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(Diplomarbeit)

**Lalibela**  
A study on an Ethiopian architectural heritage

A study for the achievement of the title of  
Master of Science (Dipl. Ing.) in Architecture

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Dedicated to my daughter Hanabel!

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## I. Introduction

Lalibela is a small town in northern Ethiopia with a current population of about 18,000. It is by far the holiest place for Orthodox Ethiopians and a centre of pilgrimage for much of the country. This entirely Ethiopian Orthodox city is very unique in its creation as the “New Jerusalem”. Crafted in response to the capture of Jerusalem by Muslims at the time, this marvellous complex was said to have been created under the motto “we lost the might to protect the holiest city; we must have the endurance with the help of God to build a unique replacement”. To that end, many of its historic buildings take their names and layout from buildings in Jerusalem.



Figure 1, Map showing Lalibela

This amazing place was very much unknown to the world due to various reasons, amongst others;

- the protective nature of the people living in the area,
- the seclusion of the church to outsiders,
- the defeat of colonial powers at its doorsteps,
- the various wars in its neighbourhood,
- the difficult geographical position &
- Lack of infrastructure.

Now that peace seems to last a bit longer in the surrounding than before and humans in general are getting highly mobile, it is becoming more and more important not only due to its unique conception & architecture but also due to the progressive awareness that comes with it. With more pilgrims & tourists heading towards Lalibela, its popularity and importance in terms of both the sacred and architectural values is picking visible momentum.

However, the state of these brilliantly carved monuments leaves much worry to all concerned. Much so knowing that these were one of the very first world heritage sites ever declared so by the UNESCO as early as 1978. [01]

This study tries to analyze the problems in brief and elaborate its architecture in detail. Further, the study tries to sort out the technical & socio-economical problems on the ground. As a final resume, it tries to postulate a packet of recommendations and a brief model that would make the place last with original glamour, authenticity, serving its purpose and the society around it in a much better spiritual & social intensity than today.

## 2 Brief historical accounts

### 2.1 Conception

In accordance with legend, the Zagwe King “Lal Yibela” (whose name arguably & most likely means “One who eats honey”) is responsible for the construction of the churches. Lalibela ruled in the 12<sup>th</sup> century & is said to have been buried in one of the churches called “Bete Golgotha”.

Though the inspiration to the idea is not exactly defined, (weather it was preceded by physically visiting Jerusalem as a young man or a “spiritual journey”), it is however clear that following the capture of Jerusalem by Muslims in 1187 Christians had it increasingly difficult to keep Jerusalem as their most holy place on earth. He therefore, was “spiritually instructed” to build a replacement; “**the new Jerusalem**”. [09]

Legend has it that, the names of several places in the general layout of the monolithic churches are said to mimic names and patterns observed by Lalibela during the time he spent in Jerusalem and the Holy Land. This holy city remained the capital of Ethiopia from the late 12<sup>th</sup> century into the 13<sup>th</sup> century.

After the Zagwe dynasty allegedly abdicated the kingdom, Lalibela was no longer the centre of royal worldly power but rather a holy centre of pilgrimage. King Lalibela, like some few rulers of the Zagwe dynasty, became a saint of the Ethiopian Orthodox Church. [15]

The earliest recorded European to see Lalibela & introduce to the world was the Portuguese priest Francisco Álvares (1465 - 1540), who accompanied the Portuguese Ambassador on his visit to Emperor Lebna Dengel in the 1520s. He is credited to the famous introduction he wrote about his encounter in a superlative language describing his overwhelming experience.



Picture 1, Aerial view of the Lalibela churches

## Arrangement & basic physical data of the Lalibela churches

### Group I.

Bete Medhane Alem  
Bete Mariam  
Bete Meskel  
Bete Denagel  
Bete Debre Sina  
Bete Golgotha  
Sellassie chapel

### Group II.

Bete Amanuel  
Bete Abba Libanos  
Bete Merkorios  
Bete Gabriel - Rufael

### Group III.

Bete Giorgis

Church	Length (m)	Width (m)	Height (m)	Columns exterior	Columns interior	Windows
Bete Medhane Alem	33.50	23.50	10.00	34	38	51
Bete Mariam	15.00	11.00	10.00	6	6	40
Bete Meskel	14.63	2.47	3.55		4	4
Bete Denagel	9.88	8.77	4.17	1	4	1 (blind)
Bete Debre Sina	9.73	8.90	5.53		4	26 (for complex)
Bete Golgotha	10.30	6.42	4.60		4	
Bete Gabriel	19.50	17.50			7	5
Bete Merkorios	31.00	25.00	6 up to 8	8	10	8 (not original)
Bete Amanuel	17.50	11.50	11.00		4	53
Bete Abba Libanos	9.00	7.00	7.00		4	35 (15 blind)
Bete Giorgis	12.50	12.00	12.00		4	21 (9 blind)

Table 1, sizes and primary physical data of the churches [15]



## 2.2 Historical accounts on construction

There are 12 churches, assembled in three groups:

The **Northern Group**: comprises of; Bete Medhane Alem, probably the largest monolithic church in the world. It is said to be a copy of the then St. Mary of Zion in Aksum. It is linked to Bete Mariam, Bete Meskel, Bete Denagel, Bete Golgotha (said to contain the tomb of King Lalibela) and the Selassie chapel.

The **Eastern Group**: Bete Amanuel (possibly a former royal chapel), Bete Merkorios, Bete Abba Libanos and Bete Gabriel-Rufael.

The **Western Group**: Bete Giorgis, said to be the most finely executed and better preserved church.

Construction is widely assumed to have been done with masses of local workers most likely properly paid or at least not forced. The alleged use of Egyptian artisans said to be documented in church records is nowhere to find.

Unlike standing cathedrals, Lalibela churches are sculptured out of the living rock. They are not to be seen from far away when approaching the Holy City. A visitor coming to the village searches in vain for them till he stands right on site. The buildings are primarily monolithic, carved from a red volcanic scoria which is interconnected by tunnels and passages. The architectural elements are mostly indigenous, yet they differ in design and style from one church to another. Two of the churches are decorated with wall paintings and carved figures.

Other accounts like these rock-hewn churches were built with the help of the Knights Templar have no historical background. It is rather such that they were the products of solely medieval Ethiopian civilization.

However, the time and duration of construction is widely disputed. Some historical accounts refer to the churches of Merkorios, Gabriel-Rufael, and Denagel as carved out of the rock some 400 to 500 years earlier.



### 2.2.1 Technique

There is no documentation available on the planning of the churches. All reports are based on assumptions and logical speculations.

It is widely assumed that the block of rock to become a church was laid. It is also assumed that at an early stage specialized sculptors carved out the roof with its base relief crosses and arches. The openings which were to become the windows or doors must have served as entrances for the sculptors to start the work in the interior.

The legend behind the creation of the churches mentions 20 years as the time taken for completion. This is very much unlikely in view of the architectural details observed in different church groups. Moreover, no specific reasoning allows the legend that angels did same volume of work in the night as humans during the day. Architectural details lead to the assumptions that it might even have taken a century or more with intermittence. However, it is definitive that the Lalibelans had mastered major organizational problems that include;

- Where to deposit the debris
- How to house and feed the masses of workers for many years in an area which may have been dry except in the rainy seasons
- Where to get firewood for preparing the food needed
- Stopping or continuing working during the summer rains.

### 2.3 Possible aspirations

It is impossible to credit a single construction that precedes Lalibela for aspiration. As far as the style is concerned, many of the monuments imitate ancient Axum.

The mighty church of Bete Medhane Alem has precisely equidistant-positioned rectangular pillars outside the walls supporting the roof which might have Sabaeen roots rather than its similarity to a Greek temple.

Bete Giorgis is unique. The ground plan is in the shape of a Greek cross. This Cross decorates the roof extensively.



Picture 2, a view of the Bete Giorgis with the cruciform roof decoration

### 3. State of churches in Lalibela



Picture 3, Bete Medhane Alem currently on restoration

#### 3.1 History of conservation

Documentation on repair and restoration efforts of earlier centuries is not available. However, there are implications that the Imperial Court at Gondar was aware of the state of the churches and that likely repair works were carried out to a limited extent.

Some principal changes from the original have been executed, like Bete Mariam's beautiful interior paintings probably under Emperor Zara Yacob, and a few other murals have been discovered at some other places going back perhaps to the 15<sup>th</sup> century. Beside this, endowments in the form of precious processional crosses in 17<sup>th</sup> or 18<sup>th</sup> century style, and canvas paintings of same date have been found.

A written statement about restoration by Dabert (at the time of his visit in 1926) mentions that repair works on the fissures and cracks of the porches of Bete Mariam had been performed by the priests with local mortar. [02]

In recent times, different restoration interventions had been carried out on the monuments at Lalibela. Though exact dates could not be stated, the elder monks and priests in Lalibela remember two interventions performed in their early days.

### **First major Restoration**

This first campaign was presumably carried out by Arabs directed by an entrepreneur named Finisho. Interventions were carried out on the entrance to Bete Mariam and the floor of Golgotha. In the interior of Bete Merkorios walls were constructed. It seems that the first campaign was carried out twice after a short interruption, at which time the cracks in Bete Mariam, Bete Amanuel, Bete Golgotha, and Bete Denagel were filled with lead. At the same time the columns of the external arcades of Bete Mariam were restored.

It is observed that this first period of intervention was stopped before completion. [11]

### **Second major restoration - 1954**

This was carried out by Bastiano, Rosetta and Cambusi. The work consisted of the application of a bituminous layer to the external surface of Bete Medhane Alem and Bete Amanuel. This bituminous layer was then painted with a wash of red ochre. While inspection, it would appear that the bituminous layer was swelling and then detaching from the rock. Moreover, after a few rainy seasons the red colour has been washed away. The restoration was not satisfactory and it was decided that the roofs of these monuments which continued to leak should be covered with corrugated iron.

**A third intervention** by Angelini led to the bituminous layer and the corrugated iron removed. The holes that one sees now around Bete Mariam are the result of the removal of nails that had been implanted by Basiano to hold in place the wire armature which provided additional support for the bituminous layer.

### **Current works at Lalibela**

Shelter construction: February 2007 till March 2008

European Union finances a €6.3 million project to provide good shelter to the churches. The work started in February 2007 & is expected to be completed in March 2008.

The churches to be covered are: Bete Medhane Alem, Bete Mariam, Bete Meskel, Bete Amanuel and Bete Abba-Libanos. The new shelters will replace existing structures, which have been in place for nearly ten years. The purpose of the shelters is to protect the churches before and during the restoration works. The shelters have been designed as temporary installations capable of being removed after completion of the restoration works and of being reused for other purposes.

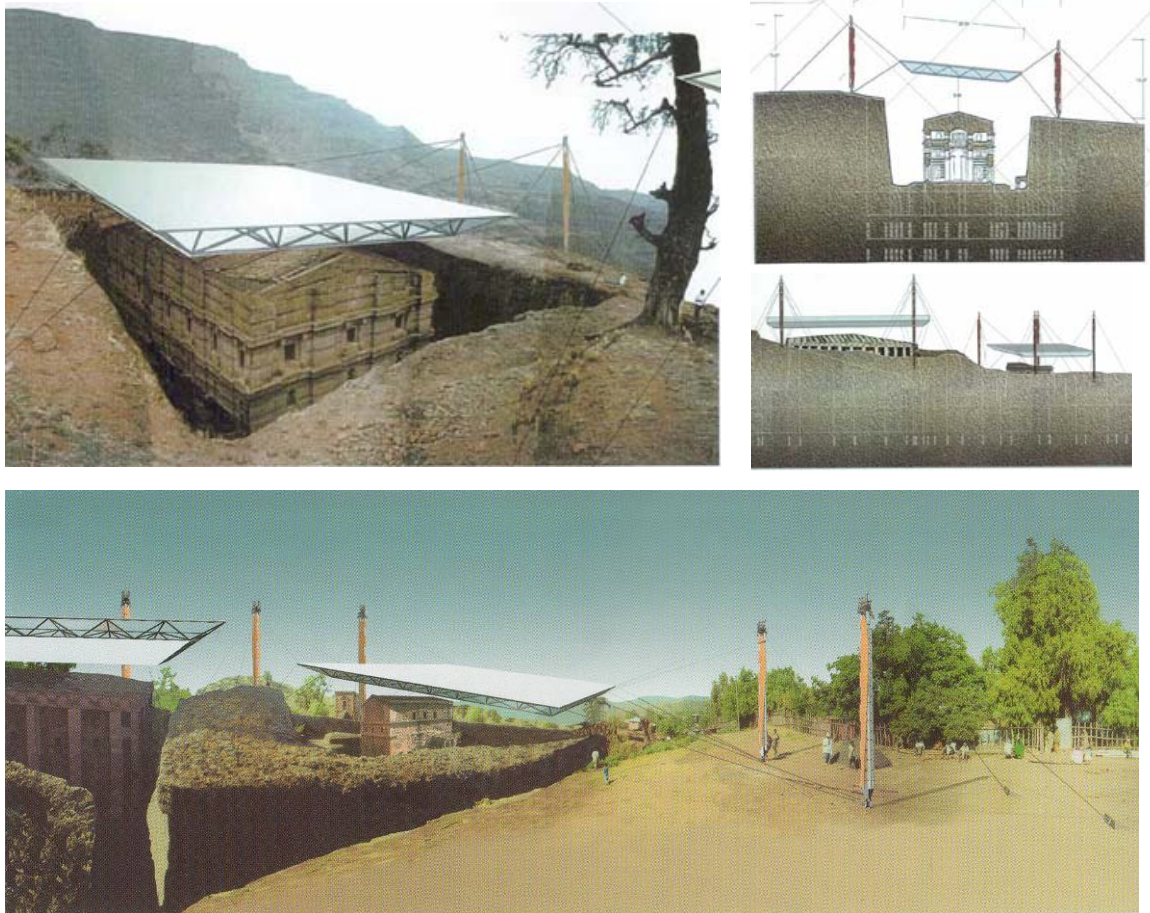


Figure 2, 3 & 4, illustrations of the shelters to be completed in March 2008

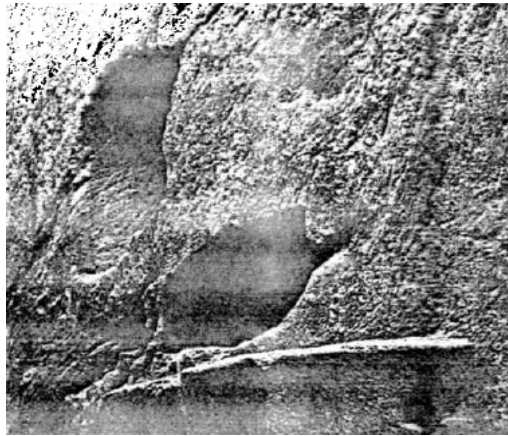
### 3.2 Fundamental studies on state of the churches

With the new status of a World Heritage Site by UNESCO in 1978, the Ethiopian Ministry of Culture and Sports Affairs was compelled to convene a major symposium of international and national experts from various fields amongst others geology, seismology, stone chemistry, micro-biology and vegetation, restoration of paintings & archaeology. This took place at the site itself in order to define the problems & find possible solutions.

As a result studies were carried out on geology, salts & biology of the area in general & ground-zeros specifically. [17]

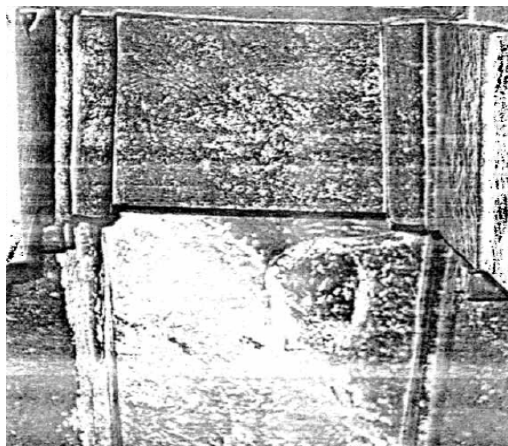
Major physical problems observed were:

1) Appearance of cracks in the monuments due to **inherent faults** in the stone, as well as stresses generated by the caving away of the stone;



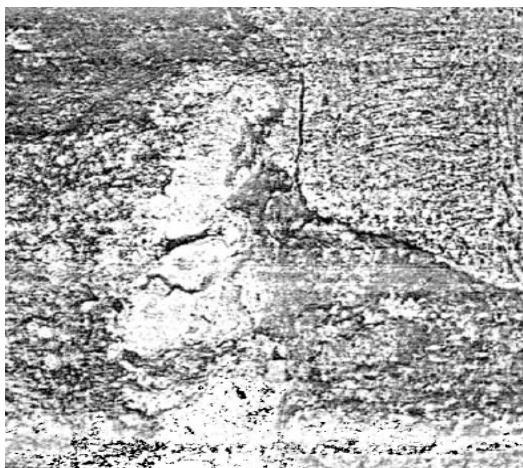
Picture 4, cracks due to inherent faults

2) Physical phenomena such as the presence of **excessive humidity** in the stone due to capillarity or infiltration;



Picture 5, damages due to excess humidity

3) Chemical phenomena such as the **presence of salts** as efflorescence on the surface or as concretions beneath the surface;

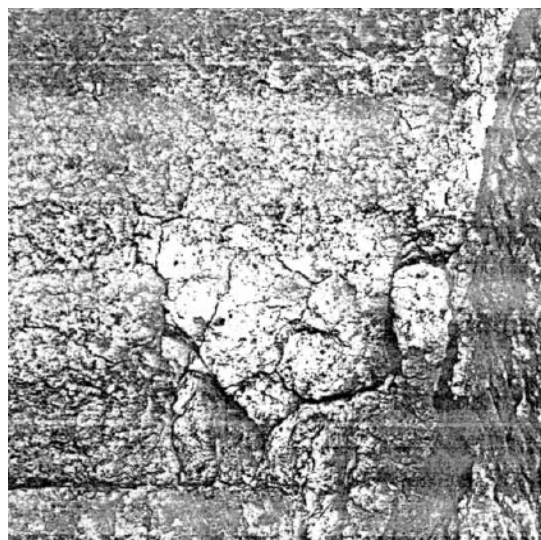


Picture 6, efflorescence on rock surface

4) Physio-chemical phenomena such as **disaggregation, exfoliation, erosion and loss of cohesion of the rock;**



Picture 7, erosion (physical & chemical)



Picture 8, loss of cohesion

5) Biological phenomena such as microbiological attack by lichens and mosses;



Picture 9, vegetation growing on the wall of Debre Sina

### 3.2.1 Geological studies

The study identifies eight horizons in the Lalibela area:

1. Rhyo-Ignimbrite
2. Welded and non-welded tuff
3. Basalt
4. Porphyritic olivine basalt
5. Volcanic agglomerate and breccia
6. Scoria
7. Porphyritic olivine basalt and aphyric basalt
8. Tilted basalt

The scoria is an angular reddish (iron enriched) volcanic agglomerate. The particle size ranges from a fine ash to large lava bombs up to 2mm. in diameter. The scoria is heavily differentially weathered with basalt pyroclasts standing out against the more easily weathered components. Secondary silica produced by metasomatic fluids had precipitated quartz in the scoria vesicles.

The basalt is a dark grey, fine grained, very tough rock, igneous in origin. It contains minerals such as olivine, pyroxene and plagioclase, which in fault-brecciated zones disintegrate rapidly.

Lalibela lies in between the Tana Graben and the Plateau Margia. Therefore, it is probable that on a heterogeneous and structurally weak rock such as the scoria the hazards due to tremors would be much higher.

### 3.2.2 Geo-physical studies & effects of salt

The fault and joint system at Lalibela is complex. There are at least three major factors controlling the joint system:

- A) Regional trend
- B) Geostatic load release
- C) Differential thermal expansion

#### A) Regional trend

Ethiopia lies in a zone of continual seismic disturbance. It has been estimated that the normal activity of the Ethiopian rift is between 200- 500 tremors a year.

#### B) Geostatic load release

A crack system bearing no direct relation to the regional trend or to tension caused by folding is caused by 'geostatic load release'. Development of joints due to this is easy to see. The solid body of rock which was a closed system with its own stress field is cut and much of the material is removed leaving a hollow box shape within the surrounding rock. This leads to alteration of the stress field. Tensile cracks are observed on the churches, particularly where there are 'crack initiators' like windows. The pillars are in a similar state of stress but the cracks happen horizontal.



Picture 10, tensile cracks on the Bete Medhane Alem

### C) Differential thermal expansion

The scoria is, heterogeneous in nature. Each component has different physico-chemical characteristics, such as:

1. Elastic modulus
2. Mineralogy
3. Water absorption
4. Porosity

All these components influence the thermal expansion characteristics of the rock.

Alternate wetting and drying of the scoria will result in hydration and dehydration and the crystallization of salts at the evaporation surfaces.

A typical example is Bete Golgotha. The church is built both upon basalt and scoria. Radial tension gashes provide a way for the water.

Bete Golgotha's basalt and scoria let northern part where water cannot escape very severely damaged. The southern part where the water can escape through the scoria is in a fair state of preservation. The effect seen at Bete Golgotha seems to be fairly typical of the others.

In summary, the **position of the basalt determines the presence of water**, which in turn governs the rate of structural damage. The basalt has a lower water absorption and porosity and is denser than the scoria. These physical qualities correlate directly with the two rock types ability to resist erosion.

	Water absorption %	Porosity %	Wt/nit vol. (gm/cc)
Basalt	1:51	4:11	2:66
Scoria	11:84	24:9	2:03

Table 2, difference between the basalt and scoria



### **Salt attack**

A) The principal cause of the deterioration is due to an impermeable basalt horizon preventing through – flow of water and thus encouraging cycles of crystallization of salts already presents in the scoria.

B) The main regional trend is N-S, with subsidiary E-W components preset in the Lalibela area. Thermal differential expansion of components within the scoria have also set up stress fields capable of disintegrating these components.

### **Conclusive observations**

- The natural rock contains a relatively large percentage of salts and minerals.
- The damaged zones all show the presence of salts, and as one knows, hygroscopic salts in the presence of humidity are one of the most influential factors in the alteration of stone.
- This presence of salts is not limited to the churches only, but also in the native rock.

### **Recommendation**

Whatever the details of the process of alteration, the rock is extremely vulnerable to humidity, in whatever form. The solution shall be therefore to research fully the sources of this humidity and, to the extent possible, control it.

### **3.2.3 Biological studies**

Lichens and mosses are the dominant vegetation growing on the monuments. The lichens seem to grow well both in wet and dry areas while mosses inhabit predominantly the wet areas.

Almost complete coverage by mosses was observed in almost all monuments. This monument is surrounded by water flowing around and underneath and offers wet areas extensive growth of the mosses. Vegetation on the monuments is undesirable aesthetically and is also a possible cause of damage to the rocks. The main cause for the growth of vegetation on the monuments is of course water that accumulates due to rain and capillary action.

The most important step to be taken to preserve from growth of vegetation is to stop water from accumulating around and under the monuments, which needs good knowledge of the natural drainage system.

### 3.3 Summary of the study

**Geology:** The principal causes of the deterioration of the monument is due to an impermeable basalt horizon preventing through flow of water and thus encouraging cycles of crystallization of salts already present in the scoria.

The main regional trend is North- South with subsidiary East- West components present in the Lalibela area. These have set up at least two major joint systems, with a third system being induced by geostatic release. Thermal differential expansion of components within the scoria has also created stress fields capable of disintegrating these components.

