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Visualization of the Structure and Medieval Frescoes in Digital Space: The Case of St. Mary of Carmel (Carmelite) Church, Famagusta

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Abstract: *Famagusta as a harbor city in Cyprus was used by the merchants for their commercial transactions. This position of the city in medieval time transforms it into a thriving city by the merchants from different regions, each one creates his specific churches in different quarters of the walled city. Some of these historic monuments due to several reason have been destroyed. At different periods, these buildings were preserved and conserved by the authorities. However, some of the conservation policies often fail to appreciate the complexities of the buildings, which results in conflict and failure. In this study, the author with a historical investigation of one of the 14th century ruined churches in the walled city of Famagusta named St. Mary of Carmel represents a virtual three-dimensional modelling of the structure and its medieval frescoes. These processes were done through investigation, observation to the building's components, measure-drawing, reviewing available historical documents and photos related to the church as well as comparison with other similar churches in Famagusta considering the period of construction and building characteristics.*

Keywords: *Digital modeling, Medieval frescoes, St. Mary of Carmel/Carmelite Church, heritage conservation.*

Dijital Alanda Yapı ve Orta Çağ Fresklerinin Görselleştirilmesi: Gazimağusa, St. Mary Carmel (Carmelite) Kilisesi Örneği

Öz: *Kıbrıs'ta bir liman kenti olan Gazimağusa, tüccarlar tarafından onların ticari işlemleri için kullanılmaktaydı. Şehrin ortaçağdaki bu konumu, onu farklı bölgelerden tüccarlar tarafından gelişen bir şehre dönüştürüyor ve her biri surlarla çevrili şehrin farklı mahallelerinde kendine özgü kiliselerini yaratıyor. Bu tarihi eserlerden bazıları çeşitli nedenlerden dolayı tahrip olmuştur. Farklı dönemlerde bu binalar yetkililer tarafından korunmuş ve muhafaza edilmiştir. Ancak koruma politikalarından bazıları binaların karmaşıklıklarını değerlendirmede genellikle sorunlar yaşar, bu da fikir ayrılıklarına neden olur ve başarısızlıkla sonuçlanır. Bu çalışmada yazar, surlarla çevrili Gazimağusa kentinde bulunan ''St. Mary of Carmel" adlı 14. yüzyıldan kalma harabe kilisenin tarihi incelemesiyle, yapının ve ortaçağ fresklerinin sanal üç boyutlu bir modelini temsil ediyor. Bu işlemler; inceleme, yapının bileşenlerinin gözlenmesi, rölöve çizimi, kiliseyle ilgili mevcut tarihi belge ve fotoğrafların incelenmesi ve aynı zamanda yapı dönemi ve yapı özellikleri göz önümde bulundurularak Gazimağusa'daki diğer benzer kiliselerle karşılaştırılarak yapılmıştır.*

Anahtar Kelimeler: *Dijital modelleme; Ortaçağ Freskleri, St. Mary Carmel/Carmelite Kilisesi, mirasın korunması.*

1. INTRODUCTION

At the end of the 12th century, Medieval Famagusta flourished as a trading hub and conveniently harbor on the East end of Cyprus [1]. This position of the city transforms it into a thriving city by the merchants from different regions, creating their specific churches in different quarters of the walled city of Famagusta. Now, some of these historic monuments due to several invasions with cannon balls, the coastal erosion risk of the Mediterranean region as well as the big earthquake in 1952 have been destroyed. One of these ruined churches is a 14th century church of Carmelita located in the northwest quarter of the walled city of Famagusta in Cyprus near the Martinengo bastion (Figure 1). In the medieval age, the quarter was reserved for people who due to the political situation in Palestine and the collapse of the Latin Kingdom of Jerusalem in 1291 had to migrate from Syria, mainly Acre in Palestine, and made foundations in Cyprus and other parts of Europe [2, 5, 6]. Accordingly, the quarter in which the church was erected named as the Syrian Quarter [7]. The Syrian Quarter is also the site of the Armenian church, an underground church called St. Mary of Bethlehem, and a ruined medieval Orthodox church.

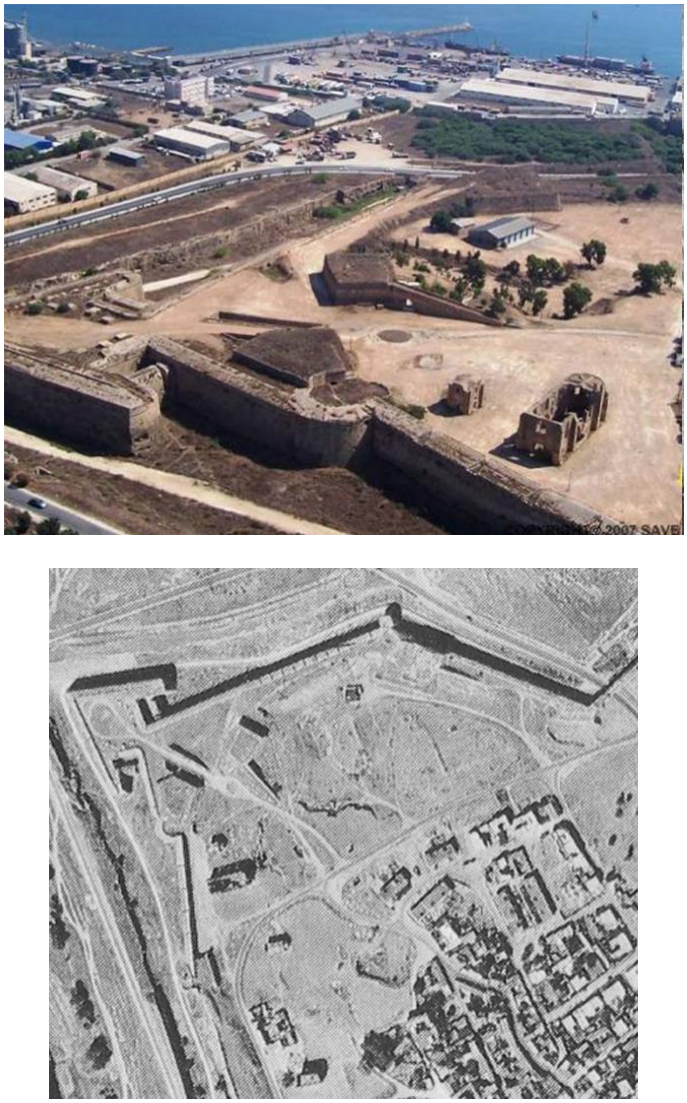


Figure 1. Arial photo of Walled city in Famagusta where St. Marry of Carmel located [14].

This paper documented the historic church of St. Marry of Carmel applying so-called "Bauforschung" method. The research through analysis of several literature mainly Enlart's book on "medieval and renaissance art in Cyprus" (1987) and Jeffery, G. H. E. (1918) on "A description of the historic monuments of Cyprus", as well as author's observations, sketches, photogrammetry, measurement by Laser Meters and comparative study of other churches in Famagusta, visualize and reconstruct the historic church of St. Marry of Carmel in digital space. However, the documentation and visualization of the church is divided in two part: first represents the building fabric and three-dimensional modeling of the church, and secondly its medieval frescoes.

The name of the church St. Mary of Carmel or Carmelite church referred to the monks of the holy Carmel mountain of Syria. According to Olympios [10] seem that the church was the initial structure to have been commenced at the site. Figure 2 represents the condition of the church in 2015.

Figure 2. Current status of the St. Mary of Carmel (Carmelite) church. Photograph by Hourakhsh Ahmad Nia

2. BUILDING'S COMPONENT

The church Carmelite was constructed during the rule of the Lusignan period of Cyprus presumably sometime before 1366 [3], with flat buttresses along the south, north, and east walls, pointed arches, and rib vaults considered as a Gothic style church. The style of construction is plain and the vaulting ribs are not even moulded. However, except the vaults of the nave part which still exists, rest of the vaults of the church collapsed. The church was constructed with indigenous stone named sandstone [9] and the type of brown medium-fine grained [1] in free-standing form.

Through observation and documentary analysis the author found some similarities in plan (Figure 3) and some features with St. George the Latin [8] (Figure 4), St. Anne (Figure 5), and St. Francis (Figure 6) in Famagusta. Similar to these three churches, it has a single nave with a dimension of around 9 meters width by 29 meters length. The church consists of three bays of vaulting and a polygonal apse for the altar. Forming four bays in all. Each bay, except the fourth one (clung to the choir) has two tall lancet windows on north and south wall. The choir part contains three lancet windows, similar to St. Anne.

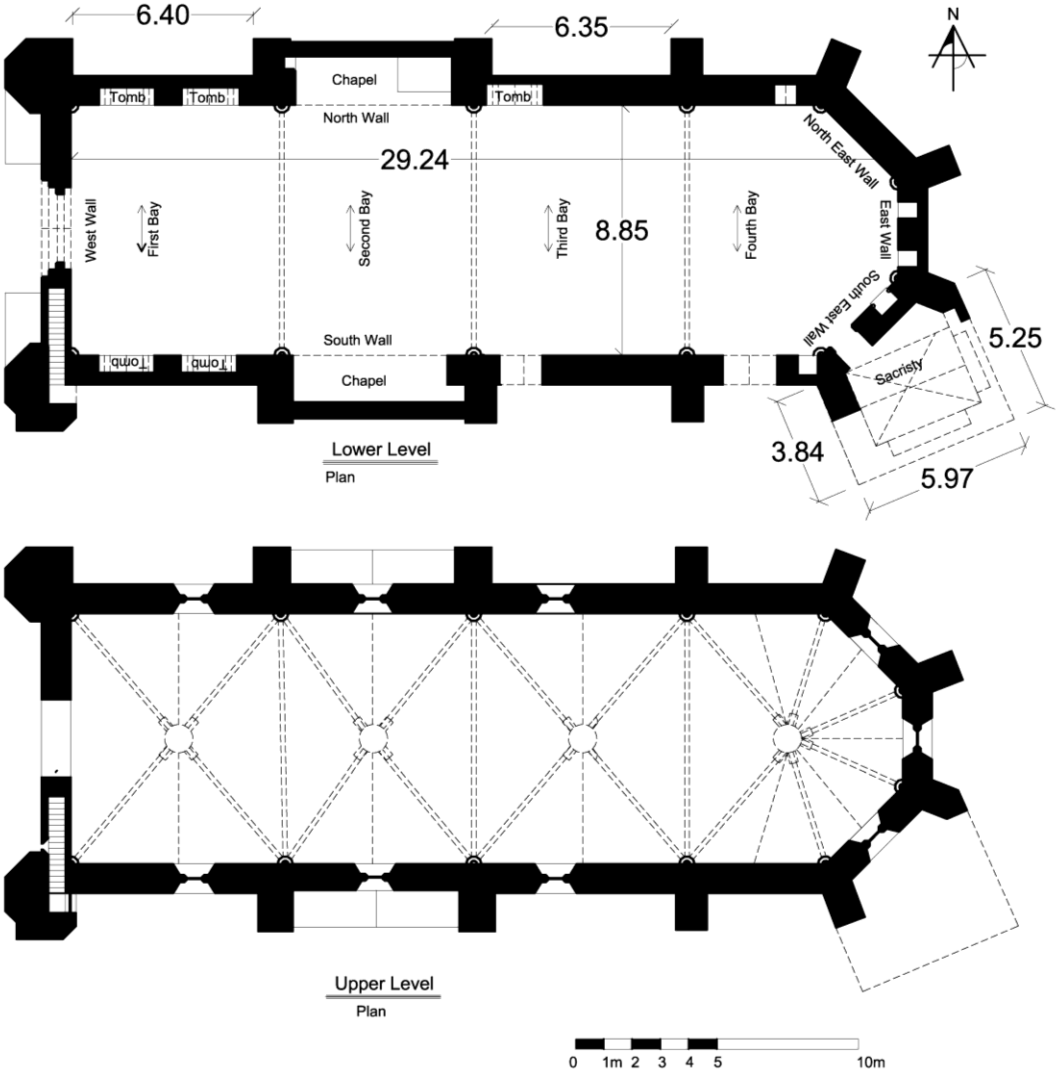


Figure 3. Plan of the St. Mary of Carmel representing with two section lines at a different height. The vaults of the nave are the projection of existing vaults. Image by Rokhsaneh Rahbarianyazd.

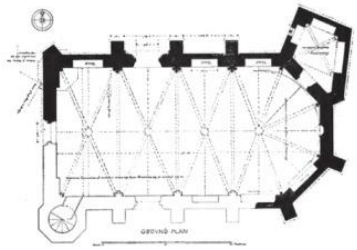


Figure 4. St. George the Latin, Famagusta, last quarter of 13th or first years of 14th [4].

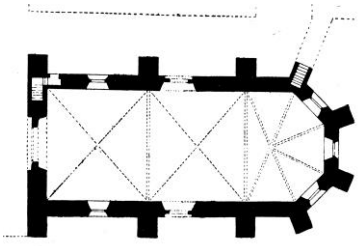


Figure 5. St. Anne, Famagusta, in the early fourteen centuries [3].

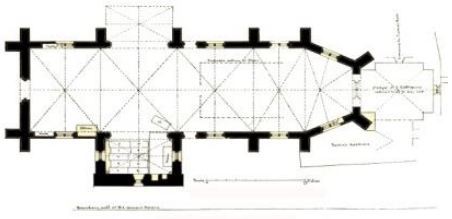


Figure 6. St. Francis, Famagusta, one the year of 1300 [11].

The buttresses of the church in the section resembling St. Anne and St. Francis (more similar to St. Anne) are non-tapering and no string courses (Figure 7).

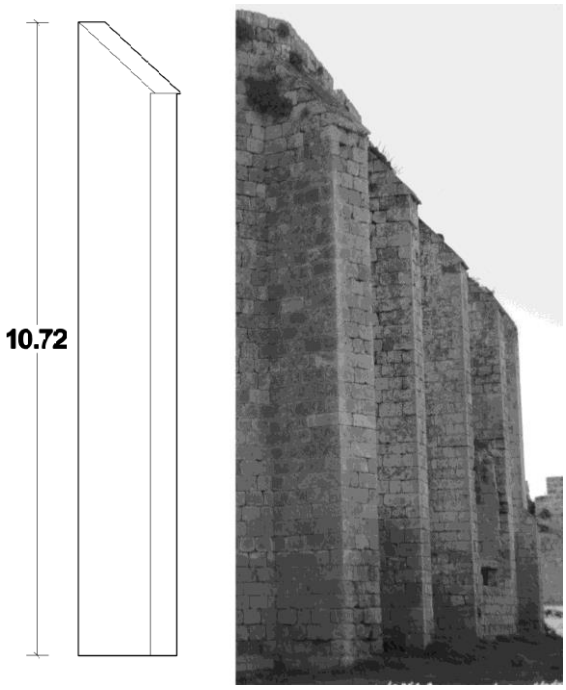


Figure 7. Form of buttresses along the south, north, and east wall of the St. Mary church. Image by Rokhsaneh Rahbarianyazd.

The buttress on the south side between the third and fourth bay has two side-posts above the roof for hanging a bell (Figure 8). Two doors on the right and left sides of this buttress with solid tympanum used for ringers.

Figure 8. The added structure for hanging the bell on the buttress. Photograph by Hourakhsh Ahmad Nia.

Two buttresses at the end of west wall and the intersection of the south and north walls, are in form of two hexagonal turrets with different diameters (Figure 9). The turret contains a broad-stand with approximately 4-meter height and a steeple with a diameter less than the initial stand and a height of 6 meters above it which are similar to St. George the Latin. These buttresses are ending in a pyramidal cap. A doorway on the south-west buttress gives access to a staircase along the west wall and gives access to the roof. However, the opening was filled. There is also an opening as a skylight at the top shaped by the stone to make the staircase lighter. At the top of the west wall seems to be three stone rings to hold flagstaff-holders, two on the top of each buttress and one in the middle [3]. The stone rings on the top of the north-west buttresses are not on the wall.

