old Roman political system came to an end, and this royal convert reigned

as an absolute monarch till his death in c. 337. Besides the troubles caused by Julian the Apostate, Christianity suffered further disabilities during the unsettled conditions consequent upon the division of the Roman Empire, which first took place in c. 364 when Valentinian became Emperor of the West and his brother Valens of the East. Theodosius The Great (c. 379-95) reunited, for a time, the Eastern and Western Empires, and in c. 438, Theodosius II published his legal code, an important work on the constitutions of the Emperors from the time of Constantine. Series of Emperors in the West came to an end in A.D. 476, and Zeno, who reigned at Constantinople, nominally reunited the eastern and western empires. Then again the seat of power was changed, and Theodoric the Goth reigned in Italy (c.493-526) during a period of peace and prosperity. In the wake of this change, Byzantine arts influenced early Christian art by way of Ravenna, which rivaled Rome importance and was the capital of the Gothic rulers, c.493-553, with the expectation of a short period when it was subdued by Justinian (c. 537). Kings were now elected for the separate states of Spain, Gaul, Northern Africa and Italy. The emancipation of Western Europe from direct imperial control resulted in the development of Romano-Teutonic civilization, which facilitated the growth of new states and nationalities; this gave a fresh impulse to Christianity, which eventually strengthened the power of the Bishops of Rome. The formation of these new states resulted also in the growth and development of Romance and Teutonic languages, which, for general use largely, replaced Latin. It is clear that these many social changes and political disturbances could not fail to be reflected in the architecture of a period in which great formative forces were at work.

Religious

In all human history there is no record so striking as that of the rise of Christianity, and no phenomenon so outstanding as the rapidity with which it was diffused throughout the civilized world. Not only in this period but also in all subsequent ages, Christianity has inspired the building of some of the greatest architectural monuments. The number of Christian communities established by the Apostle Paul in his missionary journeys round the Eastern Mediterranean, in Syria, Asia Minor, Greece and Italy, might lead us to expect many ruins of early Christian Basilican churches throughout these districts. However, it must be remembered that unlike those of the old Greeks and Romans which were built to shelter the statues of the gods, the purpose of the Christian church was to shelter worshippers who met for prayer and praise to an unseen deity, and, during the unsettled conditions at the beginning of Christianity, various places were adapted for this worship. Thus the pagan temples ceased before any attempt was made to build Christian churches. In c. 313, Constantine and Licinus issued their celebrated Edict of Milan, giving Christianity equal rights with other religions, and in c. 326 Constantine made it the official religion of the Roman Empire. Fortified by it's official position and thus freed from the need for unity within, which had been engendered by persecution from without, the church was soon divided by doctrinal differences and the council of Nicaea (c.325), called by Constantine, was the first of several such councils for the settlement of disputes about heresies. The steady progress of Christianity was temporarily arrested by a reaction (c. 361-3) under Julian the Apostate, and then for several generations religion suffered an eclipse as a power in European civilization, and the whole continent was given over to war and anarchy. Pope Gregory the Great (c.590-604) employed imperial army of

Constantinople to defend Rome against the Lombards, and thus, by making common cause with the people, early laid the foundations of the temporal power of the Papacy, which steadily increased, especially under Popes Adrian I and Leo III. Throughout the whole early Christian period the power of the eastern, or Byzantine, half of the Empire, with Constantinople as it's centre had been growing, and rivalry between East and West led to a schism in the church which culminated in the coronation of Charlemagne in c.800, under the title of Emperor of the Romans.

3.2 BYZANTINE ARCHITECTURE: Introduction

Byzantine empire was located between longitude 20 – 40°E and latitude 40°N, at the junction of the division of Europe and Asia by a narrow strip of water and between black and Mediterranean sea.

Byzantine architecture was evolved in the east of Roman (Byzantine Empire) in 330 A.D. (4th century A.D). In finding its new capital, Emperor Constantine chose an ancient Greek colony (Byzantium) for its beauty and commercial centrality.

Constantinople was for more than 1000years back, known as a cultural center, absorbing and refashioning the ideals which men brought to its shores from many lands, thereby spreading its thoughts far, wide and it was popular.

Above all it stood forth as the champion and bulwark of Christian civilization in the east, which has resulted in flourishing Byzantine with architecture of churches and cathedrals and orders, were given for building of churches and conversion of temples into churches by the emperor.

Byzantine architecture reached maturity in the 6th century A.D. and flourished within the changing frontiers of the eastern empire till the Turkish Muslim invasion arrested and conquered the development of the Christian era in 1453 (15th century). But it had left to the world its legacy of grand and logical construction of sensitive and refined details of craftsmanship and the use of splendid colours of Byzantine churches.

This legacy was adopted both on the east and west and spread through countries like; Greece, Russia, Asia minor, North Africa, Mesopotamia, Armenia, Georgia, Sicily, Italy, Palestine, Egypt, Bulgaria, Venice and Aquitaine.

3.2.1 Characteristics of Byzantine Architecture

Most of the characteristics of the Byzantine architecture varied with the period in which it existed. To start with, the Byzantine architecture was grouped into 3 (1st, 2nd and 3rd period).

Byzantine Architecture of the first period:

The buildings belonging to this period were the most interesting, inspiring and common in existence. Interesting in the sense of their being contemporary with the great church of Constantinople and inspiring because of its beauty and originality. They were churches of Baptisteries and were all square or octagonal externally. The interior of the churches were composed of large central space divided from an enveloping aisle by piers between which in most cases, were circular niches formed by columns. The roofs were made of domes, covering square plans below it. Examples may include Sancta Sophia and Mausoleum at Ravenna.

Byzantine Architecture of the Second Period:

During this period the sizes of the churches were smaller than in the first period. This was accounted for by the demise in strength and importance of the empire due to the constantly incoming external wars and internal dissension, which afforded the people little inducement to build extensively. It could partly be accounted for by the fact that in the Eastern churches, the greater part of the congregation stands and did not kneel or sit like in the West. In none of the churches of this period were found the columned niches surrounding the central area which formed a fascinating feature in nearly all examples of the early period, for example at Sancta Sophia and Salonika.

Byzantine Architecture of the Third Period:

The story of the culminating period of the Byzantine Empire showed its release from crusaders in 1261 A.D. and the fall of Constantinople to the Turks in 1453 made sad readings.

Its buildings could not be compared in size or magnificence as those of the earlier periods. They were extra ordinarily small; they were no more designed for the pump and ceremony of a church militant, but erected for private prayers and meditation of people suffering almost constant war with the Muslims of the East.

Architecturally, they surpassed the ones of the earlier periods. Most significant examples were found in Greece. It is remarkable to note that S.Sarion Church was the first

Christian sanctuary in Constantinople, which fell into the hands of the Muslims in 1453 and was converted into a mosque.

General Characteristics

The distinctive characteristics of Byzantine architecture were domes covering square spaces. This was a primary feature of the church and acted as a nucleus from which almost every essentials (details) in the church sprang. In the developed form, the components of the buildings grouped themselves around the dome (crown) with their vaults (semi-domes) extending to the outer walls like the equal arms of a cross.

Three types of domes characterized Byzantine churches: simple, compound and melon shaped

Domes.

A simple dome was one in which the supporting pendatives were part of the same hemisphere with the dome, while the compound domes were hemispheres set above the pendatives and the melon shaped domes were domes having convolutions.

The use of domical coverings on a square plan was explained with reference to three reasons; aesthetics, symbolism and practicality.

It was used as a monumental feature giving prominence and distinction to the edifice and thus set apart for the worship of God. It was also said to have represented the symbol of

the vault of Heaven, it was the fitting canopy for the place of worship where in the center of the dome Christ was almost rightly portrayed blessing his followers on the high.

Through the effect of the structure, the cruciform superstructure made a high appeal to the Byzantine mind too. The use of square plan for the Byzantine churches was explained liturgically; with reference to the difference in liturgy of the Romanesque and the Gothic, where basilican plans were widely used. In the Latin medieval churches, the priest with his attendants celebrated the mass in chancel (screen), distant from the congregation in the nave. He remained within the ambit of the altar. There, within that prescribed area, he moved to and fro, offering up his prayers and consecrating the sacred elements. The altar was the focal point of the church, and it was to the altar that the gaze of the worshippers who were gathered within the nave was naturally directed. It was therefore clear that a long and fairly narrow nave was most suitable for worshippers at such a form of service. The more who could clearly see the ceremony at the altar, the more effective was the plan.

Whereas the Byzantine churches moved in a different way, a screen (iconostasis) extended across the end of the church, shutting off the sanctuary from view. The priest comes out of the sanctuary by a northern door in the iconostasis; he passes through the central door into the altar space. He moved among the people censing them as he proceeds. A great part of the service was hidden from the people; the sacred acts were performed in the mystery of the concealed sanctuary. When the priest did make his appearance and moves before or amongst the congregation, he was plainly seen by all. A

church of square plan was thoroughly suited for such a service and there was no need to sacrifice length for breadth as in Romanesque churches.

Other types of plans used in Byzantine Architecture before transformation and development led to the precise use of square plans included;

(A) Domed hall churches (Domed Oblong),

(B) Basilican churches: This was having a length twice its width. The difference between the basilican churches of the Byzantine and Roman Empire, included its being lit by clerestory windows, and behind wall of aisles in the Romans', while in the East, it was customary to have additional lighting.

(C) Circular or Polygonal; this was believed to be directly descended from pagan architecture. The circular form was not suitable for church rituals.

(D) Cruciform buildings; this originated in the interest of symbolism and it was unsuitable for church rituals. Most examples were for memorials. The arms of the cross were generally short and domes marked the crossing

(E) Domes in basilicas, an achievement of the Byzantine was the production of a harmonious design which combined the Horizontal axis required by rituals, with the vertical axis which is determined by the same domes, were set on the crossing arches of the basilica with one dome higher than the rest. The result was unsatisfactory, since the central space was insufficiently emphasized and the longitudinal direction was too strongly marked.

(F) Cross in Square: Belongs exclusively to the second and third periods. They are smaller than those churches associated with the first period. It composed of a central square, with four arms producing a cross.

Furthermore, Byzantine architecture was characterized by the corporateness of the building, which seemed to be inherent in the plan. The walls of the nave in the churches were broken and there was the altar in the sanctuary unlike the Baroque rotunda with chapels radiating from a central area breaking the curve of the circle or ellipse and each containing its own altar.

The fellowship of believers in the church was a cardinal idea and a supreme reality, which has been disturbed in the Baroque sampling church.

Aesthetically, its compactness and unity of mass distinguished a typical Byzantine church. This portrayed the Greek fathers' orthodox doctrine of trinity. In their solution of the Trinity, that is, 3 equal persons in the Godhead, the unity of nature in the 3 (i.e. 3 in 1) was maintained. This same principle animated from the building using the idea, of difference, of balance, of proportions, of harmony and equilibrium.

3.2.2 Churches in the Byzantine Empire

There very many churches in the Byzantine Empire, the most important ones included; Sancta Sophia, Mausoleum of Rotunda, Sergns and Baccus, Constinopy, Theodore and S.Vitale in Ravenna.

The characteristics of these churches were similar and related to the general characteristics of Byzantine architecture. So a case study of S.Sophia is considered for the rest.

Sancta Sophia:

Architect Anlomus of Trellis and Isodorus of Miletos built this church for Justinan. The plan consisted of a central square space of 107ft., square with massive stone pier 25ft. by 60ft. supporting the semicircular arches upon which rested the dome 107ft. (base) and 180ft. above the ground. The dome rested with little apparent support like a canopy over the centre (as if suspended by a chain from heaven). Gigantic pendatives to the central domes overhung about 25ft. and were themselves 60ft. high above which the dome itself raises only 30ft.

Components of the Churches

Narthex:

In Byzantine architecture (churches), the transverse vestibule either preceding nave and aisles as inner narthex (Esonarthex) or preceding the façade as an outer narthex (Exonarthex).

Aisles:

Part of a church, parallel to and divided by piers or columns, or in a rare case, by a screen wall from the nave, choir or transept.

The Chancel:

Semicircular tiers of marble or stone seats for the clergy, built around the main apse.

Nave:

Open spaces to the sides of the aisles, or best described as the western limb of the church (that is part of the west crossing) or more inside the vessel of the western limb flanked by aisles.

Iconostasis:

This was a screen in Byzantine churches separating the sanctuary from the nave.

Sanctuary:

The most holy area inside the church. This envelops the altar of the church.

Altar:

A structure on which to place sacrifice offerings to a deity. The Christian altar is a table or slab on supports consecrated for celebration of the sacrament, usually of stone.

Pulpit:

An elevated stands of stone or wood for a preacher or reader.

Apse:

A vaulted semicircular or polygonal termination, usually to a chancel or chapel.

Capitals:

The Byzantine architectural sculpture was in the capitals of the columns on which the chief object represented was the foliage of acanthus so well known in Greek art.

The Corinthian and Composite Corinthian were taken from classical art. But it was later discovered that the arches in the church naves deserved a broader support than was afforded by a normal Corinthian or Ionic capitals, thus led to the insertion of an approximately trapezoidal shape (impost, puluino or dosseret) above the capitals.

The developed impost capital was generally divided into two groups; (cubical and conical), just as the name implied. The materials used for the capitals were white marbles, which were believed to have been imported from marble quarries of Proconnesus.

Screens of marble capitals characterized the interiors of the churches, and its use was associated with beauty and scaling the church.

Openings:

Arcades of semicircular arches were used in churches to support the galleries. Semicircular arches to conform to the building style also spanned doors and windows.

The widows were divided into three lights by columns of strips of marble (3 inches wide and 12-18 inches deep). Later development led to the enrichment of the window with attached shaft of circular or octagonal sections, placed in the middle of the section.

The windows lit the aisles and galleries, and in the side wall under longitudinal arches and by smaller windows in large. A ring of windows lights the central dome and forms a remarkable feature.

3.2.3 Building Materials and Methods

The building materials used in the Byzantine churches included; timber, bricks, stones, marble, glass and metals (copper and lead).

In covering a square plan with dome, more problems were encountered than in Romans covering a circular plan with dome. The idea of dome covering a square plan was believed to have been gained from timber (wooden) dome, which was developed to burnt brick domes by the Iranian due to scarcity of wood in their land.

To effect the covering of a square plan with dome, several methods were used; the simplest was by laying flat slabs at the angles of the square, corbelling them out so as to form an approximate circle as a base for the dome. Secondly, the squinch was used as a device, whereby; series of arches were flung across each angle of the square, which caused the square to be transformed into an octagon upon which a small dome could be

placed. If for a large dome, corbel or pendatives could be placed on top to effect firm rest of the dome. The origin of the squinch was traced to Iran and into Byzantine through Asia Minor.

Thirdly, the pendatives (the most important) were used to effect the placement of domes. It was a curved triangle, made up of courses of stone or brick wedged into the space between two of the adjoining arches that supported the dome. The pendatives and the arches formed a base upon which the dome could rest. The pendatives might be (continuous) constructed, such that it would be of the same hemisphere as the dome in the support, or they might be of separate hemisphere (independent pendatives).

The construction of the pendatives with brick and stone was learnt from Asia Minor. In constructing domes with stone and brick, the centering consisted of resolving central posts with rods fixed at the top, which could be moved at, will to where-ever support was required. One defined the inner radius of the dome, the other defined the outer. The stones were laid with quick setting cement and the work on the construction of the dome preceded in a leisurely manner, one course being allowed to set before the next was added.

The construction of barrel vaults was done with only the lower course built with centering and laid to radiate after which brick and stone would be laid in series of arches or layers, each inclining towards a back retaining wall. Cross vaults were constructed in the same way formed by the intersection of two-barrel vaults.

The walls could be built of concrete, though the plan of large pier was seldom adopted. Generally, the walls and pier were built of brick, but in some cases stone and a combination of bricks were used. The bricks were large and flat, with one- and- a- half inches thickness, joined by mortar of the same thickness. Many variations were adopted to relieve the flat surfaces of walls. For example, brick or marble was occasionally cut into diamond and triangles arranged in bands, or bricks would be set diagonally to provide stringcourses.

3.3 ROMANESQUE ARCHITECTURE: Introduction

Romanesque which means "In the style of the Romans" may be described as the modification of the classical Roman form which was introduced between the reigns of Constantine and Justinian and was declared as an attempt to adapt the classical forms to suit Christian purposes. Some historians described the Romanesque as the buildings built during the changes from slavery to serfdom and feudal tenure and from changes from pagan Roman society to medieval Christian society.

The prominent buildings in Romanesque architecture were the Cathedral churches and the Monastic buildings, which were built, in monastic orders. Monastism was originated in Egypt where the first men to choose a Monastic existence were the Hermits, but unlike the hermit monks, the monks of the Romanesque period were closer together.

The Monastic order ranged from the Benedictine order, which was founded during the 6th Century to the Jesuit order, which was established as a counter force to the reformation of the Era.