**Salts:** The natural rock contains a relatively large percentage of salts. The altered zones all show the presence of salts. This presence of salts is not limited to the monuments but continues in the native rock. If the salts prove by analysis to be soluble their provenance would derive from the rock itself and they would be transported to the altered areas by humidity of infiltration or capillarity. Proximity to a current of air would encourage evaporation and the formation of salts. The rock seems to be extremely vulnerable to humidity in any form. Therefore, the solution is to control humidity.

**Biology:** Microbiological, lichens and mosses are the dominant vegetation growing on the monuments. The mosses appear to do the most harm. The main cause of the growth of vegetation is undoubtedly the water that accumulates due to rain and by capillary action due to the porosity of the rock.

## 4. Architectural study

The principal layout of an Orthodox church is principally based on King Solomon's Temple with the Holy of Holies separated from the rest.

The church building is divided into three main parts: the **Narthex**, the **Nave** and the **Sanctuary**. The narthex is the entrance and serves as a place where non-Orthodox visitors traditionally stand during services. The nave is where most of the congregation stands during services. Similar to a Jewish temple, men and women stand on separate sides. [62]

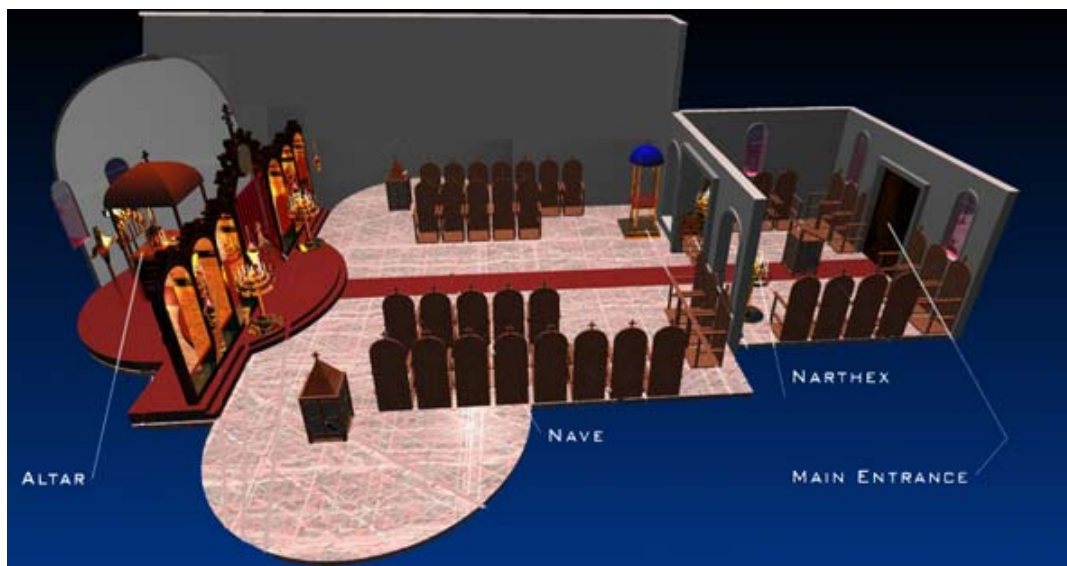


Figure 5, layout of a typical Orthodox church

### 4.1 Fundamental details at Lalibela Complex

Lalibela churches are sunk into the ground and carved out of solid rock. This makes them not visible from a distance till only very near. The pure monolithic churches sculptured free from the rock are Bete Medhane Alem, Bete Mariam, Bete Amanuel and Bete Giorgis. With regard to their carving details and attachments to the rock, the churches seem to have different architectural styles and engineering concepts. This leads to the assumption that they were built not within 20 years as legendary writes but most likely in a much longer duration. Though the floor plan of the church groups seems to have been conceived, it might as well be that the rock type available at a certain place in the Complex might have played a substantial role on their positioning.

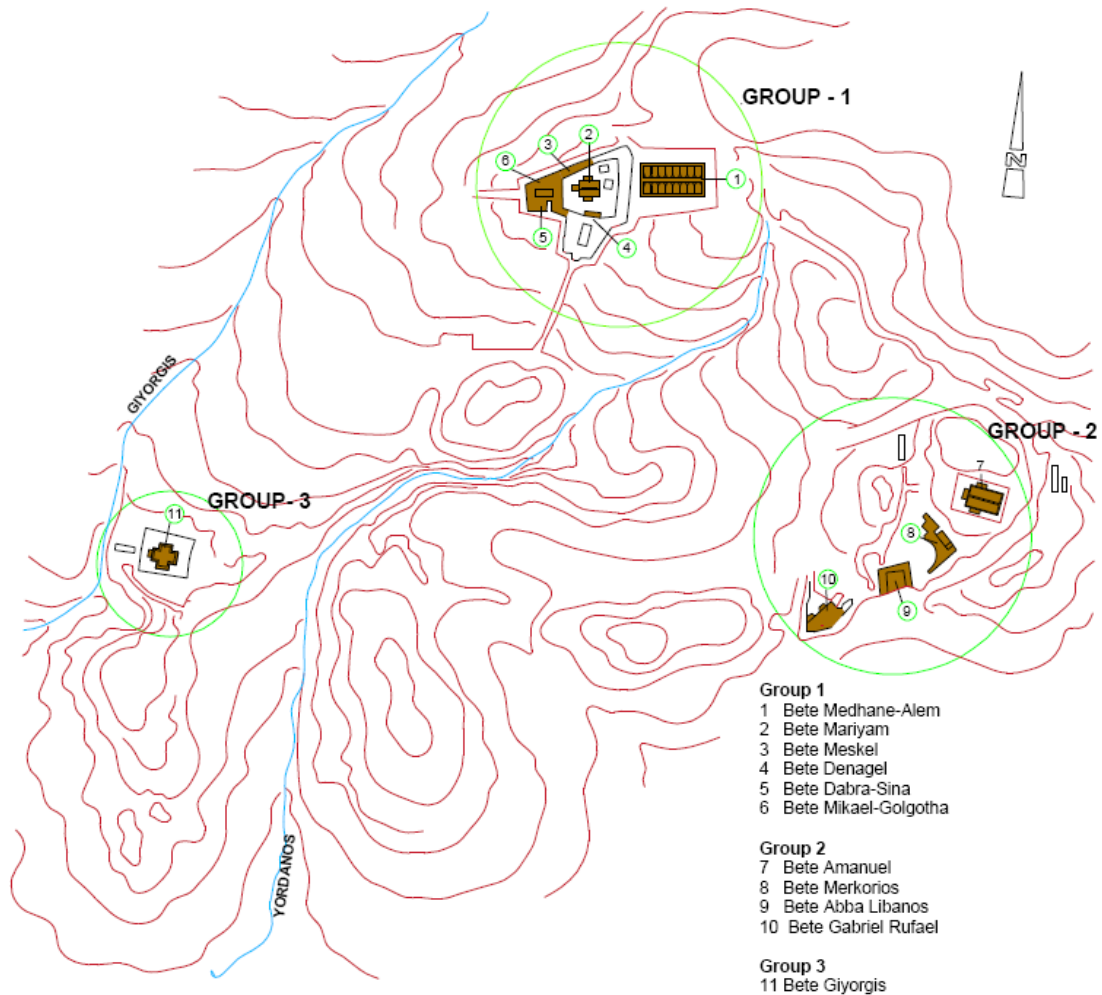


Figure 6, topographic view of the church groups in Lalibela

### Building & architectural details of the first group:

Bete Medhane Alem  
 Bete Mariam  
 Bete Meskel  
 Bete Denagel  
 Bete Debra Sina  
 Bete Golgotha  
 The Sellassie Chapel

**Bete Medhane Alem:** (House of the Redeemer of the world)

Bete Medhane Alem is the largest of all the churches in Lalibela. It has a big courtyard and is rectangular in shape. It shows much of Axumite influence with low-pitched roof having a double slope. Its roof is decorated with large relief crosses connected by blind arcades. Upper façade surface shows typical Axumite carvings. However, the unique feature here is the external equidistant columns which resembles very much to the equidistant piers with similar rectangular cross section at a Sabaean Sun Temple (see picture 14). The gallery running round the four sides of the church between the outer piers and the outer wall of the church itself is only 70 cm wide, making it more of a decoration than statically relevant.



Figure 7, an illustrative perspective of the Bete Medhane Alem

It has two rows of windows. The upper row windows with the most repeatedly implemented axumite feature are covered with coloured glass that might originate from later date. The lower windows are rectangular filled with panels of pierced stone, ornamented with a central cross. Beside that the east wall bears a pattern of swastikas alternating with Greek crosses. It has three doors in the north, south and east sides, respectively.



Figure 8 & picture 11 Axumite elements of roof decoration at Bete Medhane Alem

The interior of Bete Medhane Alem bears no decoration. It has a basilica styled plan with a nave, five aisles and eight bays separated by 28 columns. The first bay on the western side makes up a narthex and the last two bays of eastern side make a sanctuary. The aisles have flat ceilings while the nave has barrel-vault. The four rows of rectangular pillars narrow slightly towards the ceiling. All the interior pillars are ornamented with bracket-capitals and are linked to each other by semi-circular arches.



Picture 12, Interior of Bete Medhane Alem

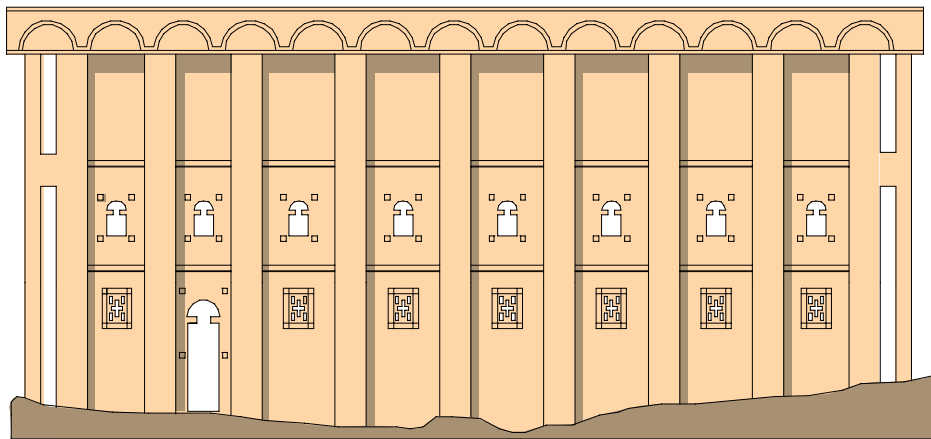


Figure 9, south elevation of Bete Medhane Alem

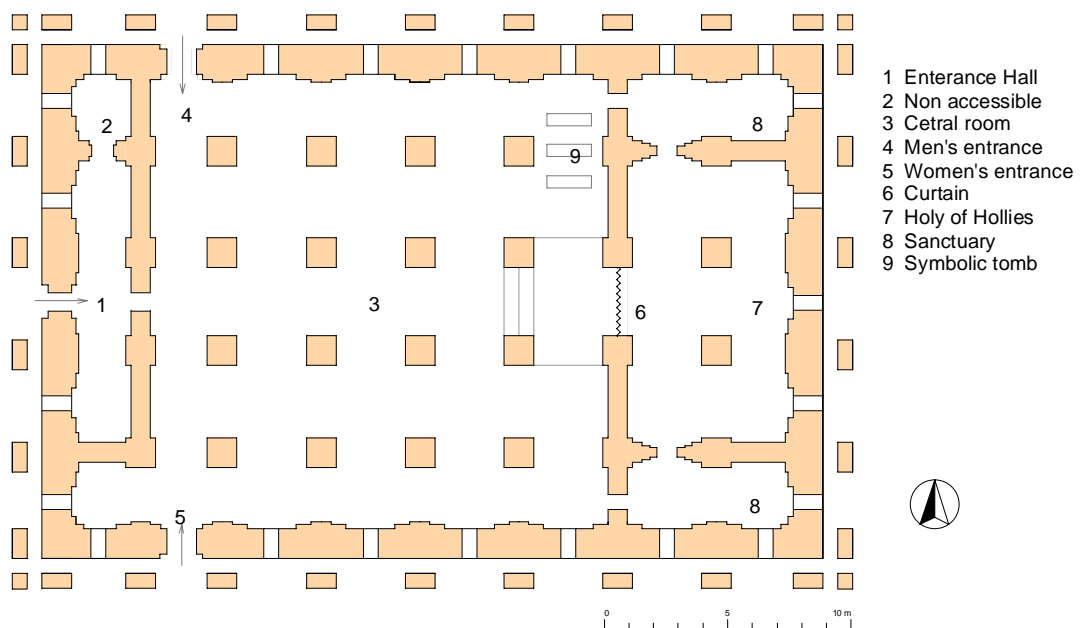


Figure 10, floor plan of Bete Medhane Alem with its 5 aisles & 8 bays

Due to the number of pillars carved, its immense size for a rock-hewn monument & its external look and the five aisles, it is said to resemble to Greek Temples showing Hellenistic architectural influence which in my view seems not distinctive. However, some historians claim that it is a copy of the original Axum Zion church which unfortunately was destroyed by the Imam Ahmed Ibn Ibrahim Al Ghazi (known as Gran) in the 16<sup>th</sup> century. It has to be indicated here that the three corner piers are interconnected horizontally by a small section in such a way that a view at 45° or at the corner reveals a cross. This might as well be the intention beside a structural advantage.



Picture 13, Bete Medhane Alem with its equidistant external piers



Picture 14, equidistant piers at the Sabaeen Sun Temple in Marib, Yemen around 800BC

There are some temples ruins whose reconstruction shows quite a large number of equidistant rectangular piers arranged in same manner in Sabaeen architecture which implies of more Sabaeen influence than Greek.

**Bete Mariam:** (House of St. Mary)

Popular for its fine architecture, this church is positioned in the centre of the first group of churches which is surrounded by a trapezoid shaped courtyard. The main access to the church is through a narrow way. Within the courtyard one finds Bette Dena gel and Bette Mescal to its front & rear. This court yard is displayed in many events due to the fact that the sacred dances of priests during Christmas takes place right there. It is a rectangular church. From the exterior, mouldings running horizontally around the walls decorate the church.

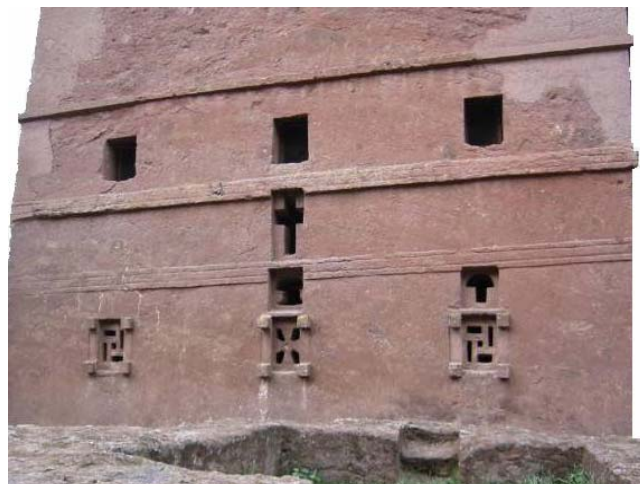


Picture 15, narrow way leading to Bete Mariam

Viewed from outside, there are three rows of windows. This makes the church popular in its fine architecture.

The upper windows are simple undecorated and without fillings.

The lower rows are decorated with a variety of crosses & the Swastika which is of course assumed associated here with the cross than any other implication.



Picture 16 & 17, views of Bete Mariam showing the porches & variation of windows



Another singular feature is the presence of the three projected porches out from the main structure. They are found in front of the three entrances at the west, north and south sides of the church, which give a cruciform shape to the floor plan. Each porch has almost flat roof, a double entrance beneath round arches with corbels, a central pillar without base or capital and a doorway opening to the church. The doorways show axumite elements with carved monkey-head frames. Besides, the main entrance there is a bas-relief showing two men on horse back, whereby one has to be St. George fighting the dragon.



Picture 18, relief of St. George fighting a dragon; above the main entrance of Bete Mariam

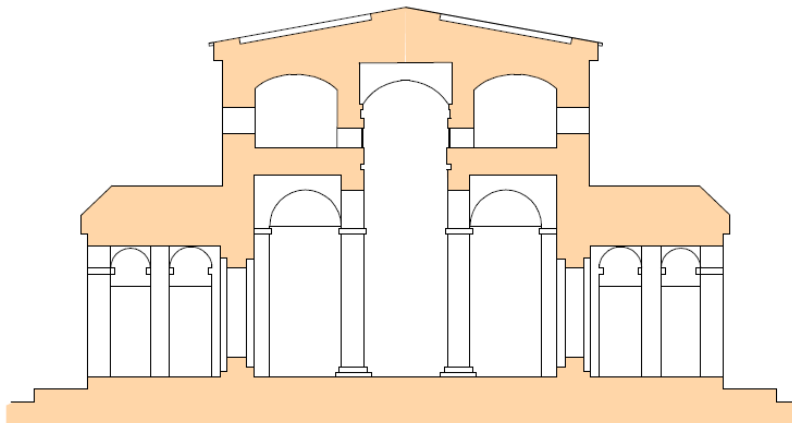


Figure 11, a X-section of the Bete Mariam

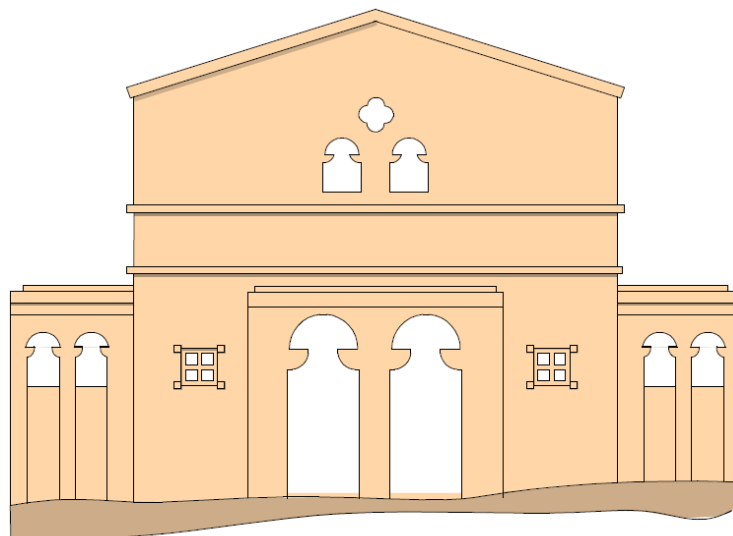


Figure 12, west elevation of Bete Mariam

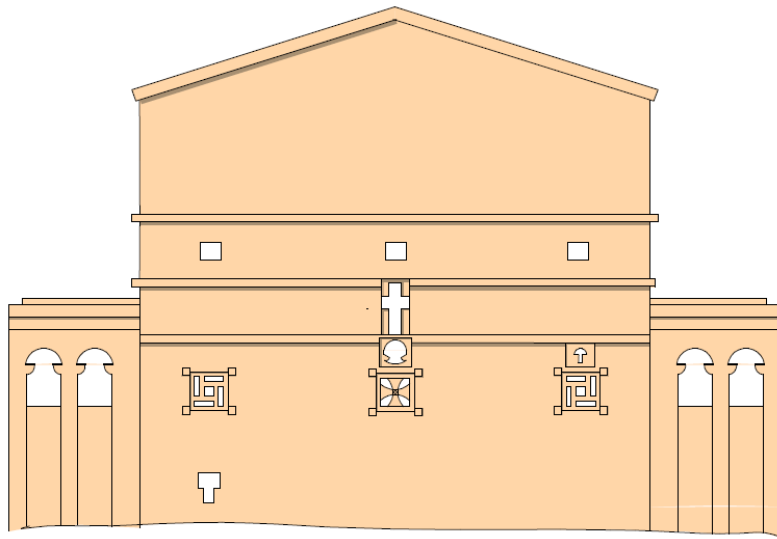


Figure 13, East elevation of Bete Mariam

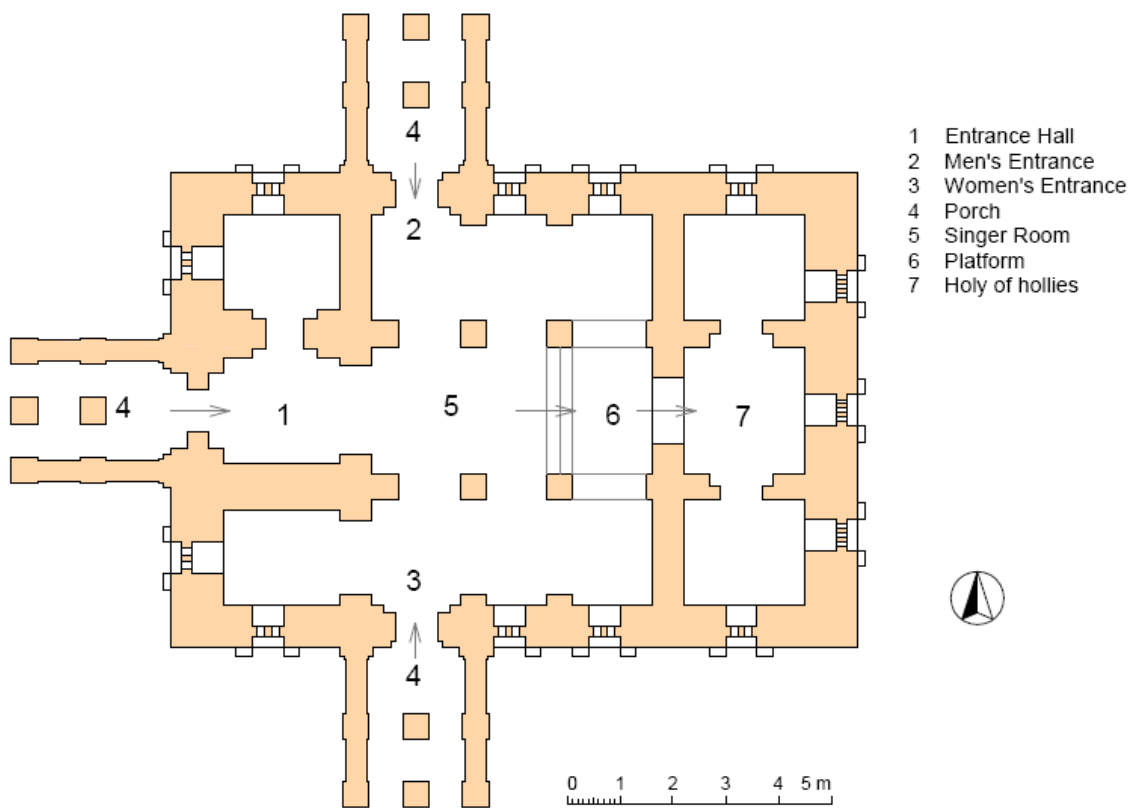


Figure 14, floor plan of Bete Mariam

The inside is an axumite basilica with the narthex, nave, the aisles and a sanctuary. It is the most ornamented church in Lalibela with frescos painted around the ceiling and the walls.