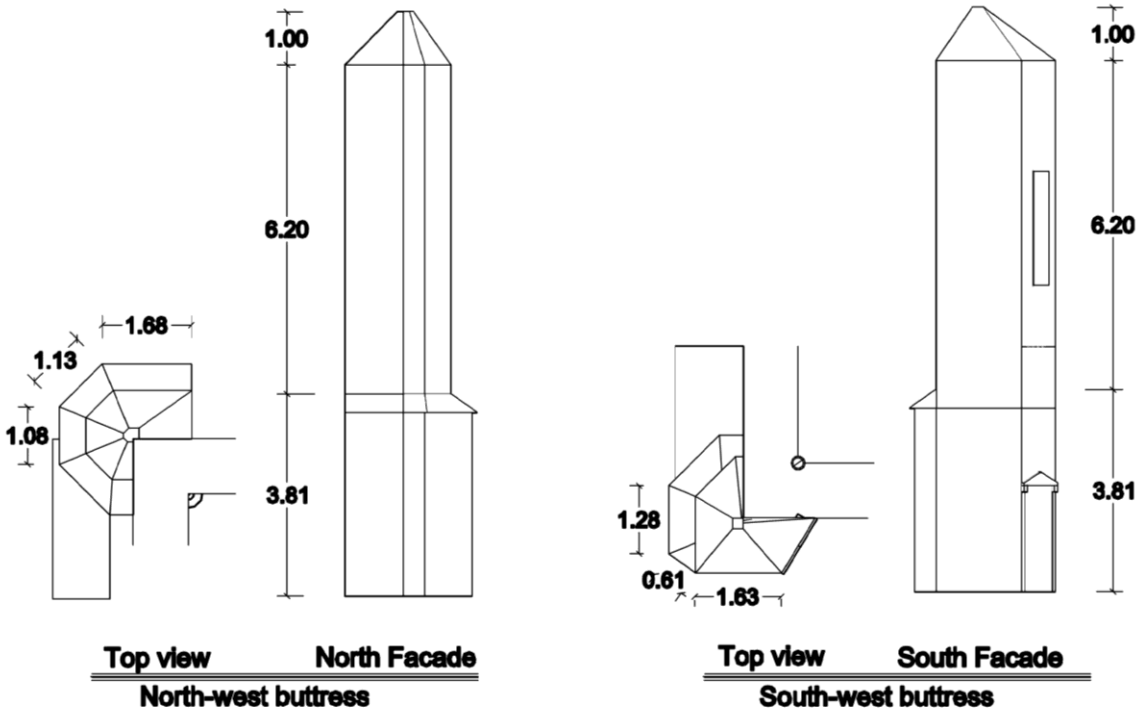


Figure 9. Section and plan of the north-west and south-west buttress. Image by Rokhsaneh Rahbarianyazd.

There is a pointed doorway on the western wall as the main entrance to the nave (Figure 10). This pointed doorway "is surmounted by an arch with moldings and a hood-mold supported on two brackets carved with human heads and bunches of foliage; at the apex is an angel holding a scroll which protrudes like a small gargoyle. The head has unfortunately been broken off" [3]. This angle with its pointing finger pointed to "a passage which was written in black paint; probably a piece of scripture and the side of the doorway are heads that look like monks with their cowls" [18]. "The jambs were surmounted by capitals with a plain bell-like those at Bellapais in Kyrenia" [3].

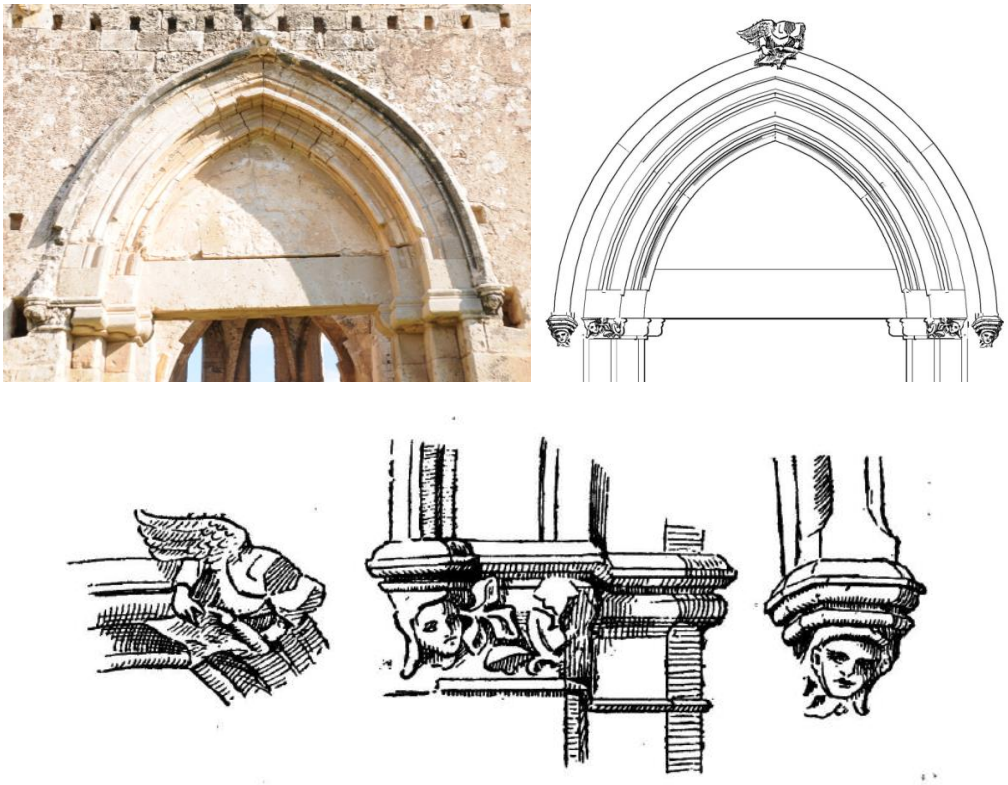


Figure 10. Top of the Western doorway. Photograph by Hourakhsh Ahmad Nia. Image derived from drawings by Enlart (right).

There is also a wide lancet window on the west wall over the doorway; it was divided by two mullions which have colonnades with capitals sculptured into three lights; consist of a trefoil and two quatrefoils inscribed in circles (Figure 11). Except some part of the upper tracery, all fell. Lourenço, & Ramos [12] in their research tried to represent the process of reconstruction, repair and resembling of the window from 1940 till 2008 (Figure 12).

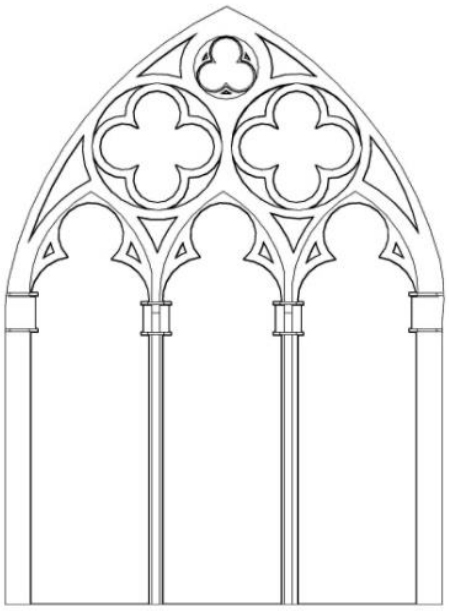


Figure 11. Western lancet window. Image by Rokhsaneh Rahbarianyazd.

Figure 12. Window tracery above the main door [12].

The façade of the western walls is decorated with three Lusignan coats of arms (Figure 13.a), (Figure13.b) a groove crossed through them. which Enlart did not mention in his book [3] and he just declared about the painting of these coats of arms on the wall of the apes. As Kouymjian [18] said, "perhaps when the church was converted to Greek Orthodoxy, a timber narthex or porch was added to the facade". Observing the holes and groove on the west side it seems there was a porch in front of the west wall which sits on octagonal Colonnettes (Figure13.c). Enlart [3] has the same description about the existence of a porch in the entrance façade of St. Anne in Famagusta. Above the entry of the St. Anne church in Famagusta there are also row of corbels and post holes for the timber-roofed porch which was originally appended to the façade [7].

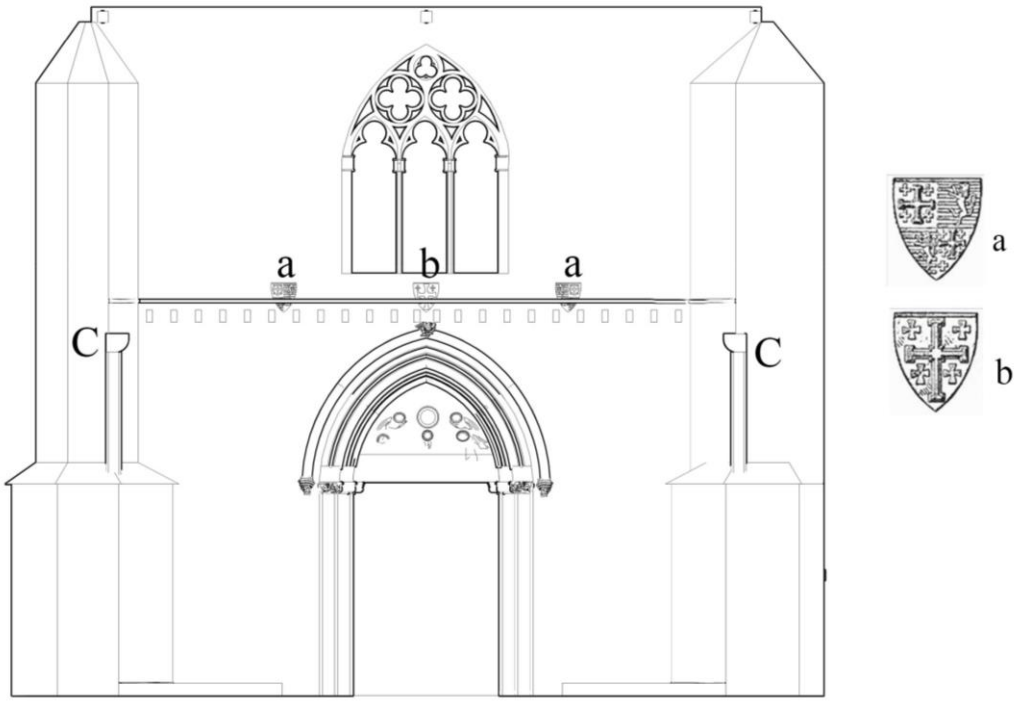


Figure 13. Western Wall.
a: King of Cyprus b: Jerusalem shield c: octagonal Colonnettes. Image by Rokhsaneh Rahbarianyazd.

Also, the string of putlog holes as lumber supporting in the exterior wall of the south, along the third and fourth bay (above two doorway) (Figure 17) and existence of the earthenware conduit used for collecting water reveals that the south wall was also surrounded by portico or rooms as the additional part. The additional part most probably was a light structure with sloping roof of timber supported by stone pillars or columns in two levels. In the East wall, one of the buttresses in the southern oblique extended (Figure 14). Due to the location, the author brings the possibility of being a sacristy space. A door from inside of the church in the southern oblique face of the altar has access from the choir to this sacristy.

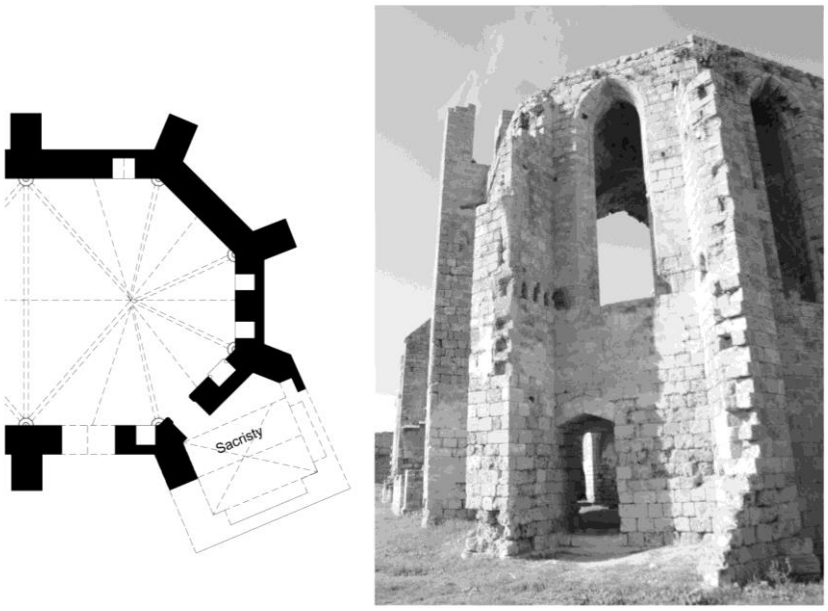


Figure 14. Extended wall to the eastern buttress and possibility of a space. An interpretation of a sacristy space. Image by Rokhsaneh Rahbarianyazd.

According to a visual comparison of the images in the unpublished Mogabgab Photographic Archive (Figure 15) in the Department of Antiquities in northern Nicosia, and also the author's observation in the building component, it seems that the present condition of the church did not change significantly from the condition around 1940.

Figure 15. St Carmelite Church. Mogabgab Photographic Archive, Department of Antiquities, Northern Nicosia.

Figure 16 represents the 3d modeling of the building with the ribbed vaults. The ribbed vaults of the nave are the projection of existing vaults and the rest of the vaults are an interpretation of old vaults before their collapse.

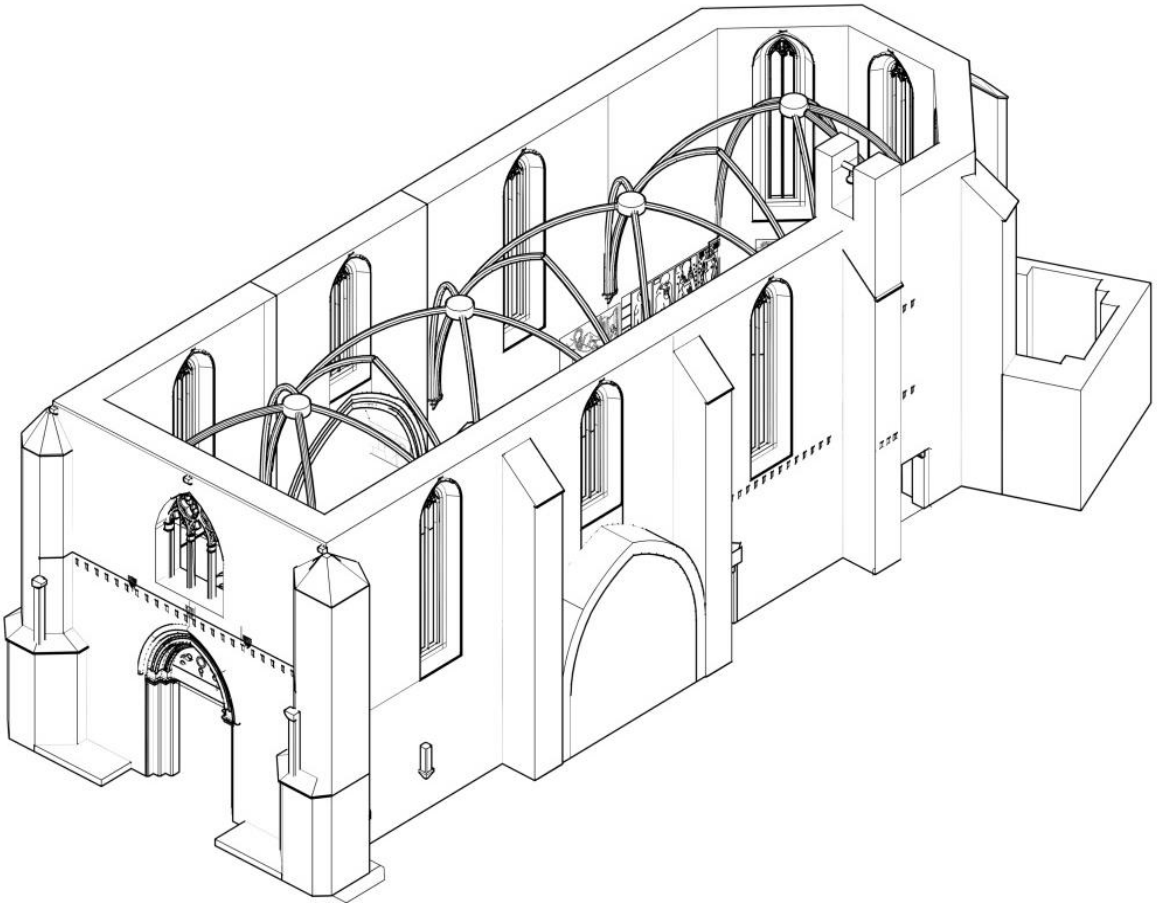


Figure 16. Perspective view from the west and south side of the church. The vaults of the nave are the projection of existing vaults. Image by Rokhsaneh Rahbarianyazd.

3. INTERIOR OF THE BUILDING

The Interior part of Carmelite Church was evaluated by the author through an in-depth survey to reveal the structure and details used in the building component. Aforementioned, the nave of the church contains four bays, the second bay Similar to St. Francis was ended with the addition of shallow chapels with a barrel vault, fitted in between the buttresses (see Figure 3, Figure 6 and Figure 17). According to Jeffery [4] the two chapels were added at a later period in 16th century. The first and third bay in the north and south side have pointed-arched niches and as Enlart [3] claimed contain tombs (Figure 3).