3.3.1 Characteristics of Romanesque Architecture

Romanesque Architecture is the first architecture of the classical period not to belong to a nation or an Empire. The structural principles of the Romanesque architecture were: The rounded arch and barrel vaults, and the equilibrium used in the designs. The round arch, the barrel and cross vaults came from Roman architecture while the dome as used in Romanesque architecture was certainly Hellenisque architecture. The structures depended largely on the principle of equilibrium and this was achieved by using properties between the spaces enclosed and the various elements, which defined and enclosed them. Most of the Romanesque architectural plans were basilican in nature. These were in rectangular, square and circular plans, though with addition of transept and eastern chapels. Some churches were in cruciform shapes (Roman crosses) and unlike Greek crosses, which had equal four legs; the Romanesque church had one leg bigger and longer than the rest.

Further more the churches were big and strong with a campanile or bell tower. And their construction was robust with walls playing a plastic role, clear, geometrical, graded spatial organization and importance was laid on the bell tower.

Basically there were four factors that led to the establishment of the Romanesque buildings:

(A) Feudal system of social and governmental organizations,

(B) The Monastic system, which led to the gathering together into protected and peaceful communities of, selected groups of scholars, students and the skilled persons in the field of arts and crafts.

(C) The growing religious veneration of sacred relics led a large number of persons set out on pilgrimages and thereby gains the broading effects of travel.

(D) The enormous development of commerce particularly towards the end of the period.

Unlike in the Byzantine, the church had accumulated much land and the Monks, which acted as feudal lords for more profitable development.

A study of the Romanesque literature and buildings would tell us a story of idealism, nativity, inspiration and ordinances and there is also a sign of mass neurosis that almost culminated into frenzy. Romanesque cared to be characterized by freedom of expression and active arresting combination of architectural forms. It contributed greatly to the development of highly articulated, expressive exterior and interior designs. It laid the foundation of Gothic success.

The Romanesque revival spearheaded by the American architect Henry Hobson Richardson, led directly into one phase of contemporary architecture through Louis Sullivan and his pupil Frank Lloyd Wright to the United States.

3.3.2 Building Types

The Romanesque Church

In most cases the Romanesque church consist of the chancel, aisle, nave, transept, tower, apse, chapel and sanctuary. The chapels were not merely walled off areas with a single space or rooms added on to the main structure, instead the space opened into one another, but maintained separate identities through difference in openings and their size. They were normally placed at the east end of the church. At the St. Martinde Tours the chapels radiate outwards from the sanctuary opening out into the choir, which in turn opens out into the transept. While at Dunng the chapels open in echelons into transept and into the eastward extension of the aisles.

The points where the space interpenetrated, were not holes cut in the walls, but were articulated by means of vertical supports and round arches, capitals punctuating their junction. The interior space is divided into its component parts, i.e. nave, transept, aisles, e. t. c. and then subdivided by means of piers into a small number of large square spaces which are themselves subdivided by columns. The subdivision of the component parts is regular, although the supports could vary in detail but they had a common vertical shaft, which runs from the floor to the ceiling. The supports may be compound piers. Clustered piers or cylindrical columns.

The Cathedral of Pisa

The cathedral, with baptistery, campanile (leaning tower of Pisa) and Campo Santo, together form one of the most famous building groups in the east. The cathedral is one of the finest of the Romanesque period, it has a marked individuality and looks like other

basilican churches in plan. With long rows of columns connected by arches, double aisles, and a nave which has the usual timber roof. The transepts, with an apse at each end, were an advance on the simple basilican plan. The building depends for its interest on its general proportion and on the delicacy of its ornamental features rather than on any new structural development.

Examples of Churches

In England: Ely Cathedral c. 180

In Italy: Abbey church of Sancta Maria at Porto novo, The Baptistery,

Pisa (ad 1153-1278): Anpuid, Piacenga, J. Tomaso, Almeno, San Bartolomi.

In Germany: Grenada Abbey (ad 959-1050), The church of the Apostles, Cologne (ad 1220-50)

In France: St. Etienne, Vignory (1050 AD), Autun Cathedral (AD 1090-1132), The Abbey church, Clunny (ad 1089-1131),

In Spain: Cathedral of Santiago de Compostele (1080-1101 AD)

In Africa: The church of Ojemba, the church at Announa, church at Ibrim in Nubia, church of Ernet, Egypt.

3.3.3 Building Materials and Methods

Materials

The characteristic materials of Romanesque architecture are stone, timber, brick, marble, concrete and terra cotta. The use of materials was based in accordance to their nature and

availability. For example the tower of Eashes Barton in England is derived from timber design. Biologically and geographically, the materials were very cheap to obtain.

France had an abundant of good stone, earlier quarried and freely used for all types of buildings; it was so plentiful that it was shipped to England. The coloured punice and tuta, of the volcanic areas were not only used for walls and decorations, but were so light that they were also employed in large blocks for the solid stone vaulted roofs.

Also in Italy, they had great mineral wealth and abundance of stone. Various building materials were used in Rome including bricks, volcanic turfs, marble from Carrara and Parda.

Methods

Roofs

The general employment of vaulting in the 11th century especially over side aisle may have been due to the desire of fire-proofing the building, although the center often had a simple wooden roof in most cases. The form of arch employed in vaulting was semi-circular, often raised or stilted. Unmoulded ribs were first used about AD 1100 and later on, they were molded quite simply. Intersecting barrels on cross vaults were usually placed over a square plan, but the difficulty in constructing them over oblong bays finally led to the use of pointed arches in the Gothic period. Romanesque Architects began to use the flying buttresses under the aisle roofs, to counteract the thrust of a vaulted nave roof. In central Italy, timber roofs placed over naves, were of the simple type, basilican types

were with rafters and the beams often effective in colour, while aisles sometimes have groined vaults of small plan. This also happened in Germany and Sicily. Cross-ribs or arches between each bay reinforced the barrel vault. In some cases and areas, the barrel vaults were replaced with a system of ground vaults. The naves were the first covered by barrel vaults, buttressed by half-barrel vaults over aisles. In France, the vault was sometimes pointed. The cathedral of S. Madeleine is believed to have the earliest pointed cross vaults in France. The most interesting thing was that, in volcanic areas, the height nature of the stone resulted in stone covered vaults.

Walls

Most of the walls were built with rubble faced with squared stone for aesthetics. Sculptured and molded ornament was concentrated on wall arcades. The buttresses are wide, of slight projection or half rounded shafts, while flying buttresses admitting high clerestory windows to height the nave were introduced. It took time before the Romanesque architect knew that it was not the width of the buttress that was important but the depth.

Openings

The arcades consisted of massive circular columns or piers, which supported semi-circular arches. A rose or wheel window was often placed over the principal west door. Cloisters frequently have small columns supporting arches in groups of three. The eaved galleries borrowed from Lombardy are special features sometimes carried entirely round the church. The windows were of the type commonly called double-splayed, i.e., with the

glass or shutter-line in the centre of the wall and the slabs splayed equally inside and out. Since the doors were arched, they used lintels to fix the doors more tightly and the gap between the lintel and the arch was filled with a stone slab called the Tympanum. The doorways were stepped out in a series of ever-unending arches.

Columns

The shafts and capitals in the doorways are frequently carved with figures of humans, birds, animals and flowers. Square pier, cylindrical piers and compound piers were frequently used. In Italy, they carried Corinthian columns, which carried round arched arcades instead of entablatures. They also carried slender finished columns in the cloisters. Variations of Corinthian or Ionic capitals were used in London and later the capital was of a cushion (cruciform shape).

Decoration

In all parts of Italy, the symbolism in Christianity centered into decorative carvings and mosaics, emblems of saints and the whole system of symbolism represented by trees, birds, fish and other animals were all worked into the decorative scheme. Crushing lions' support columns of projecting porches are symbolical of David as the Lion of Judah, while the columns represent Christian pillar of the church. Painted glass, small clear glazed openings were employed to set off the opaque colour decoration of the walls. Also stained glass, which was more suitable to the large openings, was used for decorative purposes. The period is rich in carving zigzags, rosettes and billets. Normally, it was the

very stone of the structure that were carried whether chamfers or molding, unlike in the Byzantine Era.

3.4 GOTHIC ARCHITECTURE

Introduction

In no other art is the traditional element so powerful as in religious architecture, the work of entire communities and often generations. Here a fresh and creative vision, in its formative impact upon society, may amount to an act of state. But for this very reason, such vision will have to tend to the particular resistance of ingrained traditions, as well as with the limitations of personal skills, and material resources that happen to be available. It is profoundly significant that it took a man who was at once a great prelate and a statesman of genius, Sugar of St. Denis, to overthrow Romanesque architecture and to establish the Gothic in its place.

Once created, the Gothic became the conservative "language" of Christian architecture throughout the western world. It is this language, with its local dialects, that we think of if we speak of Gothic. What concern us here, however, are not the structure of the language, but the reason of its origin and the meaning of its message.

The Gothic cathedral originated in the religious experience, the metaphysical speculation, in the political and even the physical realities, of twelfth century France, and in the

genius of those who created it. We have tried to seize the singular nexus of living forces in Gothic form that is its lasting expression. But we shall begin by looking at its form.

3.4.1 Gothic Form

What is Gothic? The decisive feature of the new style is not the cross-ribbed vault, or the flying buttresses. All these are constructive means (developed or prepared by pre-Gothic architecture), but not artistic ends. Neither is soaring heights the most characteristic aspect of Gothic architecture. The effect of immense height like in the great Abbey of Cluny- epitome of all that is Romanesque- is the very thing that the Gothic masters, during the 1st century at least, deliberately abstained from producing. Two aspects however of Gothic architecture, were without precedent and parallel: the use of light and the unique relationship between structure and appearance.

Use of light means more specifically, the relation of light to the material substance of walls. Like in Romanesque churches, light is distinct from, at the same time contrasting with the heavy, somber, tactile substance of the walls. The Gothic walls appear porous: light filters through it, permeating it, merging with it, transfiguring it. They seemed much more luminous than their Romanesque predecessors. The stained glass windows of the Gothic, replaced the brightly coloured walls of Romanesque architecture; they are structurally and aesthetically not openings in the walls to admit light, but transparent walls. Light, which is ordinarily concealed by matter, appears as the active principle, and matter is aesthetically real only in so far as it partakes of, and is defined by, the luminous quality of light.

3.4.2 Characteristics of Gothic Architecture

The gothic of the 13th century throughout Europe was slowly evolved from Romanesque Architecture and is mainly distinguished by the introduction and general use of the pointed arch, whose original home was probably Assyria, although it has been said by Mr. A. Creswell that the earliest pointed arches appear in Syria. This feature, in conjunction with buttresses and lofty pinnacles, gives to the religious aspirations of the period. Romanesque architects had begun to substitute elasticity and equilibrium for the inert stability practiced by the Romans, and Gothic architects further extended the application of these static laws, by employing small stones laid in shallow courses with thick mortar joints, so as to secure the greatest amount of elasticity compatible with stability. The Gothic masons, throwing the rein on the neck of experiment, utilized stone to its utmost capacity. They heaped up stone in towers that, rising above the lofty roofs of naves and transepts, tapered upwards in slender spires embroided with lace-like tracery. They suspended it overhead in ponderous vaults, ornamented so as to seem mere gossamer webs pierced by cunning pendants, which pleased the fancy of the 15th century, and which in reality sustain the very vaults from which they appear to hang. Finally, embolden by success, they even ventured to cut granular stones as thin as fibrous wood. The stability of a Gothic cathedral depends upon the proper adjustment of thrust and counterthrust. The collected pressures of the nave vaulting and outer roof, which are downward owing to their weight and oblique owing to the arched form of the vault, are counteracted by arches carried above the aisle roofs to press against the nave wall, and the arches are supported by an outer line of massive buttresses weighted by pinnacles; whereas in Roman buildings the wall system consist of solid walls enclosing the building

and supporting a continuous vault, in a Gothic building the wall consist of pieces of wall, or buttresses, at right angles to the building, to take collected pressures of the ribbed vault. This structural contraption of transmitting the accumulated pressures to the ground is known as a "flying buttress." The entire structure consists of skeleton piers, buttresses, arches, and ribbed vaulting, all held in equilibrium by the combination of oblique and vertical forces neutralizing each other. The walls were thus merely required to enclose and not support the structure, and they principally consisted of glazed windows with vertical mullions and traceried heads. The difficulty in quarrying and transport of stone, which resulted from the social and industrial conditions of the age, taught the Gothic architects economy in the use of materials, and there was consequently less waste in the working of stone in Medieval than in classic times

Although most Gothic forms were founded primarily on structural necessity, others were the expression of artistic invention: thus the spire fulfilled no structural requirement, but it served as a symbol and formed an outward and visible expression of the religious aspirations of the time and directed the thoughts of men heavenwards. Gothic architects were compelled to erect large buildings with small stones, whereas the Greek had erected small buildings with large blocks of marble, conditions that naturally differentiated their architecture.

The evolution of vaulting from Roman to modern times is an interesting subject. The Roman system of vaulting, comprising the wagon and intersecting vault was continued in the Romanesque period, but an innovation was introduced by placing a vault over an

oblong compartment of a church nave, when difficulties occurred owing to the differences in height between semicircular arches over spans of varying width. The setting out of one compartment of a Gothic vault is given, with plans at different levels of the Springer. This use of vaulting of the pointed arch- always regarded as the chief characteristic of a Gothic architecture (sometimes called for that reason the "pointed" style)- is the most probable of various suggested origins of this form, such as its occurrence in intersecting arcades common in Romanesque buildings.

Gothic vaulting consists of a framework of stone ribs, which support thin stone panels, known as "rib and panel" vaulting, which was an extension of the Romanesque method which had been evolved from the Roman. The ribs were constructed as permanent supports and on them the thin stone panels were laid, being supported temporarily on a movable centre sometimes known as a "Circe". The difficulties of vaulting oblong compartments were overcome by the use of pointed arch over the shorter spans, while the semicircular arch was for some time retained for the diagonal or longer spans. The license which Gothic architects allowed themselves in the treatment and disposition of ribs, with which they spun an intricate web of many strands, makes the evolution of Gothic vaulting a most fascinating study.

As a result of the Gothic system of buttresses, walls became less necessary as supports; but were naturally retained to enclose the building and protect it against the elements of weather. Another step in the evolution of the style was made possible by the invention of painted glass, which was forthwith used to form brilliant transparent pictures in the ever-

recurring windows which were enclosed under the pointed vaults, which had, as already been explained, been originally adopted for constructive reasons. The brilliant translucent windowed walls of a Gothic cathedral rival in beauty, the painted hieroglyphics of Egyptian temples, the sculptured slabs of Assyrian palaces, the painting and sculpture of Greek temples, the frescoes of Roman thermae, and the mosaics of Byzantine and Romanesque churches. In the north of Europe the windows stretched from buttress to buttress, and thus provided full scope for the use of glowing painted glass as the chief internal decoration, and it followed that walls were kept uniformly flat internally so that the coloured windows might be seen by all; while structural features, such as buttresses and pinnacles, were placed externally.

3.4.3 Gothic Cathedrals

Cathedrals and churches in medieval times occupied an important place in national life, and their construction was continued from one generation to another. The term "Cathedral" was applied to the Episcopal church of the diocese. They were the history books of the period when few people could read, and thus were a medium of popular education, taking the place of such modern institutions as free schools, libraries, museums, picture galleries, and concert halls. Sculpture and painted glass reflected incidents of Biblical history from creation to redemption of mankind, and this pictorial presentment was peculiarly adapted for people to whom the written word was a sealed book. The virtues and vices, surrounded by all the imagery of Mediaeval symbolism, were depicted in sculptured figure and coloured glass of the passing people, and the moral was pointed for the encouragement of warning of all by representations, often

crude but realistic, of the rewards of punishments that might be expected to result from the practice of the particular virtue or vice. Saints with devout mien and angels of joyful aspect carried the thoughts of men to a future and higher life; while all the manifold energies of mankind, as expressed in the various handicrafts of peace and war, were represented in cathedral wall and window to simulate energy and action in daily life. Thus we see that medieval architecture is a grand chronicler also of secular history in which kings, nobles, knights, and people were represented as playing their part. The plans of cathedrals differ in every country in Europe, and continental cathedrals form an interesting comparison with English cathedrals.