Pictures 19 & 20, interior ornaments & carvings at Bete Mariam

**Bete Meskel:** (House of the Holy Cross)

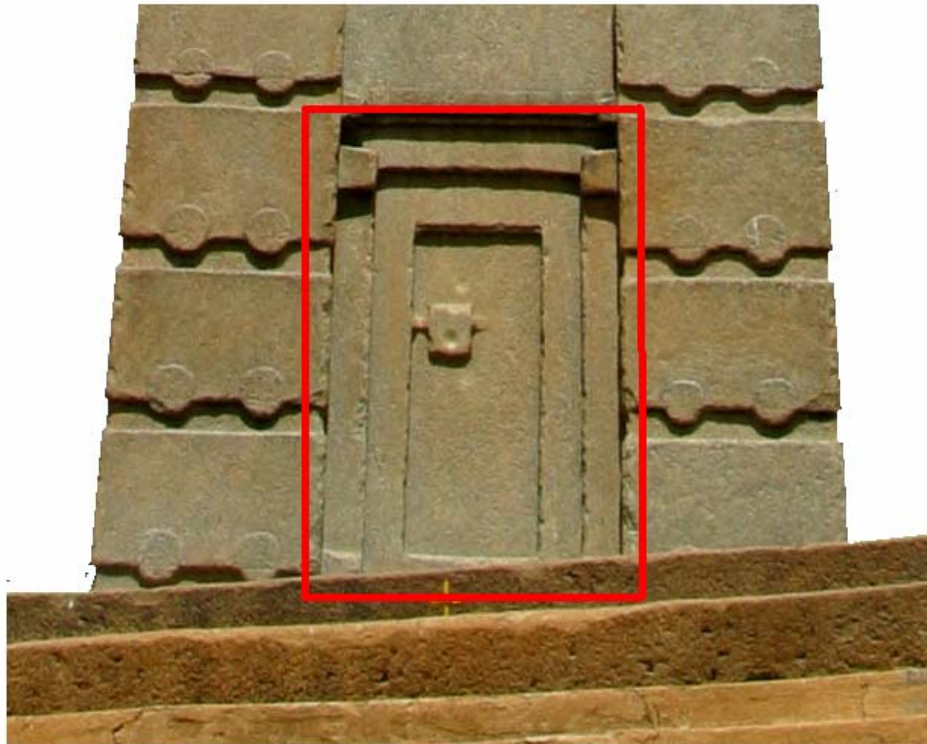
This is a small grotto church carved into Bete Mariam courtyard. The façade bears two doors with the monkey-head frame. The interior is small with two aisles and only four pillars and is mainly showing a decoration of many relief crosses. It is no wonder that the church bears the name.





Picture 21 & 22, facades of Bete Meskel with its axumite features

As seen in the picture of one of the axumite stelea, the carvings at the doors of both Bete Meskel and Bete Denagel duplicate the same pattern without precision. The upper carvings are the same “other feature” of repeated axumite element seen at the tip of the stele. This is observed in a bit adopted forms on the upper façade of Bete Medhane Alem and Bete Meskel and many of the windows.



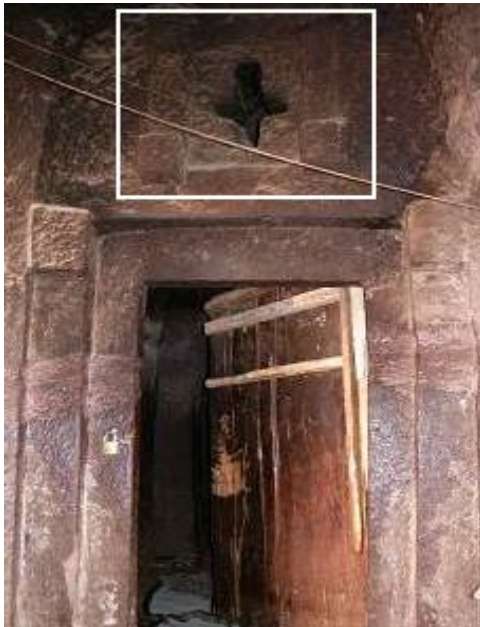
Picture 23, a fundamental architectural fingerprint of axumite architecture referred mostly as the “monkey-head” frame



Picture 24, interior of Bete Meskel

**Bete Denagel:** (House of the Virgins or Martyrs)

This is a partially monolithic church carved in the Bete Mariam courtyard. It is the least impressive of the churches. Its interior is very dark with four rectangular pillars. It is said to have been carved in memory of the maidens & martyrs beheaded by Emperor Julian. [13]



Picture 25 & 26, interior details of Bete Denagel

Very much similar to the Bete Meskel, all doors and windows (see rectangular box above) show repeatedly the same axumite elements without any alteration. There is practically no doubt that these two churches were carved at the same time though they might have been monuments reworked to a church.

### The Debre Sina, Golgotha, Sellassie Complex

The churches known as Debre Sina and Golgotha have been considered of primary importance within the rock-cut monuments. Not because they show better craftsmanship but rather a different sacral value. This complex is “Lalibela’s most secret and holiest place” whereby the Sellassie chapel retains a “the place of greatest sanctity in Lalibela”.

These are found about 6m below the level of Bete Mariam court yard. Since Bete Debre Sina & Golgotha are twined they are also referred to as the Bete Michael.

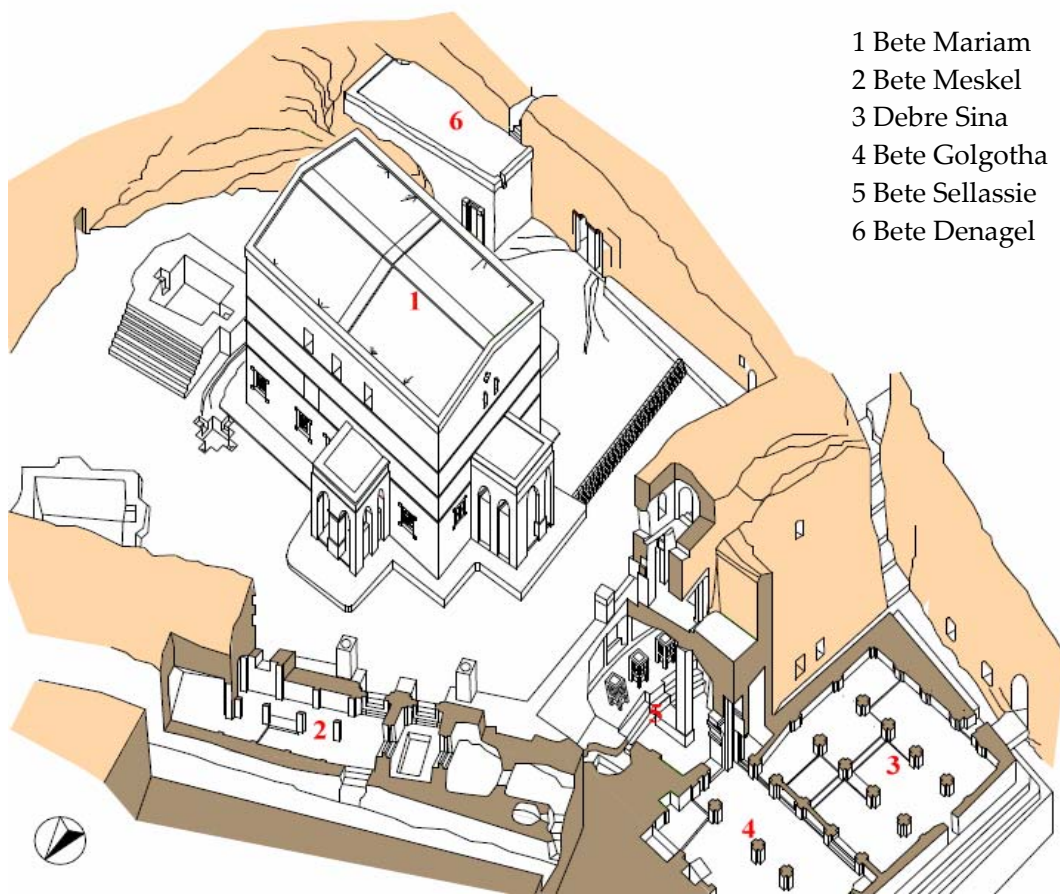


Figure 15, an adopted schematic sketch of the Debre Sina Golgotha-Sellassie complex

### The Church of Golgotha

Narrow doorways from Debre Sina lead out of the first and fourth bays into the Church of Golgotha. These are the only ways entrances.

It is considered to be the holiest places on the site because it houses the so-called “Tomb of Christ” (which is carved-out in full size) and the remains of King Lalibela himself. It is 10.7m in length; separated into two aisles by three cruciform piers. The total width measures approximately 6m. The north aisle is wider than its southern counterpart, which implies that the original intention might have been to create a tri-partite structure with a nave broader than each of two flanking aisles.

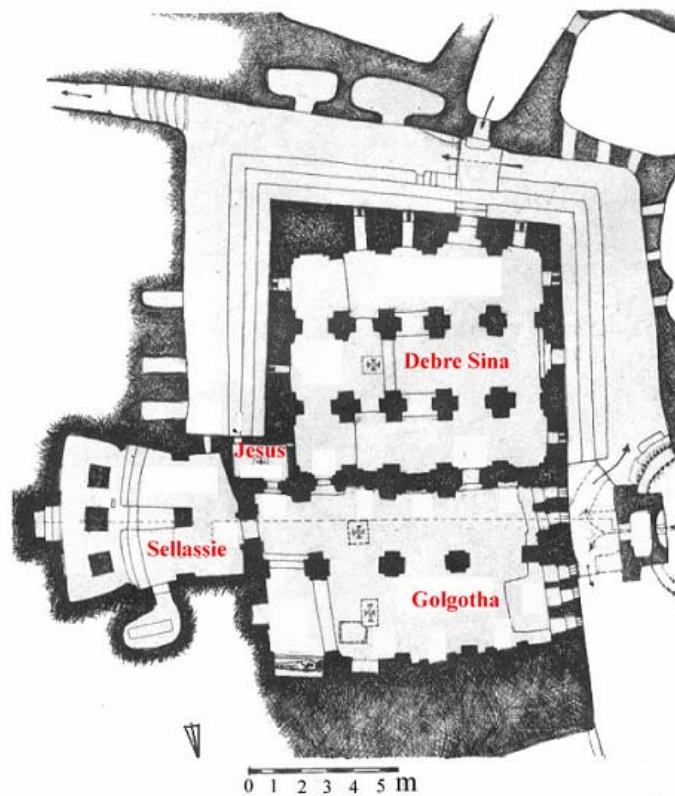


Figure 16, Floor plan of the Debre Sina, Golgotha-Selassie complex. [45]

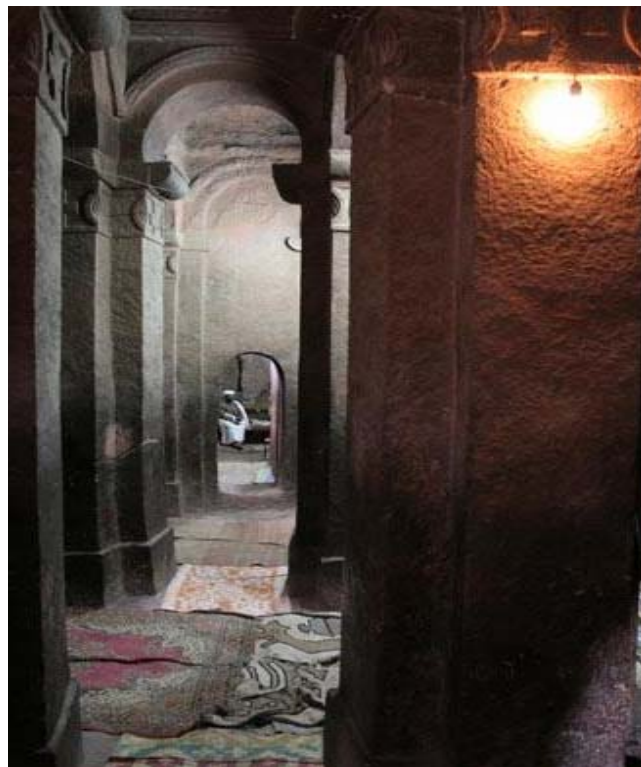
The only means of entering the Debre Sina – Golgotha – Selassie complex is through the south or west portals of Debre Sina. The interior measurements of Debre Sina are approximately 9.50m E-W and 8.50m N-S. The church is divided into three aisles by two rows of four cruciform columns which support arches rising to a height at mid-point.



Figure 17, an illustration (adopted) of the Bete Golgotha with its single row of cross-shaped piers. [45]

The flat ceiling is approximately 5m high. Unlike the preceding monuments described above, there are no chambers in the four corners of Debre Sina. The pillars at the east and west corners of the central square are free-standing doubling the usual number from four to eight.

In another divergence from axumite principles, the east end, which is wholly occupied by the sanctuary, is accessed from the north and south aisles by a step rising from the back of the first set of pillars, and from the nave by a double step rising between the second set of pillars (see figure 17) which gives the clergy a considerably larger space for their services making their ascent & decent easier to the main middle aisle.



Picture 27, interior of Bete Golgotha

I have to note here that during the time of the Zagwe dynasty, the Ethiopian church was showing the effects of long centuries of isolation from the larger Christian world. After the seventh century the sole contact with outside Christianity was with the Coptic Church of Egypt. Starting with the seventh century to the twelfth century, for whatever reason the Ethiopian Orthodox Church placed strong emphasis upon the Old Testament and on the **Judaic roots** of the church. Christianity in Ethiopia became imbued with Old Testament belief and practice in many ways, which differentiated it not only from European Christians but also from its Monophysite alliance. In fact, according to Dr. Allan Ingalls, Professor of Old Testament, Clarks Summit, Pennsylvania; priests of the Old Testament cultus were required to wear a Turban in their leadership of and participation in Israelite worship. [80]





Picture 28 & 29, a painting of “Noah” in a rock-hewn pre Lalibela church in Tigray & an interior carving on the wall of Beta Golgotha with a relief of same Judaic influence

### The Sellassie Chapel

This is a small chapel which is accessed through a simple doorway at the east end of Golgotha’s south aisle. It is on the same underground level as the Debre Sina and Golgotha churches, and has no direct link to the surface above. Natural light comes only through a single window making it a dark spot probably on purpose. Due to the tri-partite Menbere Tabots it is held to be such a holy place that few people outside the superior ranks of the priesthood have ever been granted access to it. It is a trapezoid in cross section measuring 6.5m wide at the east end and 4.6m at the west. It is 6.8m deep on the north side and 6m on the south. The south side was made shorter probably to avoid cutting into the pre-existing Jesus cell. A single, 60cm-square, 5.4m-high pillar rises on the central axis about a third of the way into the room. [16]



Picture 30, the three monolithic altars in the Sellassie chapel

The vertical surfaces are divided horizontally with crosses incised at the upper level on each of the four faces. At the bottom of the steps on the north wall is the opening to an empty tomb chamber.

A recess in the north wall, protected by an iron grate, is designated the “Tomb of Christ”. Within, a recumbent figure in low relief lies at floor level, facing east. The body tapers from broad shoulders to his feet, which are integrated into the east wall. His hands are crossed over his chest and he wears a short, thigh-length tunic. An angel stands in relief at his feet. [16]

The second bay of the north aisle contains the “Tomb of Lalibela”, surmounted by a large Menbere Tabot draped in cloth. It is always curtained off and not accessible.

### **The Jesus Cell**

This very small (about 2 x 1.3m) cell is linked to the east end of the north aisle of Debre Sina by a small aperture. A modest window with a pointed arch looks out from high in the wall of the south east corner over the deep rock-cut passage. [11]



Picture 31, stylized windows of the Jesus cell with a possible Byzantine influence on the very widely used axumite window (left Picture) with a mix of axumite and Byzantine features.

## Second group of churches:

Bete Amanuel

Bete Merkorios

Bete Abba Libanos

Bete Gabriel – Rufael

### **Bete Amanuel:** (House of Emanuel)

This church shows an impressively fine facade work. It has precisely cut axumite horizontal carvings. The lower windows are cross shaped and those in the middle show round-arched tops in axumite style. The top windows are monkey-head framed & fully open without fillings.

It is a three storey monument, where each floor shows a similar cross-section like the windows. The upper most is square, the middle is one arched and the ground floor is cross shaped. It can be attributed to be basilica style with two aisles and a sanctuary in the hall there are eight pillars. A rock stair-case leads from a side room by the main entrance to a second storey where little rock chambers surround the hall. A stairway hewn in rock leads to a long sub terrain tunnel which connects Bete Amanuel to Bete Merkorios.

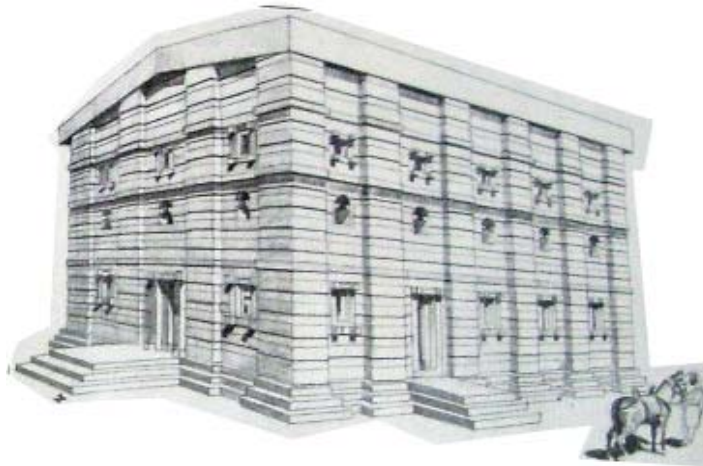


Figure 18, a perspective illustration of Bete Amanuel



Picture 32, a view of the façade of Bete Amanuel and a section of the façade of an Axumite Stele and Debre Damo church showing the typical Axumite stone-wood architecture

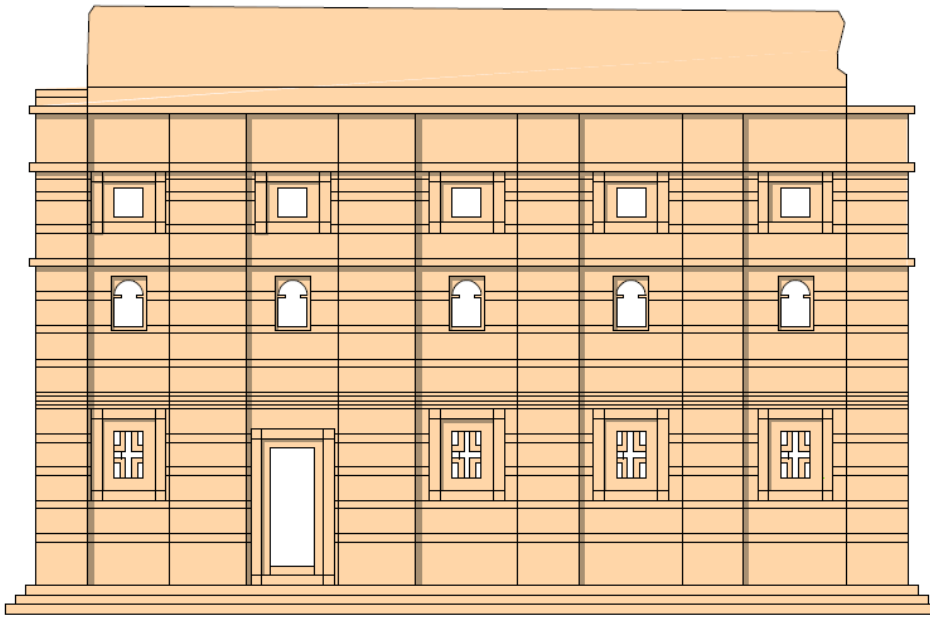


Figure 19, south elevation of Bete Amanuel

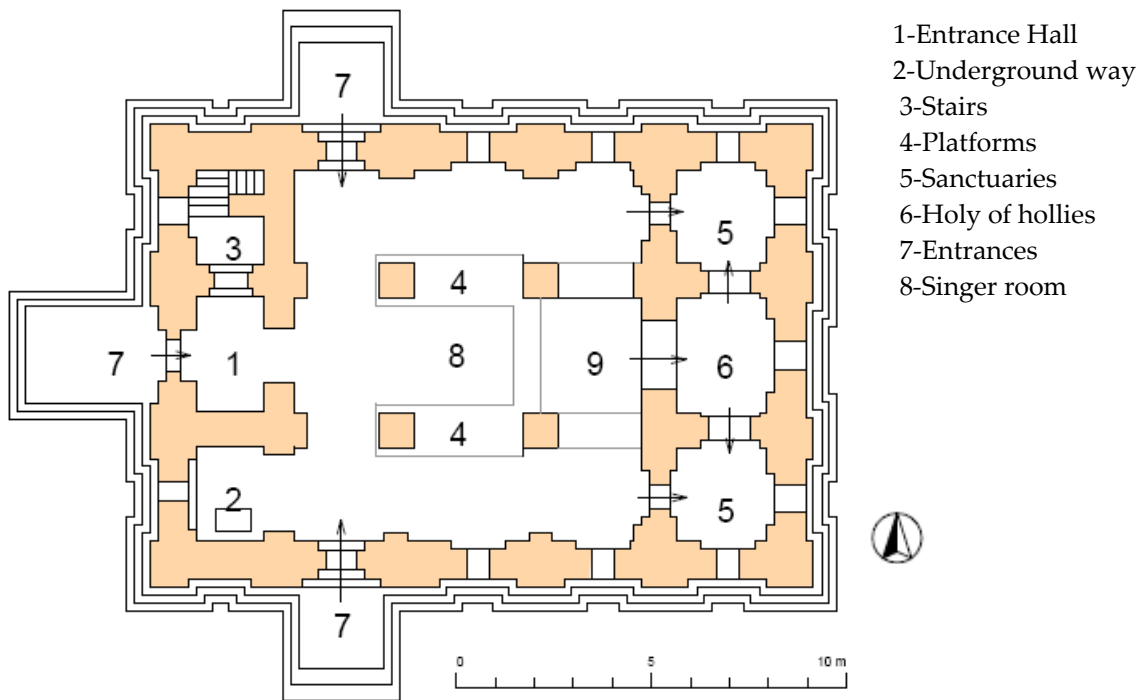


Figure 20, floor plan of Bete Amanuel

In contrast to the other churches, the interior of Bete Amanuel bears the same architecture as the exterior with the horizontal carvings illustrated above.



Pictures 33 & 34, interior of Bete Amanuel

**Bete Merkorios:** (the house of Mercurios)

This had to bear the most damages of all the monuments in Lalibela. It was not on service to that effect for long until readopted some 20 years ago. It has 20 pillars ten visible on the façade & ten inside. However, 2 pillars outside are unavailable due to damages incurred. The interior wall of Bete Merkorios is poorly decorated. Due to its architectural nature, some consider Bete Merkorios as one not conceived for being a church originally but rather adopted in later time. It might have served as administrative or judiciary unit.



Picture 35, a view of Bete Merkorios



Picture 36, interior of Bete Merkorios

**Bete Abba Libanos: (House of Abba Libanos)**

This is a rectangular semi monolithic church. The top remained undone. It is semi monolithic because except the roof, the sides are separated from rock through carved tunnels. It might be that it was unfinished for some technical reason. It displays many axumite architectural features similar to the Amanuel church. Though it looks large from outside, its interior is quite small.

It has three rows of windows. Unlike the top and the middle ones, the bottom row windows display the monkey-head frames and have cross-shaped openings. The upper ones are square and the middle ones are ogival.



Picture 37, a view of Bete Abba Libanos showing its windows

There is no written record reasoning its semi-monolithic nature. It is however assumed unfinished due to circumstances that appeared in the course of carving. The most widely accepted theory is that there might have been an anticipation of a possibility of collapse if top is removed. It is further assumed that the discovery of the nature of rock on top might have been the reason to have stopped removing further.