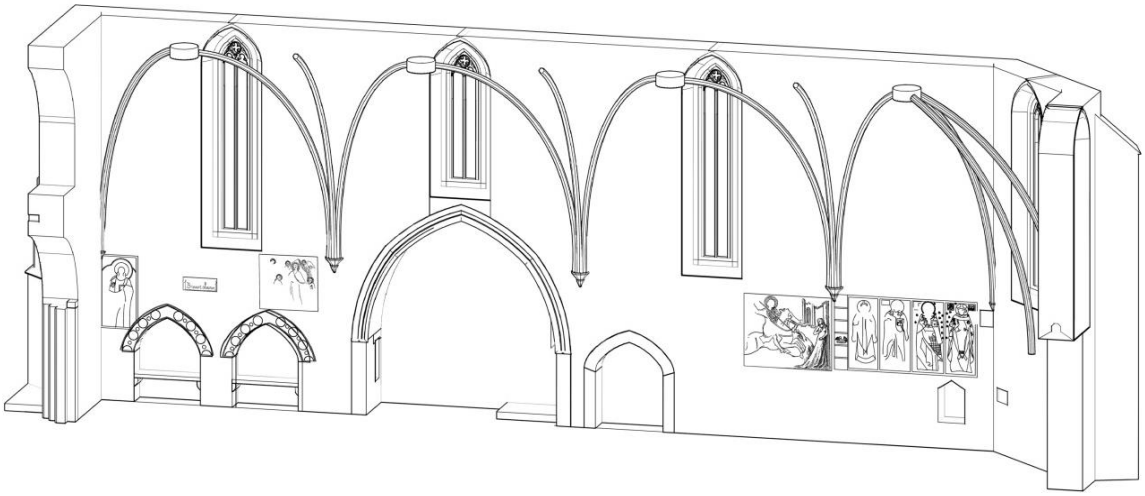


Figure 17. Perspective view of the interior part of the church representing the north wall. Image by Rokhsaneh Rahbarianyazd.

The choir of the church was formed by a vault on six ribs which was ended by two different shapes of the bracket in the middle of the walls. In the apse, three brackets are in the shape of a prismatic reversed pyramid with some kind of foliage. This description also contains the two brackets on the corner of the west wall (Figure 18a). "While in the nave the brackets are of two superimposed courses of similar design rather like corbelled colonnettes with a very short shaft" [3] (Figure 18b). In both cases, the point of the pyramid terminates in a roundel.

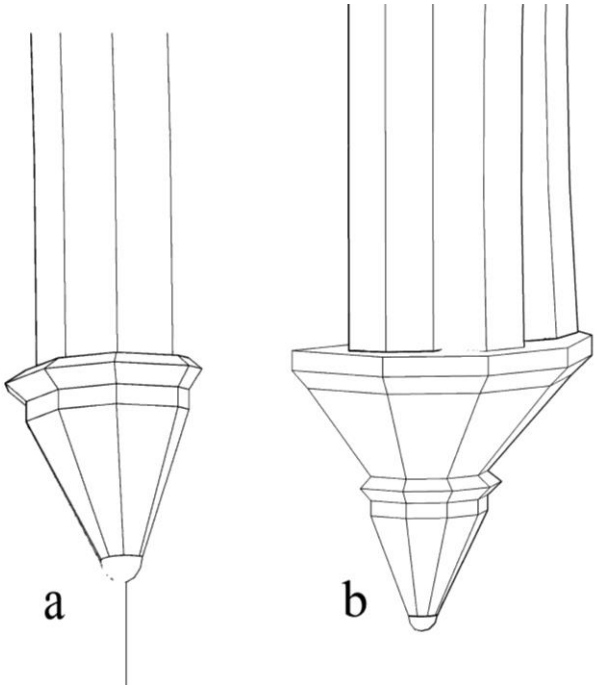


Figure 18. a: brackets in choir; b: brackets in the nave. Projection of existing brackets. Image by Rokhsaneh Rahbarianyazd.

At the intersections of the vaults in the choir, there are four bosses, one without a keystone. The three other boss stones were covered by the keystones with the shapes of the coat of arms of Guy Babin (Figure 19 a), cross shape (Figure 19 b), and an eagle with one head (Figure 19 c). The three bosses fell down, but still exist in the church.

The coat of arms of Babin is, on a shield three bendlets. This occurs on the tombstone and also on the carved key-stone which has fallen from the vault overhead. According to Enlart [3], Guy Babin's descendants were doubtless the founders and builders of the Carmelite Convent, and the date of the building is consequently after 1363.

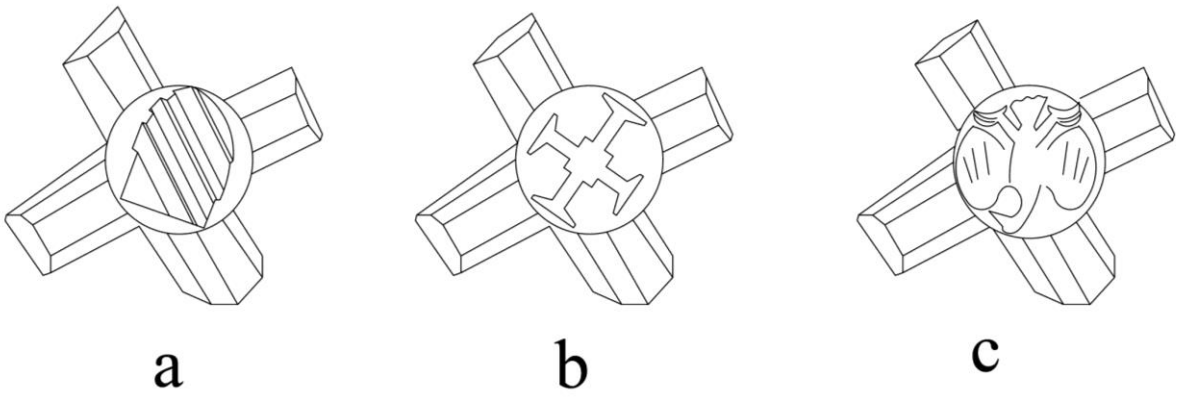


Figure 19. a: coat of arms of Guy Babin, b: cross shape c: an eagle with one head. A projection of fallen bosses. Image by Rokhsaneh Rahbarianyazd.

In each panel of the vault of the choir, there are some holes which are buried acoustic pots, not only for acoustic but also for making a lighter roof (Figure 20).

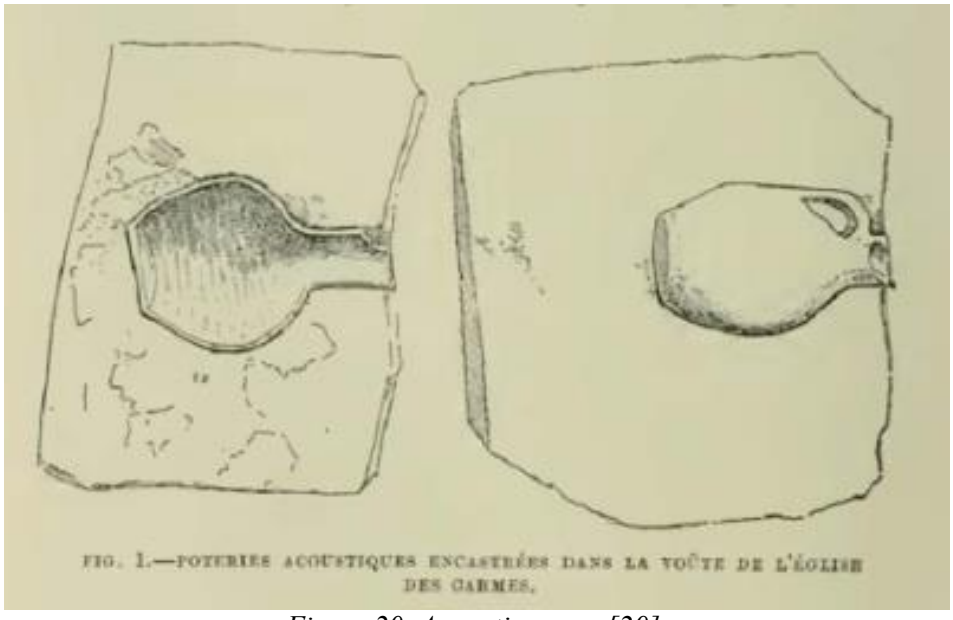


Figure 20. Acoustic vases [20].

Figure 21 represents the interior façade of the church.

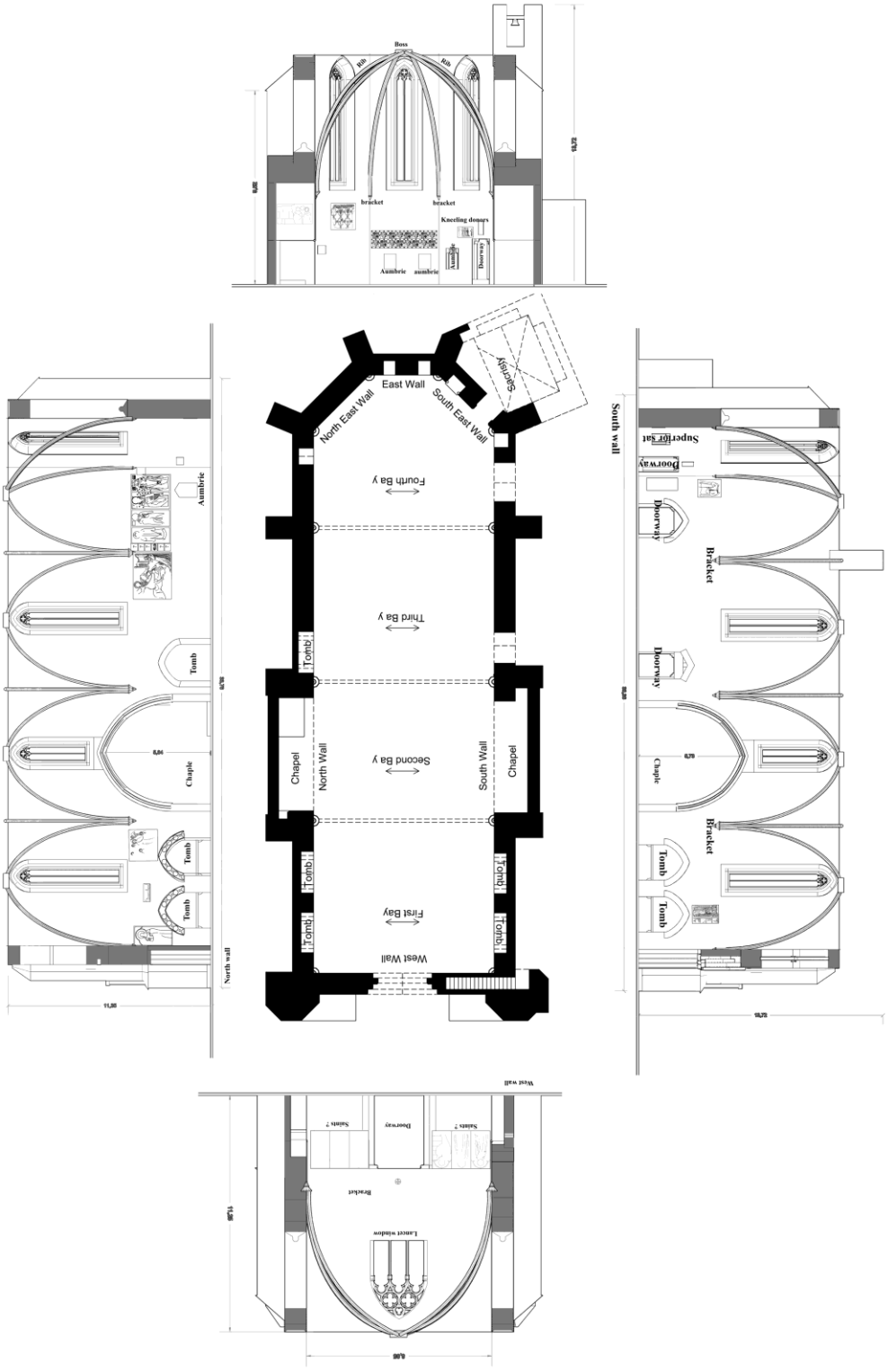


Figure 21. Plan and interior walls of the St. Marry of Carmel church, Famagusta. Image by Rokhsaneh Rahbarianyazd.

4. FRESCO PAINTINGS OF THE CHURCH

The church is decorated with Italian fresco paintings of the fourteenth and fifteenth centuries (European of the middle ages). At some subsequent period have been coved with the usual "icon" figures of Byzantine character which mark perhaps the occupation of the building by the Orthodox. "It seems probable that after the retreat of the Latin Orders from Cyprus in the XVth century many of the Latin Churches fell into the hands of the native Christians who signalized their occupation by repainting the interiors of the buildings" [3]. Stewart [2] believes that the frescoes were executed by Italian artists in the fourteenth and fifteenth centuries. Unfortunately, most of the paintings in the church destroyed due to neglection and the poor method of preservation.

4.1. Interior Fresco Painting

In this part, the author tries to observe the fresco painting of the interior walls one by one and match with the historical studies. Figure 22 represents the interior wall of the northside.

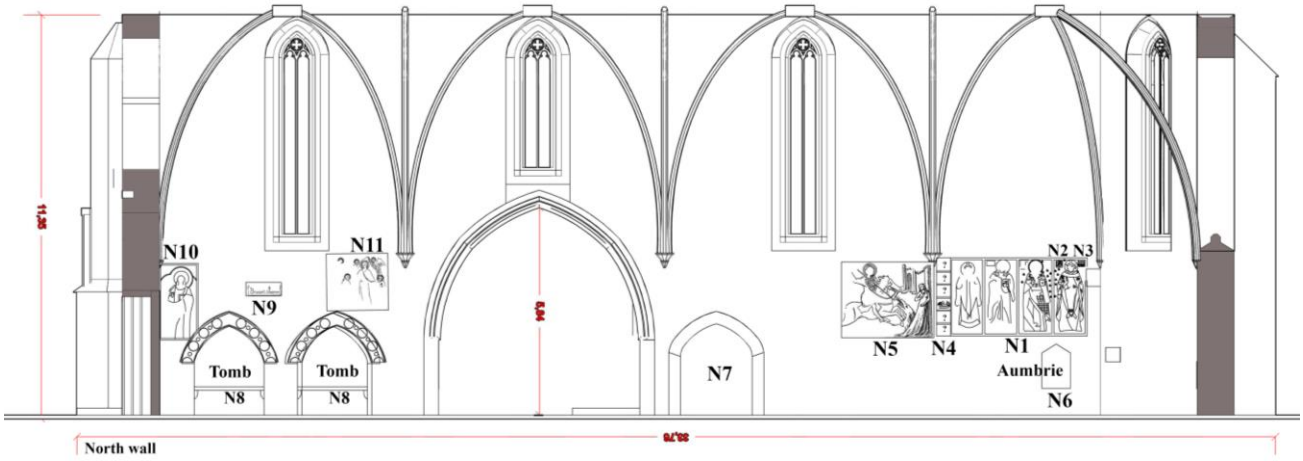


Figure 22. Fresco painting on the North wall of St Marry of Carmel, Northern wall. Image by Rokhsaneh Rahbarianyazd.

N1. On the North wall of the choir, a row of 4 saints standing and painted in life-size (Figure 23). Two of them are sainted Latin archbishops and the other two Byzantine patriarchs [3, 4]. The one on the right side is St Nicholas with his bishop's miter wearing his white omophorion (bishop's vestments) with a light green under robe [18]. Bacci [19] called it "Latin paraphernalia" (a kind of western attire). In the two top corners of the panel of St Nicholas, there are two small pictures of legendary scenes which show the miracles of St. Nicholas (see N2 and N3).