Church plans in England, France, Belgium, Germany, and Italy are generally in form of a Latin cross of which the short arms form the north and south transepts. The derivation of this cruciform plan is conjectural, and has been the subject of various theories of origin. It may have been formed from the Early Christian basilican churches such as old Saint Peter, Rome. and saint Paolo fuori le Mura, by extension of the "Bema" into well marked transepts; or it may have been suggested by the cruciform tombs of the period of Constantine. Its complicated development during the medieval period was due to the requirements of an increasingly ornate and ceremonial ritual of which it forms a material expression in stone. The main body of the church generally stretches westward and the choir and sanctuary eastward from the "crossing" of nave and transepts, which is often marked externally, especially in England, by a tower, sometimes tapering into a spire. These main divisions east and west, and the transepts north and south, are further divided into central nave with side aisles, separated by columns or piers. The principal entrance is

generally either at the west, as in France, where it is flanked by towers, or on the south or north side, as in England, where it is protected by a porch. The columns or piers, which separate nave and aisle, support the nave arcades and the walls, which rise above the aisle roofs. Above is the triforium or "blind storey," which is the space beneath the sloping roof over the aisle vault and enclosed on the nave side by a series of arches. Above the triforium is a range of windows to light the nave, called the "clear-story," probably from the French word "clair." By means of cross vaults these clearstory windows generally rise to the level of the ridge of the nave vault, which is covered by high-pitched wooden roof. The eastern arm of the choir, reached by steps from the nave level, is generally the most ornate part of the church.

The interior of a Gothic cathedral has been thus described:

"The tall shafts that mount in massy pride
Their mingling branches shoot from side to side;
Where elfin sculptures with fantastic clue
O'er the long roof their wild embroidery drew;
When superstition, with capricious hand,
In many a maze, the wreathed widow planned,
With hues romantic tinged the gorgeous pane,
To fill with holy light the wondrous fane."

3.5 INFERENCES

From the above perspectives in the history of the different constructional details of materials, organization of spaces, development of forms and ideology, behind the evolution of ecclesiastical structures, it will indeed be fair to say that the different epochs

had a hand, directly or otherwise, in the development of what is termed today as 'ecclesiastical architecture."

For proper clarity though, it will be necessary to highlight the different contributions of these different periods to what is an ecclesiastical architecture. The different features and characteristics of the contributions will therefore be summarized according to their epochs as follows:

Early Christian Architecture c.33-330 AD

The Early Christian architecture was a time when Christianity had just been legalized as a recognizable religion by the then Emperor, Constantine. The buildings then were the Roman basilicas majorly, characterized internally by closely spaced columns carrying entablature or widely spaced carrying semicircular arches. They also had three to five aisles covered by a simple roof, which also covered the central nave and they employed the use of king and queen post trusses. Narrow side aisles were occasionally vaulted, and apses were domed. Walls were constructed with hand-laid rubble faced with brick, stone or plaster. There was at the time little regard for external aesthetics. The mostly oblong plan was divided lengthwise into nave and aisles by rows of columns or piers, with a low-pitched timber roof above the nave and lean-to roof over the aisles. The roof members were exposed on the inside, but did not really present an acoustic problem due to the provision of the generous heights these buildings possessed. There were also evidence of clerestory lighting and in other cases windows were large and numerous. Floors were often of marble mosaic.

Byzantine Architecture **c.330AD-6th Century**

The major recognizable attribute of this period was the dome over a square plan. There were three major domes which were the simple dome with supporting pen datives being part of the same hemisphere as the dome, the compound dome were hemispheres set above pen datives and the melon shaped domes which were domes with convolutions. They also had the oblong churches, which proved a task for the Byzantine era in terms of roofing. In this period could also be noticed the basilican type churches, also being lit by clerestory windows. Also were circular or polygonal churches, cruciform buildings, and domes in basilicas and cross in square churches. Different features can be identified in the Byzantine churches of which would include the narthex, aisles, the chancel, nave, iconostasis, sanctuary, altar, pulpit, apse, capitals, amongst others.

Romanesque Architecture **6th-12th Century**

The most peculiar features generated by the Romanesque epoch were the rounded arch, barrel vaults and their equilibrium used in designs. Most of their plans were also basilican in nature; they were rectangular, square or circular. The churches were of a rather big volume, strong with campanile or bell towers. Intersecting barrels on cross vaults were placed over a square plan, with the introduction of flying buttresses admitting high clerestory windows to height the nave.

3.6 DESIGN PROCESS PROBLEM

This section will be specifically about the factors that enhance the optimum satisfaction in usability and comfort stature of the entire project.

3.6.1 Environmental Problems

It is intended that this project would succeed in satisfying the would be user requirements, in terms of special organization of functions and the building performance. Its comfort level will measure the success of any building. This will in turn largely depend on the various environmental factors of climate and weather.

3.6.2 Functional Problems

This will deal with the performance requirements of the building, and this will tend to give shape to the building in an attempt to achieve the following:

i. Centrality by accessibility

ii. Functional separation of different activities and circulation with regard to noise and the degree of publicity/privacy.

iii. Flexibility and adaptability.

iv. Easy orientation with consideration for the surrounding buildings.

3.6.3 Building Form

The consideration for forms cannot be underemphasized in terms of its effects to the design in the following ways:

i. A humble monumentality to suggest the significance of worship in the society in its entirety.

ii. Simplicity and honesty of the form.

iii. Functional separation and grouping of activities, for space economy and users convenience.

iv. Special organization of functions in a user friendly/convenient scheme.

3.6.4 Economy and Time

The fabric and geometry of the building could be greatly influenced by financial commitment as it dictates the following:

i. Materials to be used.

ii. Buildings to withstand the rough tendencies of the users.

iii. Simple but adequately aesthetic forms.

The performance of a building must be capable of meeting with the continual use, as well as the changing mannerism of the laity, in social and ecclesiastic out-look.

This buildings especially the Cathedral structure in particular, is anticipated for a maximum number of Catholics and Christians in general, in the Zaria Township.

3.7 DESIGN CRITERIA

This section will deal with the major considerations for the design in respect of the problems highlighted in the preceding section, which will form the basis for the design criteria. This is sought to provide solutions to some of the problems in the following ways:

A. Orientation of the building should be made to face due North and South, in order to avoid heat penetration into the interiors due to the rising and setting of the sun, or the use of shading devices on East and West façade.

B. Buildings will be oriented at 45* to the direction of the prevailing winds (South-West and North-East winds). This as well helps improve the efficiency of natural ventilation by maximizing pressure differences on the windward and leeward facades of the building. Building orientation should be made East-West since the prevailing winds are either Northeast or Southwest or vice-versa.

C. Spacing the building at least six (6) times its height from the nearest building or the windward side could encourage natural cross ventilation.

D. No building should go beyond three levels in order to obviate the use for lifts.

E. Materials used should be most durable, for minimum maintenance cost.

F. Fenestration in the cathedral structure by coloured (stained) glass.

G. Site drainage should be such that it does not undermine the building foundation.

H. Views from the external highways and distant internal township positions to be given due consideration.

I. Circulation to be separated from main access of the buildings in a way that it permits ingress and egress to and from the township.

J. Monumentality in this case could be achieved by making the building unique in contrast to its immediate surroundings. However, this does not only call for uniqueness of the plan alone, but must also be extended to the elevation treatment of the façade for the required visual impression.

K. Landscaping materials have to be specified for various sections of the site depending on the functions they serve. This could be used to check some of the environmental problems.

3.8 UNITY OF LITURGY AND FORM

As one would already know, the Roman Catholic Church has its set form of worship and their architectural implications, there are a certain number of activities that take place in the church, and these will be the main focus of this chapter, as to how they translate to architecture.

3.9 MASS

Mass is at once the most important and commonest liturgical activity to take place in a Catholic church. In a parish church it will take place at least once on every weekday and twice or thrice on Sunday. In addition it usual for mass to be included in both marriages and funeral ceremonies.

The mass is divided into two parts, the service of the word and the service of the Eucharist. In these celebrations, the priest comes from the sacristy, which might be separate so as to allow the priest to pass through the body of the faithful. The priest goes to sit in the presidential seat to take up the position of the president of the ceremonial assembly.

The president's seat (in this case the Bishop's seat) has come into much greater importance recently and its sitting needs careful planning considerations. The following design points should be noted: -

i. The position of the seat must be such that the priest is seen to preside. It must be in full view of the congregation, and it must have a formal sitting. One favored position is on the centre line of the sanctuary behind the altar, but in

this case it must be raised so as the top half of the priest is visible above the altar.

ii. The president's seat must not look like a thrown except in the case of a cathedral for the Bishop.

iii. Some place must be set out for the mass servers to sit.

3.9.1 Service of the Word

This entails readings from the Bible. At present there are two readings and the psalms, making three. Lectors who stand at the place of the word read these. The prayers of the faithful close the service of the word.

In this case it must be emphasized that though the altar remains the focal point of the sanctuary, the place of the word must rank next in importance. Then place of the word must not be too interwoven with the altar, or else loose its importance as a separate entity. It is most commonly sited at the left hand side (i.e. when seen from the congregation). At its most basic, the place of the word is only a lectern with or without a footpace on which the reader may stand. There must be space adjacent to it to enable three people to read simultaneously. It must also be noticed that the place of word will normally also replace the traditional pulpit.

3.9.2 Service of the Eucharist

The Eucharist liturgy begins with the assembly reciting an offertory chant. Next the chalice, bread and wine brought to the altar table. Servers will bring the wine from

table to table (called a credence), placed in an inconspicuous position near or at the end of the sanctuary.

Later the priest asks God that these items be good enough for their purpose. The servers bring water to him and he washes his hands. The people stand for prayers.

The priest shows the consecrated host to the people and together they acknowledge their unworthiness. The priest then gives himself the Holy Communion. The priest returns to the altar. The servers once more bring him wine and water. The priest cleans the chalice.

The priest reads the last post communion prayer, blesses the assembly and dismisses it. The sitting of the credence table, present a problem today when the altar is at the middle of the sanctuary, the people may be seated on three sides and space is at a premium. This post of the mass called the offertory is clearly in a state of transition. It is present in today's custom for the congregation to kneel some few minutes through the canon. This justifies the special care to be given to the provision of kneelers.

3.10 THE EASTER LITURGY

The activity which should have most effect on church planning after the mass are the series of ceremonies collectively called the Easter Liturgy, which take place during the Holy week- the week before Easter Sunday.

Palm Sunday

The mass is preceded with a blessing and distribution of palms to all present, which are then carried in a procession which leaves the church, go round it and ceremonially re-enters it, recalling the Lord's entry into Jerusalem.

From an architectural point of view, the distribution of palms is no more different to the distribution of communion. The critical action is the procession. There are two main sessions: -

i. Where only a small procession of clergy and attendants go out and the congregation remains seated.

ii. Where the whole congregation goes in a procession.

As the procession in either event will go out of the main doors used by the congregation, these doors must be bigger and wider than domestic proportions for cross bearer. The doors must also be capable of being kept in the open position. If the church has only one exit door for the congregation, there will have to be enough room outside the church to enable the tail of the procession get out before the head gets in. Two exits overcome this difficulty, though they do not over come the incongruity of the leaders hammering to be let in at one of the doors, while the tail has not yet been let out of the door. Another device is to permit the procession to pass round the outside of the church.

Maundy-Thursday

The liturgy of this day commemorates the events of the last supper.

Washing of the Feet

After the Gospel and a sermon on the events, which the day's liturgy recalls, the washing of feet takes place in the cathedral to recall Christ's symbolical actions in washing the disciples' feet. Other liturgies that take place are: -

i. The procession

ii. Good Friday

iii. Veneration of the Cross-

iv. Holy Saturday, the Easter vigil

The procession of the sacrament to the place for reservation requires the following: -

i. An altar in a space, which is clearly divided from the main body of the nave. The most usual place for this is the weekday chapel.

ii. A route of procession.

The veneration of the Cross-requires a greater space in front of the altar than is needed for the distribution of communion.

3.11 BAPTISM

Baptism as a rite was intended for a private ceremony, carried out when the assembly is not present, but Fathers of the Vatican Council have made it clear that they want it to be a public ceremony, in which the newly baptized member is received into the local assembly.

Locating the baptistery near the altar has two advantages:

Architecturally, if in cases where baptism is carried out in front of the congregation it will be very functional as it allows easy visual participation.

Liturgically the close proximity of the baptistery to the altar brings a close tie and significance to the sacrificial lamb, the word and the initiation.

3.12 MARRIAGE

Space within the sanctuary must be adequate to accommodate the two prie-Dieu and chairs for the bride and bridegroom. A table is required in the sanctuary for the rings and Holy water.

3.13 BURIAL OF THE DEAD

The funeral service consists of four parts: -

i. Receiving the body

ii. Funeral mass

iii. Absolution

iv. Burial

Enough space must be provided on the axis of the altar to accommodate the bier with the coffin upon it and the candles in a tall candleslies and to allow the priest to pass all round. In order to avoid the loss of such a large space for seating, on normal occasions the first few rows of pews can be made with a short detachable length next to the central aisles so that they may be temporarily removed to accommodate the bier.

3.14 DEVOTIONS

This is a corporate devotion in honor of the Blessed Sacrament.

There seem to be two main alternatives for this service: -

i. To hold it in the main body of the church, standing the monstrance on the altar.

ii. If the sacrament is reserved in a Blessed Sacrament chapel, to hold it in this chapel, standing the monstrance on a special ledge for this purpose.

Station of the cross to be placed round the peripheral wall, implies that there should be direct access to them. The stations of an additional argument for providing covered space in the entrance area where they could be put.

CHAPTER FOUR

CASE STUDY

4.0 CRITERIA FOR SELECTION

This chapter will deal with studies of some Cathedral structures and institutions that that have inspired the design of this thesis design proposal, with respect to their merits and demerits. Also the concepts and symbolism in their construction of form will be looked at, and lastly their functions.

4.1 ROMAN CATHOLIC SOCIAL CENTRE KADUNA

4.1.1 Introduction

The Roman catholic centre Kaduna is located in a traffic area of Kaduna town, Nigeria. Two roads, one a major and the other a minor road, bound it. These are the Independence way and the Police barrack road respectively. The centre came into existence in 1967 and since then has been upgraded with the addition of some auxiliary structures, and is managed by the Arch Bishop of Kaduna.

The centre now has facilities such as; administration, crusade grounds (Papal altar), conference hall, guest rooms, media training centre and students' hostels. The complex is presently divided into two major units viz a viz, the social centre and the media training centre, with some of the functions shared between the two centres. There is also an ongoing construction presently of guest suits and a chapel structure.

Fig. 4.1.1, Site layout of the Catholic Social centre Kaduna.

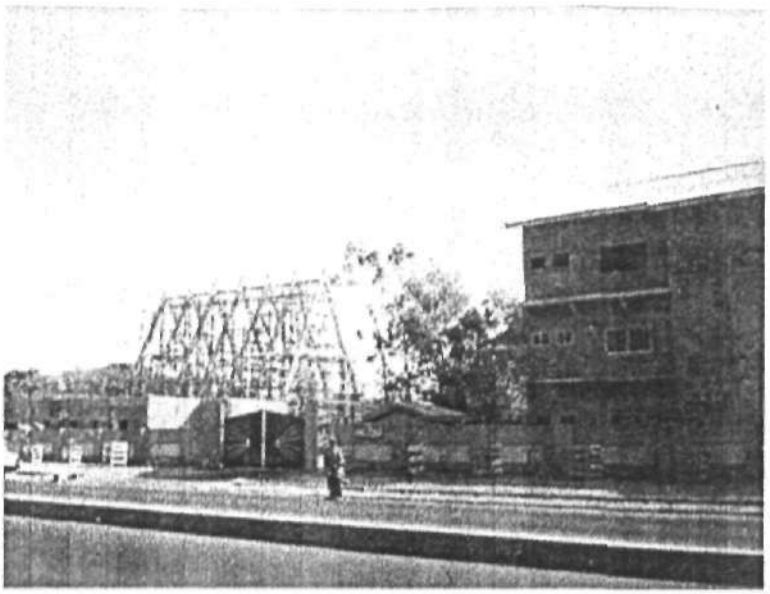


Plate i. View of the Catholic Social Centre Kaduna from the main road (Independence way).

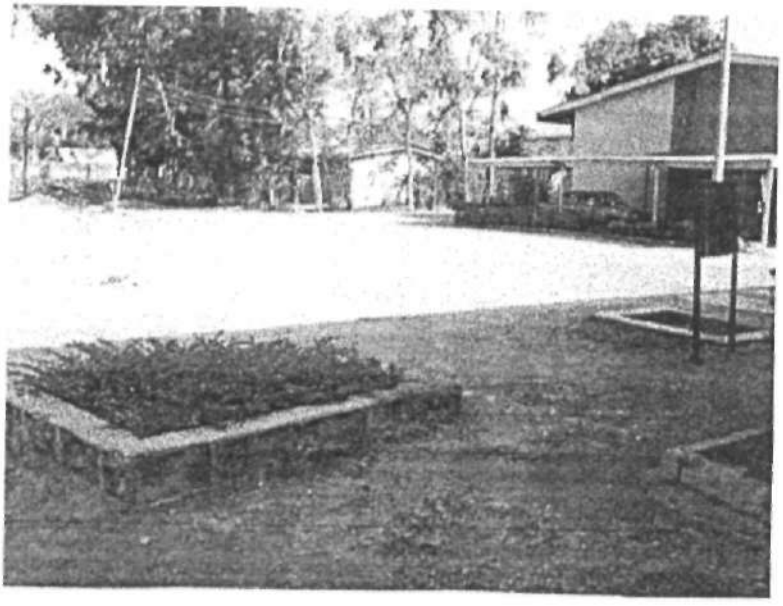


Plate ii. Drive-in situation on the centre's grounds with view towards conference hall and guest accommodation.