Picture 38 , a section of the Axumite Stele showing the so called “Monkey-head” frame copied in many Lalibela windows & doors



Pictures 39 & 40, façades and interior of Bete Abba Libanos and the similarity to the Axumite Stele (see picture above)

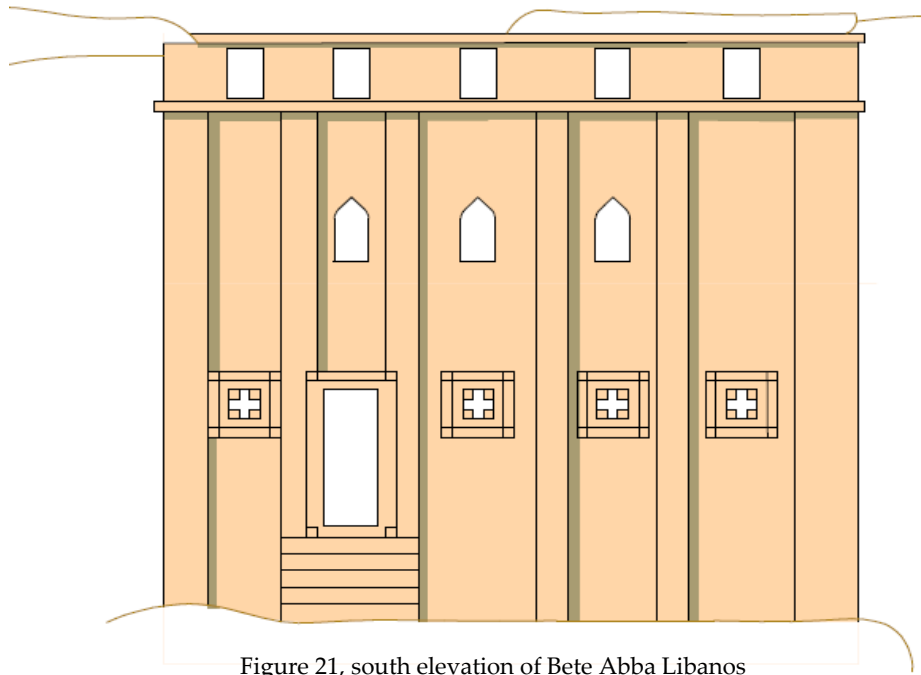


Figure 21, south elevation of Bete Abba Libanos

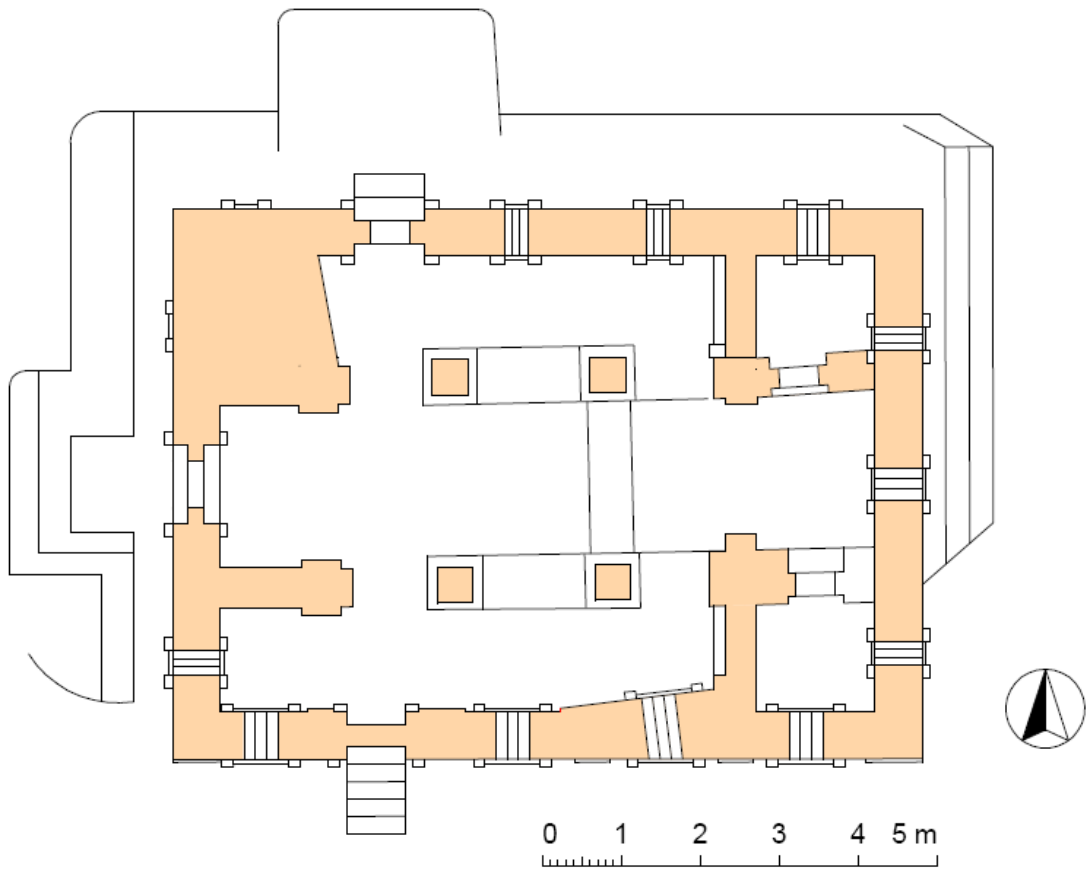


Figure 22, floor plan of Abba Libanos



**Bete Gabriel-Rufael:** (House of Gabriel-Raphael or house of the Archangels)

It is a church located between two trenches on the north and south. Access to this church is over a bridge crossing the main trench. The façade shows much of aksumite features whereby the top bears ogival niches similar to the Aksum stele. The two niches contain two doors in aksumite style and five of them have windows. A platform enlarges the landing in front of both doors. Originally they both led into the void, since there is more than ten meters from the edge of the platform to the floor of the rock courtyard.<sup>[15]</sup> Down in the courtyard there is a well and an underground cistern. Steps lead down to a subterranean hall of pillars, where the water sinks or rises, according to the dry and rainy season.

Near the church one finds a unique carved path called “path to heaven”. This wall shaped path rises from ground ascending to the roof indicating the “difficulty and narrow way to heaven”. The sharp slope is an indication of the failure to cross the difficult lane would have given consequences. Pilgrims are expected to walk on this narrow way in order to test their spiritual integrity. Though many do the walk; the walk way must have been more symbolic than a testing lane. It glorifies the popular conception that the way to heaven is very difficult requiring absolute diligence and a life in accordance with the Gospels.



Pictures 41, 42 & 43 passage & interior of Bete Gabriel-Rufael

The interior is divided by arched pillars. As seen in the picture below, the shape at tip of the Axumite Stele which comes in various forms in Lalibela is seen here as an entrance leading to the doors. This architectural finger-print is usually observed either as decoration on the surfaces of facades like at Bete Meskel and Bete Medhane Alem or as windows. The doors in turn are monkey-head framed.

The interior is divided by arched pillars. The fact that there is no integral church plan here, leaves one wonder if it might have not been conceived originally for the holy purpose it serves now.



Pictures 44, passage & views of Bete Gabriel-Rufael and an Axumite contrast



Figure 23, Floor plan of A-Gabriel B-Rufael

### Third Group

#### Bete Giorgis:

This is no doubt an ultimate creation in rock-church design. This church portrays great vision, conception and precision with vast undertakings that is seen nowhere & of course unmatched.

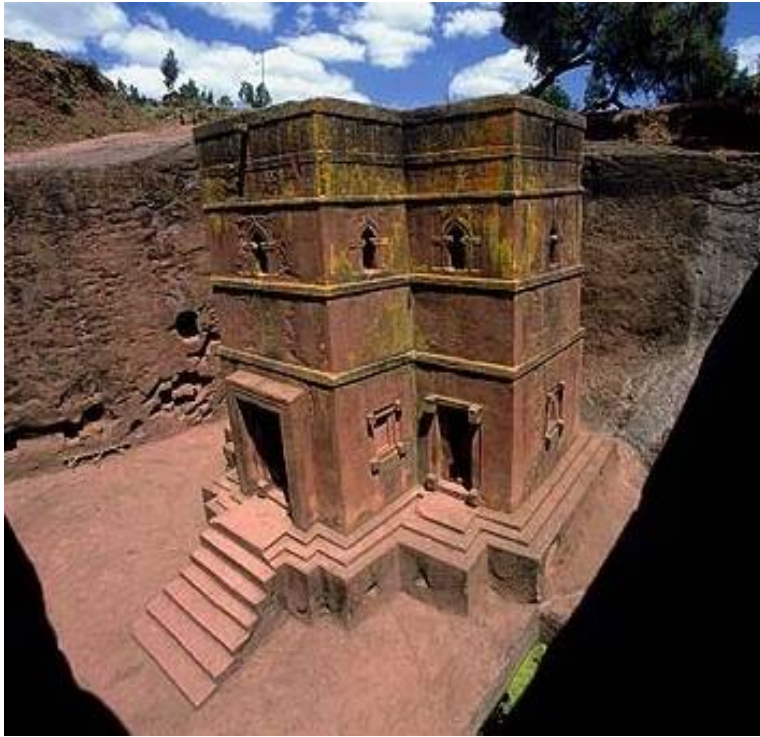
This is purely monolithic and lies isolated from all others. Access to it is through trenches with gateways & tunnels. It has a rectangular relatively medium sized courtyard which has a baptismal font.

Its Singular cruciform shape is very distinctive. It is decorated on top with a relief of three symmetric "*crux immissa quadrata*" or the Greek cross positioned inside each other. It has two rows of windows whereby the monkey-head framed windows at the bottom are blind. The upper 12 windows have ogival arches and bracket capitals similar to those at Bete Golgotha.

The roof seems to have been decorated by the senior craftsmen while excavation works in the interior was carried out by the less skilled craftsmen.

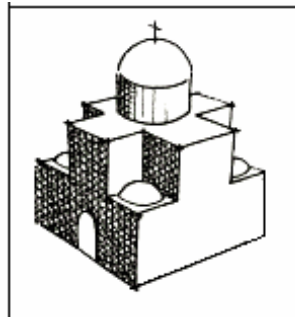
There are seven wide steps at the main entrance in the west. Structurally, one observes an increase in the thickness of the walls downwards. The projecting corner beams at the doors, the monkey-head windows, and its stepped platform all indicate a solid Axumite architectural influence mixed with the very elements of Byzantine Cruciform plan. The interior is simple and cruciform. There are no free standing pillars inside.





Pictures 45 & 46, Top & perspective views of Bete Giorgis

In order to evaluate the extent of Byzantine architectural influence, we shall take the simplest & most widespread form of Byzantine church plans. This is the so called "Tetrakamara" or "Cross-in-Square" plan, adopted in Constantinople in the later ninth century. In the simplest terms, this kind of church is cubical on the first level and cruciform on the second, with a dome resting on a cylinder at the intersection of the arms of the cross. Schematically it looks like this:



The church is centered around a quadratic space known as Naos which is divided into nine bays by four columns or piers. The dome crowns the central bay which is usually larger than the other eight. The four, rectangular, bays that directly adjoin this central bay are usually covered by barrel vaults showing the Arms of the "cross" which is inscribed within the "square" of the Naos. The four remaining bays in the corner are usually groin-vaulted.

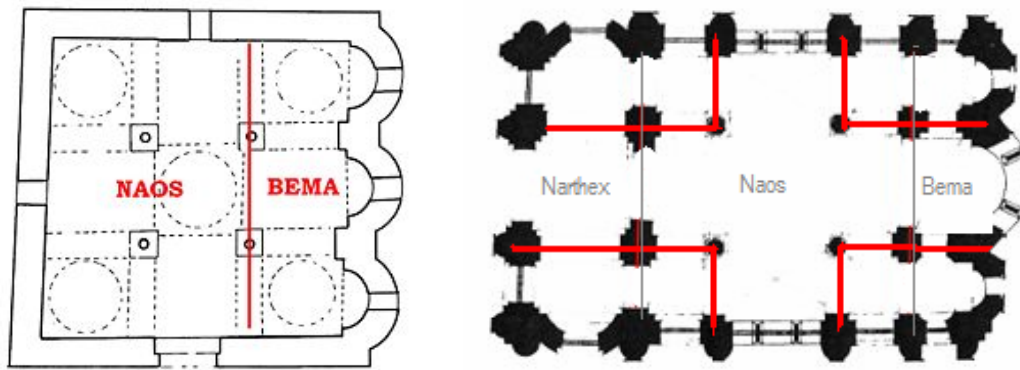


Figure 24 & 25, Plan of a Compact & a typical cross-in-square church; based 10th-century church plan (Myrelaion in Constantinople)

To the west of the Naos stands usually the narthex, or entrance hall. To the east stands the bema, or sanctuary, often separated from the Naos by Templon or, in later churches, by an iconostasis. The sanctuary terminates in an apse crowned by a half-dome. The central apse is larger than those to the north and south. [52] Although evidence for Byzantine domestic architecture is rare, it appears that the core unit of the cross-in-square church (nine bays divided by four columns) was also employed for the construction of halls within residential structures.



Picture 47 & 48 The Hagia Sophia in Thessaloniki dating back to the 8<sup>th</sup> century & Aghios Eftychios dating back to 10th century

The first cross-in-square churches were probably built in the late 8th century, and the form has remained in use throughout the Orthodox world until the present day. The cross-in-square church may be said to constitute a unique artistic development of the middle Byzantine period. Early Byzantine churches were predominantly Basilical. Cross-in-Square forms probably started with early Christian basilicas rather than late antiquity. According to the basilica theory, the crucial intermediary buildings were the so-called "cross-domed" churches of the seventh and eighth centuries (e.g. Hagia Sophia Thessaloniki )

During the middle Ages, the cross-in-square plan had spread far beyond the borders of the Byzantine Empire. The type was adopted, and developed, in the medieval Russian sphere, and in the various independent kingdoms of the northern Balkans



Picture 49 & 50, a simple model, Aghia Paraskevi in the Monastery of Asomatos Creta & Church of St. Paraskevi, Ukraine. Both from the 12<sup>th</sup> century,

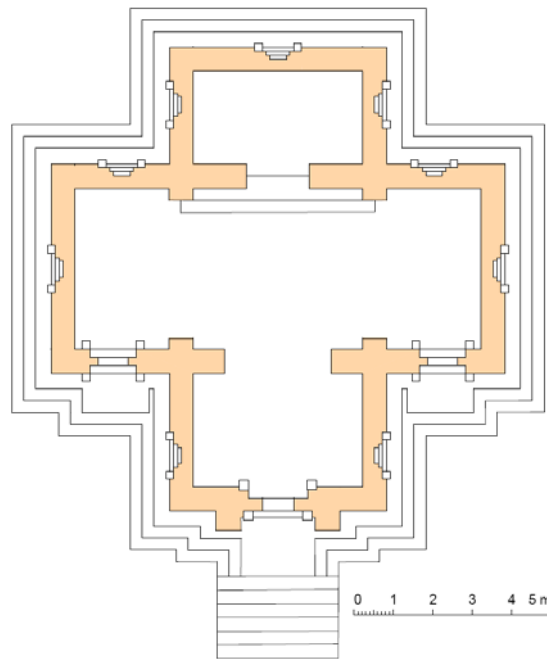


Figure 26, Floor plan of Bete Giorgis



Picture 51, Ceiling of Bete Giorgis with a *crux inmissa quadrata* or the "Greek cross"

#### 4.1.1 Interpretations of the Lalibela Complex

Beyond the legend of New Jerusalem, the unique nature, the sanctity & its secrecy, has led to a number of speculative interpretations of the Lalibela site. To mention some;

- **The Cosmological myth:** Irmgard Bidder had a cosmological interpretation. <sup>[03]</sup> She considered the church grouping in three as the pivotal point. She claimed these were reworked versions of ancient sanctuaries originally devoted to nature worship, the physical expression of a creation myth. The first group concentrated in the NE section, near the monolithic church of Bete Amanuel represented the “Womb of the Earth”. The second group, concentrated around the Church of Golgotha in the NW section, the form and the idea of the stele projected horizontally into the rock’s surface represented “phallus”. The remaining unit, the single church of Bete Giorgis expressed idea of the ‘Offspring of Heaven and Earth’”. Here, I find the supportive evidence weak, whereby neither the Geometry as such nor the concept seems to be convincing.
- **Apocalyptic myth:** Another hypothesis by Jacqueline Pirenne describes these as “a mystical commentary on the Apocalypse of St. John”. <sup>[10]</sup> She was inspired by the discovery of four inscriptions engraved on fragments of wood and bearing the theme of Christ’s transfiguration on mount Tabor, and of the invocations inscribed on ten menbere tabot of which nine were attributed to King Lalibela. Her argument derived from the association of each Tabot with a specific church. This however is very much a mystical assumption than an evidenced hypothesis.
- **New Jerusalem:** The only theory that has logical and legendary support seems to be the “New Jerusalem”. The concentration of churches, the possible time of construction, the “river Jordan”, the number of Tabots bearing the many names of Jesus & Mary and of course the names Debre-Sina & Golgotha all support this.

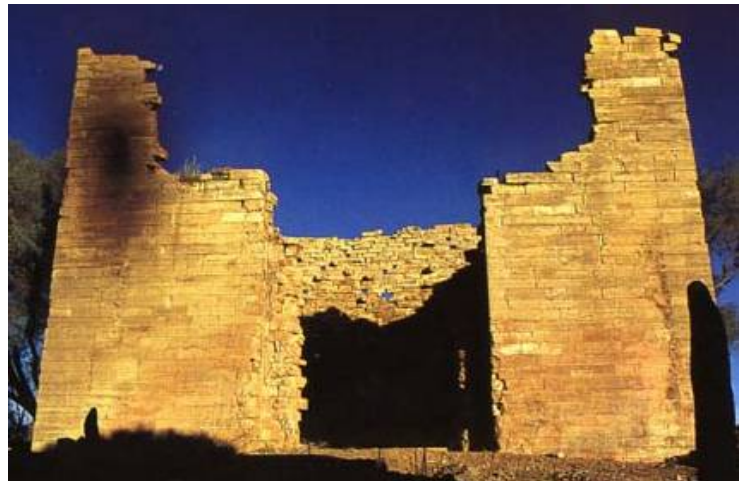
All other theories, some of which claim even the monuments were built by Crusaders after losing the battle for Jerusalem, seem to have very little supportive evidence. On the other hand, the legendary construction period of 20 years for the entire Lalibela complex seem to go short of architectural chronology. However, there has been very little archaeological study carried out in the area that might have revealed and defined things.

## 4.2 Comparative architecture & possible correlation

### 4.2.1 A brief historical account on the Aksumite Empire & Architecture

Immigrants who arrived from South Arabia around 600BC, bringing with them a belief in diverse gods, a system of writing, and a tradition of monumental stone building mixed with local indigenous population developed to be the Axumites. Axumite civilization picked up in the fourth to third centuries B.C., developing into a kingdom between the mid-second century B.C. and the mid-second century A.D.

The Axumite Empire lay perfect in the path of commercial trade routes between Africa, Arabia, and India becoming immensely wealthy. Its major cities, Adulis, Aksum, and Matara, became three of the most important cosmopolitan centres in the ancient world. By virtue of being a crossroad to a variety of cultures: Egyptian, Nubian, Arabic, Middle Eastern, and Indian this empire became the first cosmopolitan Empire with Jewish, Nubian, Christian, and even Buddhist minorities.



Picture 52 & 53 ,Yeha, Sabaeen Temple, 500BC

Around the second century AD, Aksum set feet on the Arabian Peninsula across the Red Sea, conquered northern Ethiopia, and then finally conquered Kush. The downfall of the Nubian powers led to the rise of Aksumite imperial power. Aksumite religion was at the beginning a polytheistic derived from Arabic religion in which gods controlled the natural forces of the universe. [68]

Greek inscriptions claim that Aksum conquered the lands to the south and southwest of what is now Tigray and controlled the Red Sea coast to the present-day Djibouti and Berbera areas. The Aksumite state controlled parts of southwest Arabia as well during this time, and subsequent Aksumite rulers continually involved themselves in the political and military affairs of Southwest Arabia, especially in what is now Yemen. The main reason behind the foreign conquest lay in the desire to control the maritime trade between the Roman Empire, India and adjoining lands. Among the commodities that the



Aksumites exported were gold, rhinoceros horn, ivory, incense, and obsidian; in return, they imported cloth, glass, iron, olive oil, and wine.

Sometime around 300 AD, Axumite armies conquered Meroe or forced its abandonment. By the early fourth century A.D., King Ezana (reigned 325-60) controlled a domain extending from Southwest Arabia across the Red Sea west to Meroe and south from Sawakin to the southern coast of the Gulf of Aden. As an indication of the type of political control he exercised, Ezana, like other Axumite rulers, carried the title Negusa-nagast (king of kings), symbolic of an Empire and his rule over numerous tribute-paying principalities and a title used by successive Ethiopian rulers into the mid-twentieth century.

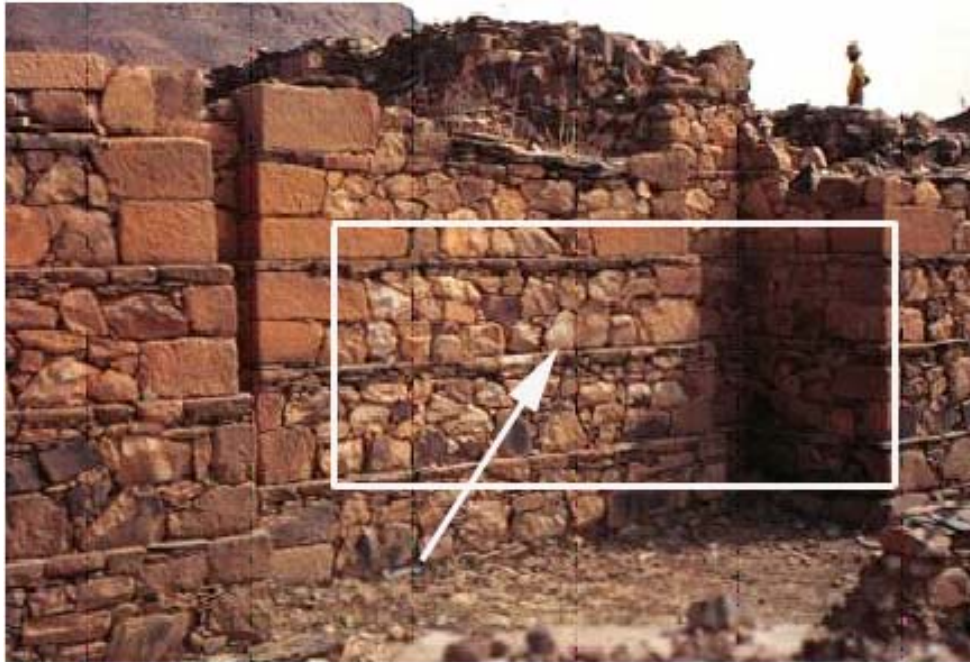
The Axumites created a civilization of considerable distinction. They devised an original architectural style and employed it in stone palaces and other public buildings. The most famous early manifestation of this influence still extant is the 60 x 50-foot stone structure at Yeha in modern-day northern Ethiopia, estimated to have been constructed around the fifth or fourth century B.C. Possibly once a temple to a South Arabian deity, this rectangular building was constructed from ten-foot sandstone blocks fitted together without the use of mortar.