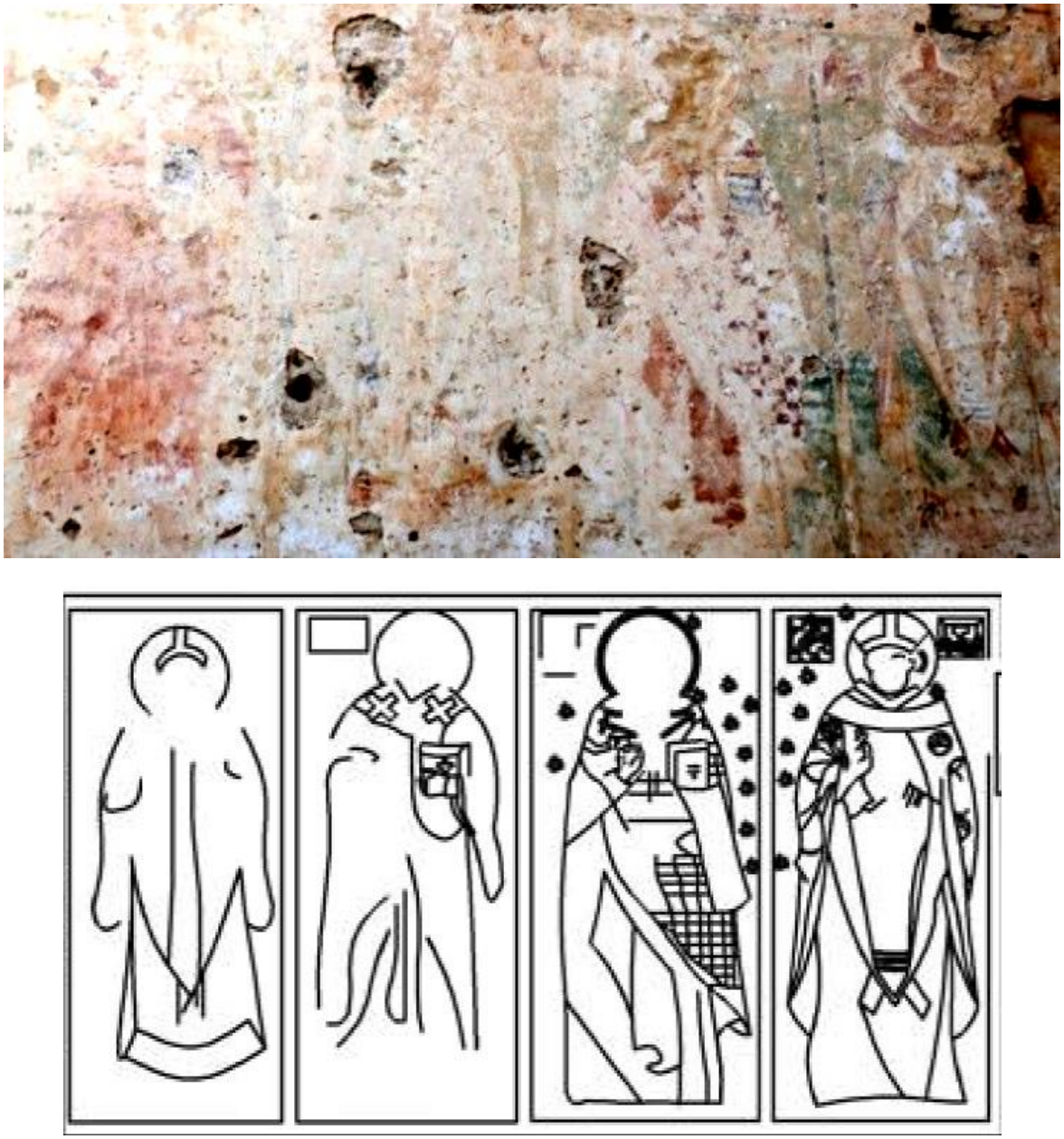


Figure 23. N1. The row of holy bishops. Two sainted Latin archbishops and two Byzantine patriarchs. Photograph and Image by Hourakhsh Ahmsd Nia.

N2. On the left side of St. Nicholas fresco, there is miracle of him which tries to intervene to save three knights that have been unfairly sentenced to death (Figure 24). "They kneel on the ground, blindfolded, as St Nicholas grabs the sword from the executioner just as he is about to strike" [18]. Enlart in his description referred this picture to the story of the salting-tub which comes in the Golden Legend -"three boys put in the salting-tub and after seven years St Nicholas called the two boys back to life" [13, 17]. However, this was not entirely consistent with the story of the Salting Tub.

Figure 24. N2. Saint Nicholas is arresting the sword of the executioner who wants to kill three princes Nepotian, Ursyn, and Apollyn (see: [13]). Photograph and Image by Hourakhsh Ahmad Nia.

This was not entirely consistent with the story of the Salting Tub that he simultaneously suggested. The correct literary reference is in fact the work of the Jacobus de Voragine [13], and his Golden Legend of 1266. More particularly in the near execution of the three princes Nepotian, Ursyn, and Apollyn [15]. Voragine [13] described it as follows:

"And whilst they were at dinner, the consul, corruption of money, had commanded three innocent knights to be beheaded. And when the blessed Nicholas knew this, he prayed these three princes that they would much hastily go with him. And when they have come where they should be beheaded, he found them on their knees, and blindfold and the righter brandished his sword over their heads. Then S. Nicholas embraced by the love of God, set him hardily against the righter, and took the sword out of his hand, and threw it from him, and unbound the innocents, and led them with him all safe".

N3. The right side of St Nicholas's fresco is another miracle of St. Nicholas. He is handing a purse through a window to the father of three virgin daughters who were too poor to afford their dowries. The virgin girls are sleeping on the same bed. Enlart [3] mentioned that just two girls on the bed however through scrutinizing in the picture and referring to Kouymjian [18], the heads of three sisters are visible. The father in the left side of the bed holding his hands up to the window to take a purse of gold from Saint Nicholas. "The father bearded and robed in brown and looks like a Carmelite or a Franciscan. One of the girls has a delightful face" [3]. The father used the money so that his daughters could marry (Figure 25).

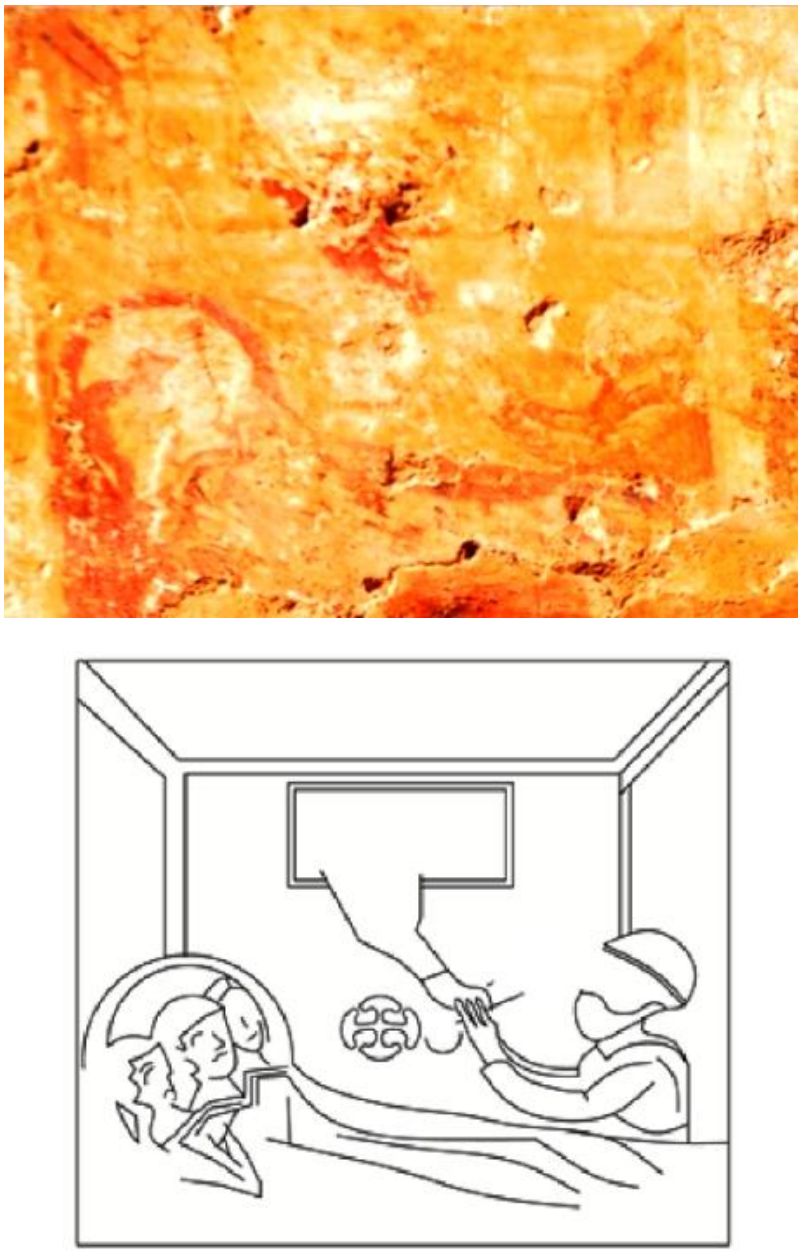


Figure 25. N3. Saint Nicholas and the three virgin sisters. Photograph and Image by Hourakhsh Ahmsd Nia

N4. In the fourth painting from the left side of the row of holy bishops, there is a picture of the empty tomb (Figure 26). After redrawing the picture, it revealed that the fresco painting describes the story of an empty tomb -the same story in 12th-century frescoes in the narthex of the Panagia Phorbiotissa church of Cyprus. Catholic tradition claims that the "three Mary's" are the French Saints-Maries-de-la-Mer- the Saint Marys of the Sea. Once the Jewish leadership in Jerusalem started to strongly follow the Christian in Jerusalem, they centralized on the three women who claimed to be eyewitnesses of the empty tomb: Mary Magdalene, Mary Mother of James, and Mary Salome.

Figure 26. The Three Mary's and Empty Tomb, the Resurrection. Photograph and Image by Hourakhsh Ahmsd Nia.

N5. On the north wall of the church, there is a large Italian painting style of the fourteenth century with the size of 2x2 meters. This fresco painting refers to the story of St. George when he was a soldier saint and tortured and martyred at Nicomedia, during Emperor Diocletian's persecutions [13]. Also, the story from the book Golden Legend [13] describes him as a Knight from Cappadocia. Enlart's sketches and his description of the painting support this story (Figure 27). St George at the back of the horse tries to kill the green dragon which was arrested as the daughter of the king. In the background under the bracket, there is a painting of a regular Italian castle. The prince with curling hair is turning towards the saint with a frightened gesture. She wears a long greyish purple dress without a girdle [3]. Unfortunately, the face of the princess, the green dragon, and the face of St. George are destroyed.

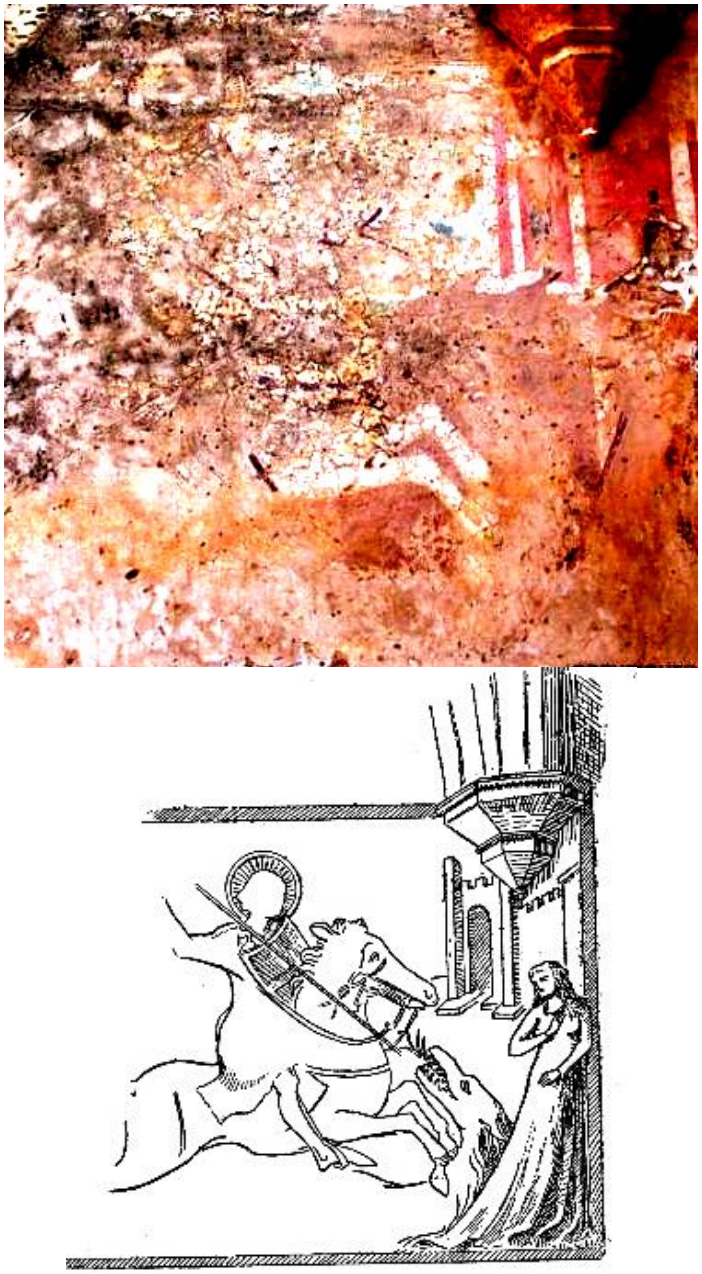


Figure 27. St. George and the Dragon (CE). Drawing by Enlart. Photograph by Hourakhsh Ahmsd Nia.

N9. On the north wall of the church, there is graffiti from a middle ages pilgrim as a record of his visit to Famagusta. His name in elegant FrenchGothic lettering— "**Brucourt Alioveain**" [3, 4] was written by cutting deep of the plaster. Brucourt is the name of a city in France. The graffiti was written above a human height so there is no opportunity for a pilgrim to climb up and write his name on top with this beautiful handwriting and scale. Most probably this signature is from the painter who signs his name after finishing his painting of the church (Figure 28).

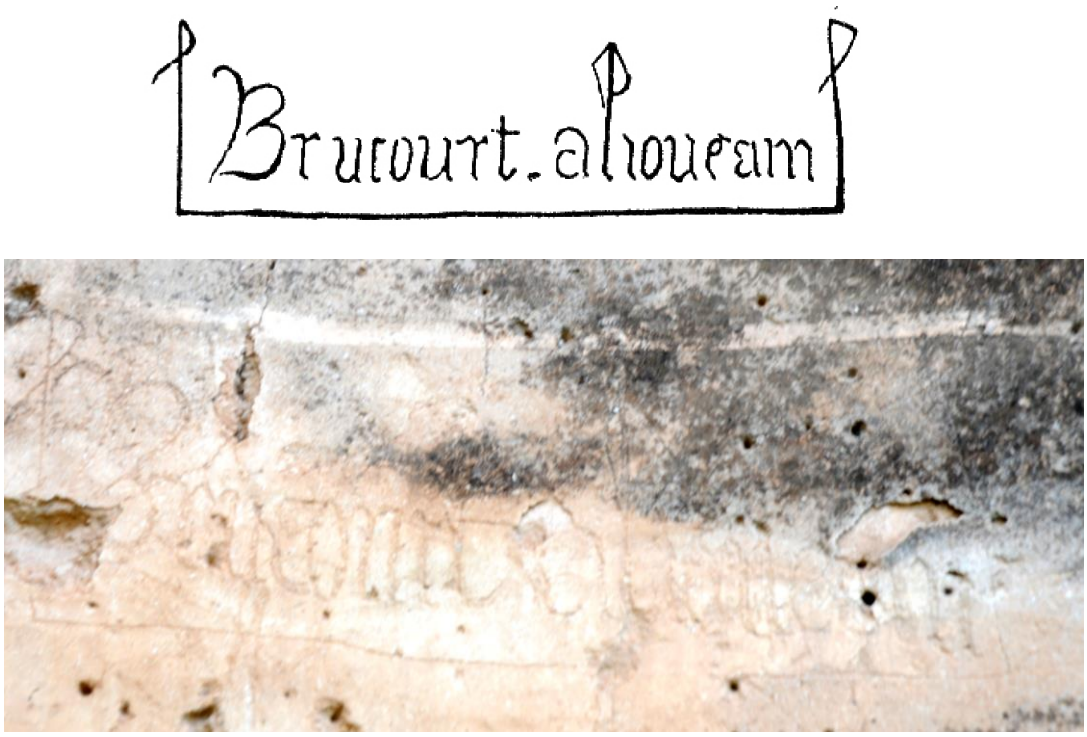


Figure 28. Handwriting graffiti. Drawing by Enlart. Photograph by Hourakhsh Ahmsd Nia.

N10. The first painting on the north wall above tomb-niches is female saint. On top of the arch, medallions designed in Byzantine style (Figure 29).