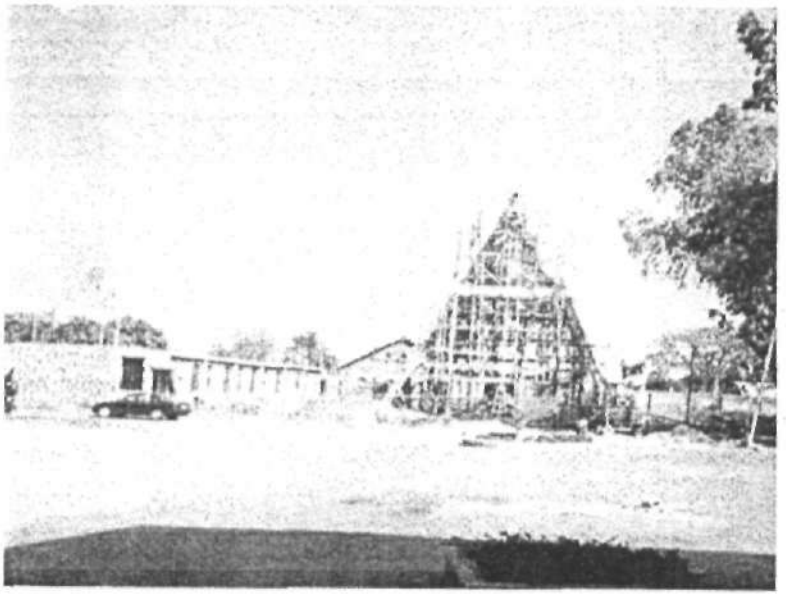


Plate iii. View of ongoing construction of new guest wings and chapel.

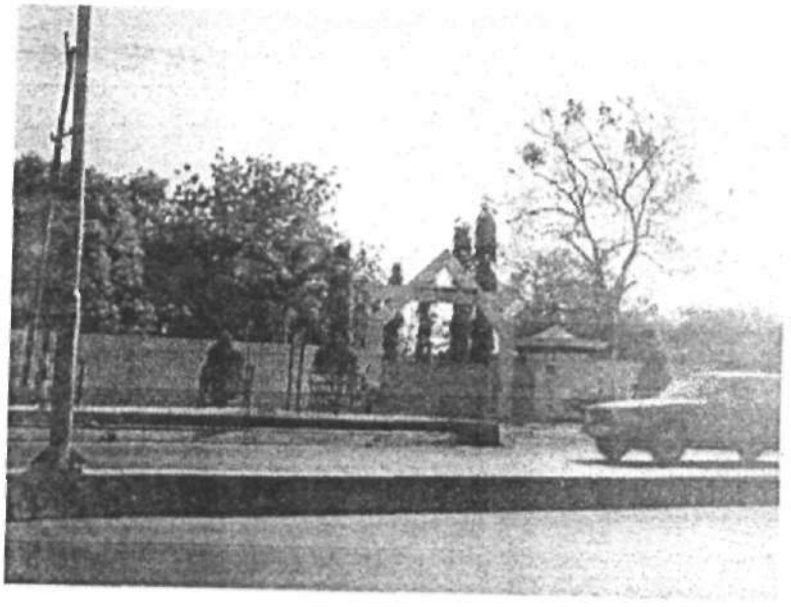


Plate iv. View of Papal altar and Media training centre

4.1.2 Surface Treatment

The internal roads of the centre are untarred; pictures are hung on smoothly finished block walls. Carpet, rugs, floor tiles and concrete screed are floor finishes and coverings. Aluminum, concrete, metal benches, cut stoneware used extensively. The ceiling surfaces are extensively of wood paneling smoothly finished.

4.1.3 Construction

Majority of the roof are pitched roof systems, draining to the ground. Rectilinear approach to building forms enhances simplicity in construction. Concrete was used to form a dome for the media centre gatehouse. Concrete block work was used extensively in the complex, with cement mortar. The newly constructed bookshops' roof slopes in different directions.

4.1.4 Merits

i. The media centre half is well landscaped.

ii. Simplicity in roof construction.

iii. Entrance to the main complex is well planned.

4.1.5 Demerits

i. Acoustics was not considered in planning of conference hall.

ii. The general circulation pattern was not well planned due to difference of construction times in buildings.

iii. Functionally, the entire site was poorly planned.

iv. There are large unused pocket of spaces, with hidden sanitary facilities.

v. The crusade arena (Papal altar) does not have a peculiar symbolism to its form.

4.2 HOLY CROSS CATHOLIC CATHEDRAL LAGOS

4.2.1 Introduction

The Rt. Rev. Francis O'Rourke during the time of Rev. Alme Simon laid the foundation stone of the Holy Cross Catholic Cathedral Lagos on The 6th of August 1934. The church was dedicated in the late 1950s. A purely Gothic expression on the execution of this Cathedral. Also visible is the Master craftsmanship executed by Brazilian Artisans.

The Cathedral is located along the busy streets of the Lagos Island, occupying a corner plot, therefore access to the grounds are on two sides.

The terrain at the time of construction was swampy, and this necessitated deep and strong foundations. The site occupies mainly the Cathedral structure and the bell tower.

The Cathedral owes its form to Mr. Began Benjamin, and it is of an approximated capacity of about 1500 worshippers at a single mass.

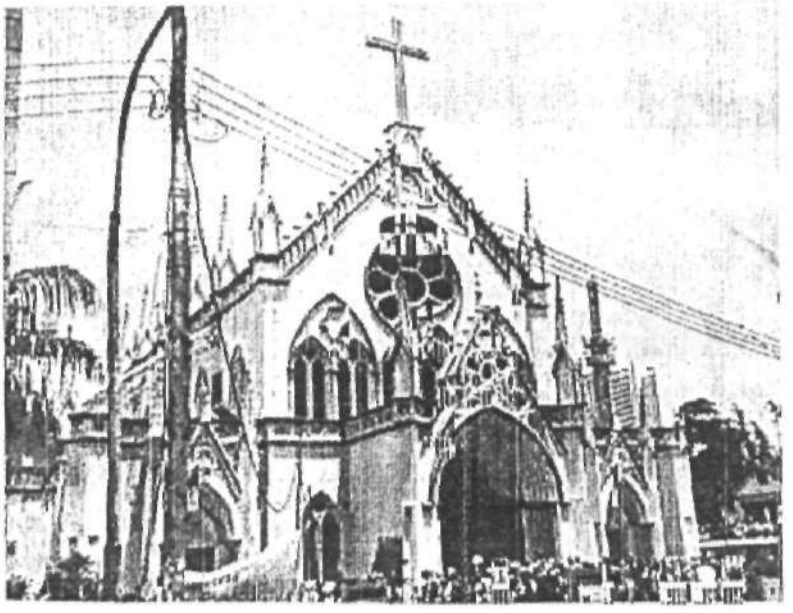
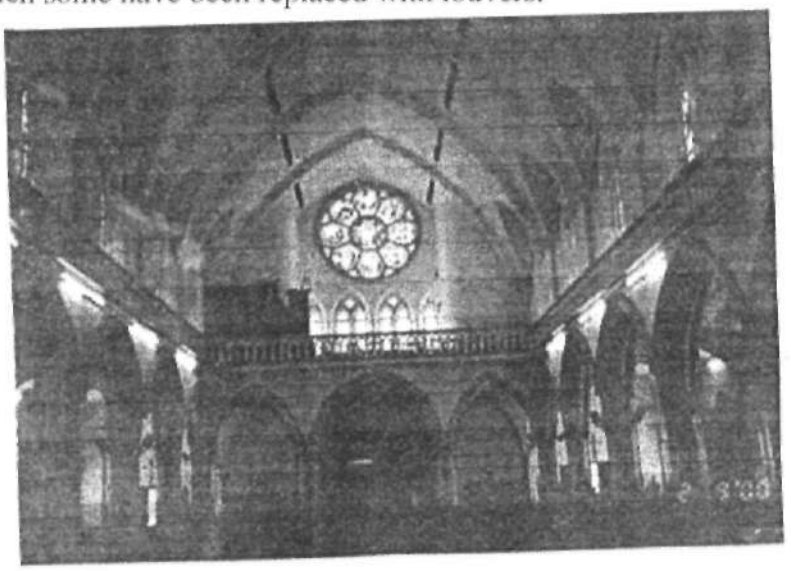


Plate v. View of The Holy Cross cathedral Lagos from main road.

4.2.2 Surface Treatment

Firstly the roof has been changed from the original corrugated iron sheets to expanded zinc. The window behind the vestry was added in 1996, to the design of Tunde Okogie an architecture student.

On first sight of the church building, one will notice an extensive use of concrete used to achieving the shape of some of the structures on the façade, the windows are also of the stained type, of which some have been replaced with louvers.



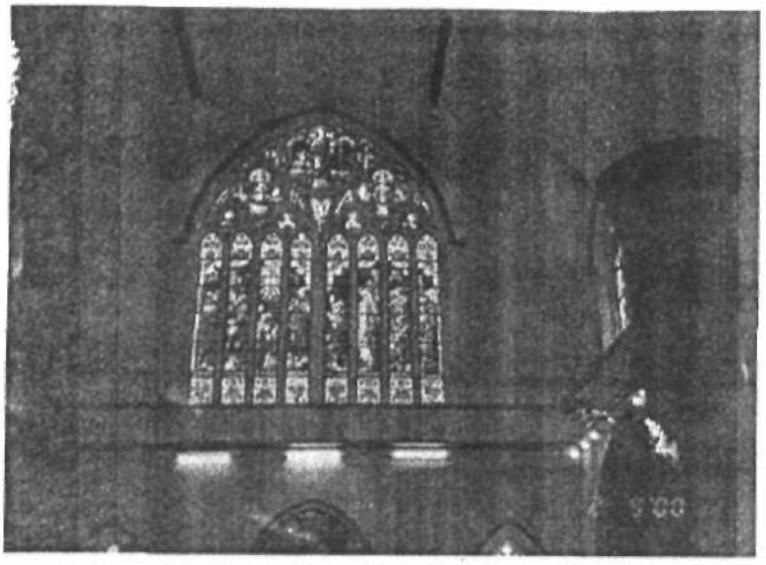


Plate vi Internal views of the Holy Cross Cathedral Lagos, showing stained glass windows.



Plate vii. View showing pointed arches and buttresses.

4.2.3 Construction

The main structure is of a cruciform plan, of which the main longitudinal axis is the central nave for the congregation, the shorter axis which form the other arms mainly carry the side exits, while the rear end of the church has a balconied floor overlooking the nave towards the altar.

The stained glasses are housed in the pointed arched window spaces with an average height of about 3.6m and widths of about 1.2m.

There are rows of rounded columns that separate the side aisles from the nave, a flat roof covers these Directly above these columns are clerestory windows of which walls are supported by flying buttresses that extend to the outer walls.

The roof structure externally is of a simple pitch appearance, while it is of a pointed barrel appearance internally.

4.2.4 Merits

i. It reflects the characteristics and expressions of original ecclesiastic architecture of the Gothic era.

ii. Proper definition of functional spaces.

iii. Adequate location of the Cathedral at city centre.

iv. Pedestrian circulatory patterns are well defined.

4.2.5 Demerits

i. Inadequacy in parking due to over population.

ii. Natural lighting is faint internally.

4.3 OUR LADY OF PEACE BASILICA YAMOUSSOUKRO

4.3.1 Introduction

Construction begins	July 1986
Construction completed	Sept. 1989
Opened for worship	Jan. 1st 1991
Architect	Mr. Pierre Fakoury
Client	Late Felix Houphouet Boigny
Capacity (entire worship area)	200,000

The Basilica is located at a central location of the Yamoussoukro town of Cote D'ivoire. Built on 130 acres of property, the entire site has been given to the See (the Pope) as a gift.

The foundation rests on a system of piles. The process consisted drilling 156 shafts of 1.1m in diameter, of an average dept of 20-30m. Behind the Basilica, two rigorously identical buildings can be seen. Perfectly balanced, dominated by the straight line of the distribution of their architectural mass and their sober decoration, they are of the pure Neo-classical style. By the use of columns, by their colour and by their choice of materials used, they harmonize with the shrine. The southern Easterly one is destined for welcoming the Holy Father and his entourage during his visits to the Ivory Coast. The Southern Westerly one shelters the offices and living quarters of the Rectory.

At the side of this last building is another, partly hidden by relief and technical means: it is used for maintenance, air-conditioning, and e.t.c.

At the entrance there are three buildings built after the construction of the Basilica. These are destined for the practical welcoming of visitors who can also use the space foreseen in the gardens.

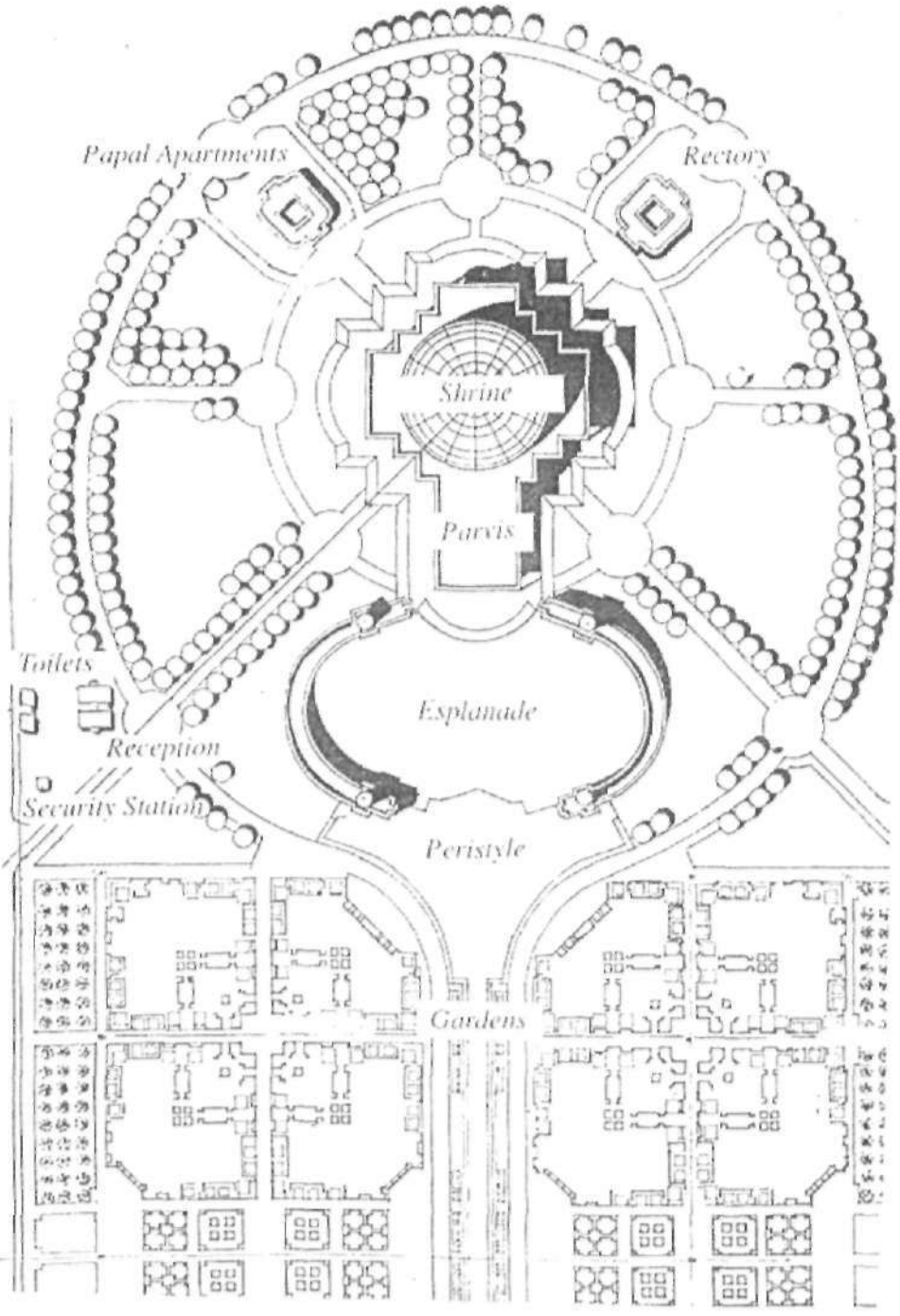


Plate viii. Site plan of the Basilica at Yamoussoukro Ivory Coast.