Temple of Yeha shows a refined construction with precisely carved walls. It is a perfect example of stone carving and precision of angles and surfaces. It shows the construction and architectural excellence of the Sabaeans of the time from which the Axumite architecture and civilization emerged. Its direct implication to Axumite and beyond that to the Lalibela Monuments is manifested in precision of surface works, knowledge of stone carvings, structural knowledge of engineering without the use of Mortar



Picture 54, Details of construction with a fine surface finishing at Yeha Temple

The carving realistically portrays architectural details. Stone masonry walls reinforced with a timber framework, inset longitudinal beams were joined by cross timbers that were slotted over the longitudinal members and projected from the wall as round studs. The curved headstone shown here originally held a bronze plaque held by rivets. The plaque probably had a representation of the crescent and disk of Llmuh, the Sabaean Moon god



Horizontal forms reproduced in much of axumite construction



Picture 55, Axumite ruins of a Villa at Cohaito and façade of churches in Lalibela

Aksum (Axum) is perhaps most renowned internationally for its enormous monolithic stelae, erected during the third and fourth centuries A.D. as funerary markers for deceased members of its elite. [68]

The largest Axumite stele is over 100 feet long. It was the largest single stone ever quarried in the ancient world. The obelisks are impressive, cut from hard local granite. These seem to depict the dead rulers' palaces whereby their tombs lay beneath. The Obelisks were the "stairways to heaven" for the kings of Aksum. At the base are granite plates with carved wine-cups for offerings to the spirit of the deceased. [70]



Picture 56,57 & 58 Entrances to the Grab chamber

Byzantine and Roman historians chronicle how a Syrian Christian named Frumentius, who later took the name Abba Salama, came to be captured and later hosted by the Aksumite court. He ultimately converted the later king Ezana who removed crescent-and-disk of South Arabian polytheism from his coins and replaced with the Christian cross.

Axum was a very powerful Empire. It was listed by the Persian prophet Mani as the third kingdom of the world, with Rome, Persia and China. Later a Byzantine diplomat described his audience with Kaleb of Aksum, conqueror of the Jewish king of Yemen. The ambassador in his witness to King Kaleb's arrival mentions, King Kaleb standing high on a dais bound with golden leaves, set on a wheeled platform drawn by four elephants. From his gold and linen headdress fluttered golden streamers. His collar, armlets, and many bracelets and rings were of gold. His kilt was also gold on linen, his chest covered with straps embroidered with pearls. He held a gilded shield and lances.

Building on their trading wealth, Aksum's rulers became ever more powerful. Ezana, second ruler ever, after the king of Armenia, to adopt Christianity as state religion around 330AD, calls himself 'King of Kings, King of Aksum, Saba, Salhen, Himyar, Raydan, Habashat, Tiamo, Kasu, and the Beja tribes'. Arab royal inscriptions of the 3rd century tell how Aksumite kings sent their sons with fleets and armies to ally with rival Yemeni tribes, slowly carving out a great Afro-Asiatic empire that bridged the Red Sea, and allowed the kings of Aksum to impose kings on the Yemeni Arabs.

Exceptionally for an ancient sub-Saharan African state, Aksum struck coinage. [81] Few contemporary rulers could issue in gold, a statement of absolute sovereignty. Gold coins, struck by the kings of Aksum found at a place called al-Madhariba in Yemen show silver and bronze, uniquely, overlaid with gold on important symbols like the cross or crown. They read the names of over twenty otherwise unknown kings, from the 3rd-7th century AD. Monarchs wearing the high Aksumite tiara, dressed in fringed robes, with necklaces, bracelets, armlets and probably finger-rings, and holding sword, spear, or hand-cross. Wheat-stalks appear too, a vital crop for Aksum's continued prosperity.

A characteristic motif is the cross; the Aksumites were the first to depict the Cross on coins. The coin-legends of the earlier kings were in Greek, changing later to Ethiopic, though Greek is retained for the gold--an indication of the international commercial status of the Greek language in the trade of the region. The coins carried messages like 'By the Grace of God', or 'By this Cross he will conquer', or, later, 'Joy and Peace to the People', 'Christ is with us', 'Mercy and Peace'.



Figure 27, Gold & silver minzing of the Axumite Empire

Later in the sixth century, however, Sassanian Persians established themselves in Yemen, effectively ending Aksumite control. Thereafter, the Sassanians attacked Byzantine Egypt; further disrupting Aksumite trade networks in the Red Sea area.

Aksumites turned their attention to the colonizing of the northern Ethiopian highlands. The Agew peoples, divided into a number of groups, inhabited the central and northern highlands, and it was these peoples who came increasingly under Aksumite influence. This southward expansion continued over the next several centuries. The favoured technique involved the establishment of military colonies, which served as core populations from which Aksumite culture, Semitic language, and Christianity spread to the surrounding Agew population. By the tenth century, a post-Aksumite Christian kingdom had emerged that controlled the central northern highlands from modern Eritrea to Shewa and the coast from old Adulis to Zeila in present-day Somalia, territory considerably larger than the Aksumites had governed.

About 1137 a new dynasty came to power in the Christian highlands. Known as the Zagwe and based in the Agew district of Lasta, it developed naturally out of the long cultural and political contact between Cushitic- and Semitic-speaking peoples in the northern highlands. Staunch Christians, the Zagwe devoted themselves to the construction of new churches and monasteries. Under the Zagwe, the highlanders maintained regular contact with the Egyptians.

#### 4.2.1.1 Lalibela & Axumite architectural influence:

Substantial presence of Axumite elements in Ethiopian rock-cut architecture is observed principally at Bete Mariam, Bete Abba Libanos, Bete Ammanuel, and in its enlarged form at Bete Medhane Alem. Bete Merkorios & Bete Gabriel show enough elements but not as elaborative as the Bete Mariam & Bete Abba Libanos perhaps due to the fact that they might not have been conceived as churches originally. However, the least “Axumite” of the monuments in Lalibela is the Debre-Sina - Golgotha – Selassie complex. Whereby, Bete Giorgis is unique in many ways but much related to the Debre Sina complex.

The absence of long-established forms at Debre Sina group & Bete Giorgis suggests that these monuments were carved at a time when those traditions were no longer considered essential in church construction which might imply that the 20 years of construction are very unlikely to hold.

In terms of the ground plan the so-called Axumite type consisted of a central square in form of a basilica divided into three aisles by two sets of two pillars contained in a rectangular frame (figure 24).

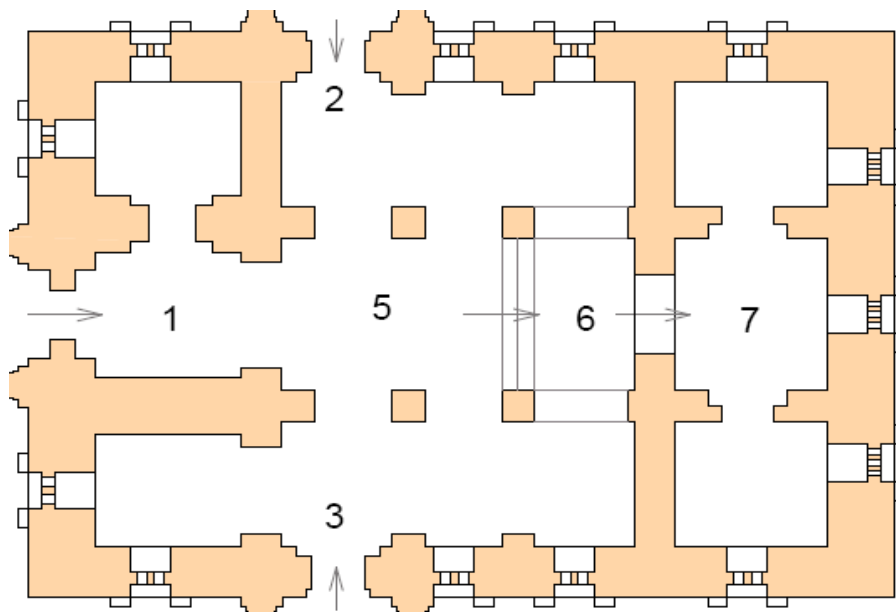


Figure 28, a typical axumite floor section with two rows of two pillars & three isles (Bete Mariam shows additional smaller supports positioned in the central square)

At each end of the central square this frame incorporated a tripartite division of space corresponding to the layout of the three aisles. At the east end, the sanctuary stood as a continuation of the central aisle (space 7 above), and was flanked to the sides by rooms, accessed from the sanctuary and/or the side aisles, which served as sacristies. At the other end, a central entrance vestibule (space 1 above) was situated between two chambers, with access to the left

Chamber from the vestibule and to the right chamber from the right aisle (space 3 above). In addition to the main entrance (which is usually positioned west), there were side ones (northern and southern) which opened into the sides to allow entry & exit of men & women separately. This is the formula found at Bete Amanuel and Bete Abba Libanos, and very close to that of Bete Mariam which is otherwise distinguished by additional pillars.

The Debre Sina-Golgotha-Sellassie complex is certainly unique among the Lalibela churches in its structure and composition; it doesn't hold many of the traditional characteristic of Axumite-style architecture. [45]

The absence of corner chambers and the change in the number of piers in Debre Sina is a new departure in church construction, thus creating an open interior space considerably larger than that of an Axumite. Golgotha itself, with three free-standing piers, only two aisles and without corner chambers, is even less conventional whose construction definitely preceded the next stage of expansion which was the tiny Jesus cell.

The final work and perhaps the last of any of the rock-cut monuments in Lalibela from the point of view of the chronology of prevailing architecture, has to be the Sellassie chapel. It must have followed the completion of Golgotha because it can only be entered through the doorway at the east end of Golgotha's south aisle; and it must have followed the excavation of the Jesus cell. There are no transversals (square "monkey heads"), typical of Axumite architecture, to be found in any of the doors and windows. The windows from the exterior are barely framed.

The last in the sequence to be built has to be the Bete Giorgis. This resembles much to a typical Byzantine cruciform plan of the "Dome design". A clear shift in Lalibela architecture from the usual "Axumite Basilica" to the cruciform; in other words the cross-in-square form.

#### **4.2.2 Architectural analysis & chronology.**

The architectural details & the chronological development of architecture, especially of rock-cut architecture in Ethiopia shows a clear progression from late Axumite, to various stages of Axumite-influenced, and then to post-Axumite styles. Chronologically, that means;

- the Axumite architecture of wood and stone construction and its monolithic Stelae,
- the early Christian basilica with a period of wider Axumite mix,
- The post-Axumite Architecture with more & more distinctive Byzantine and Mediterranean influence

The influence of the typical Axumite wood and stone construction appears to be predominant. Originally this consisted of stone- and- clay building material utilizing small stones and rubble, so that the walls had to be strengthened at frequent intervals with long squared timbers(the so-called “sandwich style”); These were then held in place by short round cross-pieces the ends of which became visible as rows of protruding and smoothly rounded beams like “monkey heads”

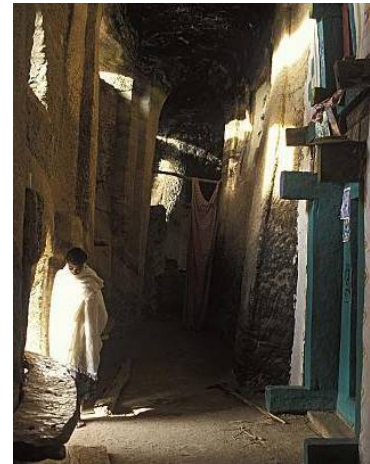


Picture 59,60 & 61 Front, façade & interior of Debre Damo Church the oldest existing Axumite church (Altered Tin roof) showing the combination of wood and stone in Axumite architecture

One basic understanding of all historians is however that there can be no question that Axumite elements appear to a greater degree in the rock-cut churches of Ethiopia. However, more of them can be found in the churches of Tigray, the traditional centre of Axumite power and influence, than in Lasta and regions to the south. This is understandable if one considers the sequence of architectural changes.

In the monolithic rock churches this type of architecture had no function but was sometimes imitated. Bete Amanuel with its horizontal projections and indentations is an excellent example.





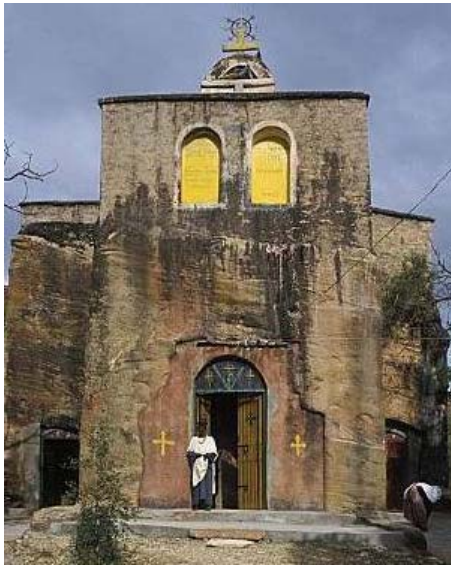
Picture 62 & 63, early churches in Tigray

The most important foreign model for the Ethiopian rock churches, which was not, however, strictly adhered to, was the Basilica. A hall with a flat ceiling, a nave and two or more aisles. In order to let more daylight into the centre part the ceiling of the nave was raised to allow space for rows of windows above the lower side aisles. Since the fourth century it was regarded in the Christian world as the correct shape for a church building. The model of the first Ethiopian churches very likely all date from before the time when the bell towers were introduced in the east and west Mediterranean.

An important aspect of the basilica concept was that the church should be oriented with the holy of holies towards the east. The narthex (main entrance hall inside the building) being in the west. It is characteristic of Ethiopian churches that there should be three external doors-not less, not more-and that there are usually three openings to the holy of holies. You may be permitted to enter the church; permission to enter the holy of holies; however, is traditionally only granted to the priests serving mass.

The holiest piece in the Ethiopian church is the “Tabot” on the altar. The tabot is a slab of stone or wood, understood to be an imitation of the Tables of the Law. The Tabot is always dedicated to the tabot’s patron saint carrying the name.

Byzantine motifs are found in later paintings proving long-standing contact with the Byzantine world. The rock churches thus reflect the blending of Axumite tradition and early eastern Mediterranean Christianity. Yet they are an entirely new creation. Examples here are the Cherkos Wuqro, Abreha we Atsbeha and Michael Amba, which relate to the churches built in caves preceding the late churches in Lalibela like the Debre Sina complex. [45]



Picture 64 & 65, comparison of the Cross-shaped & elevated Cherkos Wukro in Tigray & Panagia Lampini in Creta

Post-Zagwe construction of such rock-cut churches as Enda Maryam Wuqro and May Kado Giorgis in Tigray in the late-thirteenth to early fourteenth century includes a monolithic *menbere tabot* and a raised platform. This might indicate that the Bete Golgotha complex (At least the Bete Selassie) with three *menbere Tabots* has to be a later construction



Picture 66 & 67, Debre Sela 10<sup>th</sup> century AD, Typical features visible on the Axumite Stele imitating wooden rounded bars called Monkey-heads.

In the case of May Kado, this platform contains a monolithic altar, while at Enda Mariam a similar altar is situated in a room of modest dimensions entered from the north side of the central sanctuary. The raised position of the NE corner of these two churches further recalls similarity to that of the Church of Golgotha, and points to the probable use of the area in all three cases as an extension of the sanctuary. The monolithic altar in May Kado confirms this employ.



Picture 68, a single menbere tabot from Geshen Mariam

Such similarities do not indicate some absolute influence between these arguably post-Axumite style churches in Tigray and the Debre Sina-Golgotha-Sellassie complex at Lalibela. The presence of the raised sanctuary is however fundamental to the argument; a feature common to all of these including the Bete Giorgis.

The presence of monolithic altars is of prime importance to the argument for the particularly late construction of the Sellassie Chapel. Debre Tsion, dated to the period 1382-1411 contains a monolithic altar. In chronological terms, churches with only one monolithic altar represent the earliest of their type.<sup>[11]</sup>

All those who have attributed dates to churches with a monolithic altar or *manbere tabot* place them between the late thirteenth century (starting with the reign of Yekuno Amlak, 1270-1285) and the early fifteenth century; that is, to the post-Zagwe period. Significantly, the one church known to have three such monoliths is Abba Yohanni, a late structure believed to bear the name of the fourteenth-century Abba Yohannis.

This lets us assume that, the three carefully worked monolithic altars in the Sellassie Chapel would appear to be of the late fourteenth to early fifteenth century, implying a later construction of the Sellassie chapel.

#### 4.2.2.1 Windows at Lalibela and the Axumite influence:

Windows are usually indicators of architectural categories and influences. As shown below, the main character of the windows is to engrave a cross in various variations. The pivotal point here is that the light that falls inside shall bear a clear signal of a cross in different forms. Influences are mainly Axumite and the Greek proportioned cross is very much visible. The Swastika is here in its form a variation of the cross. Beyond this it seems that many show a local adaptation. However, the so-called monkey-head seems to have been carved also at Myra.

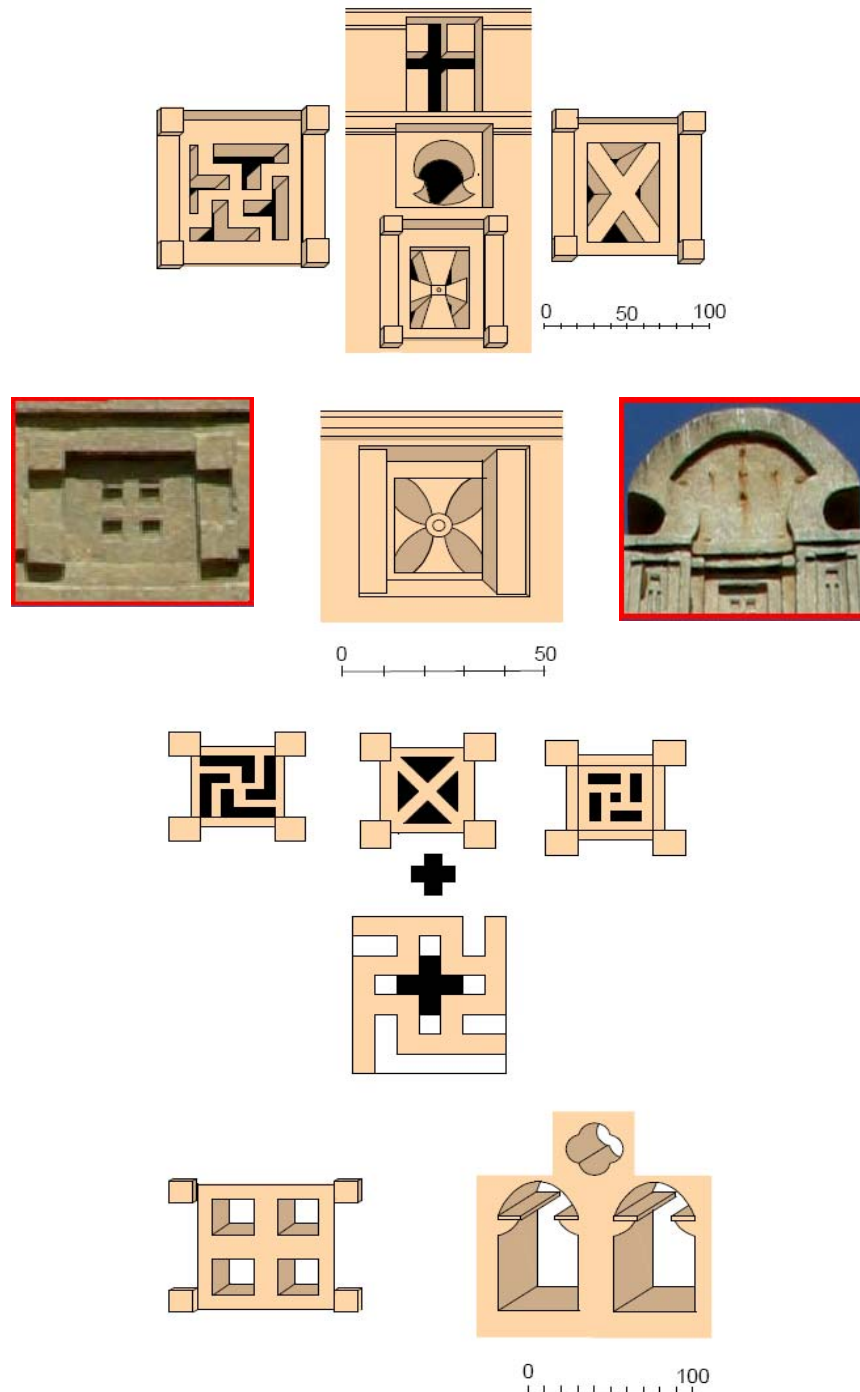


Figure 29, Sketches of various window types and openings in Lalibela whereby the two main Axumite elements dominate much of the window architecture.

#### 4.2.2.2 Crosses.

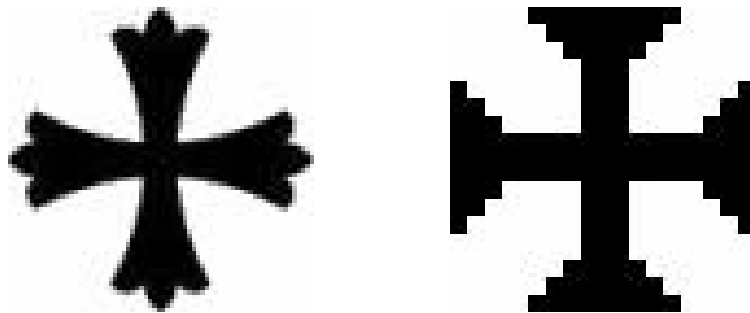
The two types of crosses seen repeatedly on walls of the Lalibela churches; manifest the Holy Trinity. These are;

##### **(Pattee Cross) The Patonce Cross:**

Patonce is any form of cross which has expanded ends, like the Pattee Cross, but with each arm terminating in floriated points like the Fleurie Cross and Fleur-de-lis Cross. As a Christian Cross, the three petals represent the holy Trinity and the total twelve petals represent the Apostles.

##### **Peronnée cross in Heraldic form**

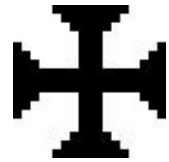
A heraldic variation of the Peronnee is a cross with steps. Such a cross is referred to as a Graded-Cross or Croix Peronnée. These were used to identify bearer. These identification markings were later enhanced to show the rank of the bearer, and it wasn't long before logos became popular. One such logo was the cross, especially for Christians fighting in the First Crusades.



Picture 69, carved out Monkey-head with a Patee cross decorating the inside of Bete Mariam showing Byzantine influence.



Picture 70 & 71, Purely Axumite carved out blind window (monkey-head) on the façade of Bete Giorgis and a similar window at Debre Damo Church



Picture 72 & 73, windows with pure Axumite features and the heraldic Peronnee Cross

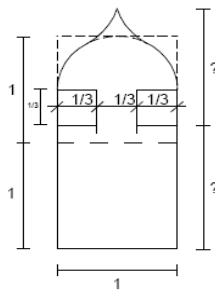
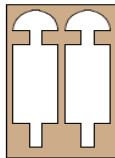


Figure 30, an illustration showing the usual proportions in "Axumite windows"

#### 4.2.2.3 Reliefs, Figures and decorations

The Church of Golgotha and the Sellassie Chapel show larger than life-sized relief sculptures representing holy figures. All those who have studied them comment that they are unique not only in Lalibela, but in Ethiopia as a whole. While the identity of the standing figures is not precisely defined, there can be no doubt that they represent saints.

Standing below the small window opening into the Church of Debre Sina in the centre of the south wall of Golgotha, there is a figure wearing a turban. The inscription on the arch above identifies him as St. Cyriacus, but the inscriptions seem to have been added later. Though some claim to see Ottoman influence, I believe that it is an association to Judaic roots of the church. [80]



Picture 74 & 75, relief figure inside Church of Golgotha

The characteristics, both decorative and architectural show a number of common elements with the Byzantine church. It is generally understood that these are either contemporary or the influence came some decades or a century later to Ethiopia.