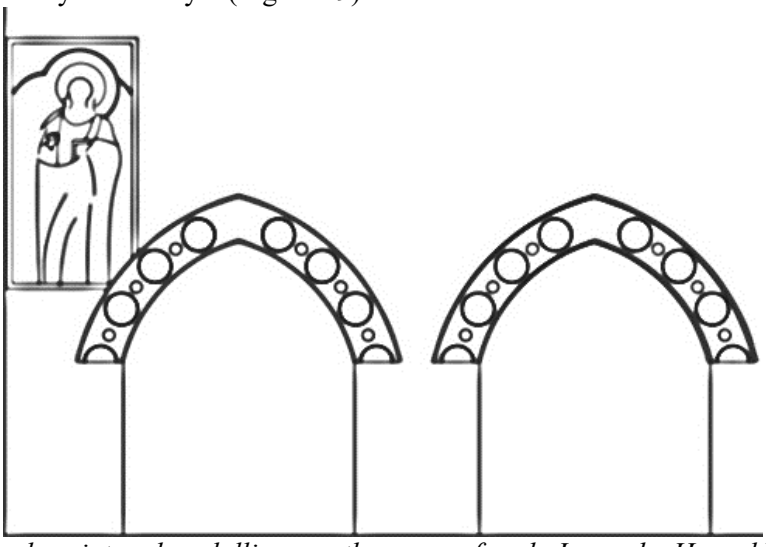


Figure 29. Female saint and medallions on the curve of arch. Image by Hourakhsh Ahmsd Nia

N11. Another fresco on the north wall above the curve of the arch represent a scene connected with the foundation of the Carmelite order. This picture is, however, very much defaced. As Eenlart [3] described the fresco might be interpreted as the Prophet Elisha and two men named prophets Jonah and Obadiah who are listening to his speech. As Enlart [3] said there are also two Angeles with white beards holding a piece of drapery in the back of Elisha. Since all invitation and pry of prophet Elisha was in the Mount Carmel, the background seems to represent mountain of Carmel rather than drapery (Figure 30).

Figure 30. Elisha with Jonah and Obadiah. Photograph by Hourakhsh Ahmsd Nia. Image by Enlart.

The east wall of the chair is the choir part of the church, several fresco paintings represented (Figure 31). In the apse are ambries and a piscine: shelves and niches for liturgical implements, reliquaries, and holy water [18].

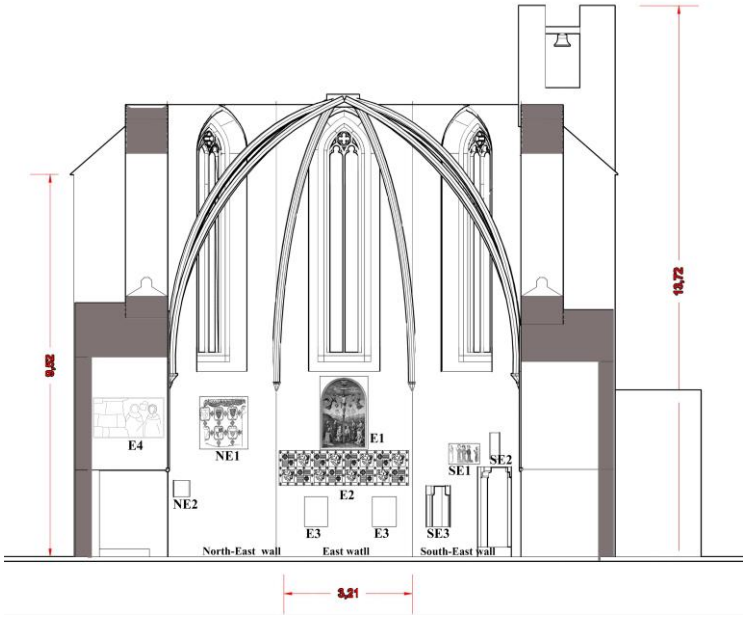


Figure 31. East wall/ the choir side. Image by Rokhsaneh Rahbarianyazd.

SE1. On the right side of the apse, there is a group of kneeling donor figure which wearing "distinctive medieval head coverings" [18] called as Hennin (poor Byzantine style). The painting describes the process of donating. Unfortunately, this magnificent painting is going to vanish. As Enlart [3] mentioned these donors are the rich merchant of the Famagusta. Most probably Guy Babine's family. His two sons in front and one daughter and his wife at the back of them stand. The arms demonstrated on the keystone, representing the close association of the Babin family with Carmelite church (Figure 32).

Figure 32. Five kneeling donors most probably Guy Babine and his family. Photograph by Hourakhsh Ahmad Nia. Image by Enlart 1987.

SE3. On the south side of the altar, near the sacristy door, is the piscina used for washing holy vessels.

E1. On the wall of the altar there is a simple pattern representing masonry courses outlined in red but in the fifteenth century a large picture of the Crucifixion in a good Italian style was painted over it [3, 18]. unfortunately, today this painting completely vanished.

E2. On the apse, one can recognize a series of Lusignan coats of arms in the shape of squares with crosses and a rampant lion in pale yellow. Enlart [3] mentioned that these coats of arms as remarkable heraldic decoration contain a lion rampant, for Cyprus or Armenia, and Jerusalem quartering Lusignan.

This research study revealed that these coat of arms belong to three main patrons of the church (Figure 33-34). The first one is Guy Babin's coat of arms which had a contribution to construction. The second one was prelate of Nicosia, the Dominican John of Conti or Lusignan coats of arms. This coat of arms decorate the keystones of the nave vaults as well as the stone identified above as a lintel. The third one for the King of Jerusalem. Even though the coats of arms painted in the apse, as well as in relief on the west facade of the church, indicate substantial royal contributions, very likely from King Hugh IV, whose predilection for patronizing monasteries is also reflected in the Abbey of Bellapais [18].

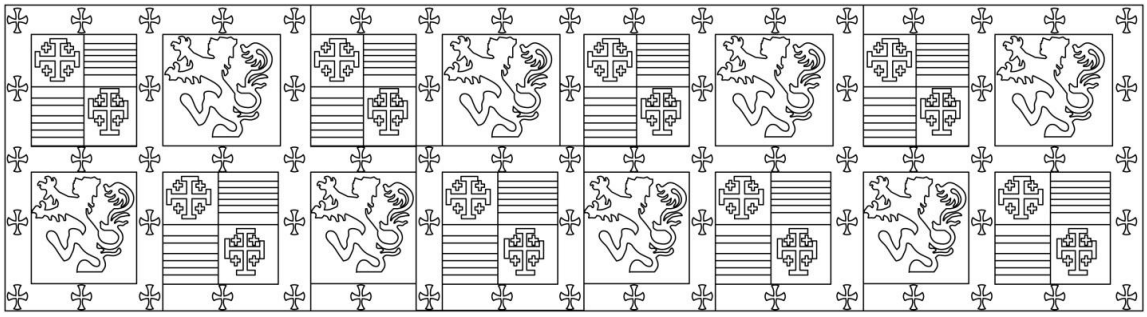


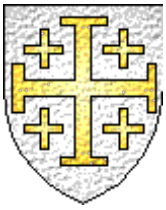
Figure 33. Painting on a stylobate of civet. Image by Hourakhsh Ahmad Nia.

Figure 34. Coat of arms of main donors of three main patrons of Carmelite. Guy Babin, Lusignan and Jerusalem coats of arms.

This coat of arms is similar to the ones in Bellapais (Figure 35). In Carmelite Church there are coat of arms of all Cyprus, Jerusalem and Lusignan empire; who contributed to build the church and it seems that the church is a symbol of peace (Table.1).

Figure 35. Lusignan coats of arms, Bellapais, Cyprus. Photograph by Rokhsaneh Rahbarianyazd.

Table 1. The coat of arms Jerusalem Empire and King of Cyprus

			
Hugues III King of Cyprus (1267-1284) King of Cyprus (1284-1285), Jean I, Henri II King of Cyprus (1285-1306)	Jean de Brienne (Jérusalem) (1227-1296)	Jean I de Brienne King of Jerusalem (1210-1223) Comte of Eu Emperor of Constantinople (1231-1237).	Jean Count of Jaffa and Askalon (1247- 1266).

E3: At the altar there are two niches probably the aumbries, for storing sacred vessels or treasures.
NE1. one of the most interesting paintings at the altar is the rich Gothic tapestry hanged with the coats of arms of various countries among others of England (3 lions passant) and France (seme de fleur-de-lis) [3]. Le Huen in his travels (1487) describes a similar decoration with the coats of arms of European states as existing in the Carmelite church in Nicosia [4]. Thus, this collaboration of all countries from different countries in the world it seems that the message invites the countries to be in peace. Unfortunately, there is no evidence even the shadow of this magnificent mural painting (Figure 36).

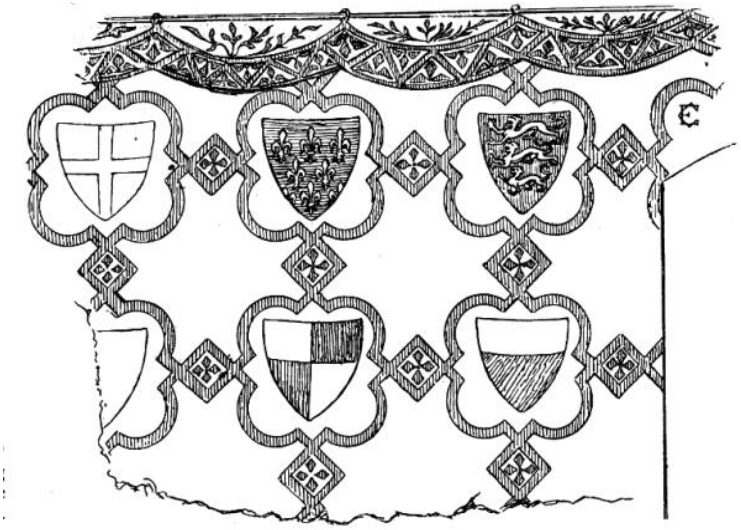


Figure 36. Mural painting imitating tapestry from the stylobate in choir [3].

E4. On the wall of the northern chapel, there are three holy women which the painting from the left side was destroyed (Figure 37).

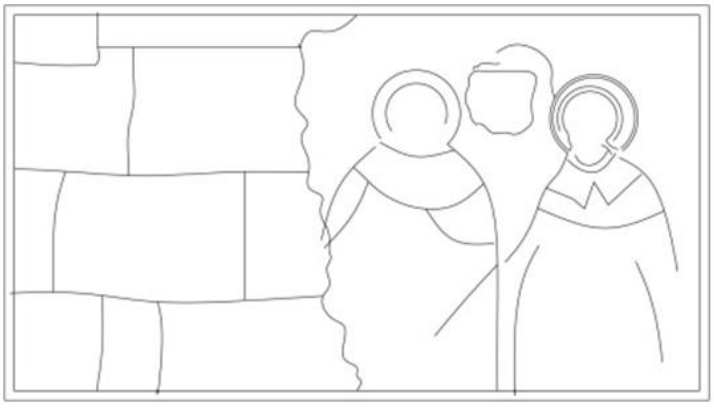


Figure 37. Byzantine holy women. Photograph and Image by Hourakhsh Ahmsd Nia.

Figure 38 represents the fresco paintings of the South wall. On the South wall of the church two fresco paintings, one of St. Catherine and the other St. Helena signified.

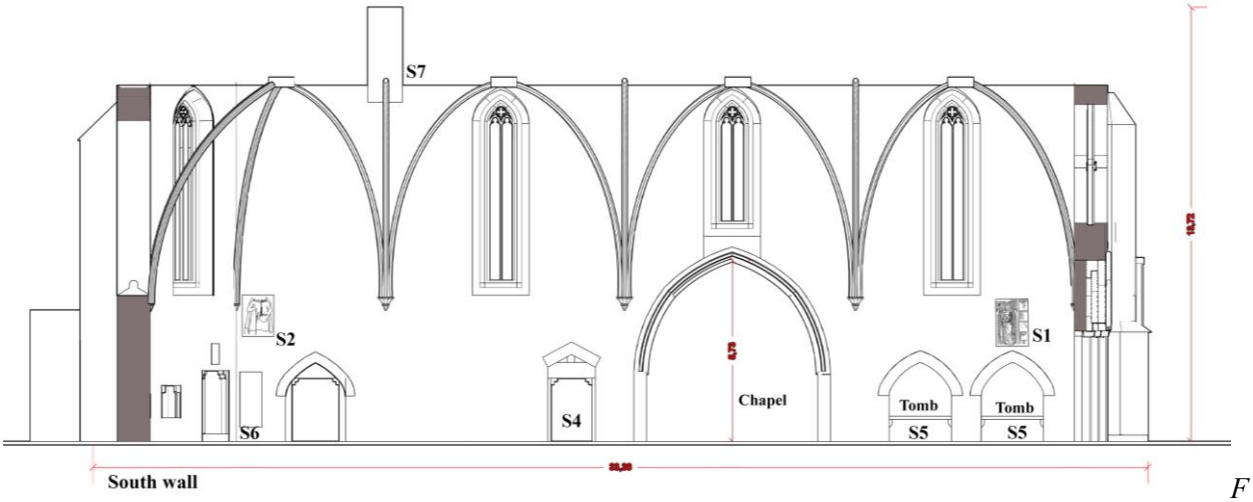


Figure 38. Painting on the South wall of the church. Image by Rokhsaneh Rahbarianyazd.

S1. On the south wall, above western tomb-niches there is a female saint holding a book. According to Enlart [3], she is most probably St. Catherine, who is associated with Famagusta in life-size standing in a pretty Gothic arcade flanked on the right side by five small paintings of legendary scenes. Enlart [3] describes this painting from top to down; (a) the saint kneeling before a person seated (no doubt St. Catherine before her father) (b) entering a small building (c) in prison, guarded by a sleeping soldier (d) two persons in conversation (e) uncertain. The paintings are Italian in styles which are probably dating to the mid-fourteenth century. Bacci [19] believes that these ten seen are belong to her life and miracles (Figure 39).

Figure 39. St Catherine of Alexandria flanked by ten scenes of her life [3].

S2. Above the sedilia there is a Byzantine painting and according to Enlart [3] is St. Helena. St. Helena was Constantine's mother and one of the important saints in the early period of Christian history. She went to the Holy Land where she is credited by some who discovered the True Cross. She was a Byzantian woman of lower social standing [16]. She is standing, wearing a splendid red robe that holds an orb in her left hand and the right raised must have held the True Cross (referred to Enlart) (Figure 40).

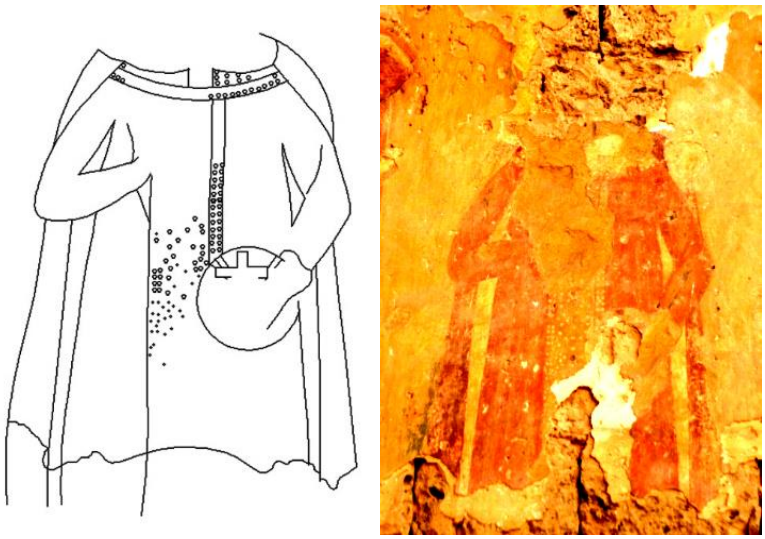


Figure 40. St. Helena, Constantine's mother. Photograph and Image by Hourakhsh Ahmsd Nia.

S6. There is a wall niche with a lintel supported on quadrant corbels contained a stone bench served as sedilia, the Superior of the monastery sat (Figure 20).

Figure 41 represents the fresco paintings of the West wall.

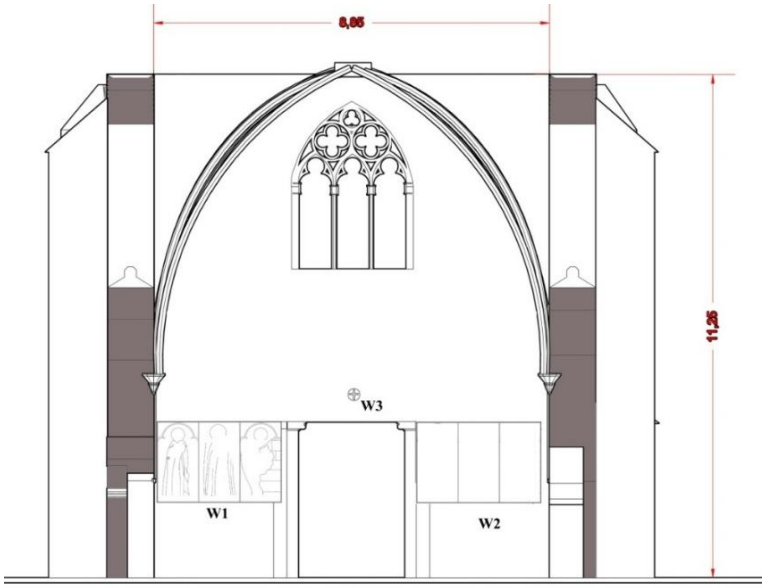


Figure 41. West wall of the church. Image by Rokhsaneh Rahbariayazd.