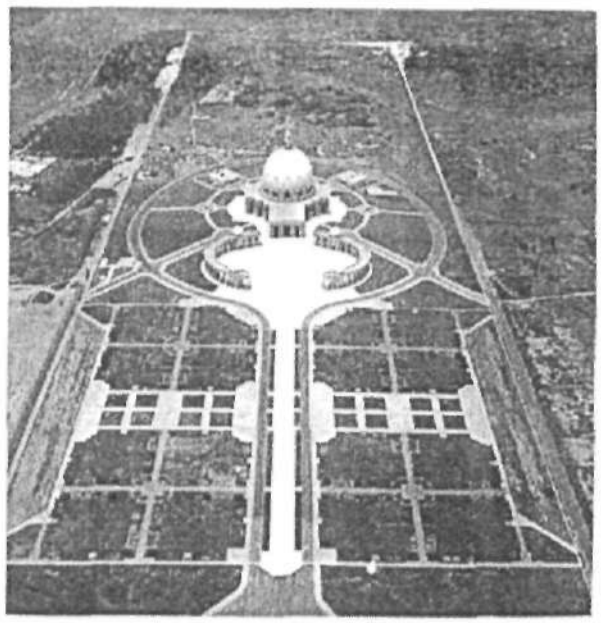


Plate ix. Birds' eye view of the Basilica grounds.



Plate x. Exterior view of the Basilica.

4.3.2 Surface Treatment

At first sight of the Basilica's structure, one thing that stands out predominantly is the extensive use of tectonic concrete and glass. For the interior though, most of the furnishing especially the pews and confessional boxes were of solid well polished Mahogany wood. There was also the use of bronze on the Baldachin, and on the spire on top of the dome.

4.3.3 Construction

i. Main body of the structure:

This is constituted by a cylindrical drum, which is 58m high and 100m (300+ feet) wide, and is coated with tectonic concrete.

ii. The stained glass:

Windows that surround the sanctuary are divided into 12 rectangular bays of 21m high and 11m wide. Two of these bays are chapels dedicated to respectively to the Blessed Virgin Mary and Saint Joseph.

The windows of the Apostles are contained by 24 sets of columns, which form 12 full frames and 12 empty frames. The total surface area of the windows in the Basilica is 8,400m².

iii. The Baldachin:

This of bronze and brass plated steel forming a canopy 28m high over the marble altar.

iv. The Dome:

One of the largest in the world with a diameter of 90m at base, and a height of 60m. The frame is of galvanized steel. The upper calotte (crowning piece), 120m above ground level, carries a double glazed zenith: The exterior of which is made of water proof glass, and the interior of stained glass to represent the dove of peace, symbol of the Holy Spirit. On the upper calotte rests the "lantern", which is composed of:

a. A double range of curls in gold- coloured anodized aluminum.
b. 8 polished stainless steel columns.
c. 2 golden aluminum spheres.
d. A gold coloured cross at the summit, reaching 158m above ground level, making it the highest and largest Cathedral in the world.

The interior of the dome has a surface area of 13,500m^2,and is composed of removable staff panels, which are perforated and painted. The outer cover is of 14,300m^2 surface area, made of 5,300 panels of 7cm thickness.

v. The columns:

The Basilica's style takes its inspiration from 13th century Greco- Roman architecture and carries an impressive number of concrete columns.

a. The peristyle is composed of 128 Doric columns.
b. The parvis (covered area in front of the Basilica) has 84 Doric columns.
c. The Basilica itself contains 48Doric, 12 Ionic and 48 Corinthian columns.

vi. Landscaping:

The gardens are situated on 37 acres on both sides of the 1Km marble and granite alley leading to the Esplanade (square). These formal gardens are arranged according

to the French places of old, divided into four large squares and subdivided into smaller borders and flowerbeds. There are some 400,000 flowers, trees and shrubs.

vii. Marble:

The surface of the parvis and the entire internal flooring of the Basilica are covered by approximately 18,400m² of multi- coloured Italian marble arranged in geometric designs.

4.3.4 Merits

i. Proper and adequate defined spaces.

ii. Proper circulatory pattern.

iii. Complementable for the depiction of original ecclesiastical characters.

iv. Complementable on the extent of use of symbolism in expression.

v. The basilica's location is properly executed as a vista from far distances.

vi. Proper use of finishing materials.

vii. Very suitable tourist attraction.

4.3.5 Demerits

i. Location of Basilica in terms of usage is inappropriate.

ii. Grossly over scoped for its location.

iii. Grossly under utilized.

iv. Central location of altar is inappropriate due to the fact that the priest at one time or the other backs some of the congregation.

v. Confessionals and baptismal fonts were not considered at planning stage of the structure.

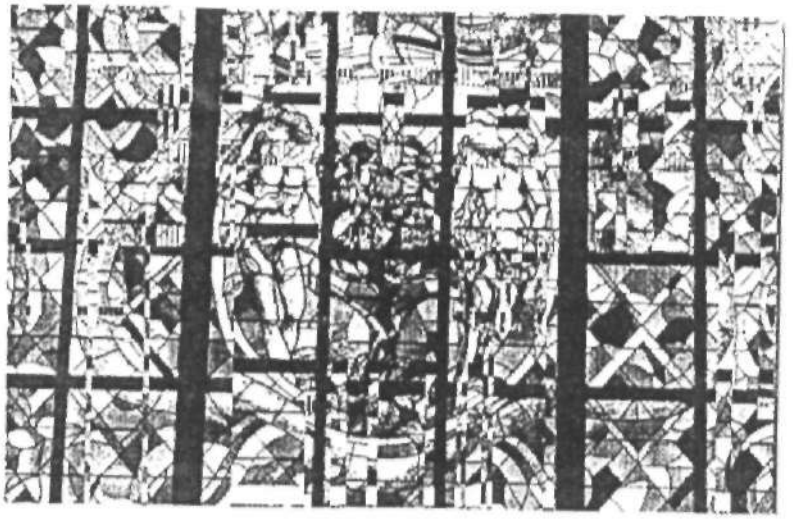


Plate xi. Interior of the Basilica, showing stained glass windows.

4.4 SAINT MONICA'S CATHOLIC CHURCH KADUNA

4.4.1 Introduction

Saint Monica's Catholic church is located in a quiet district of Malali in Kaduna; it has a capacity of 1600 worshipers.

The church is derived from a simple geometric form of a hexagon, removing three sections of it symbolizing the Holy Trinity (the three God heads in one).

This church owes its form to Arc. John Uzoh, and was designed and built for the Augustinian order.

Fig. 4.4.1: Plan of Saint Monica's church Kaduna.

4.4.2 Surface Treatment

The roof covering is of corrugated aluminum roofing sheets, with regular slopes. Windows are of different heights and widths. Walls are externally finished with burnt brick facing and tarolin.

4.4.3 Construction

As already stated the plan consists of three sectors of a hexagon, with columns in the nave space of the church, to support the roof structure. The ceiling of the nave slopes upwards towards the altar, with the ceiling of the altar sloping vice versa, both meeting at a difference in levels to create a clerestory effect of windows for natural lighting. The accommodation units are situated at the rear of site, this is of a normal rectangular block construction.

Plate xii. Approach view of Saint Monica Kaduna.

4.4.4 Merits

i. Adequate natural lighting for interior spaces.

ii. Effectiveness in integrated space usage.

iii. Optimum view towards altar.

4.4.5 Demerits

i. Glare occurs at clerestory window level.

ii. Intermediary column support can obstruct congregational view towards altar.

iii. Building lacks the peculiar features of an ecclesiastical edifice.

iv. Poor landscaping with no particular allocation for parking spaces.



Plate xiii. Interior view towards altar of Saint Monica Kaduna.

4.5 THE ARK CATHOLIC CHURCH NETHERLANDS

4.5.1 Introduction

The Ark Catholic Church is located at Hevormd, Amsterdam- Slotervaart in The Netherlands. Its users are the congregation of that community. The capacity reaches 500 at its peak.

This is a small church that has been designed using symbolism in its form concept, designed by Arc. P. Zanstra, its inspiration was derived from the Noah's Ark, as the one in Joppa. Everything had to find a place here too. Just as in Noah's Ark, everything necessary to a church found a place under one roof, within the large square of the church including; a sanctuary, and all the things necessary for the church to express man to man relationships (the administration, club room, study and other auxiliary facilities).

Fig. 4.5.1: Plan of the Ark Church Netherlands.

Fig. 4.5.2: Elevation of the Ark church Netherlands.

4.5.2 Surface Treatment

Materials used for the church include brick with concrete walls, a concrete flat roof with glazing used on the external surfaces.

4.5.3 Merits

i. A complete church, meeting the totality of the needs of the members.

ii. Functionality is commendable.

iii. Honesty in material usage.

4.5.4 Demerits

i. The rectangular and parabolic shape of roofing makes the building have a deceptive appearance compared to its function.

ii. Lacks elements of original ecclesiastical architectural features.

iii. Lighting occurs only towards the altar, thereby causing possibility of glare to the altar.

4.6 CONCLUSION

It will be observed that some of the case studies stated above have a direct lineage with the structures of the early original ecclesiastic architectural forms and features, while some are almost or totally not in line with these architectural types.

This study will therefore implore the original ecclesiastical features of age, for their structural originality and the later for their symbolism, thereby finding a suitable structure with an appropriate symbolism for this project.

CHAPTER FIVE

SITE

5.1 CLIMATIC CONDITION FOR ZARIA

Background

The region in which Zaria is situated, experiences a typically seasonal climate of Northern Nigeria. The relatively simple climatic regime is primarily a function of the position of the inter-tropical convergence zone (ITCZ).

When the ITCZ is north of the area, from May to October, the site comes under the influence of moist southwesterly winds. During October however, the site experiences a more complex wind pattern, an indication of the southerly movement of the ITCZ over the site. From November to May dry northeasterly winds dominate.

Most of the data following are derived from information on the weather, produced by the Samaru Meteorological station, the details of which are Longitude 7°42'E, Latitude 11°1'N, Altitude 685 meters.

Temperature

According to Table 5.1.1 provided by the Samaru Meteorological station, for the monthly mean maximum and minimum air temperature for the site for the years 1938-1980. Maximum air temperatures occur between the February-June periods, peaking in April at 35.7°c. However, daily maximum air temperatures in excess of 40°c are regularly recorded in March and April. Mean monthly minimum air temperatures of 13.8 and 13.9°c are recorded for December and January respectively, although actual daily temperatures frequently fall below 10pc from December to February period.

diurnal air temperature ranges are frequently much greater. Ranges of 20°c+ were recorded for 7 and 5 days for January 1989 and 1990 respectively.

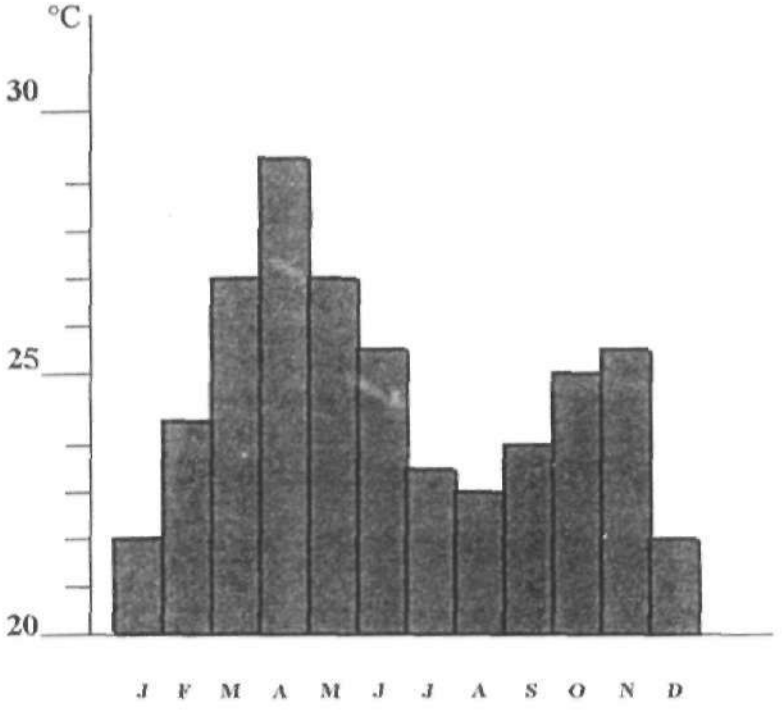


Table 5.1.1: Temperature extremes in the Zaria township.

Humidity

Mean monthly percentage relative humidity figures for 0900 and 1500 GMT readings for the period 1954-80 are given in table 5.1.2.

Mean percentage relative humidity (%RH) level of 70+ is recorded for the July – September period, peaking at 81.7 in August. Actual AM recordings of 100% RH are not uncommon for August, and in August 1980, 17 AM recordings exceeded 80% RH.

Minimum relative humidity levels occur in December and January.

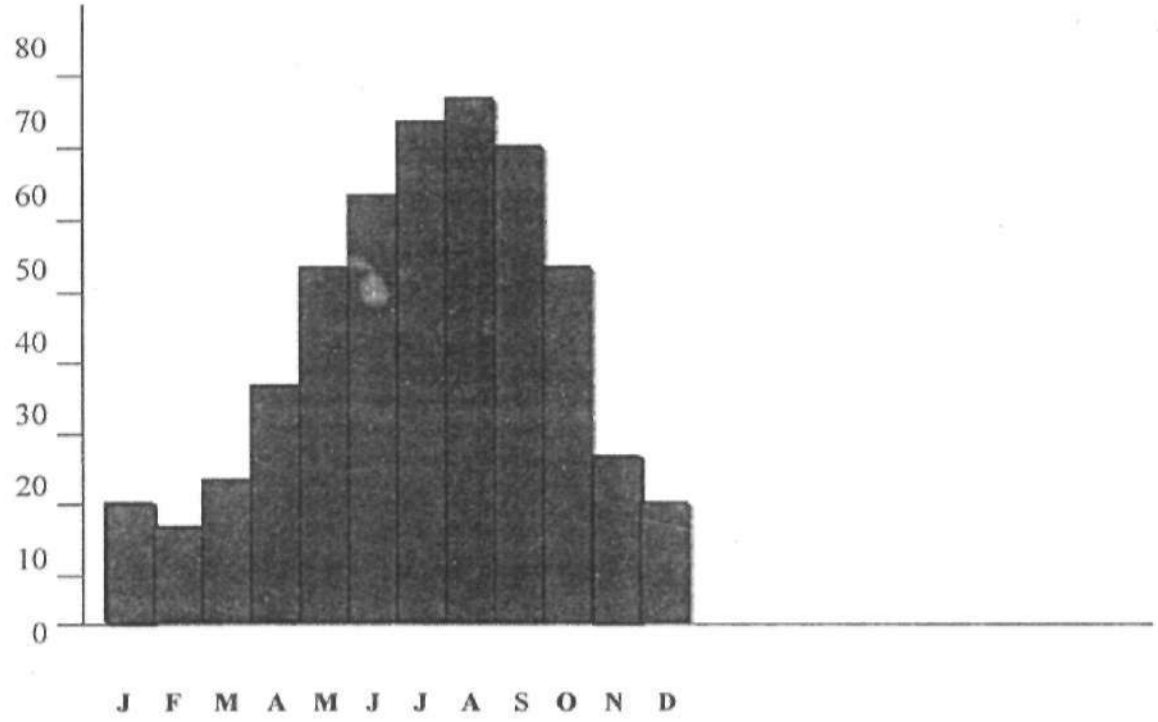


Table 5.1.2: Humidity readings for Zaria township.

Winds

Zaria has two dominant winds, the dry northeasterly and the most southwesterly. During the November to February period, the dry northeasterly winds frequently carry considerable quantities of dust (the Harmattan). Wind speeds in this period rarely exceed 2m/s and generally peak in February.

The Harmattan has a considerable nuisance value, both in terms of human comfort and physical effects. The moist southwesterly are associated with the rainy season. This wind tends to precede storms and is generally strong but short lived. Gusts exceeding 3m/s occur, but mean speeds exceed 2.5m/s only in may. Table 5.1.3 summarizes the data available on wind speed and directions.