Picture 76, Details of a decoration & carvings at Bete Mariam and at the Pantokrator in Parta Greece showing Byzantine influence and the variety of three way crosses with association to the Holy Trinity



Picture 77 & 78, Ceiling decoration details at Bete Mariam and similar frescos motives at Hagia Sophia, Constantinople



Picture 79 & 80, Pillar carving of a peronee cross at Bete Mariam and a Patee Cross



### **4.2.3 Church Architecture with emphasis on the first millennium**

Church architecture in the beginning of its history was a simple installation of honest craft. During the early centuries of persecution, Christians worshiped in catacombs and private houses. Later on some modifications were made for certain houses and set apart for assembling and for the symbolic “breaking bread”. They are known as House Churches. The details of such a house excavated had eight rooms, a court yard, portico, vestibule, assembly hall, baptistery and three additional undesignated rooms. The baptistery is the largest room with a basin sunk into the floor showing how important Baptism was for the early Christians.

When Emperor Constantine allowed Christians to worship freely, they adopted Roman Basilica as the model for Church construction. Basilica churches were long rectangular low structures with timber roofs supported by long rows of columns. The columns divided the long building into a central aisle (later known as the nave) and two main side aisles. The Eastern end was rounded into apse, often domed. This is still the basic form of a Western church, a cruciform shape being adopted in certain cases. The roof and decoration developed according to the developments in engineering as well as the different Periods of architectural styles like Roman, Romanesque, Gothic, Renaissance & Modern etc...

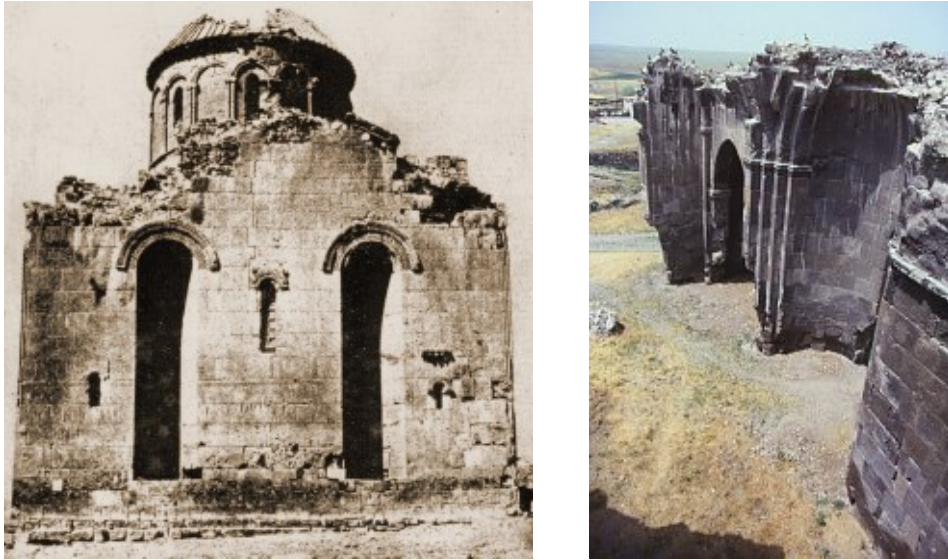
Byzantine architecture developed from Rome and oriental elements became part of it. The style was characterized by the use of squared floor plan, domes and rich decorative mosaics. The dome of the building was considered as the image of the glory of heaven imitating the sky.<sup>[52]</sup>

#### **4.2.3.1 Church Architecture of the Asia Minor region – Armenian Church**

The Armenian Church was in close association with the Churches in the neighbouring countries, particularly with the Syrian, Greek, Georgian and Persian churches. Centres of Christian life, thought and missionary expansion such as Caesaria in Cappadocia, Antioch, Nisibis, Edessa, Melitene, Alexandria, and later Constantinople, were closely related to and made an impact on the formation process of the Armenian Church tradition up to the end of the 5th century.

The drift & isolation started (though some connection continued) at the beginning of 6th century after this first shock of division in the Christian Church known as Chalcedonian Definition.

Armenian architecture is essentially that of church buildings, thus a Christian architecture. Its productive history spans the period from the fourth to the seventeenth century. [56]



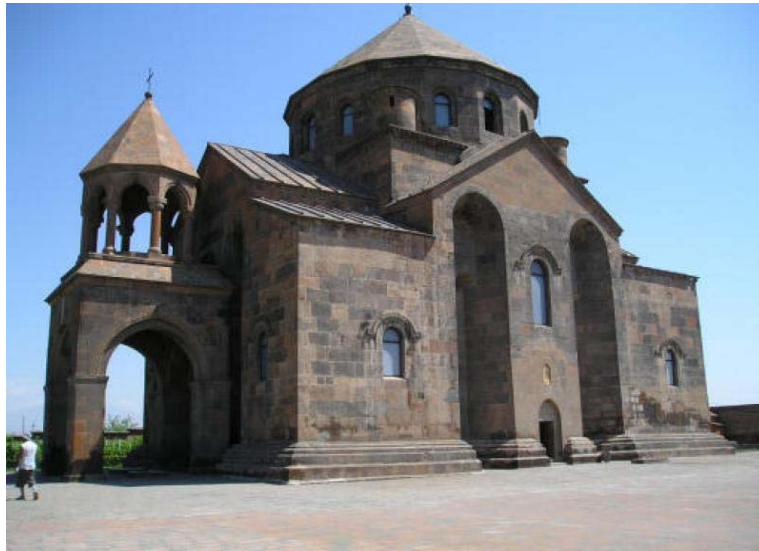
Picture 81 & 82 Remains of Uguzlu church exterior & interior

Church architecture is put into categories based on similarities of features and according to their periods. Moreover, one needs to know that churches & buildings were erected as they were needed with the material available, in a style either asked for by a patron with the necessity to withstand locally known hazards like earthquake, flood... Despite the large diversity in the types of early churches, Armenian architecture achieved a distinctive style through the combination of a number of common characteristics and materials.

The compositional employment of these traits was unique to Armenia. It took its style in Christian architecture before the Byzantine, Romanesque, and Gothic but at some stages in similar times to the Axumite Ethiopian architecture. [72]

Its recognizable features were:

- 1) All churches are built entirely in stone. The scarcity of wood prevented its architectural use in medieval Armenia.
- 2) Ceilings were always vaulted. Since wood was not available for making simple flat roofs, stones were employed, but their weight demanded they be arranged in arcs so that the thrust of their mass could be directed to robust stone walls and thence to the ground.
- 3) Armenian preference for basilica styled dome manifested itself very early. Other than a few early exceptions, the dome or cupola was elevated above the other vaulted ceilings by a cylindrical drum.
- 4) Roofs were composite in their appearance because they had to cover the vaults and domes of a complex, though symmetric, group of inner spaces. Like the inner and outer walls and the drum, they too were made of tufa thinly cut into uniform units.



Picture 83, St. Hripsime Church in Echmidzin, Armenia, completed I 618, is one of the oldest surviving churches in Armenia

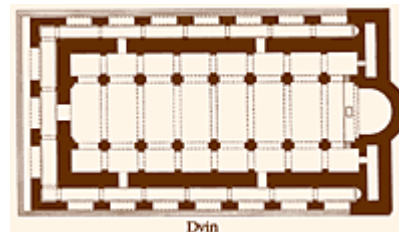
St. Hripsime, UNESCO World Heritage is an early cruciform inside with a Copola on top. [75]

The direct relationship to the Lalibela architecture is the fact that most of early Armenian churches are basilicas (with a dome due to shortage of wood) and the ones built later bear a cruciform in their layout as seen below. As the Armenian Church doesn't belong to the Eastern Orthodox Church but rather to the Alexandrian, it shows much similarity in the liturgy but same architectural roots like the Greek Church.

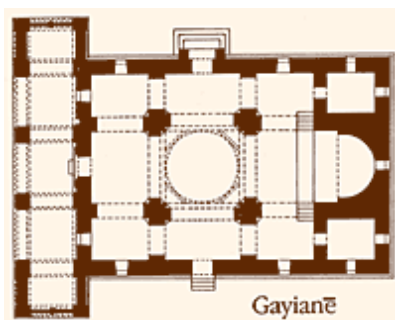
The Single Bay



the Three-Nave Basilica



The Domed Basilica



the Hripsime Type

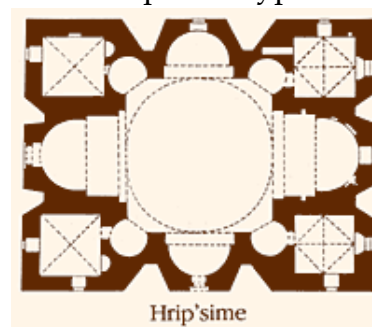


Figure 31, some architectural topologic examples of the Armenian Church

#### 4.2.3.2 Syrian Church architecture

In Syria, the Christian architecture of the third and eighth centuries produced a number of very interesting monuments. The churches built by Constantine in Syria, the Church of Nativity in Bethlehem, the magnificent octagonal church on the site of the Temple, and finally the somewhat similar church at Antioch; were the most notable Christian monuments in the area. Some of these have been so altered by later additions and restorations that their original forms are only approximately known from early descriptions. The columns and a part of the marble incrustations of the early design are still visible in the "Mosque of Omar," but most of the old work is concealed by the decoration of tiles applied by the Moslems, and the whole interior aspect altered.

Christian architecture in Syria later diverged from Roman traditions. The abundance of hard stone, the lack of clay or brick, the remoteness from Rome, led to a peculiar independence and originality in the forms and details of Architecture of central Syria. These led to local innovations upon Roman models resulting in the development of distinct types and independent style of architecture.

Ceilings in the smaller churches were often formed with stone slabs; the apse was at first confined within the main rectangle of the plan, and was sometimes square. The exterior assumed a striking and picturesque variety of forms. Conventional and monastic groups of buildings appear early in Syria, and that of St. Simeon Stylites at Kelat Seman is an impressive and interesting monument. [77]





Picture 84 & 85, Ruins of St Simeon basilica North West of Aleppo, Syria

Circular and polygonal plans appear in a number of Syrian examples of the early sixth century. This occurs at Kelat Seman in a small double church. These were probably the prototypes of many Byzantine churches like St. Sergius at Constantinople, and San Vitale at Ravenna, though the exact dates of the Syrian churches are not known. [76]



Picture 86 & 87, Exterior at Simeon

Seman is a famous Christian pilgrimage centre & is situated on a hill top overlooking the town of Deir es-Semaan. The complex consists of a monastery, a baptistery with adjoining church, propylaea and a unique church, which is made up 4 basilicas joined around a central octagonal area in the form of a Greek cross. The complex was built in the 5th century AD to commemorate the life of a famous 5th century AD local ascetic monk, Simeon. St. Simeon's church is a masterpiece of Byzantine ecclesiastical architecture.

Below we share a number of churches of same period in Syria, all of them in the same belt.



Picture 88, 89& 90 Church at Mshbaak-Syria Exterior & interior, around 6<sup>th</sup> century



Picture 91, Wardan Church & palace complex-Syria exterior & interior, 6<sup>th</sup> century AD

Similar to the Armenian church of their time, the Syrian churches are explicitly basilica styled with two rows of pillars. There are very distinctive roman elements in the architecture. The Sanctuaries are usually in a vault with a wide nave as seen in the pictures above. [78]

One can not see a direct and distinctive architectural influence on Axumite or the Lalibela churches, except the common basilica form adopted by all in the Asia-minor region starting with the 4<sup>th</sup> century.

#### 4.2.3.3 Greece...(Byzantine Architecture)

Early Byzantine architecture date from Justinian's reign and survive in Ravenna and Constantinople, here architects invented a complex system providing for a smooth transition from a square plan of the church to a circular dome (or domes).

Early Byzantine architecture is essentially a continuation of Roman architecture, whereby influences from the Near East and the Greek cross plan was used for the church architecture replacing stone by brick. Mosaics replaced carved decoration, and domes were erected. The influence of Greek Church architecture on Lalibela churches is seen in the Cross-in-square forms which took hold in Bete Giorgis beautifully as an adaptation of the system. Beside that, one can also see detailed carvings in Bete Debre-Sina, Golgotha, Sellassie & also in Bete Giorgis showing elements that were copied or had their influence from the various Greek or Byzantine churches. The paintings in Bete Mariam of later days, Cross carvings especially those dedicated to the holy Trinity and some window details show a clear evidence of Byzantine influence.

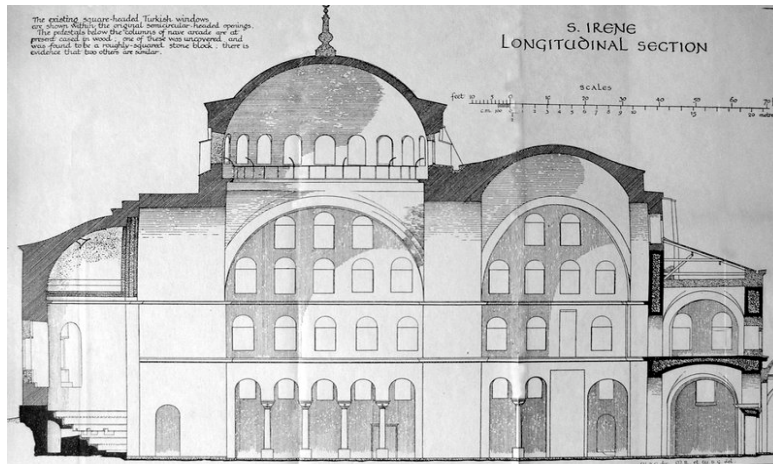
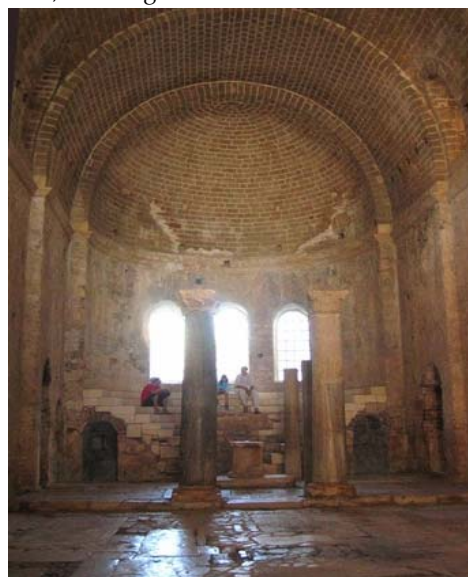


Figure 32, Hagia Irene church in Constantinople, details, 6<sup>th</sup> century  
 Byzantine rule from the eighth century onwards brings the first of the typical Greek Church



Picture 92, The Hagia Irene with dome & cross design



Picture 93, Interior of the St. Nicholas church at Myra-Turkey, around 6<sup>th</sup> Century showing an elevated Sanctuary similar to Bete Debre Sina [80]



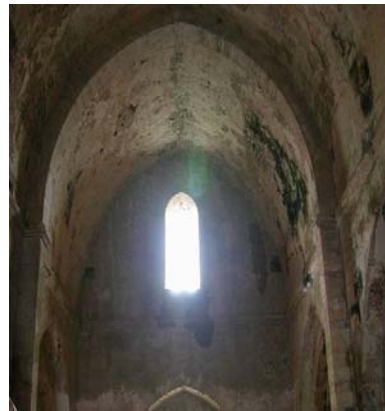
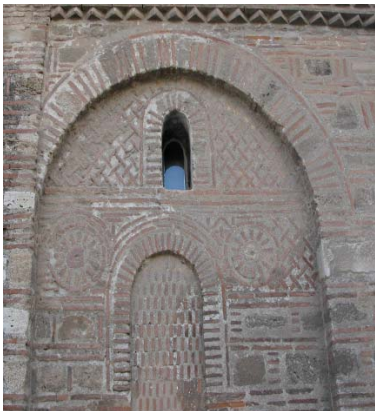
### Windows in early church architecture

Christian churches, in contrast to the ancient temples, required the admission of much light by large openings in the walls, that is, by windows. As a matter of fact the early Christian basilicas were richly provided with large windows, placed partly in the central nave that was raised for this purpose, partly in the side aisles and façade. [79]

In general two or three windows united in a group, were even then of frequent occurrence in the early Christian architecture of Asia Minor. The form of the window is nearly everywhere the same; a rectangle that usually has a rounded top, but seldom top.



Picture 94 & 95, a typical window with a round top of Asia Minor churches (Armenia & Syria)



Picture 96, 97 & 98, Windows at Holy apostles church Thesaloniki, Krak des Chevaliers in Syria and Bete Abba Libanos in Lalibela

In the countries under Roman influence, the places where the windows existed on the side aisles can no longer be identified with absolute certainty, owing to the chapels and additions that were later frequently built. According to some researches, the windows of the earliest Germanic churches had a round arch above, which was generally a hollowed stone. Towards the bottom these windows, were frequently somewhat broader than above.

Romanesque churches up to the 12<sup>th</sup> century had small openings for light, a sloping intrados, and an inclined sill. In the further development these round shafts received small bases and capitals; the intrados was divided into rectangular intervals in which small columns were set.

Gothic art adopted this framework, merely changing the round arch into a pointed one, and later replacing the rectangular intervals of the intrados by flutings. In the Gothic period the windows were longer and broader; in a number of cathedrals they almost replace the walls.

The Baroque style added to the round-arched and rectangular light- openings those in the shape of a basket handle-arch and even of an oval shape, and sought to enrich them by drawing in the corners and by curving the sides in and out. This led to the appearance of a great variety of lines the number and lack of repose of which is characteristic of the Baroque.

In reference to windows in Lalibela, there is very little to say except the roundedness of the top part of the windows similar o the ones in Bee Abba Libanos.

#### **4.2.4 Rock-hewn architecture**

##### **4.2.4.1 Ellora – India**

Ellora represents the epitome of Indian rock-cut architecture. The 35 "caves" – actually structures excavated out of the vertical face of the Charanandri hills – comprised of Buddhist, Hindu and Jain cave temples and monasteries, were built between the 5th century and 10th century. They also demonstrate the religious harmony prevalent during this period of Indian history. [26]

The Buddhist caves were the earliest structures, created between the fifth and seventh centuries. These consist mostly of viharas or monasteries: large, multi-storeyed buildings carved into the mountain face, including living quarters, sleeping quarters, kitchens, and other rooms.

The Hindu caves were constructed in the beginning of the 7th century and represent a different style of creative vision and execution skills. Some were of such complexity that they required several generations of planning and coordination to complete.

The Kailasa or Kailasanatha Temple is the unrivalled centrepiece of Ellora. This gargantuan structure – designed to recall Mount Kailash, the abode of Lord Shiva – looks like a freestanding, multi-storeyed temple complex, but it was carved out of one single rock, and covers an area double the size of Parthenon in Athens.



Picture 98, 99 & 100, Kailash Temple - the largest monolithic structure in the world

All the carvings are done in more than one level. A two-storied gateway opens to reveal a U-shaped courtyard. The courtyard is edged by columned galleries three stories high. The galleries are punctuated by huge sculpted panels, and alcoves containing enormous sculptures of a variety of deities. Originally flying bridges of stone connected these galleries to central temple structures, but these have fallen. [35]

Within the courtyard are two structures. As is traditional in Shiva temples, an image of the sacred bull Nandi fronts the central temple housing the lingam. In Cave 16, the Nandi Mandap and main Shiva temple are each about 7 meters high, and built on two stories. The lower stories of the Nandi Mandap are both solid structures, decorated with elaborate illustrative carvings. The base of the temple has been carved to suggest that elephants are holding the structure aloft.

But its historical value lies in the fact that human hands fashioned a three-storied building from solid rock with such painstaking skill that even the floors and the ceiling are smooth and levelled. Two stories of corridors have been carved into the mountain, ringing the temple on three sides.

#### 4.2.4.2 Bhaja & Karla caves: (India 2<sup>nd</sup>-1<sup>st</sup> century BCE)

These cave temples are found in the western Deccan dating between 100 BC and 170 AD. They were probably preceded as well as accompanied by wooden structures which time destroys while stone endures. As seen below these mimic timber texture and structure.



Picture 101, the carved "rafters" that imitate wooden beam construction

The earliest cave temples include the Bhaja Caves, the Karla Caves, the Kanheri Caves and some of the Ajanta Caves. Relics found in these caves suggest an important connection between the religious and the commercial, as Buddhist missionaries often accompanied traders on the busy international trading routes through India. Some of the cave temples are commissioned by wealthy traders. These include pillars, arches, and elaborate facades. [31]



Picture 102, a rock-cut worship hall its stupa

The roof has wooden supports giving an idea of what wood built architecture used to be like 2000 years ago. The roof at the carved end resembles a Gothic vault. At the far end of the hall stands a stupa, literally meaning funeral mound, above which is held an umbrella, a symbol of royalty. [41]

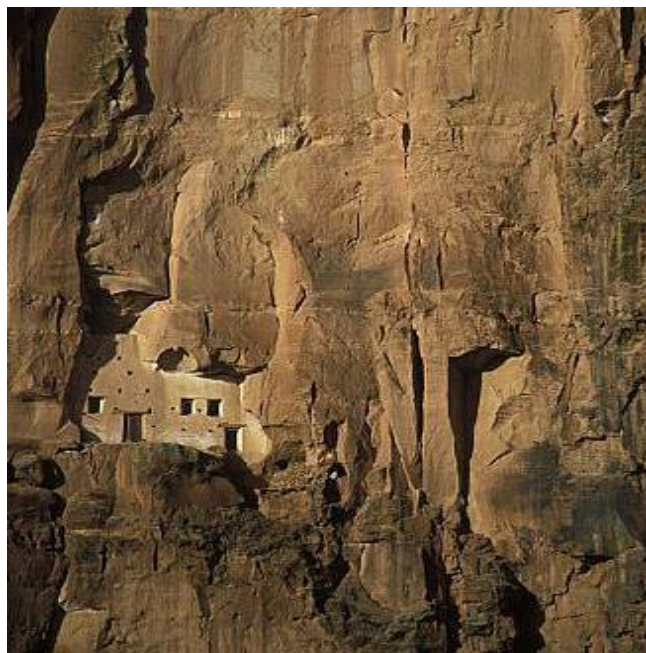
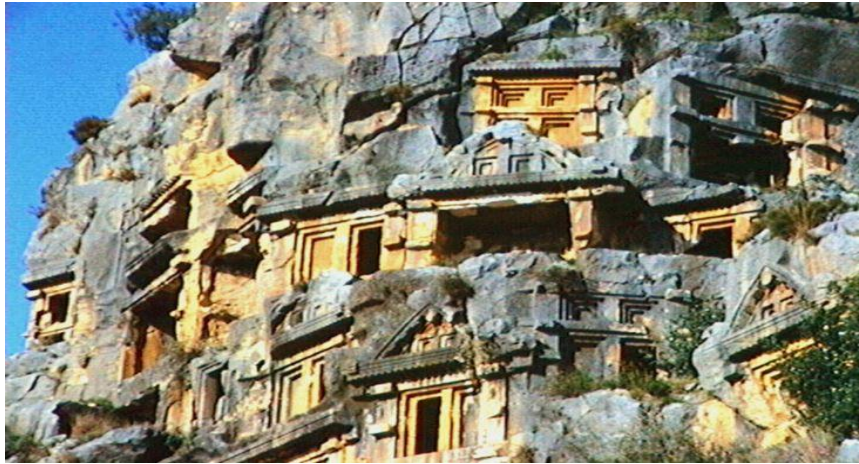


Picture 103, a distant view of the Bhaja Caves



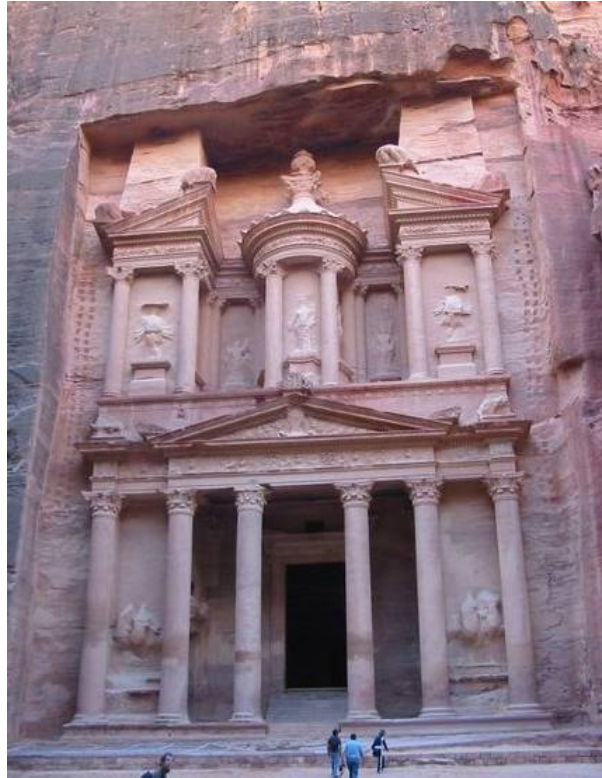
Picture 104, an entrance at the Bhaja Caves

#### 4.2.4.3 The Myra rock-cut tombs in Turkey [49]



Picture 105, 106 & 107 Myra Tombs exterior with a detailed view and Abba Yohanni in Tigray

#### 4.2.4.4 Petra Jordan & Nubian monuments



Picture 108, Petra rock-cut monuments-Jordan [28]



Picture 109, Nubian Rock-cut Monuments-Egypt [12]

### 4.3 Brief summary

The Bete Golgotha group and the Bete Giorgis church which deviate architecturally from the previous ones show limited Byzantine influence but basically use the Greek cross as a basis in many carvings. Since no domes and hence associated architectural elements and plans are not to be observed, it can be concluded that it is more of a local adaptation & development with Byzantine influence.