W1. On the western wall both side of the door, there are icon figures of holy women and men (Figure 42). Unfortunately, the ones on the right side have completely vanished. Also, the one on the left side has little visibility. It is just Enlart's description [3]: "The other three of which are on the west wall south of the main doorway. Inscriptions in Gothic capitals. The style is rather Byzantine".

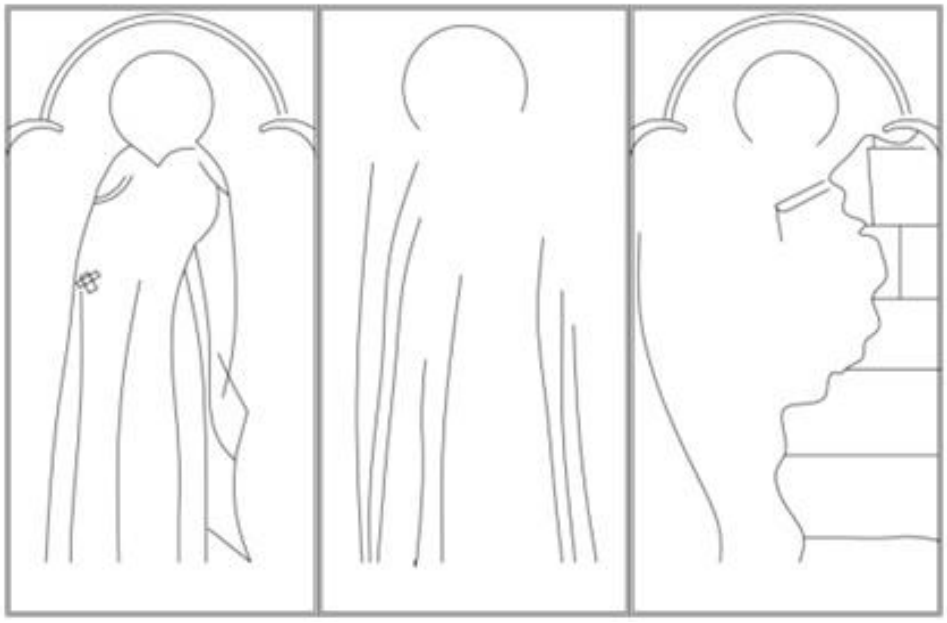


Figure 42. Three saints. Photograph and Image by Hourakhsh Ahmad Nia

4.2. Exterior fresco painting

On top of the main doorway of the main entrance from the west side, there is “tympanum” which is plastered and frescoed representing The Virgin Mary with the infant Christ flanked by two pairs of angels (Figure 43). Unfortunately, small part of painting survived. However, the hollows created by the painter give ideas of the painting. According to Kouymjian, [18] “The fresco might date from a fairly late period when the church was turned over to Greek Orthodoxy. Indeed, several of the interior frescoes seem to be from a time after the Latin/ Catholic control of the church”.

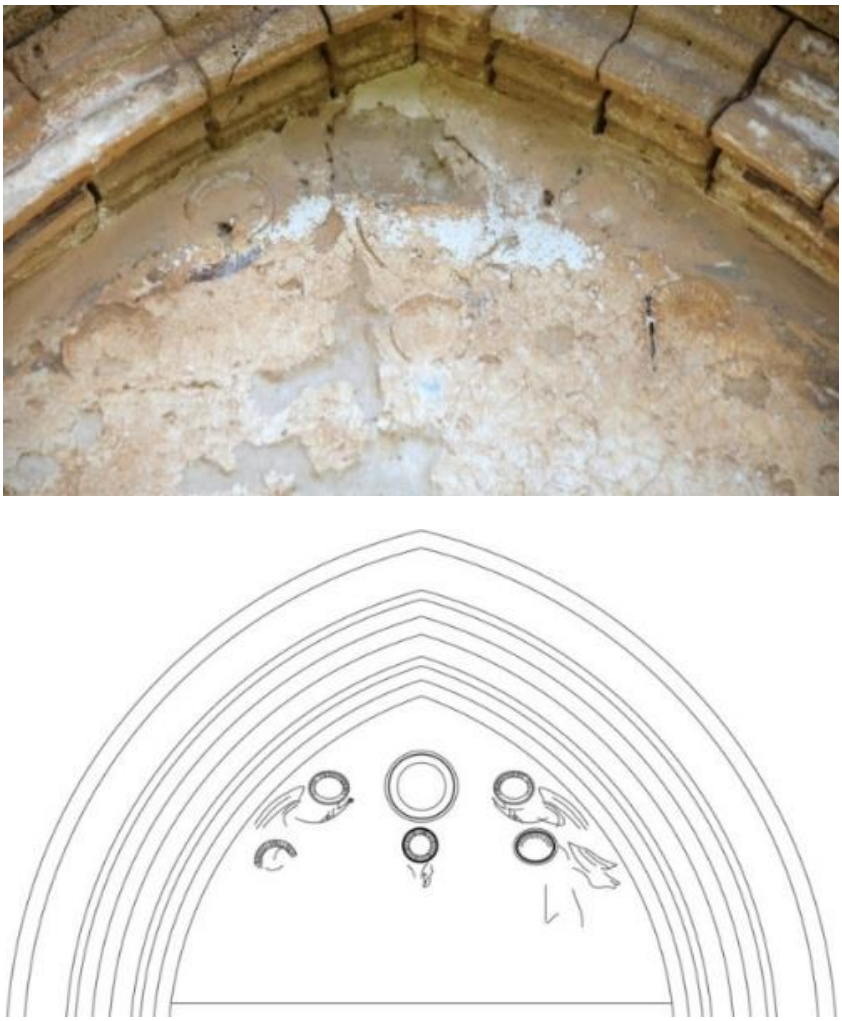


Figure 43. Virgin Mary with the infant Christ flanked by two pairs of angels. Photograph and Image by Hourakhsh Ahmsd Nia.

According to Jeffery [4] lower layer or original series of decorations has been executed by artists trained in the European art of the middle ages. Over these at some subsequent period have been daubed the icon figures of Byzantine character, which mark perhaps the occupation of the building, by the Orthodox Church. In other words, it seems probable that after the retreat of the Latin Orders from Cyprus in the 15th century many of the Latin Churches fell into the hands of the native Christians who signalized their occupation by repainting the interiors of the buildings.

5. ENLART'S EXCAVATION

Enlart in his 1901 excavations in Carmelite church revealed the fragments of gravestones and inscriptions of Guy Babin at the east end church. Guy Babin was the knight of Nicosia and been a devoted vassal of King Hugh IV. The slab had comminuted due to the force of the keystone of the vault and collapse (Figure 44). The tombstone of Guy Babin with the following inscription read as "Here lies the very noble Monsignor Guy BABIN very noble baron - June of the year 1363".

ICI GIT LE TRES NOBLE CH'R MONSEIGNOR
GUI BABIN TERS NOBLE BARON
DE JUNE LAN DE MCCCLXIII DE

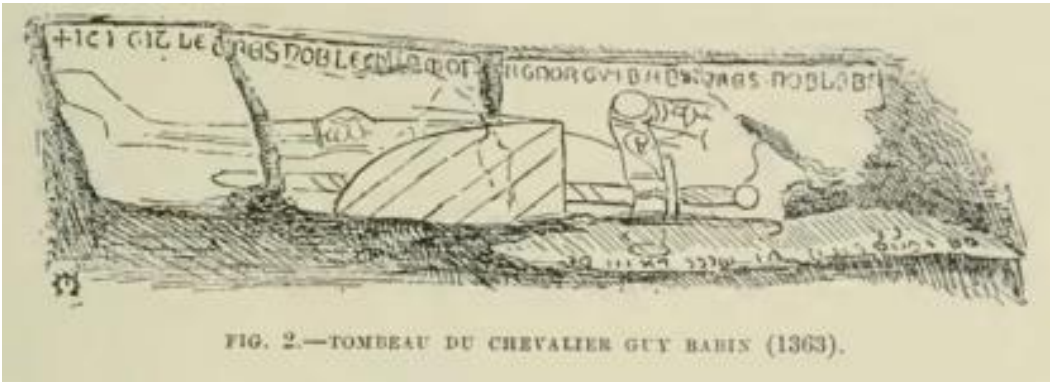


Figure 44. Tombstone of Guy Babin [20].

A broken and fragmented tombstone of a Lady as to afford very little trace of the inscription. The family name seems to have been Vorefke. It is probably the work of the 16th century (Figure 45).

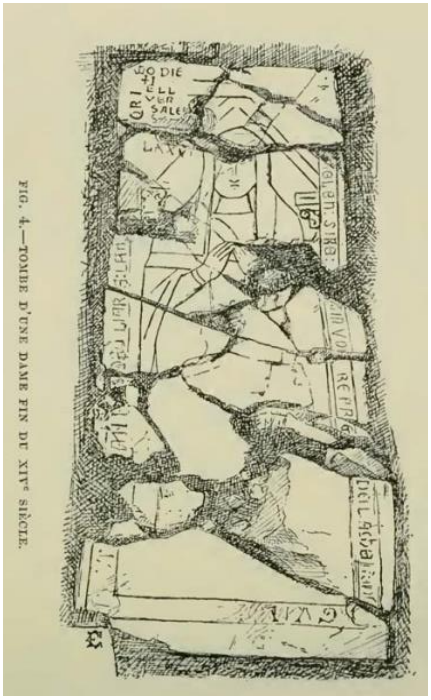


Figure 45. A tombstone of a Lady in the XVIth century [20].

Another fragmented tombstone with a coat of arms (Italian?) with three diagonal line and flower (Figure 46). This coat of arms also occurs on a shield within an arched niche preserved in the medieval museum.

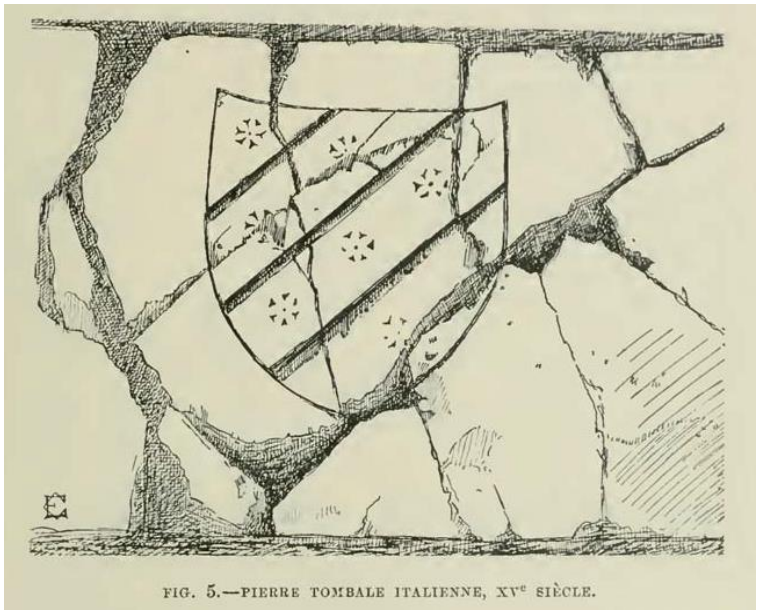


FIG. 5.—PIERRE TOMBALE ITALIENNE, XVe SIÈCLE.

Figure 46. Fragment of a tombstone with a coat of arms [20].

One of the distinguished medieval wall inscriptions discovered in Famagusta when M. Enlart was investigating the Carmelite church in 1901. It is the much-broken fragment of a stone slab 75 by 47 centimeters which formerly was situated on the altar. It is engraved in fine Gothic capitals inlaid with black mastic and appears to be a record of the foundation of a perpetual celebration of the mass (Figure 47) [20].

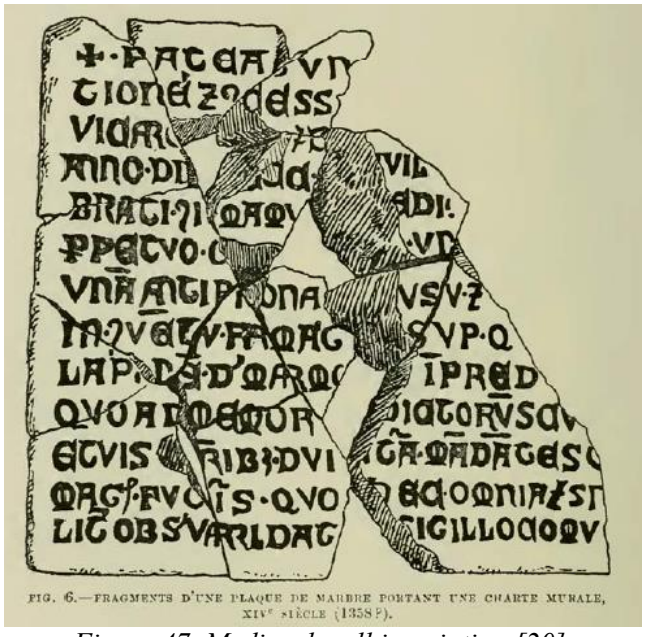


FIG. 6.—FRAGMENTS D'UNE PLAQUE DE MARBRE PORTANT UNE CHARTE MURALE, XIVe SIÈCLE (1358 ?).

Figure 47. Medieval wall inscription [20].

6. CONCLUSION

The Carmelite church is a historic ruined building and several parts of the building destroyed through time. However, its historic value needs careful preservation. Since any maintenance program necessitate the process of documentation, this paper tries to provide a record, particularly the original state of the church and the parts where reconstructed, repaired, and then reassembled. This qualitative research through investigation, comparison analysis, measure-drawing, reviewing available historical documents and photos aimed to document the original state of the Carmelite church, which can be an indispensable aid in the execution of the conservation scheme of the church. The research revealed similarities in terms of structure and form of the building with the churches built in the city of Famagusta. Records and documentation of the church reveal that due to the uniqueness of the building, the protection of fresco, building component and engravings of the Carmelite church is necessary.

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High-Rise Towers and Their Relation to Context-Sensitive Design Elements in Architectural Education

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Abstract: *This paper studies modern towers' architecture from a pedagogical point of view focusing on elements of towers' impact on its surrounding context and its impact on architecture students' understanding of high-rise building typology. The paper examines towers' impact on the surrounding context if it is far greater than the contextual parameters that affect their architecture itself, regardless of the tower's spatial program and functions. The research followed an analytical methodology to break down students' projects within different locations in Egypt from the 6th semester design course in the Architecture and Urban Design program, German University in Cairo. The locations are characterized by being a new urban community development by the government. These new communities have business districts with a vision of high-rise structures plugged in them. The selected projects were done over a duration of 6 years (2013-2019). A series of comparative analysis were achieved by proposing a matrix that highlights the interrelations between the different types of towers and the contextual sensitive design parameters. The paper categorizes the projects according to their locations within new cities in Egypt, and these locations are New Cairo, New Capital and New Alamein City. All collected data and analysis are compiled through the proposed matrix of contextual sensitive design parameters based on three factors: architecture approach, street and Infrastructure, and public realm.*

Keywords: *High-rise, context-sensitive design parameters, architectural education, new cities*

Yüksek Katlı Yapılar ve Bu Yapıların Mimarlık Eğitiminde Bağlama Duyarlı Tasarım Ögeleriyle İlişkisi

Öz: *Bu makale, yüksek katlı modern yapı mimarisinin çevresindeki bağlam üzerine etkisini ve mimarlık öğrencilerinin yüksek katlı bina tipolojisi anlayışını pedagojik bir bakış açısıyla incelemektedir. Makale yüksek katlı binanın mekânsal programı ve işlevlerinden bağımsız olarak, mimarisinde rol oynayan yapı çevresindeki bağlam üzerine etkisini ve bağlamsal parametrelerini incelemektedir. Araştırmada, Kahire Alman Üniversitesi Mimarlık ve Kentsel Tasarım Programı 6. dönem tasarım dersi öğrenci projelerini Mısır'ın farklı bölgelerinde ayrıntılandırırken analitik metodoloji yöntemi izlenilmiştir. Seçilen konumların tamamı, devlet yönetimi tarafından yeni kamusal oluşum olarak nitelendirilmektedir. Bahsi gecen kamusal oluşumların ticari bölgeleri yüksek katlı yapılar ile tahayyül edilmektedir. Seçilen projeler 6 yıllık bir süre boyunca (2013-2019) yapılmıştır. Süreçte, farklı kule türleri ve bağlama duyarlı tasarım parametreleri arasındaki karşılıklı ilişkileri vurgulayan bir matris önerilerek bir dizi karşılaştırmalı analiz gerçekleştirilmiştir. Makalede projeler yeni inşa edilen şehirlerdeki konumlarına göre sınıflandırılmıştır. Bu şehirler, Yeni Kahire (New Cairo), Yeni Başkent (New Capital) ve Yeni Al Alamein Şehri (New Al Alamein City)'dir. Elde edilen veriler ve analizlerin tümü önerilen, üç faktöre dayalı bağlama duyarlı tasarım matris parametreleri olarak derlenmiştir. Bu faktörler; mimari yaklaşım, sokak ve altyapı ve kamusal alandır.*

Anahtar Kelimeler: *Yüksek katlı yapı, Bağlama duyarlı tasarım parametreleri, Mimari eğitim, Yeni şehirler*

1. INTRODUCTION

Metropolitan vertical expansion became a main urban and architectural theme of many MENA cities as a vision for futuristic development and globalization. There are 387 high-rise structures in different contextual parameters that led to the debate of towers context-sensitive design approaches in the architectural professional and educational community especially in the MENA region in the past few years. High-rise towers have turned into significant architectural typology since the industrial revolution and the wide use of steel frame construction in the late 18th century, which resulted in urban vertical expansion until today, with a competition among most architects in constructing the most noteworthy vertical structures have existed since this industrial revolution [1, 2].