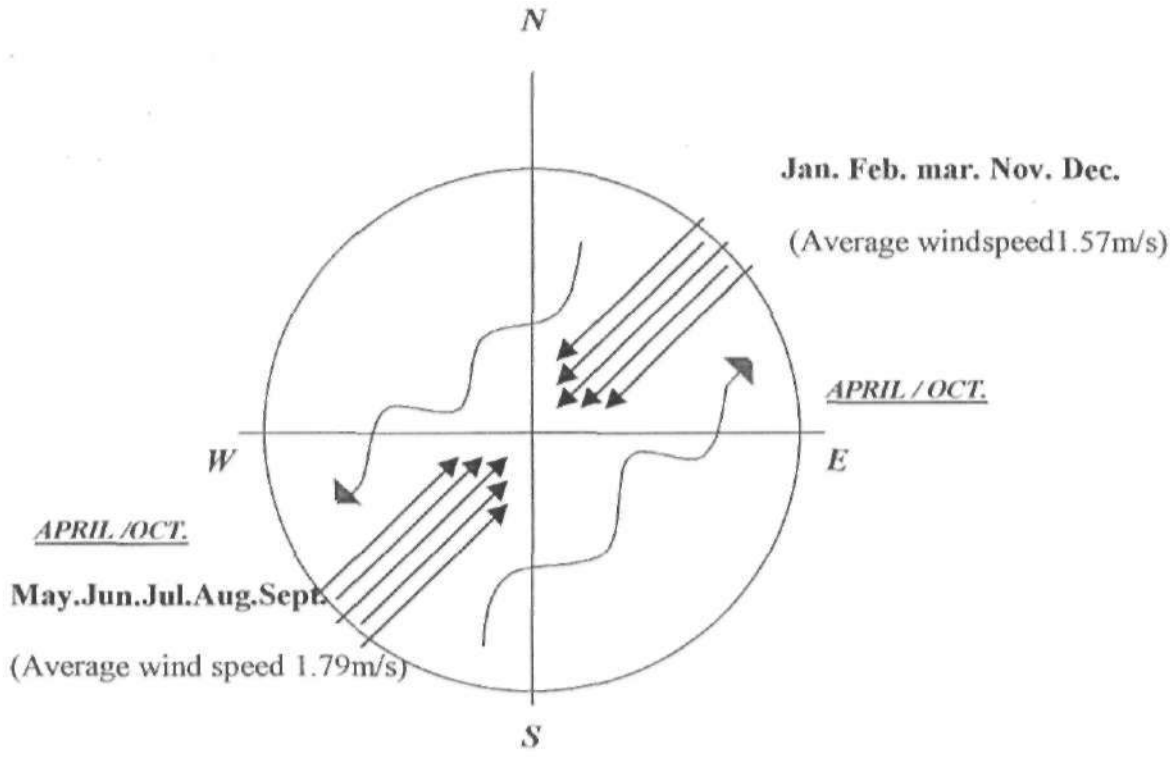


Table 5.1.3: Wind speed data for Zaria township.

Rainfall

Zaria has a rainy period of approximately 210 days (May to October) and a mean annual rainfall (1928-80) of 1092.8mm. Table 7.1.4 summarizes the rainfall data.

Much of the rainfalls occur as storms for a short duration, but with a high intensity. The IAR estimates the 15year, 1 day rainfall maximum to be in the order of 150mm. Unfortunately no hard data exists, nor are there any suitable run-off coefficients from which to determine hard and fast engineering standards.

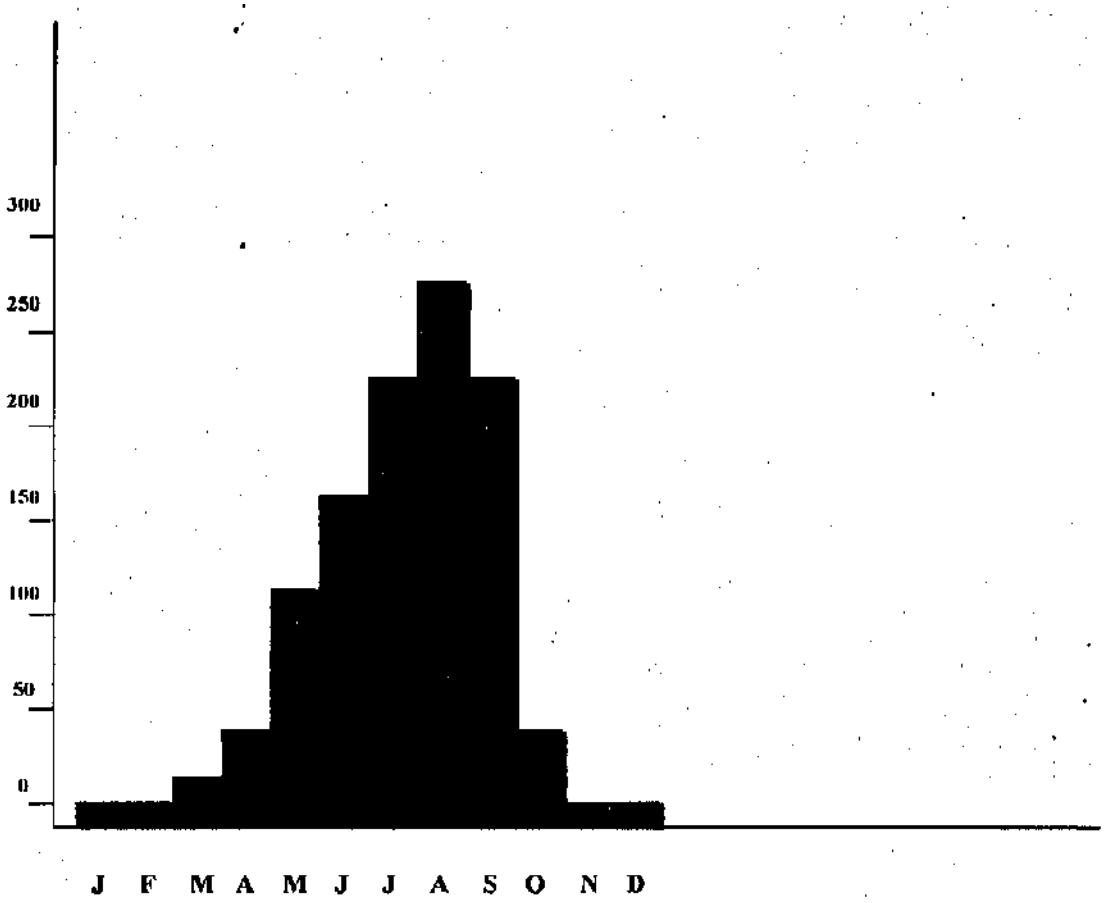


Table 5.1.4: Rainfall data for Zaria township.

5.2 SITE SELECTION CRITERIA

For a good site for the proposed design, the following criteria were adopted:

The site must be accessible to and from a main road free from religious sentiments.

The site must be relatively flat with a gentle slope.

The site must be situated at a strategic location, a centre of human traffic and focus.

The site must have proper landscaping tendencies, and also noise control tendencies.

The site must have access to man-made parameters like water, power line, highway, and drainage.

Fig. 5.2.1: Land use map for Zaria showing allocations for different functions.

Build able soil and geologic conditions without unusual and strenuous engineering measures for construction.

The site must have viewpoints from major highway by visitors.

Selection

At first, three sites were chosen, the first (site 'A') located at the Sabon-Gari vicinity, also another (site 'b') located around the Hanwa vicinity, and the third (site 'c') located along the old Kano road.

Site 'c' which is along the old Kano road was chosen because it met the above set out criteria.

5.3 SITE PLANNING CRITERIA

A The centre will have access to vehicular parking and vehicles will be restricted to this region and the banquet hall area, because of noise.

B The residential area will be zoned to a quiet area with a building to serve as buffer.

C Pedestrian and vehicular accesses will be separated.

D Elaborate pedestrian walkways to connect buildings to each other.

E The centres' buildings follow a harmonious concept of planning to illustrate Man's harmony with God.

F Buildings to be properly oriented to allow light and S.W. wind inflow.

5.4 SITE PLANNING RELATIONSHIP

To arrive at how to integrate the different structures to be provided for, we need to study the functional relationship of the site. There will be access from the car park to the halls,

and also a link between the administrative block and the halls. Walkways cannot be overemphasized; therefore they will be used to connect between structures, wide enough for the comfortable walk of three persons.

5.5 ZONAL CONCEPT

The centre will be divided into the following zones:

A The public/ social zone, which includes the car parking lot, halls, seminar room, service area, facilities like the library and open-air field for crusades.

B The private zone, which includes the residential wing and banquet hall.

5.6 SITE PLANNING CONCEPT

The site-planning concept was adopted after considering the above-mentioned criteria. It is the unity of the zonal concept and site planning relationship.

CHAPTER SIX

SCHEDULE OF ACCOMMODATION

6.0 ANALYSIS OF SPACES

The purpose of this chapter is to further breakdown the different facilities of the centre, in terms of spaces and functional requirements. The spaces are further grouped in order of functional relationships into worship, accommodation, services, recreational, administration and miscellaneous

6.1 WORSHIP FACILITIES

The spaces that serve the laity populace are as follows:

Worship Area

This entails mainly the Cathedral structure as the main focus of the project.

Open Air Crusade Ground

This is the out door open grounds for inter denominational crusades.

6.2 ACCOMMODATION FACILITIES

These spaces would be provided for the dwelling of the different personalities of the centre and will be as follows:

i. Bishops' accommodation.

ii. Residing Priests' accommodation.

iii. Reverend Sisters' accommodation.

iv. Guest accommodations.

v. Grounds keepers' accommodation.

6.3 SERVICE FACILITIES

These spaces serve the laity as well as the general public that the centre will be of use and especially, of influence to, and they are as follows:

Information Centre

This area has the main notice board of the centre, as regards to general information on the centres' use, for internal and external information. A space is also provided in this centre for lost and found items.

Supermarket Stalls

This is anticipated to be run by the centre itself. The aim here is to allow the centre generate funds for its own internal running. This could save the centre a great deal of running cost.

Bookshop

To contrast with the normal bookshops which concentrate on selling text-books and other educational materials and opens for some hours of the day, this book-store will concentrate more on general religious educational books and stationeries. This is expected to open daily including weekends and operate into the evening hours.

Kitchen/Eatery

This is expected to offer services to the in-house residents of the Reverend Fathers (Priests) and Sisters only. Attached to it are other kitchen ancillary functional spaces like changing rooms, toilets for kitchen staff and storage for both dry and cold. The main kitchen would however be made up of washing, preparations and main cooking areas.

The Eatery will therefore be closely linked to the accommodation facilities, for easy accessibility.

6.4 RECREATIONAL/ENTERTAINMENT FACILITIES

Multipurpose Theatre

This is planned to provide accommodation for Christian functions like society functions, dramas, plays and film shows. This could also be used for large public lectures and symposiums. It will comprise of a main hall, a stage, a projection room and other back stage facilities like changing rooms, rehearsal rooms, costume store and toilets for both performers and audience alike.

Research Library

The aim here is to provide a reading space within the centre that will be devoted more on general wide reading on Christianity. This library will encourage a religious recreational/leisure reading.

6.5 ADMINISTRATION

These are the spaces that form the centre of coordinating all the activities of the Diocesan Centre. This is made up of the following:

Bishops' Office

This is the space provided for the sole use of the Bishop of the Zaria Diocese, for the adequate running of the Diocesan affairs.

Diocesan Offices

These are the spaces provided for the requirements of the concerned parties that help the Bishop in the handling of the Diocesan affairs.

Conference Rooms

Rooms are to be provided for conferences, meetings as well as for use by the general public.

6.6 DIMENSIONAL ANALYSIS AND SCHEDULE OF ACCOMMODATION

The Diocesan centre consists of the following facilities:

i. The cathedral structure.

ii. The administration/ library block.

iii. The multipurpose auditorium.

iv. The Bishop's residence.

v. The priests/ Rev.sisters/ guest accommodations.

Worship Area (Cathedral)		
Sanctuary		
Nave (2,000 capacity)		
Confessionals		
Sacristy/ Vestry		
Choir stand		
Organ stand		
Stores		
Mass servers		
Lobbies (Narthex)		
Toilets		

Administration		
Bishop's office		
Secretary General		
Toilets		
Meeting Room		
Waiting		

Accountant		
Storage		
Reception		
Records		
Laity office		
Pastoral office		
Social communications		
Justice, development and peace		
Legal office		
Health		
Education		
Religious		

Library		
Reading area (30 people)		
Journals		
Open stack		
Cataloging		
Librarian		
Archivist		

Archives		
Reception/		
Secretary		
Workroom		

Multipurpose Auditorium

Auditorium (600 people)

Stage

Changing rooms

Projection room

Stalls

Stores

Catechism

Bishop's Residence

Priest, Rev. Sisters/ Guest Accommodation		
Priests 1 Bedroom + sitting + conveniences (3 Nos)		
Rev. Sisters 1 Bedroom + sitting + conveniences (3 Nos)		
Guests 1 Bedroom + conveniences (24 Nos)		
Services (general)		
Kitchen		
Dinning		
Common room		
Audio-visuals		

CHAPTER SEVEN

CONCEPTUAL DEVELOPMENT

In the process of developing a concept for the design of this project, various factors were considered and adequately incorporated. These factors are as follows:

7.1 THE DESIGN PARAMETERS

7.1.1 *Diocese Stature*

The present stature of the Zaria Diocese is at the inception level, this therefore means that the Diocesan Centre is the first ever proposed for this Baby Diocese in the making. The plan in each case including the Cathedral structure is simple and organized in such a way that, the most heavily used spaces are located nearest to the general circulation areas. The plans are made totally free of barriers and include stairs, parking and other special public facilities.

In each of the above cases, the functions have been vertically arranged in order of zoning.

7.1.2 Site Motivation Factors

A careful study of the Zaria Master Plan identifies two major axes of approach to the proposed site for the Diocesan Centre.

7.1.3 Psychological Factor

In realization of the fact that the Diocesan Centre for the Zaria Diocese is a new one, to cater for the Dioceses' needs, monumentality is the key word from the on start of the conceptual stage. This makes it mandatory to anticipate evolution of the Cathedral

building as a domineering architectural piece in the Zaria Township. This suggests a high level of aesthetics as a means of achieving the desired contrast, considering the fact that the surrounding structures are not of too high standards.

7.2 DESIGN TASK

Based on the case studies conducted, the design tasks are as follows:

i. Design a Diocesan Centre for Zaria.

ii. Brief will include five major sections, viz; worship, accommodation, services, recreation and administration.

iii. The provision of adequate facilities.

iv. Buildings not to exceed three floors.

v. Optimal and effective space organization for interaction.

vi. To properly harmonize all functions on one site.

vii. Flexibility in the use of spaces.

viii. Reduce to the minimal,spaces between functions.

ix. Emphasis on good network of pedestrian and vehicular circulation.

7.3 SITE ZONING CONCEPT

Site zoning is based on the following criteria:

i. Expansion possibilities

ii. Circulation patterns.

iii. Accessibility.

iv. Convenience.

vi. Noise level.

vii. Grouping of user activity.

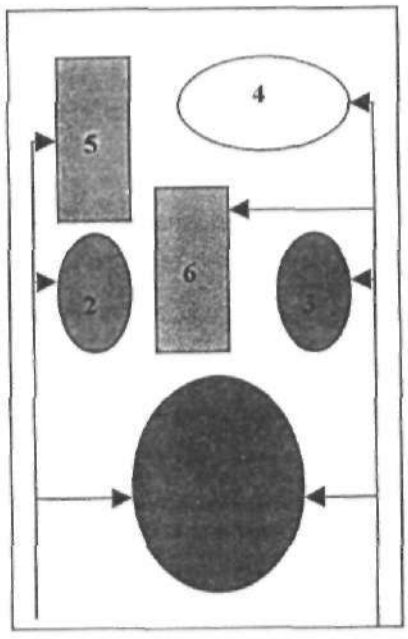


Fig. 7.3.1: Zoning concept one

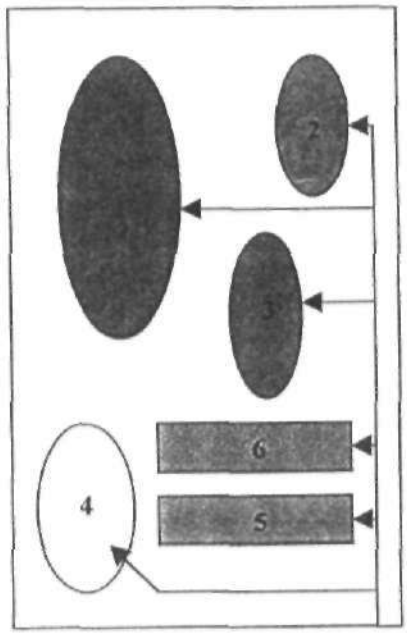


Fig. 7.3.2: Zoning concept two

1- Cathedral, 2- Admin./ Library, 3- Multipurpose hall, 4- Accommodation, 5- Crusade grounds, 6- Outdoor rest area.