The transformation from the basilica style to the so called Cross-in-Square and also the change in the arrangement of the Sanctuary to be an elevated space within a single space seems to have been done in more or less similar period as that of the Byzantine churches. The transformation is clearly visible in the Debre Sina, Golgotha, Sellassie complex which probably preceded the Bete Giorgis.

It seems in general that Byzantine influence in the Architecture of the Lalibela churches of later days has been fair. However, the Axumite roots carrying the Axumite fingerprints seen below remained pretty much in use.



Picture 110, Axumite architectural fingerprints

With regard to rock-cut monuments or temples, there is practically no convincing evidence that can allow one to say that there had been any architectural influence from any of the monuments in the Far East like the millennium earlier monuments in Bhaja and Karla. The Ellora monuments show an architectural masterpiece of carving multi-storey monuments with precision. Beyond being of later days in comparison to Karla & Bhaja caves, there is no evidence in similarity between the Lalibela churches and the monuments in Ellora.

Comparative analysis of Lalibela to Ellora caves & the Karla-Bhaja temples shows that they are both rock-hewn holy places. While Lalibela is undoubtedly not easy to sculpture, the nature of the rock in Bhaja & Karla seems very difficult to form. Besides that though not extensive like the dimensions & sizes in Lalibela it seems that there are finer details of excellent workmanship. Architecturally there is practically no direct visible correlation between the two that can lead to the conclusion that Lalibela which was built more than a century after Karla had some inspiration from India.



Similarly, there are no distinctive architectural correlations between Petra of Jordan and Lalibela indicating a kind of inspiration or distinctive elements. On the other hand much of Lalibela's elements seem to have Axumite architecture as their origin.

Likewise Nubian rock-monuments also show no traces of similarities to Lalibela except the common fact of being rock-cut. Much of the architectural influence in the church groups created at the beginning show a dominant Axumite architecture which in turn might have had influences in extension early Roman architecture long before Christianity.

The identical nature of the Myra tomb elements and some Axumite figures are very much impressive. The monkey-head frames in both must very likely have some kind of connection. From the point of view of their geographical positioning, it is evident that trade link between the Roman Empire or later Byzantine and Axumites has been continuous.



Picture 110, A Myra blind window in Turkey & a typical monkey-head blind window at Bete Giorgis Lalibela

The monkey-head style is derived from the fact that the rounded ends of timber beams stick out of the stone walls, resembling monkey heads. This popular form which seems to have its origin in wood & stone construction seems to originate likely at the time of the Axumite Empire.

## 5. Pilgrimage & tourism. Lalibela - A brief economic study

### 5.1 Introduction

Pilgrimage is deep rooted in traditional Ethiopia. Orthodox Christian major destinations are Lalibela, Aksum, St. Gabriel in Kulubi & the Debre Libanos monastery while Moslem Ethiopians go to the tomb of Sheik Hussein in the Bale zone and the holy city of Harrar.



Picture 111, Pilgrims at Lalibela.

The most famous of all Christian destinations is arguably Lalibela. This is mainly due to the nature of its conception as the “New Jerusalem”.

The spiritual journey of pilgrimage is in fact often structured around debt relations. The debts that are most frequently associated with pilgrimage centre on the relationship between the pilgrim and the deity. Orthodox Christians visiting St. Gabriel’s in Kulubi or Lalibela often make the journey with physical sacrifice like a day long foot-march and Promises offered in exchange for healing and other wishes of the pilgrim. Other similar exchanges occur throughout the world at shrines visited by followers of numerous religions. During the journey, these relationships of spiritual exchange are mirrored in the physical world by transactions that are dominated by human economics in the form of money and goods.

The current inflow of foreign tourists to Lalibela is estimated to be 5000-6000 annually and growing rapidly due to the absence of war & the better economic climate. However, changes to accommodate these are not going far enough. Except some basic advances to that end since about five years, inadequacies for accommodation, Catering, sanitation, transportation and communication are as if time is still since generations there.

In order to meet the requirements of the increasing number of pilgrims & tourists, new roads, hotels, toilets, shopping outlets etc, have to be constructed beside resolving shortage of drinking water, power outage/shortage, flies, wastage disposal problem, shortage of medical facility etc.

### 5.2 Tourism

According to Pilgrimage-marketing theories such tourism serves to satisfy “Self actualation needs”.

### 5.2.1 Developing tourism.

Infrastructure development, tourism product development, human resources development and market development are the keys to tourism.

Infrastructural development is the most intensive financially while Tourism product development requires an effort at various levels. The marketing part requires market research with a clear perspective for a long term planning.

According to major studies, income creation and foreign exchange are two major economics benefits. Analyses of income and employment effects on the economy of regions & states in developed countries ranged from 20 to 40%. In many places temporary employees in this industry hold about 30 percent of all jobs in the field.

### 5.2.2 A brief summary of social & economic impacts of Tourism

Tourism has a wide variety of impacts, some positive, others negative.

In addition to the direct revenues, there are huge secondary benefits. The money that is directly spent by a tourist travels through many levels in the overall economy, increasing purchasing power all along the way. In the process, it provides both direct and indirect employment opportunities.

Sustainable development and response consumption tourism is the goal in many cases. Planning should be made designed to maximize the economic and social benefits from tourism to the population. The negative socio-cultural effects, amongst others are;

- a) Ecological and Environmental degradation
- b) Destruction of livelihood of the local people and social tensions
- c) Unplanned tourism growth

The exclusive use of common resources like water and electricity by the tourist may be at the expense of the local people. The influx of tourism increases prices and impoverishes local communities. Hotel and tourist complexes may grab agricultural land. Undermining local culture for the sake of foreign exchange may happen.

Tourism Planning is therefore the basic instrument to address these.

The economic impact is directed mostly to the aspect of how to achieve a more successful control of a country's economy in the context of an accepted political framework, and the system of mechanisms of checks and balances to regulate the economy so as to achieve a desired and specified outcome. [34]

Income is created directly or indirectly. Tourism is a labour intensive service industry. It can create direct as well as indirect income from tourist expenditure by providing tourist goods and services. For example, expenditure in hotels, investment in infrastructure development, taxis, car parking, catering services,

purchase of goods and services like water, electricity, gas, food and beverages etc all result in income generation. The flow of money generated by tourism multiplies many times as it passes through various sections of economy. This is known as the „multiplier effect of tourism earnings“.

It is the extra income produced in an economy as a result of the initial spending of money. This extra income is again invested directly or indirectly and there can be different rounds of income generation. Along with the initial spending and with each round of spending of tourism income, some benefits of spending may be dissipated through different sources known as leakages. Savings made by individuals or by the country, tourists purchasing imported goods, imports to be made by the local people, remittances of income outside the country etc are the examples of leakages. [06]

Money spent by tourists (tourist expenditure) does not stop moving after it is spent; rather it circulates through the economy of the country. When a tourist visits a place and spends his money in that particular region, part of this money becomes income for the people living in that region. Part of this income is spent which generates income for others to spend. A part of this income is again spent and so on and so forth.

Tourism can be used as an important resource for generating government revenue. The tax income to the government from tourism sector may be direct or indirect. Most taxes on tourists accrue in the form of sales tax on tourist spending. The government can collect tax also as import duty on goods imported for tourists' use. Tourism therefore, contributes to tax revenue both directly through sales taxes and indirectly through property, profits and income tax.

Tourism can play a vital role in enhancing the standard of living of the people of the tourism-developed areas. The standard of living of a community largely depend upon the earnings of the people, infrastructures available, mode of employment, regional development etc. Tourism is a vibrant and economically useful activity.

### **5.2.3 Pilgrimage tourism**

Religious organizations and communities that host religious shrines and other sacred spaces have to cater to the needs of tourists. The economic benefits are obvious, and many communities rely almost entirely upon the religious or spiritual tourism product to survive. There are many ways communities and faiths have adapted to benefit from the inevitable flow of outsiders. The key element here is, however, to continue facilitating tourists and tourism, while maintaining the sacred nature of the place. [08]

Millions of people travel each year throughout the world in search of encounters with deity by visiting places that are venerated as holy and divine.

The largest tourist gatherings in the world are religious in nature. The Hajj in Saudi Arabia, which attracts some two million people each year, and the Kumbha Mela, which involves approximately 20 million people every few years, are two examples. Millions more people travel each year in devotion to Buddha, Jesus Christ, or nature gods.

Religious leaders have usually shunned the notion of tourism primarily for hedonic and economic reasons; tourists are seen as sinful, lustful, promiscuous, and tourism is seen as a force that promotes idolatry, laziness, immorality, and drunkenness. By the same token religious organizations have eschewed tourism because it is seen to commodify religion, to put holy places into the spotlight for mass consumption, and to make holy things unholy. [07]

Although many groups still refuse to see pilgrims as tourists, many religious site managers and their sponsoring churches or faiths have realized that these visitors can be capitalized upon to meet economic needs. [38]

Several economic realities have become obvious in religious tourism:

- Funding is increasingly in short supply for maintenance, preservation and staffing.
- Many parts of the world are experiencing rapid growth in religious adherence and
- Conversion while others are experiencing decline. This has significant implications for funding through growing or declining donations.
- Religious sites are often given tax breaks owing to their dual function as heritage
- Properties and religious places. Income at these places is therefore typically tax protected.
- Pilgrims, or devout religious tourists, must spend money when they travel. They eat, sleep, travel, and undertake recreational and sightseeing activities.
- The lines between mass tourists and religious tourists are becoming increasingly blurred. In many cases, we are now seeing a rapid growth in mass religious tourism.
- Religious tourists are becoming more sophisticated in their demands for travel and are willing to pay more for their experiences and modern conveniences.
- Nearly all communities throughout the world desire to grow tourism as an economic boom. Communities around sacred sites are no less in need of jobs, tax revenue, and public services, and they, too, desire to benefit from the tourism industry.
- Religious organizations and their associated shrines or holy spaces can not operate in seclusion from each other. Communities need the money generated by religious tourism, and religious organizations need the support of the community.

Pilgrimage accounts for additional employment options, rise in property value, enhanced public revenue through taxes increased use of public utility services, more entertainment options, general development of the region, and rise in the standard of living. Pilgrimage helps to improve the household's income by acting as monetary incentives to local crafts, market for local produce and effect on the welfare of the population.

The infrastructures created primarily to cater for pilgrimage provide access to wider markets, for many locally produced goods. Pilgrimage may lead to the increase of value of land and which, in turn, benefit the households.

Many argue that the most obvious material benefits from pilgrimage are that it creates employment provides a source of income, brings up a better standard of living and helps regional development.

**In reference to Lalibela;** despite the difficulties & inconveniences, the number of pilgrims to Lalibela will go up drastically with the global awareness of the spiritual & architectural assets it carries. Similar experience in countries like India supports such a trend. [06]

Soon the hidden & sacred churches will be the target for millions from all over the Globe. Thus a crisis is yet to come if not planned on time now.

Lack of toilets, inadequate or unavailable health centres, water scarcity are the major problems faced by all pilgrims & hosts. This New Jerusalem submerged in an ecological imbalance or losing its prestigious religious purity is a major crisis to be avoided.

The style of pilgrimage has to be fine-tuned to the prevalent situations. There might be some good measures to be learnt from the proceedings in “the Hajj” though the financial capacities are definitely worlds apart.

There will be and are professional beggars, however a ritualistic ban on begging will be unprecedented and irrational.



Picture 112, Beggars around Lalibela

There can be a severe degradation of environment due to uncontrolled influx of pilgrims and unplanned expansion of pilgrim facilities. The flow of pilgrim will increase every year and it is imperative that the environment be preserved clean and natural. Conceptually, integrated eco-friendly development program with Lalibela’s unique architectural singularity in mind is what is needed arrive at a permanent solution.

A coherent and well thought out approach by different agencies, to draft the expertise of Ecologists, qualified Engineers, Architects, Technocrats, intellectuals is a prerequisite to the planned development.

The important observations in them are:

Lalibela is currently widely breeding ground for flies mainly due to open defecation & waste disposal.

Public latrines are practically unavailable, not even at peak season. The poor sanitation and drinking water facilities and the improper waste disposal mechanism is a matter of very deep concern. The increasing number of pilgrims will give rise to several more problems for the fragile eco-system.

There is no disaster control mechanism

In terms of security risks of the modern world; uncontrolled movement of dense crowd can also give chances for terrorist and criminal activities.



Picture 113, a public Toilette around Lalibela

Objectives of the study

- To examine the economics of Lalibela at micro and macro levels.
- To understand the attitudes of the local people to the various aspects of the pilgrimage.
- To investigate and analyse the effects of pilgrimage on the socio-economic conditions of the households.
- To suggest suitable measures for the maximization of benefits and also to suggest measures to mitigate adverse impacts.

### 5.3 Socio-economic survey

Data from sample households with “multistage sampling technique” was necessary for a precise study. However, in line with the complexity of doing this, the data available was collected with the help of the officials and previous similar studies supported by the Bureau of Works and Urban development, which is in charge of land use management in urban areas. In due course every household had been surveyed with the help of a questionnaire and the compiled data had been statistically evaluated by the then survey team. The study that includes, collecting general information about residents status, education, employment, income, seems to have been extensively worked out.

#### 5.3.1 Basics

##### Environment & Climate

Lalibela is located in Wollo administrative region of the Amhara national government. It is about 600 km from Addis Ababa. The town covers roughly 124 ha with the church areas comprising of a fifth (25 ha) of the space.

It shows a landscape of highland plateaus with rugged mountains and valleys. Its rivers are predominantly seasonal. Its altitude averages at 2,500m. Extensive agricultural practices, overgrazing and deforestation have caused wide environmental degradation whereby the soil is poor in organic matter.



Picture 114, Landscape of Lalibela showing the river Jordan

Temperatures range from 12°C to 26.3°C. As all of Ethiopia there is “kremt” which is the major rain period going from July to end of August. Though very much fluctuating and unreliable, the average is somewhere in the range of 800 mm of rain.

### **Structure & settlement**

The town is shaped like a star with five corner points, with a valley between most of the corners. Most of the town’s area is (about 71 ha) residential. There are only about 8.5 ha of commercial area in the town which shows a wide shortage in all aspects.

Oral history has it that, the first church here “Kedemt Michael” was built in the 6<sup>th</sup> century. When the 12<sup>th</sup> century churches we see now were built by king Lalibela, the residential hub was said to be in “Mekalit” which is 20-30 minutes walk.



Picture 115, a typical Lalibela Tukul



Originally the churches were secluded with only some small huts called “Tukuls” meant for the guardian monks & church duty.

The population near to the church area is dense. The houses here are of the typical Lasta area architecture in which they follow the slope & form of the landscape blending with the environment instead of forming it. Construction materials used are basically stone & wood.

As seen here in Picture 115a, there are deep trenches between the churches used as drainage & boundaries.



### 5.3.2 Major parameters

#### a) Energy

Lalibela is since about 2 years connected to the national energy supply. Cell phone lines also function though not impressive. The major power supply shortage where only 6 hours of supply was the rule is history now.

Picture 115b, wood is the major source of energy for cooking



#### b) Public Health.

Lalibela has one of the six health centres in the Wereda. It has a frequency of 95 persons a day. The centre has 11 rooms without child care unit & the number of staff is below 20.

According to this centre, parasitic diseases constitute over 20% of prevalence in the town followed by respiratory track infectious & gastritis. (See appendix 3)

#### c) Education

Around 65% of the population is illiterate. It is estimated that more than 2/3 of children between 7 &13 have the chance to attend school. There are four schools and a small technical school totalling around 4000 pupil.

#### d) Ethnicity, Religion and culture

Lalibelans belong to the Amhara ethnic group. Outside the town there are some Agaw settlements. It is explicitly an orthodox Christian town with a Moslem population of about 1%. Due to famine and war there had been migrations from Lalibela. But since recently many migrants are returning back.

However, both town and rural dwellers are very much dependant on food aid on regular basis. During food ration distribution periods the town gets very crowded. During the Ethiopian X-Mass period (peak of the pilgrim period) there will be over 10,000 arrivals.

### Scenario during Pilgrim Season:

The basic facilities such as drinking water, sewage disposal, garbage disposal, transportation, food and accommodation remain extremely inadequate to meet the basic minimum needs. As a result, the environment is put too much stress

#### e) **Drinking Water Supply**

At present, the raw water pumped from a river. There are 15 public taps and just over 500 households have private taps. Though water born diseases are the major health hazards here because the quality especially during the rainy season is poor, the people have no choice for drinking water. The only potable water is sourced by the seven olives hotel with is piped from the nearby Asheton mountain.

#### f) **Garbage Disposal**

Solid waste consisting of mainly the food waste generated is being discharged in a haphazard manner. Decayed garbage is washed off during the rains. No solid waste management.

#### g) **Transport Facilities**

Network of roads is quite inadequate to meet the ever-increasing needs of the pilgrims, especially during the festival season. There is only one major road into the city connecting it to the major cities around. There is an airport of good quality completed recently but flight schedules are usually not met due to various technical and weather oriented reasons. There are no taxis but tourist agencies station-wagons transporting mainly from & to the airport.

#### h) **Food**

Doctors estimate that about 95% of the population suffers from malnutrition. The main diet like every where in rural & poor Ethiopian households is Injera & Shirowet. Production & supply of vegetables & fruits is very inadequate. There are around 20 restaurants of inadequate standard & 7 tea houses.

#### i) **Accommodation**

The accommodation facilities available to pilgrims are insufficient when compared to the number of pilgrims. These are limited to a very small number of hotels with inadequate number of rooms for peak season. However, the tendency to diversify the type & quality of accommodation is being observed by the increase of privately invested initiatives.

j) **Hygiene Problem** has multiple reasons. Sanitation is practically inexistent. There are 2 blocks of public toilettes with 92 partitions but not of an acceptable standard for tourists. Hazardous garbage disposal, unawareness of basic hygienic facts and shortage of water are the most acute problems.

#### k) **Post & telecom:**

There is a post office with 100 telephone lines for public services.

In summary the opportunities & strengths of tourism in Lalibela are:

- New opportunities for business and work.
- Growth in the value of land which elevates the assets of the people.
- Growth in basic infrastructure like roads, bridges and electric supply.
- Growth in the standard of living of the population.
- Investment opportunities for businessmen.
- Employment potential through tourism.

Weaknesses & threats

- Insufficiency of waste removal and recycling facilities.
- Inadequate health care facilities.
- Exploitation of pilgrims.
- Social evils consequent to pilgrimage.
- Lack of co-ordination between government agencies.
- Inadequate availability of basic information for tourists.
- Inadequate supply of potable water.
- Absence of a road-map for development.
- Tourists return with bad memories due to inadequacies.



## 5.4 Analytical study

### Tables for studying Economy of pilgrimage

**Table A. Business People greater Lalibela**

Nature of business	No. regular	No. during peak	increase in %
Church service items (Embroidered Umbrellas, Twaf,...)	56	350	650
Snacks & food	12		
Grocery services	79		
Hotels	15		
Foot wear, mat & pilgrim clothing	13		
Bakeries	5		
Fruits & vegetable shops	2		
Sheep, Goat & Cattle			

#### Summary:

It seems that the business with church service items like Candles (Tuaf), Umbrellas, souvenirs...are the main items of interest. However, once the Momentum of foreign tourism picks, there will be others to satisfy the demand.



**Table B1: Household basic property proportions**

These are very good indicators of socio-economic status.

Property	Beneficiaries
Telephone at home	1000
Horse, Mule or donkey	215
Carriage	none
Bicycle	21
Motor cycle	1
Car	25
Any other vehicle (heavy)	8

### Summery

The number of telephones is a recent development which is part of the infrastructural development. As seen the transport means are very much limited to tourists only.

**Table C1: Perception: reasons for welcoming/rejection Pilgrims**

Reason	Score	Rank
Income generation & livelihood	7	1
Purely religious	1	4
Both	2	3
Development of region & town	3	2
Wish no tourists/pilgrims	0	

### Summary:

It is clear that out of all interviewed a vast majority wants to see tourists for economical reasons. Besides that it seems that there are practically none who don't wish tourism

**Table C2: Community & pilgrims major difficulties:**

Type	Score	Rank
Drinking water shortage	8	1
Medical facility	0	
Waste disposal	0	
sanitation & toilets	4	2
Mosquitoes, Flies & hygiene	1	3
Security	0	

### Summary:

Shortage of clean water seems to be a major obstacle for tourists

Type	Score	Rank
Catering	1	3
Accommodation	1	3
Trade	5	2
Others	8	1

### Summary:

The main source of income is of course farming followed by trading

**Table D1: Need and availability of services**

Service	approx. Need	availability	deficiency
Small catering services	40	20	20
Hotels	20	15	200 rooms
Medical		3	-
Postage & telecommunication		1	-
Drinking water supply units			
Medical units			
Security & police assistance			
Toilets	20/300 units	2/92 units	18/208 units
Parking facilities	3	-	3

## 5.5 Findings, suggestions and recommendations.

### 5.5.1 Forecast

The number of pilgrims and other tourists who will visit Lalibela will grow into many folds as long as major parameters get better or at least do not deteriorate. There were 18,508 foreign tourists in the last Ethiopian calendar with an average of 3 days/2 nights stay, while around 70,000 pilgrims showed for Christmas

The major item of importance will be infrastructure development

### 5.5.2 Major Findings of the Study & research Design

Relevant information was also collected by holding discussion with the key units of the regional administration.