Conceptual ideas for Mega City Pyramid by Shimizu Corporation that done in 2004 as a vision for 2030 in Tokyo-Japan. It is a conceptual proposal for the construction of a massive pyramid to house 1 million people, and there are many other proposals that aimed at creating the feasibility for occupants to live from support to shrine without a need to go outside beyond what many would consider possible as other optimistic musings. Notwithstanding the way that reminiscent of Le Corbusier's planning and architectural visions for the Contemporary City [3], Mega City ideas of the 20th century, the Pyramid and Sky metropolitan regions illustrated some possible metropolitan living environments. They combine trails and examinations of inventive structural segments, building/construction technical approaches, and advancement techniques that cause all of them to show up the proof and possibility to realize these ideas and proposals.

There were 119 accomplished high-rise structures of 150 meters or more prominent height as the Council of Tall Buildings and Urban Habitat stated in 2008, and there were 387 high-rise building structures by 2018, within an average of twenty-seven towers every year for these ten years somewhere in the range of 2008 and 2018.

The development pace of these high-rise structures depends on some aspects as administrative arrangements, futuristic visions, population growth and density. As populace development functions a crucial part in high-rise blended use lodging projects existences in mega urban areas over the MENA region. The elements and the purposes behind high-rise development in the region are as assorted as the cities that include it.

The focus of this paper will be analysis of architecture students in German University in Cairo over 6 years in 6th semester - design studio towers. The studio focused only on high-rise mixed-use towers typology from an urban, architectural, environmental, and structural point of view. The selected site are all in business districts in new urban communities proposed by the Egyptian government as part of the governmental urban development goals and visions for 2030 and 2050. The presence of high-rise towers typology in these districts is also part of the government’s visions and the design studio tried to tackle different approaches to test the design and impact of these mega structures in these new communities.

2. RESEARCH HYPOTHESIS

The paper endeavors to discuss if modern towers’ architecture from the comprehension of architectural student is supple to the incorporating context impact. In addition, it battles that modern towers’ effect on the encompassing context is undeniably more distinct than the pertinent parameters that affect their design itself, paying little heed to the tower’s principle functions and spatial program.

As indicated by the literature reviews, the three primary types of sustainability are the social, environmental and economic. Accordingly, the significant standards will take into consideration these viewpoints in the

analytical part that uses the proposed matrix to expand and enhance the potential function of residential urban spaces.

3. RESEARCH AIMS AND OBJECTIVES

This research intends to recognize the relation between the modernistic towers and their encompassing context. Furthermore, the research pursues to build up a matrix conducted from the diverse designed towers in various locations and the contextual sensitive design parameters. The proposed matrix examines the towers' impact on the encompassing context and how far can influence it.

In this manner, the research outlines its objectives through:

- Identifying the contextual sensitive design components.
- Assigning the correlations between the contextual sensitive parameters and the towers over the proposed matrix.
- Confirming the presence of the referenced correlations within the Egyptian academic comprehension.

4. RESEARCH METHODOLOGY

The research seeks after an analytical methodology that separates thirty student tower projects amongst three different site locations from the sixth semester design course in the Architecture and Urban Design program, German University in Cairo. The students' sample of projects were done during four years between 2015 and 2019. The proposed developed matrix achieved a concatenation of comparative investigations that determines the correlations between the different kinds of towers and the relevant contextual sensitive design components.

This research arranges the chosen towers by their distinctive locations within different cities in Egypt, and these locations are New Cairo City as metropolitan expansion context in 2015, New Capital City as new contextual city alongside Cairo in 2016 and 2018, while New Alamein City as modern metropolitan seafront extension setting in 2019.

The projects of students' towers expanded an extent of various models from the four unique site locations, and every pattern shapes of sixteen endeavors circulated correspondingly as demonstrated by the students' GPA. The proposed matrix of contextual sensitive design components requests and filters all assembled information and analysis dependent on three fundamental considerations, and they are components of public realm, street and Infrastructure components, and architectural components [4].

5. LOCATIONS AND STUDIO STRUCTURE OF SELECTED CASE STUDY IN GUC TOWERS DESIGN STUDIO

5.1. Studio Introduction

5.1.1. Selected locations

Characteristics of selected sites:

1. In new urban community

a. 2015: in New Cairo City – a new community planned in 2000 on an area of 300 square kilometers and it has been under construction since then with the aim to have a residential and business community outside the crowded center of the capital Cairo (Figure 1).

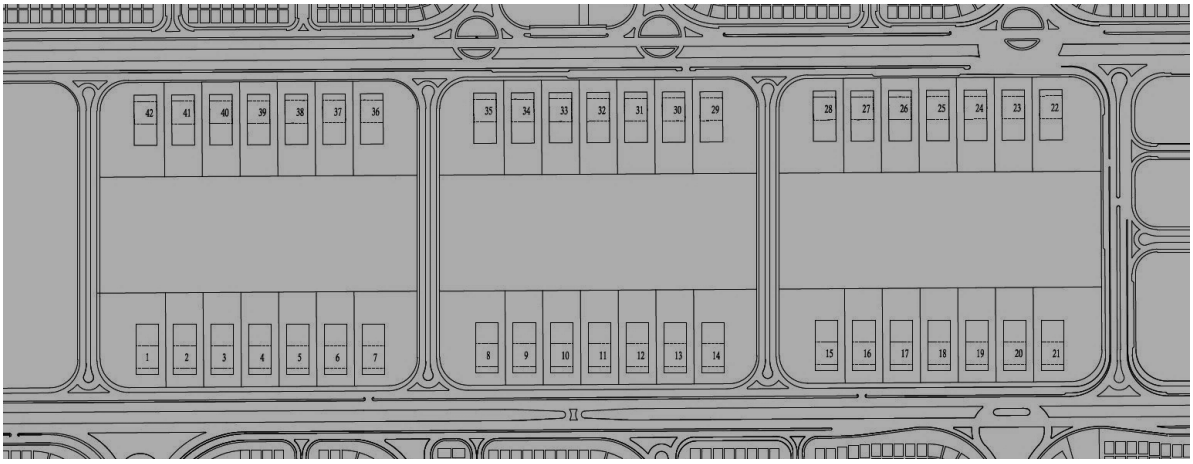

Figure 1. New Cairo proposed sites in design studio towers 2015. Authors, 2021.

b. 2016 and 2018: in New Administrative Capital - a new community planned in 2015 on an area of 700 square kilometers. It has been under construction since then with the aim to have all governmental administrative headquarters outside the crowded center of the capital Cairo along with business, residential and recreational zones as one of Egypt's biggest currently ongoing national projects.

c. The new capital will have high-rise business district with the tallest tower in Africa already under construction and the selected site for the design studio this year was in the same district (Figures 2, 3).

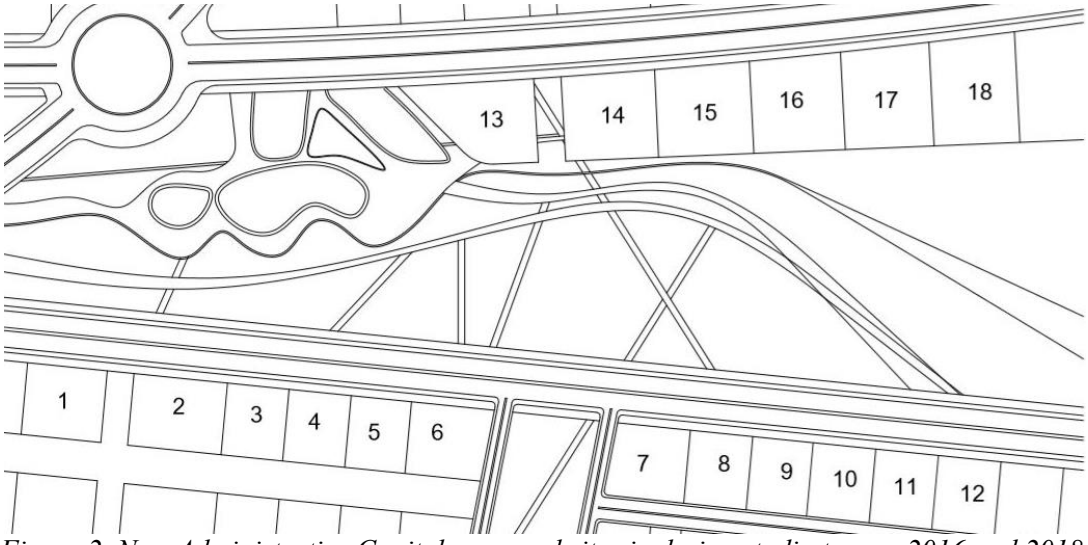

Figure 2. New Administrative Capital proposed sites in design studio towers 2016 and 2018. Authors, 2021

Figure 3. New Administrative Capital in Egypt proposed visions by the government [5]

d. 2019: in New Alamein City - a new costal city by the Mediterranean Sea planned in 2018 on an area of 210 square kilometers and it has been under construction since then with the aim to have a new recreational and residential hub next to the historic city of Alexandria by the Mediterranean.
All the water front development in this city will be high-rise structures and this is the location for the design studio towers in this year (Figures 4, 5).

Figure 4. New Alamein City proposed sites in design studio towers 2019. Authors, 2021

Figure 5. New Alamein City waterfront under construction towers [6]

The following Figure6 highlight the different selected sites for the design studios on the strategic vision map done for the government in 2018 with the red circles highlighting important existing cities as part of the development vision to link new and existing cities.

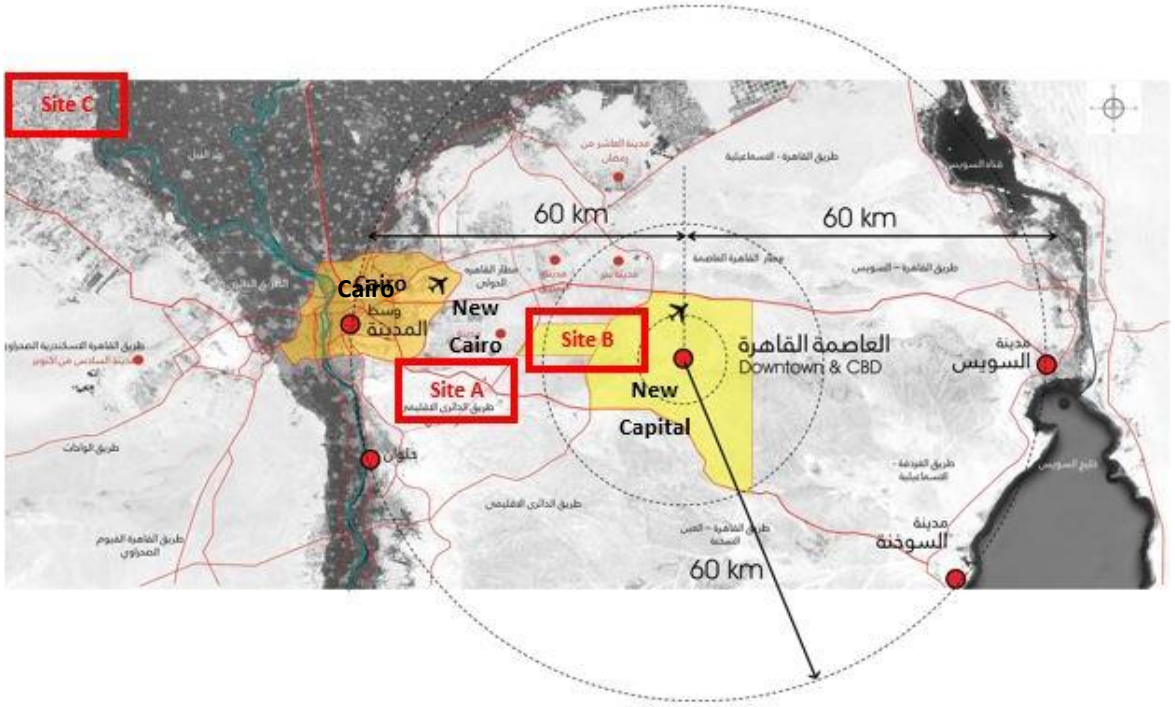

Figure 6. Different selected sites for the design studios on the strategic vision map done for the government in 2018 [5]

5.1.2. Studio Structure

The studio –over the selected years- have some common requirements from students to achieve the final project as listed in Table1. The structure was based on developing their knowledge of high-rise towers and their impact gradually over the semester's 13 weeks. The first 2-3 weeks started with site understanding, context analysis, site visit and first urban approach ideas.

Weeks 4-6 normally focused on transforming the student's urban approaches into keywords and design ideas for the tower mass and form itself. The remaining part of the semester focused on structural solutions and façade engineering of the developed ideas.

The students worked with model making techniques on different scales:

- Macro scale – Urban scale. Normally from scale 1:5000 to 1:10000,
- Medium scale – tower mass in neighboring context scale. Normally scale 1:1000
- Micro scale – tower engineering (structure and façade) scale. Normally scale 1:400 to 1:20 details.

Also the students in parallel to this model making approach worked on providing 2D drawings and 3D software models + working on developing ideas via parametric tools and environmental simulation tools such as Rhino, Grasshopper, and Ladybug tools.

Table 1. Summary of Students Tasks over the semester in selected case studies in GUC. Authors, 2020

WEEK	PHASE	STUDIO/TUTORIAL
01	Introduction	Site Visit
		Context Analysis
02	Mass and Form	Intro to Studio work (Models, Sketches, and Ideas)
	Urban Analysis	1st Urban Approach Ideas and Site Analysis
03	Tower Building Examples + Core design	Towers Research + inspirations/concepts/ models/sketches Tower in Context Impacta
04	Tower Examples + Hotel Design Standards	Review students projects + Studio work (Models, Plans, and sections)
05	Review students projects + Studio work (Models, Core Design, Plans, and sections)	
06	High rise buildings Structure	Review students projects + Studio work (Models, Layout, Core Design, Structure, Plans, Facades, and sections)
07	MIDTERM SUBMISSION	
08		Review students projects + Studio work (Models, Core Design, Structure, Plans, Facades, and sections)
09	Façade Engineering / Wall Sections	Review students projects + Studio work (Models, Core Design, Structure, Plans, Facades, and sections)
10	Review students projects + Studio work (Models, Layout, Core Design, Structure, Plans, Facades, and sections)	
11	Review students projects + Studio work (Models, Layout, Core Design, Structure, Plans, Facades, and sections)	
12	Review students projects + Studio work (Models, Layout, Core Design, Structure, Plans, Facades, and sections)	
13	Final Drawing Submission	
14 & 15	MODELS WORKSHOP	
	MODELS WORKSHOP	
	FINAL Submission Model	
	FINAL PRESENTATION	

The given space program was normally a mixed-use high-rise tower of 40 floors with footprint of around 1500 square meters. The towers included office spaces, commercial and recreational areas, residential hotel units, galleries, restaurants, and the students were given the freedom to modify and tailor the space program to match their urban and conceptual design approach.

Other semesters the proposed space program was slightly changed to housing projects or special typology such as community service centers to match the selected site needs with always having some mixed use spaces integrated in the tower.