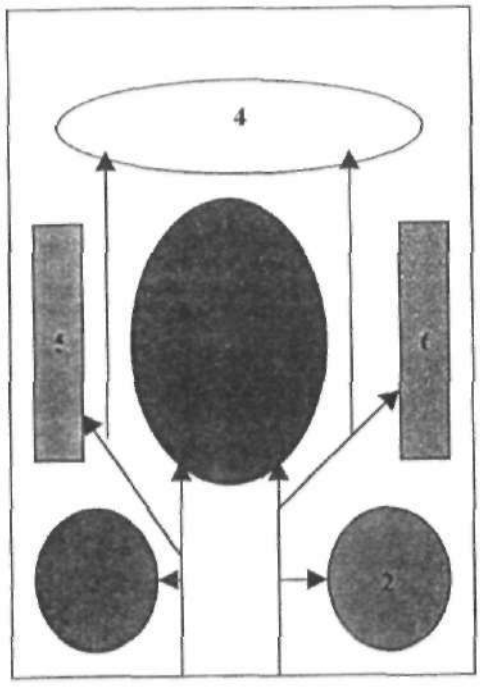


Fig. 7.3.3: Zoning concept three

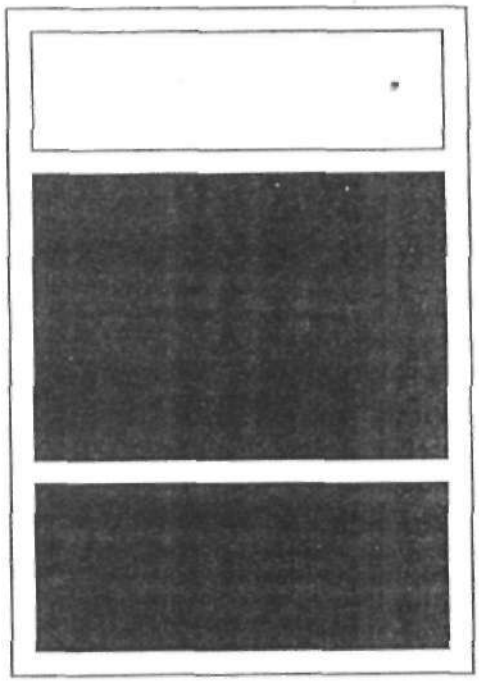
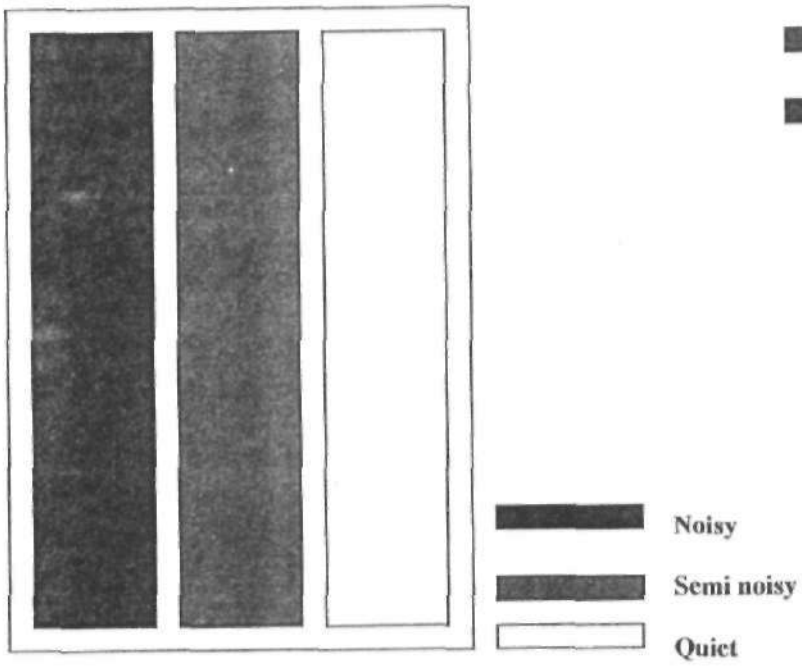


Fig. 7.3.4: User activity zoning

Private

Semi public

Public



Noisy

Semi noisy

Quiet

Fig. 7.3.5: Noise level zoning

Three different approaches were utilized and a compromise was reached among them to evolve the utilized one –Fig. 7.3.3-, amongst (figures 7.3.1-7.3.3). Figures 7.3.4 and 7.3.5 however show the factors of noise and user activity, for the realization of the zoning concepts. The utilized concept (Fig. 7.3.3) is of a hybrid of the above three and based on a conscious attempt at separating the public area from the semi-public area and private area. Success is achieved in shielding away the quiet areas, i.e., the worship area, accommodation and administration away from noisy areas (car parks, service areas and recreational). In all, the final concept meets the functional requirements by integrating many parallel functions together.

7.4 DESIGN PROPER

In the final analysis the design of this project evolved as a direct translation of all the pre-stated analysis and concepts. It is conceived in such a way that the main focus being the Cathedral structure, could be approached from all four sides by means of pedestrian accesses. The main approach falls along the main pedestrian axis, which also joins the parking lot between the administration/library block, and the multipurpose hall, thus creating a visual contact between all around the entrance core, that is between the three buildings.

On approaching the main entrance of the Cathedral is a symmetrically well-landscaped lawn, with the Cathedral in front, directly forming a vista. Also a beautiful and symbolical sculptural element of Mary carrying Jesus after his death, this is placed in the middle of the lawn, adding to the visual impression. The concept of zoning heavily used

spaces closer to the ground floor, has been properly employed in the administrative block plan.

Spaces on the site are located as follows:

i. Ground Floor

Ideally, the ground floor encompasses the whole grounds, but as regards to the built up structures, first the Cathedral, which consists of the entrance canopy leading to the entrance lobby, from where we come to the central nave for the congregation, this is flanked on both sides by aisles separated by a row of columns. This eventually leads to the intercept of the cruciform arms, directly above which is the dome of the church. The two arms on either side are terminated by apses, which equally house chapel and confessional boxes. These apses also contain the side entrances. Directly following this is the altar, which comprises the pulpit on the left and baptismal font on the right. The rear end of the altar is also terminated by an apse, which internally contains the Bishop's throne and externally housing the sacristy and vestry. This also leads to the rear entrance of the Cathedral.

The auditorium wing consists of the stage, backstage, rehearsals and changing rooms. This wing has its main entrances alternatively of the use at hand, thereby having four entrances, two in front and at rear, and one for performances.

Still on the grounds provisions for outdoor relaxation/meditation area, and an open air crusade altar.

In the administrative block, the ground floor houses the administrative arm of the Diocesan centre, and this comprises the Bishop's office, in house priests and Reverend sisters, accountant, conference room, secretary's office, stores, tea room and toilets.

ii. First Floor

This floor appears mainly in the administrative block, and the accommodation units. The first floor of the administrative unit houses the library, which consists of the Librarians' office, secretary, Archivist, printing and photocopying, cataloging, open stack, journals, reading space, archives and reception.

In the accommodation, it houses the priests, Reverend sisters and guest accommodation, and this applies in preceding and subsequent floors.

The auditorium also appears on this floor, it has its upper seats and projection suit.

7.4.1 Form

The design is based on a classically symmetrical theme, a series of simple geometric shapes (squares and circles) stacked on each other in a translative mannerism, resulting in an overall outward semblance of cathedrals of the early centuries with a modern outlook.

7.4.2 Structure

The structure of this Cathedral is modeled in the following ways:

i. Main body of the structure;

This is constituted of a cruciform plan (a derivative of the Roman crucifix with one arm of the cross longer than the other three, a plan originating as far back as the Byzantine period), which measures 85m in length along the longer axis and 40m along the shorter axis. The internal height of the ceiling is 10.75m, with most of the structure constituting concrete vaults, beams and columns.

ii. Stained and Obscured glass;

The windows of the sanctuary are divided into seven bays of two windows along the sides of the north and south walls, on top of which, each bay carries a Rose Window, these all add up to a total of 14, which symbolize the 14 Stations of the Cross. On top of these bays are also stepped higher clerestory windows, which also total 14 (7 on both sides). The apsidal external ends also carry singular modules of the earlier window types.

On the dome is a ring of 12 windows, which symbolize the 12 apostles (the corner stones to the spread of Christianity).

The stained glasses are the Rose Windows (a derivative of Romanesque architecture), the ring of windows on the dome and the oblong windows on the vertical apsidal projections, while the obscured windows are those of the 14 bays surrounding the sanctuary, the clerestory windows and the external singular windows round the external surface of the apsidal ends of the four arms.

iii. The Dome;

The dome is placed directly on the intersection of the vaulted arms of the cruciform, atop a projected square plan, which is a derivative of the Byzantine architecture, 'dome on square plan', with a base diameter of 23m, set on a major support of the pendative system of domical coverings, also a derivative of the Byzantine architecture. The dome has an independent height of 7m, while it measures up to 20m from ground level.

iv. The roof;

The roofing system has a support similar to the vaulting systems of the Romanesque architecture. The four arms of the cruciform plan are with a barreled covering intersecting at the square projection that carries the dome. These barrels constitute arches that span across the longitudinal axis of the arms, which are arranged equally in respect of their height and widths, also a derivative of the Romanesque architecture. The walls enclosing the sanctuary are basically in fills that prevent weather and other external factors. The arches that carry the roof covering also hold the beams that hold the walls and the clerestory windows by means of a buttress and flying buttress arrangement, a derivative of the Gothic architectural character.

7.4.3 Finishes

Low maintenance cost was envisaged in the selection of finishes. Also of importance is durability in a setting of low maintenance culture. Therefore for the walls and columns, sandtex paint is applied on the rendered surfaces on high levels, and a glossy equivalent for the lower levels, while glass is noticeably enclosing the lobby and entrance areas.

Long span aluminum barrel roofing sheets are used for roof coverings. Floors are made of insitu and pre- cast terrazzo, cement/sand screed, and ceramic nonslip tiles for the baths and toilets. Walkways are of pre-cast concrete paving, with insitu in other places.

In places like the auditorium, decor ceil suspended ceilings are used with the walls having plywood, and the floor carpeted. The doors are of soundproof timber type.

7.4.4 Services

i. Electricity

Electricity will be tapped from the National Electric Power Authority (NEPA) transmission lines, which run along the Sokoto road and an on-site standby generator in the general maintenance section of the Diocesan grounds will complement this.

ii. Water Supply

Two basic sources of water supply are ground and surface water. Data suggests possible large ground water supply.

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iii. Sewage and Foul Water

For easy maintenance and avoidance of shut down in major convenience facilities due to problems in centralized sewage, single sewage disposal system is utilized. The treatment system is a combination of anaerobic pond and aeration pond.

iv. Refuse and Garbage Disposal

This will be done by the use of bins and paladin type refuse collection, located at strategic points in the entire complex. These are to be emptied on a daily basis to a central refuse collection point, located nearer the kitchen.

CHAPTER EIGHT

8.0 CONCLUSION AND RECOMMENDATIONS

8.1 CONCLUSION

Ecclesiastical architecture as being practiced today, not taking into consideration original ecclesiastical architectural ideas and characters should well be checked for the genius of these structures and not in the least bit played down.

A few architects will take this seriously, while others will be adamant to the topic, this is either due to lack of knowledge on the subject, or lack of interest all together. Today however it is possible as it has always been, to create architecture of the present, borrowing from the past, all in all to originate an edifice worthy of the gathering of God's children.

This thesis has in its best effort highlighted some facts concerning the origin and characteristics of basic elements in ecclesiastical architecture, with reference to how they were applied, their significances, their merits and shortcomings. This thesis has also in its best strength harmonized these original features with modern architecture.

The Catholic diocese of Zaria is still one in the making; it presently lacks the major units adequate for the running of Diocesan affairs. The proposed site is located along the old Kano exit junction from Zaria, off the Sokoto road and behind the Bamayi flats, in the Hanwa settlement of Zaria, it is of a total area of about 30,000m².

With the design brief at hand and after feasibility studies with site analysis, the following have been met by this thesis:

i. An adequate design for the Cathedral structure bearing in mind the original ecclesiastical features of a Cathedral.

ii. Adequate office/social spaces for a proper administrative setting of the baby Diocese.

iii. Harmony of the various units acting together as an entity (accommodation, worship and public facilities), as in the Holy Trinity-the three persons in Godhead.

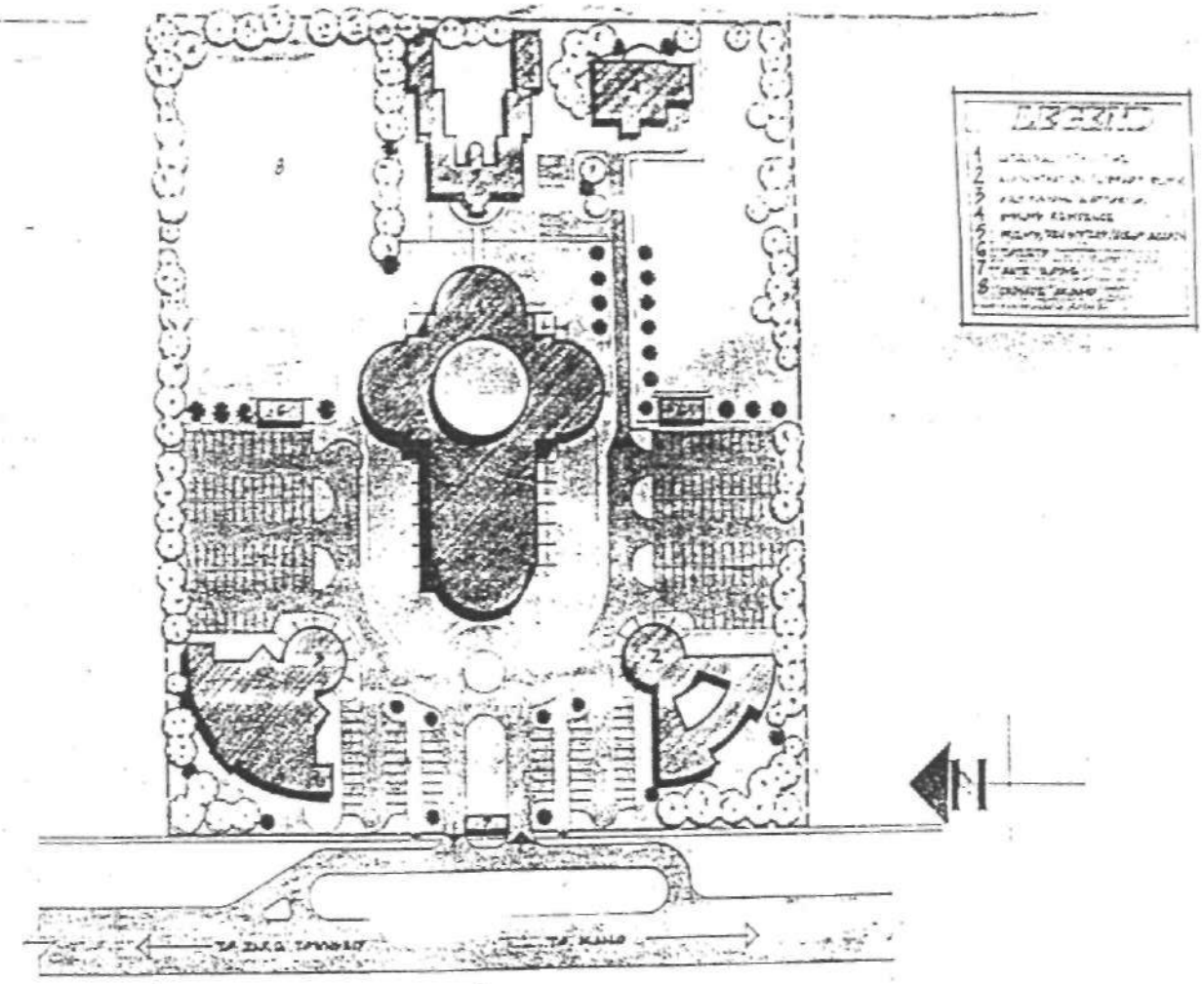
iv. Adequate car parking.

8.2 RECOMMENDATION

To conclude this thesis write up, I would like to recommend that architects could look a little more into these original ecclesiastical characteristics and features, for the designs that are to come ahead so as for the structures we worship in to be magnificent as well as original and an ideal ecclesiastical architecture.