- All is an extremely backward to the days of erection. Great potential for the entire region.
- Perfectly reserved religious purity & harmony.
- About 65% of the households depend on agriculture for their livelihood;
- Development in and around Lalibela show little signs of integration & long-term plan.
- The economy of the area and the local people doesn't depend much on the pilgrimage rather a bit more on foreign tourists.
- There is practically no agency or unit, private or state-owned that provides pilgrimage drinking water, toilet facility, parking,
- Majority of the pilgrims come from near regions. Majority of non pilgrim tourists come from abroad.
- There is only a single agency involved in tourist/pilgrim related activities
- Tourists spend about 3 days on an average in Lalibela during the season.
- The involvement of households in pilgrim & tourist related activities are limited to small trade.
- There is an immense potential for development & a huge return of investment is widely expected once the flow reaches a reasonable size.
- The unique conception and architecture guarantees long-term development.

## 5.6 Conclusions, recommendations and a brief model

Lalibela is Ethiopia's tourist destination with the best potentials and global uniqueness. The central government & the region failed to fully utilize these resources. Tourism activity here is not organized. Except a good will on all sides there is no long term plan for success with sustainable growth.

In addition to that long term preventive maintenance and preservation is in huge deficit. Most of the churches went through no adequate conservation measure for centuries.

The point of concern here is the integration of tourism benefiting the local economy up to the limits of its potential. This however, has to be planned in such a way that the main conception of erection, i.e. a holy pilgrimage site which is "conceived as a replica" of the then Jerusalem.

The study hereby recommends the following:

### I. Socio-economic measures:

1. Awareness measures: Local residents and Ethiopians at large have to fully understand the potentials, shortcomings, state of the monuments of the site. This will help in establishing a common goal and a long term touristic development that will be carried/ followed by all citizens. This is also valid for devotees and tourists about the monuments fragile status. Create awareness among the visiting tourists about what they should and should not do.
2. Expansion of social infrastructures such as Electricity, water, health services & transport facilities to an internationally acceptable level in steps. This means; construction of more latrines/provide more cheap or Subsidized pay and use latrines in and around the site. Supply uninterrupted and purified drinking water. Provide more facilities at the health centre. Provide garbage disposal.
3. Investment: This needs governmental encouragement in form of laying the frame work like building infrastructure and identifying investment potentials & participation in tourism business. Besides, incentives in form of facilitating better credits, tax holidays, free management trainings for operation of hotels and other tourist services will help residents and locals participate in development and benefits from tourism.
4. Long term tourism planning with explicit forecasts and strict development strategies

5. Developing tourism management skills of all concerned staff with regular and effective trainings. Assist potential Handicraft like Black smiths, Potters, Weavers, Tanners so that the community generates income. Strengthening economic linkages among these potential target groups and expand the market for locally produces crafts and goods.
6. Increasing & retaining the value of the site for tourists by having a preventive maintenance and regular restorations in an efficient way with concern to not disrupting tourist influx.
7. Isolating the church area wider with the objective of accessibility for only its sole purpose of pilgrimage and tourism so that the area remains workable, upgradeable holy and at the same time far from speculative business. This might need funds for proper compensation of those living near to the monuments.
8. Efforts to harmonize tourism with local culture have to be planned in advance. This will reduce the risk of locals being foreign to their domain and the holy site will fulfil its purpose of remaining holy New Jerusalem.
9. There shall be a coordinated effort for sustaining a reasonable life to those who serve the holy site. This has to be worked out between the local/federal administration and the church. This includes; generating constant income to the church for running its services in proper order. Responsibilities of restoration, repairs, administration & planning have to be worked out in joint and that needs reasonable passion for the monuments and the religious aspects. All fund generation methods like Entrance fees, donations...have to be forecasted and accounted for.
10. Hold an eco audit. Development of sustainable tourism is the end target. This will save the monuments & guarantee their survival and stops the decline.
11. Design hotels and other tourist facilities to reflect local architectural styles so that these facilities give a sense of completeness & uniqueness for the place.
12. Protect relics that bear the signature of the churches and valuable antiquities of cultural & historical relevance.



## II. Measures for effectiveness:

- Make short term and long term plans for development. To effect this efficiently it is wise to have a workshop in which Church administrators, investors & developers (state & private), Donors, Builders & Architects and experts on all associated fields come together to set a guide line. This shall also debate on ideas like taxing pilgrims or entrance fees
- A more solid study must be conducted to assess the carrying capacity of the town and to estimate the gap between need and availability of various facilities required for the pilgrims.
- Authority has to be put in place with all stakeholders represented in it. They must discuss and implement programmers.

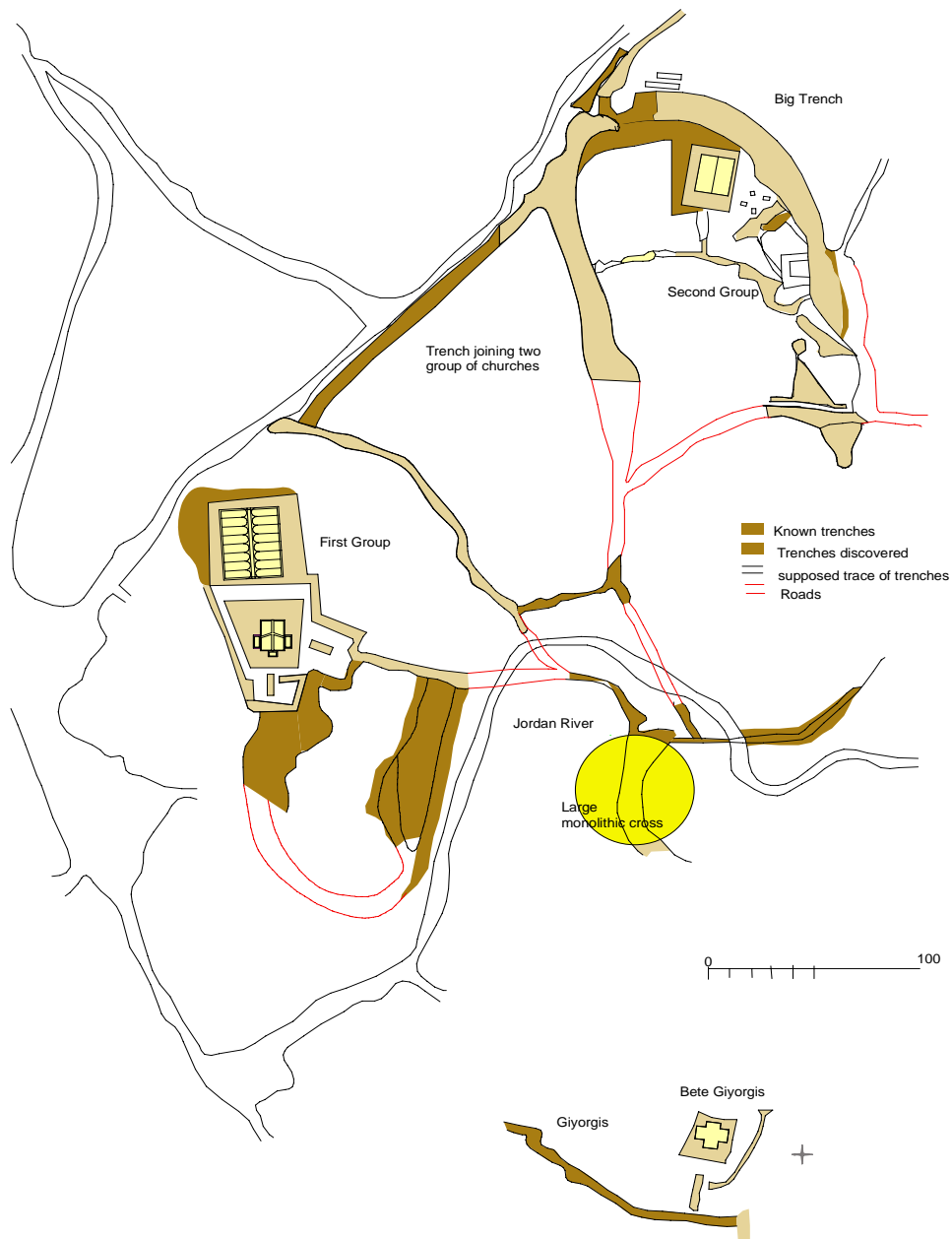


Figure 33, Topographical illustration of the Lalibela complex

### III. Fundamental measures to protect & promote the monuments and facilitate the enhancement of church procession



Picture115, Worshipers (at less favourable distance to clergy) during service

As seen in the above two illustrations & picture, one of the major obstacles in proper and wider performance is the fact that the topography doesn't allow it. During prime events of Christmas & Meskel where processions are followed by pilgrims and all believers, the participation or direct attendance of believers is limited by the space & geography available.

The clergy perform the ritual dance far away & practically without the pilgrims in direct sight. In addition to this, there is no possibility to synchronize all the churches (Tabots) in a single place for a hyper-event like Meskel. To this end

1. It is highly recommendable to evacuate all space surrounding the church complex with a certain hexagonal or elliptic nature to be established by church and authorities (see illustration below). This will require a large financial backing that at this time seems much cheaper now to achieve than the very near future. The main reasons for this are;
  - a. The churches complex was built to serve as the ultimate holy place for Christian pilgrims and that requires a Monastery character where secular life doesn't mix up with the spiritual. The number of cave refuges around the complexes where monks dwell is a living example to that. In fact, the situation at time of construction was that there were only "Tukuls" for church staff & guards and whereby the village was some half a kilometre away.
  - b. Constructions of houses in the midst of the complexes are an architectural nightmare to visitors & difficult to get it regulated.

- c. The various infrastructural networks in the town like water pipes, telephone cables, sewages...will compromise the church complexes and damage is inevitable. More so, in view of the situation that the churches are below the ground level.
  - d. The Waste, Garbage and Sanitation of the residential complexes are already creating a major problem.
2. Beyond this, it is advisable to clear a space somewhere in the geographic centre minding ditches and river Jordan. A level ground wide & good enough to accommodate as much pilgrims and clergy on same level ground. That will allow a much better performance making the procession effective and colourful.

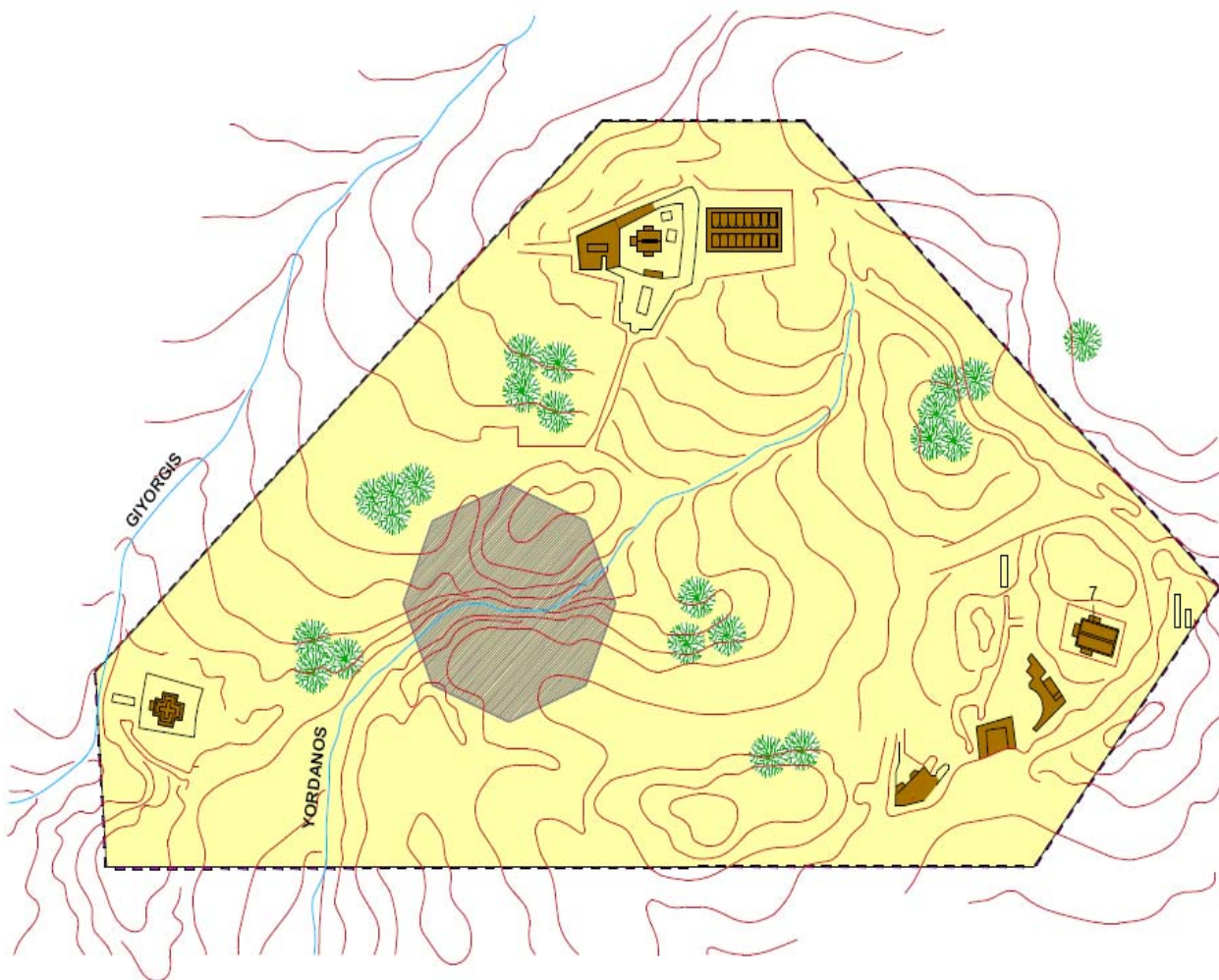


Figure 34, Concept of creation of a residence-free church complex & a common level space for church procession

A central space of procession and gathering as shown below facilitates a wider participation of Pilgrims and believers in the services. The specific rituals of the Ethiopian Orthodoxy has the “Mass” principally composed of a uniform standardized centuries old Lyrics & texts whereby most of it is conducted in Songs of “praise & pray”.

Unlike many other churches, the believer participates directly in the Mass called “Kidasse” by reciting the lyrics and texts in an appropriate melody. It is a concert of praise where the clergy lead the believers in the procession. This makes the interaction very much direct and different to all known churches.

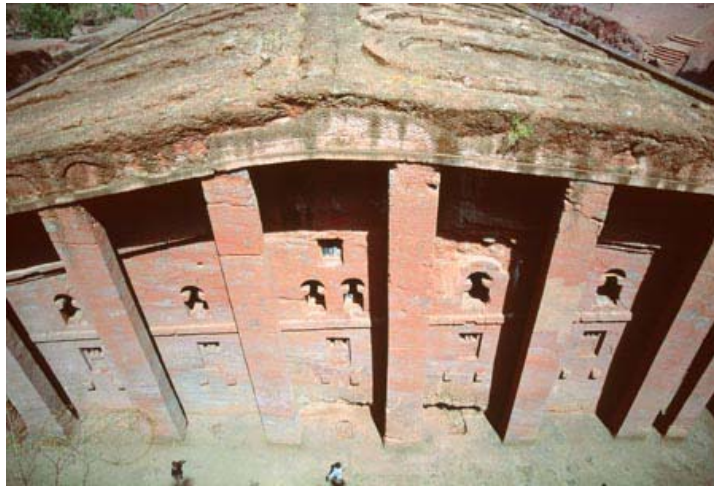
To this end a wider space of procession that reflects the inside of a Church is a perfect addition to the spiritual service Lalibela offers. In light of the major procession of “Timkat”, whereby all the “Tabots” come out and spend the night out of their Sanctuary, it gives a common safe & organized space for all the Tabots.



Figure 35, a conceptual central procession space alongside the river Jordan

## 6 Pictorial Illustrations

### Bete Medhane Alem



The roof is low pitched & appears like a saddleback with a double slop, possessing a central dividing line at the central axis.

#### Window details





(1)



(2)



(3)



(4)



(5)



(6)

- 1- Bete Medhane Alem - 3 empty graves said to have been symbolically dug for the biblical personages of Abraham, Isaac & Jacob
- 2 -Baptistery
- 3- Southern entrance (woman's)
- 4 -Northern entrance (Men's)
- 5& 6- Sanctuary

## Bete Mariam



(1)



(2)

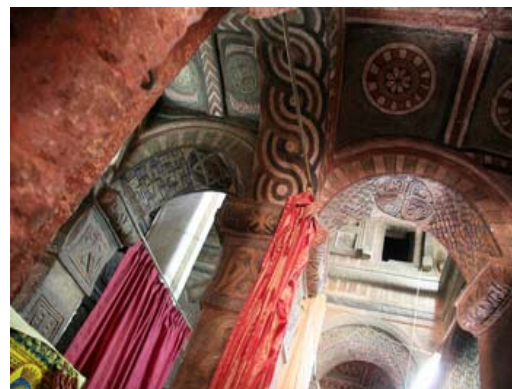
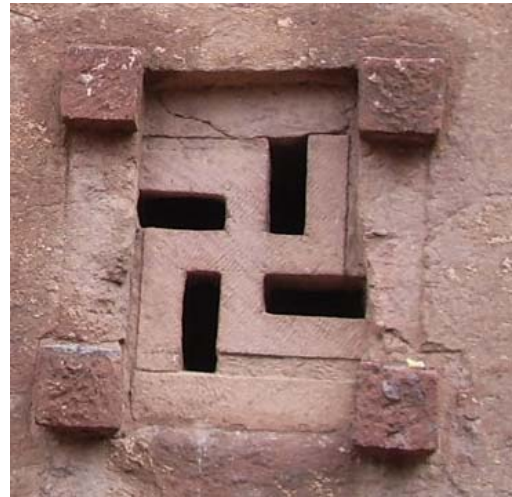


(3)

1-Bete Mariam

2-Cistern containing water which is said to have healing power and is believed also to help childless woman, who remain in the water while the priests stand at the edge singing prayers.

3-Window detail of Bete Mariam - Array of carved windows in a vertical Line, from bottom up is a Maltese cross, Axumite opening, Latin cross, & simple square window



Richly decorated interior-Bete Mariam with detailed ceiling frescos



## Bete Mariam



(1)



(2)

## Bete Meskel



(3)



(4)

- 1 - Gigantic pillar, constantly wrapped in a shroud, so that no one would be able to read the secret name of God that is said to have been inscribed on the pillar
- 2 - TABOT; referring to replica of the Table law on which the Biblical Ten Commandments are inscribed
- 3 - A swastika design through which is pierced a Greek cross
- 4 - A Maltese cross motif

## Bete Debre Sina



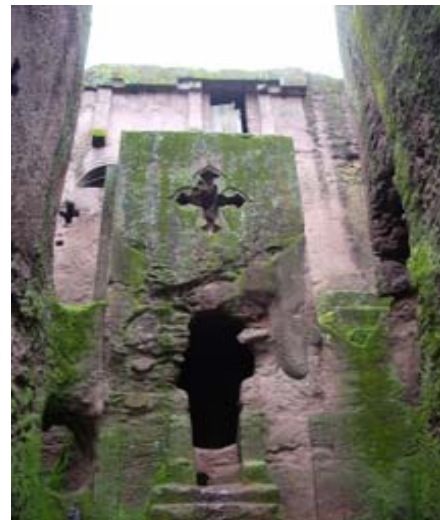
(1)



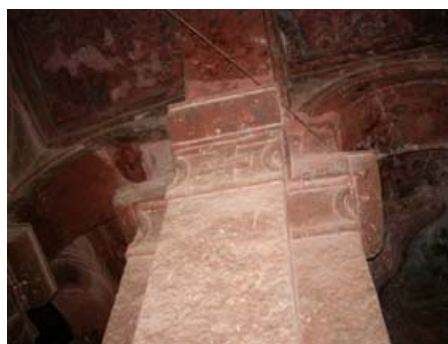
(2)



(3)



(4)



(5)

- 1 - Access to this church is through a trench of 10.50 meters depth.
- 2 - Southern entrance
- 3 - Window details at Bete Debre Sina
- 4 - The Tomb of Adam
- 5 - Pseudo-capitals of pillars decorated with Greek cross in reliefs

## Bete Merkorios



(1)



(2)



(3)



(4)



(5)

- 1 -A long and a very dark tunnel which leads to Bete Merkorios
- 2 - Interior of Bete Merkorios
- 3 - Painting on cotton fabrics attached to the walls by a thick layer of loam, ox-blood and straw
- 4 - The remains of hermits in a wall nook near Bete Giorgis
- 5 - A priest showing ancient crosses of Bete Giorgis

## Lalibelans



Lalibela Airport



## Housing in and around Lalibela



## Glossary

<b>Aisle</b>	lateral division parallel with the centre (nave) in basilica church
<b>Altar</b>	the holiest part of a church. In the medieval period the altar was a table or rectangular slab made of stone or marble, often set upon a raised step. After the Reformation the stone altars were replaced by wooden communion tables.
<b>Arcade</b>	a range of arches supported on columns, attached to or detached from a wall
<b>Arch</b>	a structure of wedge-shaped blocks over an opening, so disposed as to hold together when supported only from the sides
<b>Baptistery</b>	where the font was stored and baptisms were performed, generally near the west door. Sometimes a screen or grille separates the baptistery from the nave.
<b>Bays</b>	compartments into which the nave or roof of a building is divided; also projection windows
<b>Chancel</b>	the eastern end of a church.
<b>Chapel</b>	a small building or room set aside for worship. Large churches or cathedrals might have many chapels dedicated to different saints. A chantry chapel is a special chapel where prayers for the dead are said.
<b>Corbel</b>	a block of stone, often elaborately carved or moulded, projection from a wall, supporting the beams of a roof, floor, vault, or other feature
<b>Cruciform</b>	cross-shaped
<b>Crypt</b>	A vaulted chamber made to house graves and relics, generally located beneath the chancel. Many crypts were very large, to allow numbers of pilgrims access.
<b>Façade</b>	the face or elevation of a building
<b>Frieze</b>	narrow, long, horizontal band or panel used for decorative purposes
<b>Gallery</b>	a communicating passage or wide corridor; an upper storey for seats in a church
<b>Greek-cross Plan</b>	style of church with four equal arms
<b>Latin-cross Plan</b>	church plan with one arm longer than the other three.
<b>Monolithic</b>	formed of a single block of stone
<b>Narthex</b>	a long arcaded porch forming an entrance inside a Christian basilica church
<b>Nave</b>	the western arm of the church, where the congregation stood
<b>Niche</b>	a recess in a wall hollowed like a cell for the reception of a statue or ornament

<b>Orientation</b>	the compass alignment of the church. The altar is usually oriented to the east.
<b>Plaster</b>	a rectangular feature in the shape of a pillar, but projecting only about one-sixth of its breadth from a wall
<b>Platform</b>	a raised level surface on which a structure stands
<b>Porch</b>	a roofed structure, usually open at the sides, to protect the entrance of a building
<b>Relief</b>	in a sculpture, a work in which figures or ornaments are shown as projecting from a ground; low- relief or bas – relief: the design is more or less a piece with the ground projecting but slightly; in a high- relief the forms are made to stand out more detachedly and many in parts be completely disengaged from the round
<b>Sacristy</b>	a separate room for storing sacred vessels.
<b>Sanctuary</b>	The holiest part of the church where the high altar is placed.
<b>Stele</b>	an upright slab bearing sculptured designs or inscriptions
<b>Vault</b>	an arched covering in stone or brick over any building

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