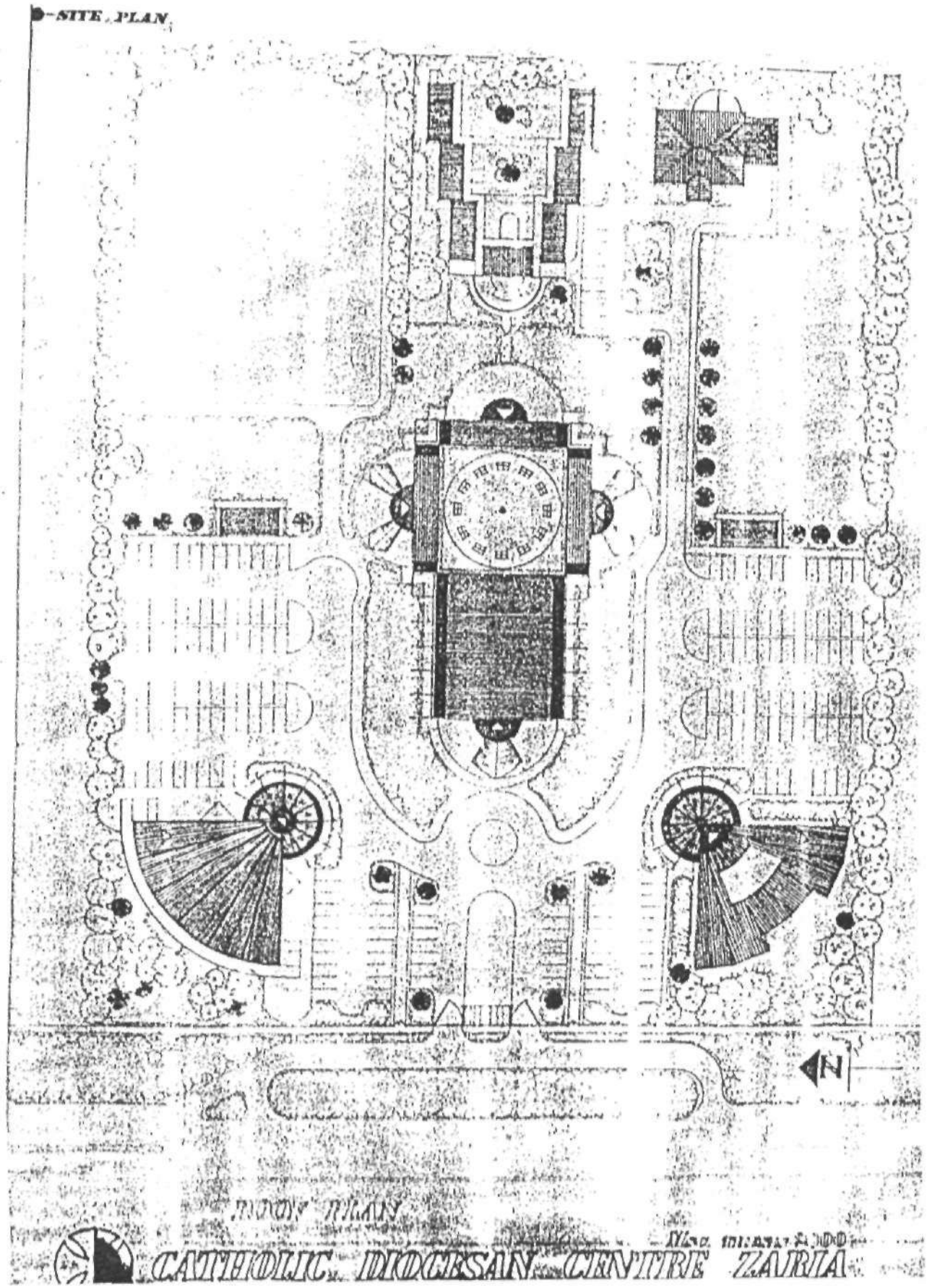
Finally, I am presenting my design proposal for the Catholic Diocesan Centre, Zaria to The Department of Architecture ABU Zaria, the Catholic Community of Zaria, the general public and lastly to the Glory of God.

SITE—PLAN



CATHOLIC DIOCESAN CENTRE ZARIA

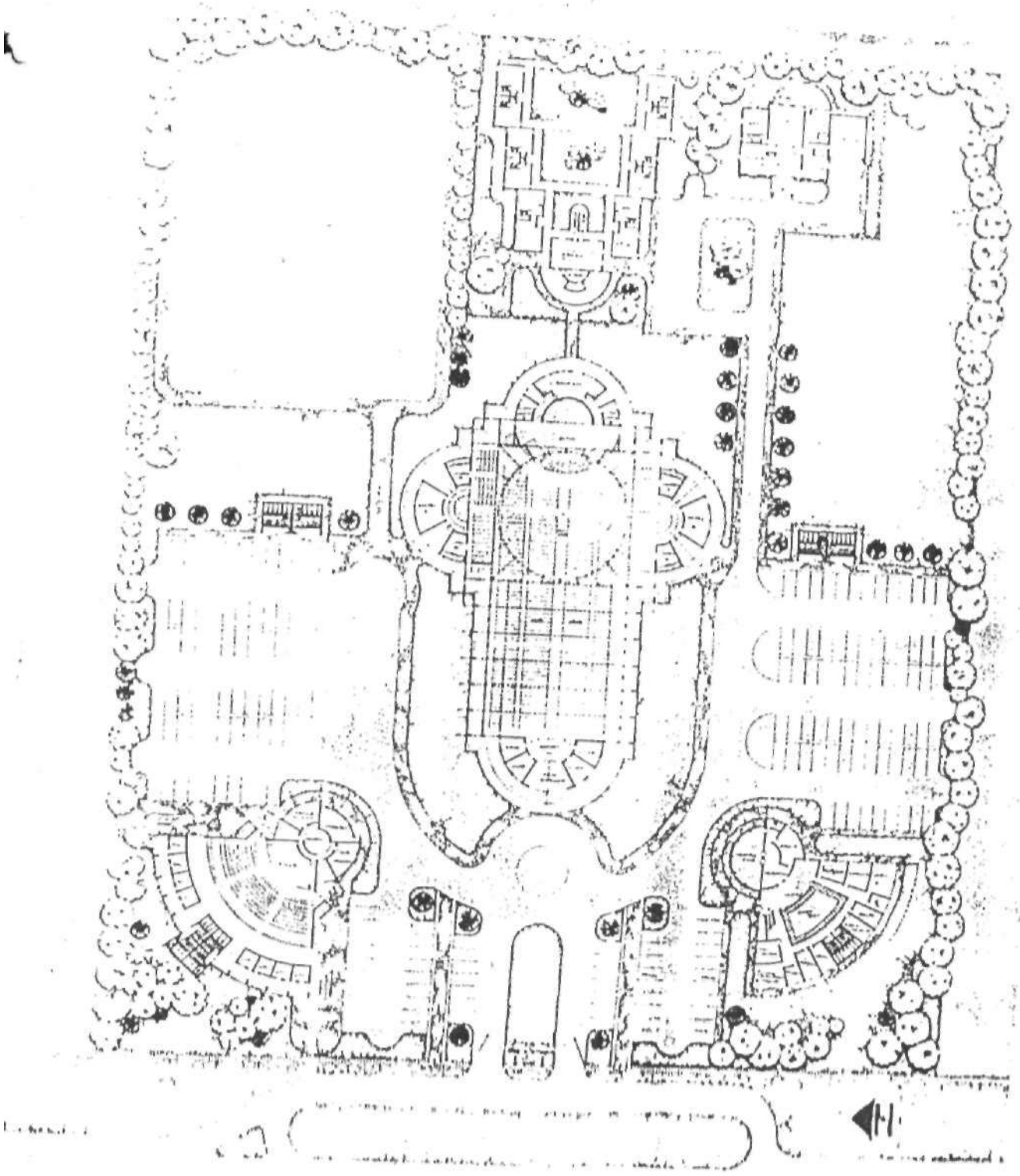
SITE PLAN



SITE PLAN

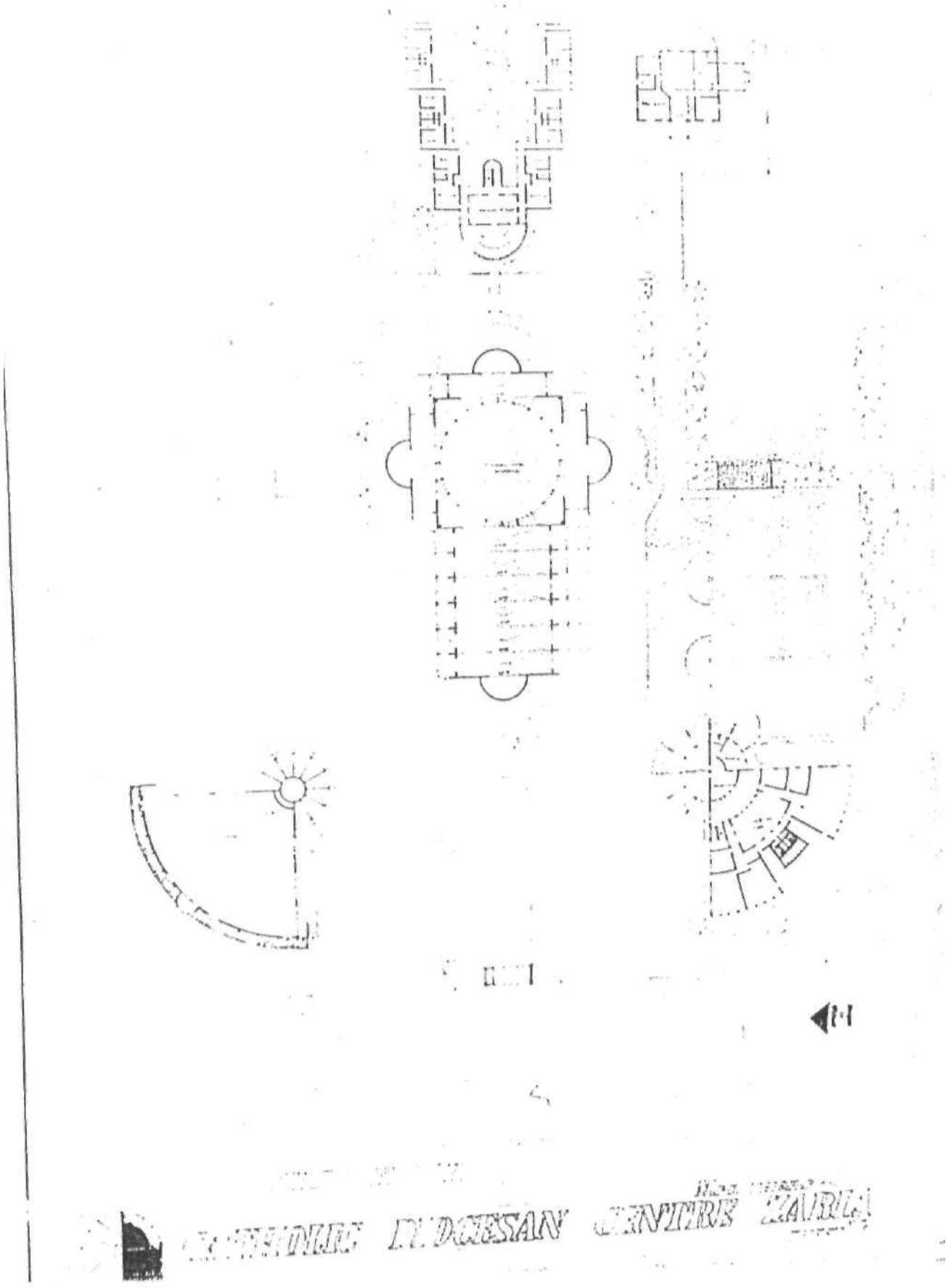
CATHOLIC DIOCESAN CENTRE ZARIA

SITE PLAN



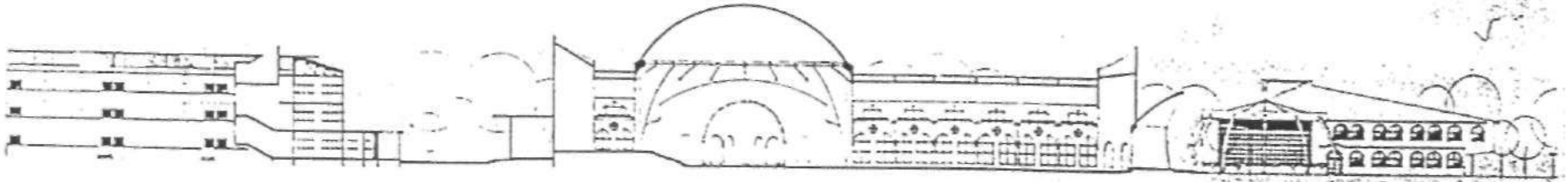
CATHOLIC DIOCESAN CENTRE ZARIA

9 SITE PLAN



SITE SECTIONS





M.Sc. THESIS 2000

CATHOLIC DIOCESAN CENTRE ZARIA

SHEET 18





APPROACH



NORTH VIEW

CATHOLIC DIOCESAN CENTRE, ZARIA

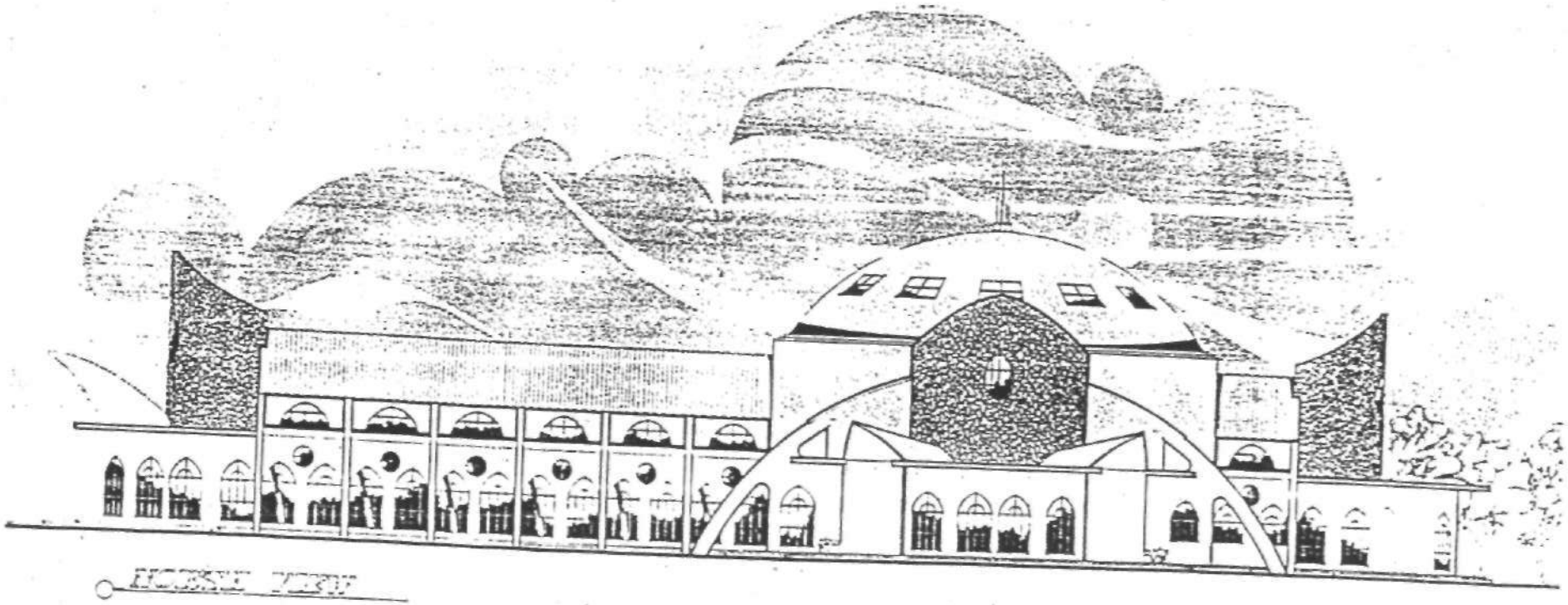
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SHEET 19

ELEVATION

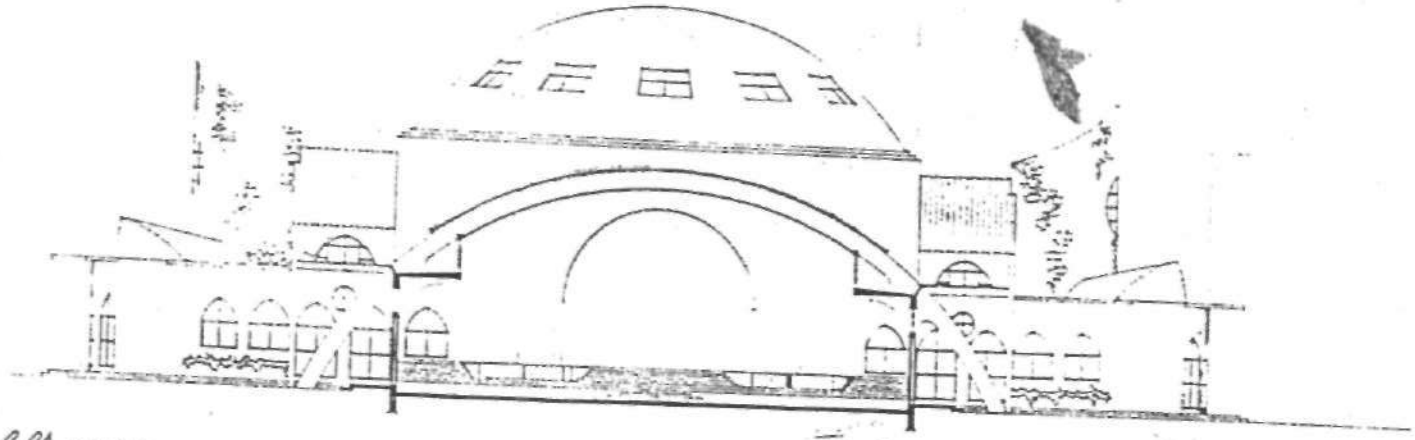
CATHOLIC DIOCESAN CENTRE ZARIA

ELEVATION



CATHOLIC DIOCESAN CENTRE ZARIA

SECTION



SECTION 0.01

CATHOLIC DIOCESAN CENTRE ZARIA

SHEET 22