5.2. Example Space Program

5.2.1. Example 01_Luxury Hotel + International Office Firm (proposed in 2015, 2016, 2018, and 2019 design studio cycles)

Entrance Hall
Information desk/ Security/ Waiting areas 200m2
Conference hall 300m2
Exhibition space 200m2
Core area 150m2
Commercial Zone
Shops (clothes/ furniture/ books/ tourist agents/ banks) 1000m2
Coffee shop and restaurant 300m2
Services 500m2
Outdoor Area
A well-landscaped area, including main entrance, side entrance, underground parking and service entrance and an entertainment area
7 & 5 stars Hotel Tower
Hotel Rooms space per floor approximately 1000m2
Core and service area approximately 200m2
Panoramic Restaurant
Exclusive restaurant with a special theme on the top floor with its services- 400m2
Vertical Circulation Core(s) include:
Elevators
Main staircase and fire escape stairs
WCs
HVAC
Electrical room
Low current and network room
BMS (Building Management System)
Storage and services

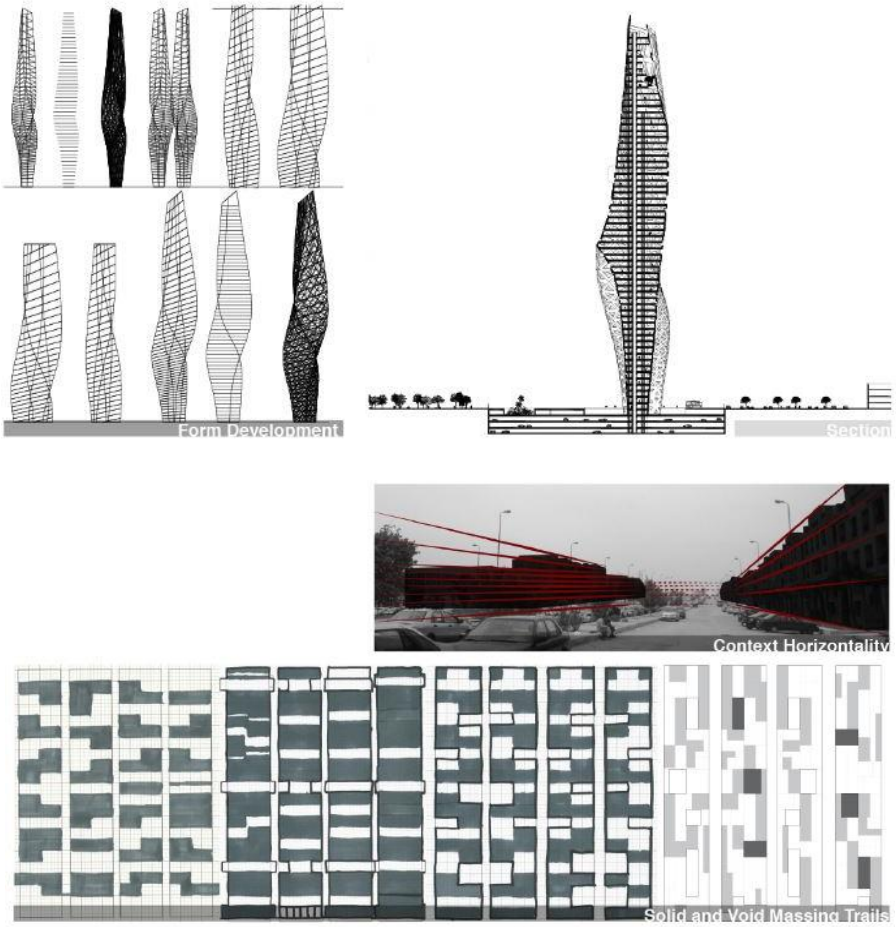

Figure 7, 8. Example of studio towers 2015 in New Cairo with the student using parametric grasshopper tool for form generation and structure solutions by student Karim El Kurdi. Authors, 2020

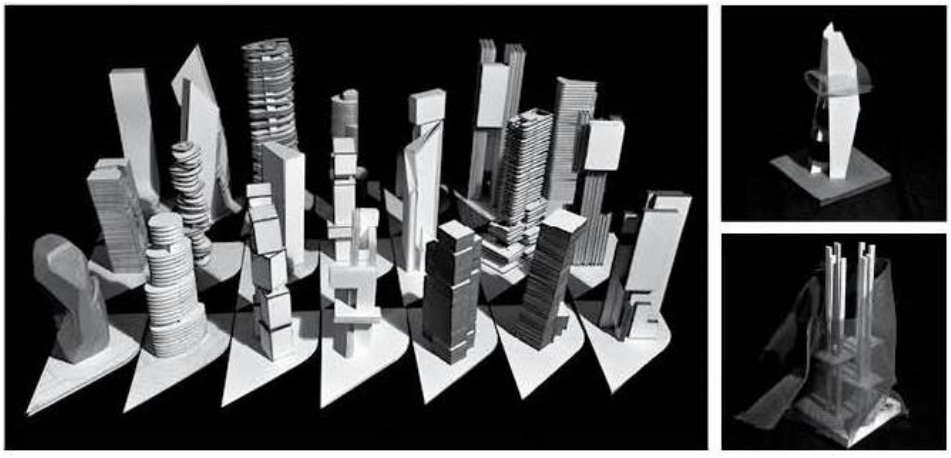

Figure 9. Example of studio towers 2019 in New Alamein City with the student using physical models scale 1:1000 for form generation alternatives. Authors, 2020

The comparison in this research also investigates the results of the students' work in different locations as mentioned before and with reference to similar and slightly modified space programs and if these locations change and these space programs affected the context sensitive tower design elements presence and impact or not.

6. CONTEXTUAL SENSITIVE DESIGN ELEMENTS

Each project has an alternate setting while the project's comprehension context plays a crucial role in the accomplishment of every design project especially in its final architectural design result. Furthermore, the surrounding context can be tended as compel as well as design opportunity. The diverse case studies of international contextual sensitive guidelines taking into consideration the relevance of the design components to the tower architectural design project, which results from a pedagogical perspective, created and improved a set of conducted components. These elements were been sorted into three fundamental divisions:

- Contextual Sensitive Streets and Infrastructure Elements.
- Contextual Sensitive Architectural Elements.
- Contextual Sensitive Public Realm Elements.

Every division comprises a list of subdivisions that include a scope of contextual components as figured in Table 2.

Table 2. Contextual sensitive design components. Authors, 2020

	Contextual Sensitive Streets and Infrastructure Elements
01	Present urban characteristics.
02	Consider the connection between open spaces, streets and buildings.
03	Supply remarkable situations.
04	Promote and bolster corridors' view.
05	Make a characterized and dynamic street wall.
06	Adjust various utilizations for sustainable environment.
07	Comply with naturalistic aspects.
08	Integrate infrastructure network (streets, bridges, sidewalks, transportation systems …).
	Contextual Sensitive Architectural Elements
09	Integrate clear architectural ideas toward the context.
10	Incorporate encompassing materials with building designs.
11	Consider the project's design from different viewpoints.
12	Supply dynamic building fronts.
13	Utilize sustainable approaches.
14	Integrate building techniques and materiality with the domestic context.
15	Consolidate landscape elements with public open spaces.
	Contextual Sensitive Public Realm Elements
16	Integrate site topography.
17	Connect public open spaces with the streetscape.
18	Supply public spaces to enhance the physical comfort, diverse social activities and visual accessibility
19	Highlight the local characteristics.
20	Provide bicycling and public transportation.
21	Promote pedestrian pathways.
22	Consolidate social, environmental & cultural features.
23	Boost economic sustainability (land uses, business and other activities …etc.).
24	Esteem naturalistic features (as connection to water or a view, open space, mountain…).
25	Consider the ecological features (climate, energy, water…).

7. APPLYING THE PROPOSED MATRIX

GUC students of Towers design studio were asked to fill-in a survey based on Table1 to rate the relevance of their design results to each criteria with 0 representing no relevance and 5 representing maximum relevance. A total of 80 out of 140 total tower students (average of 26 students per each tower design studio answered the survey). Figure 02 represents samples of students design results. The survey results' summary for each of the design locations is represented in Table3. The students were asked to choose between range of 0-5 (0 representing the non-existence of the criteria and 5 representing strongly agree with the implementation of this criteria in the design studio).

Table 3. Average scores of each criteria based on results of students' survey. Authors, 2020

Tower Studio	Present urban characteristics	Consider the connection between open spaces, streets and buildings.	Supply remarkable situations.	Promote and bolster corridors' view.	Make a characterized and dynamic street wall.	Adjust various utilizations for sustainable environment.	Comply with naturalistic aspects.	Integrate infrastructure network (streets, bridges, sidewalks, transportation systems …).	Integrate clear architectural ideas toward the context.	Incorporate encompassing materials with building designs.	Consider the project's design from different viewpoints.	Supply dynamic building fronts.	Employ sustainable features	Integrate building techniques and materiality with the domestic context.	Consolidate landscape elements with public open spaces.	Integrate site topography.	Connect public open spaces with the streetscape.	Supply public spaces to enhance the physical comfort, diverse social activities and visu	Highlight the local characteristics.	Provide bicycling and public transportation.	Promote pedestrian pathways.	Consolidate social, environmental & cultural features.	Integrate social environment & cultural characteristics	Boost economic sustainability (land uses, business and other activities …etc.).	Esteem naturalistic features (as connection to water or a view, open space, mountain…)	Consider the ecological features (climate, energy, water…).
New Alamein Tower 2019	3.66	3.63	4.17	4.19	3.05	3.67	3.97	3.82	4.34	3.32	4.11	3.81	3.01	2.57	4.08	3.25	3.77	4.11	3.22	2.97	4.01	4.26	3.56	4.10	4.51	3.14
New Cairo Tower 2015	3.34	3.56	3.70	3.86	2.98	3.48	3.08	3.10	3.92	2.89	3.47	3.36	2.74	2.40	3.84	2.25	3.59	3.76	3.01	2.60	3.10	3.73	3.15	4.04	3.48	2.54
New Capital Tower 2016	3.04	3.20	3.46	3.78	3.11	3.37	2.84	2.99	4.05	2.75	3.51	3.53	2.61	2.31	3.91	2.27	3.67	3.69	2.89	2.38	2.90	3.65	3.09	3.79	3.17	2.22
New Capital Tower 2018	2.72	3.07	3.26	3.72	3.27	3.45	2.74	3.06	4.04	2.93	3.79	3.56	2.59	2.43	3.93	2.09	3.57	3.69	3.01	2.32	2.87	3.58	3.17	3.81	3.16	2.33

The summary for New Cairo tower in 6th semester - 2015 showed weakness in the following criteria elements: Integrate building techniques and materiality with the domestic context and Integrate site topography. It showed strength in the following criteria elements: Boost economic sustainability (land uses, business and other activities …etc.).

The survey results' summary for New Capital tower in 6th semester - 2018 and 2016 showed weakness in the following elements: Provide bicycling and public transportation, Consider the ecological features (climate, energy, water…), and Integrate site topography. It showed strength in the following criteria elements: Promote and bolster corridors' view, Integrate clear architectural ideas toward the context and Consolidate landscape elements with public open spaces.

The survey results' summary for New Alamein tower in 6th semester - 2019 showed weakness in the following elements: Integrate building techniques and materiality with the domestic context and Provide bicycling and public transportation. It showed strength in the following criteria elements: Esteem naturalistic features (as connection to water or a view, open space, mountain…) and Supply remarkable situations.

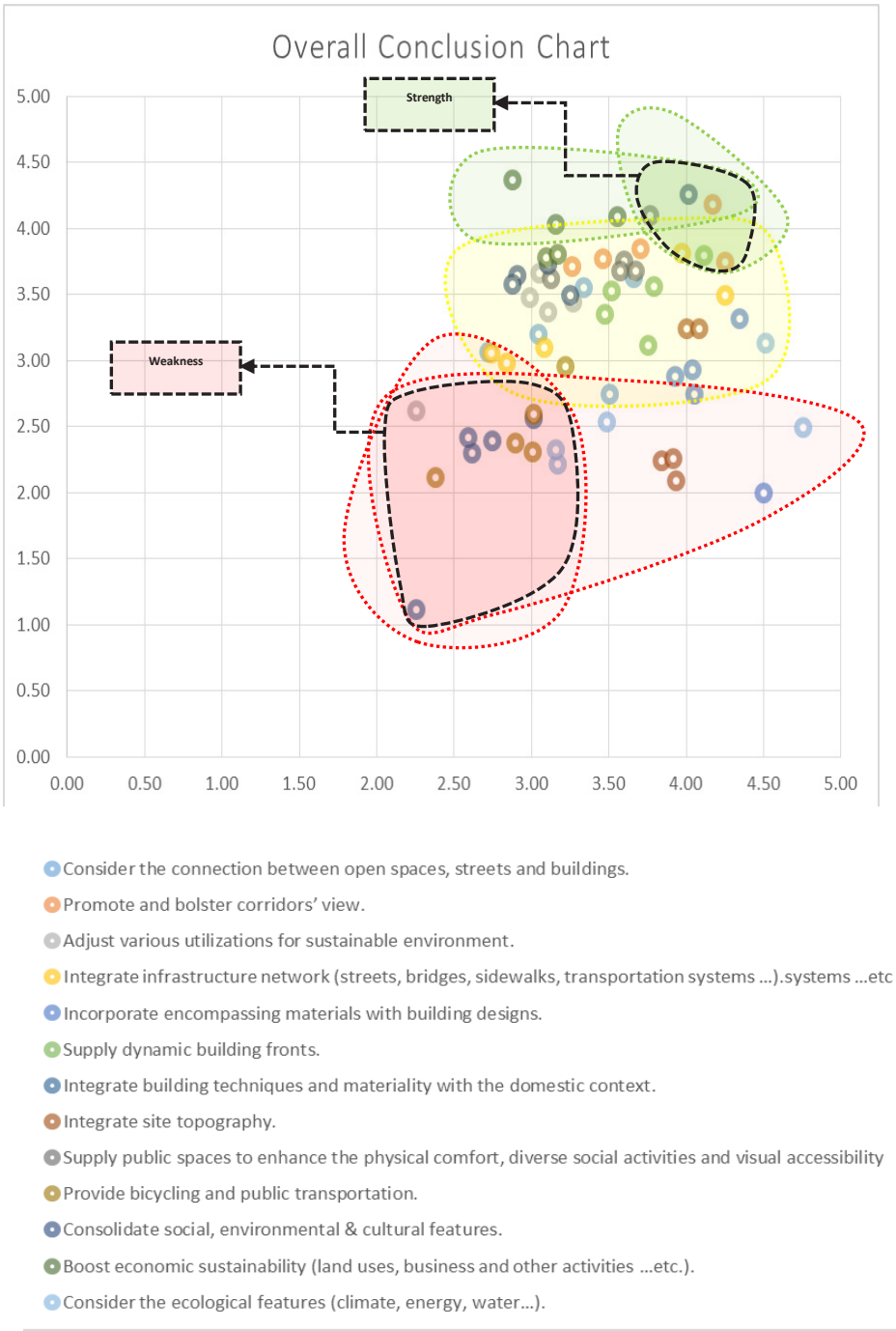

Figure 10. Overall strength and weakness categories based on survey results. Authors, 2020

Figure 11 represents a summary of overall strength and weakness categories based on survey results.

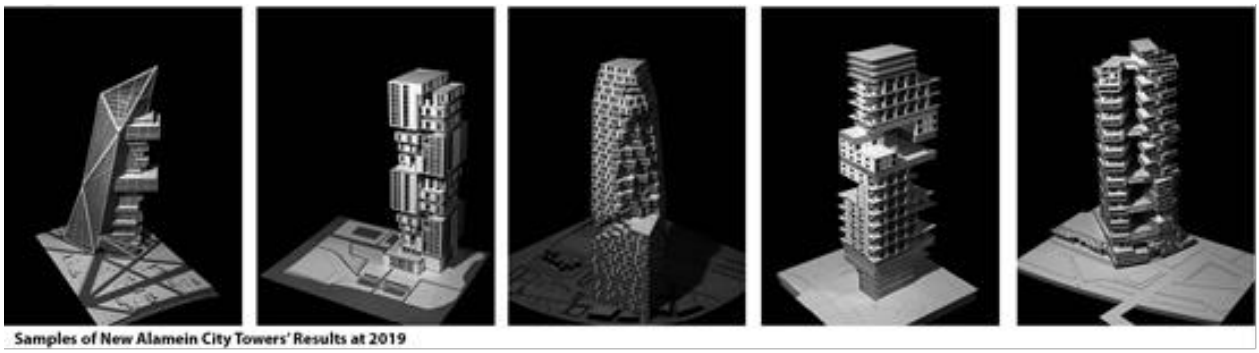

Figure 11. Example of the results in design studio towers. Authors, 2020

8. CONCLUSION

The analysis and results in Table4 and Figure12 represent mainly a set of missing context sensitive elements according to each of the four case studies. The GUC 6th semester tower design projects and survey results proved the students' projects to be responsive to context in some criteria elements but the architectural tower design project itself is dominant in comparison to the context sensitive factors.

Table 4. Context sensitive elements high (in green color) and low (in red color) average scores. Authors, 2020

Tower Studio	Present urban characteristics	Consider the connection between open spaces, streets and buildings.	Supply remarkable situations.	Promote and bolster corridors' view.	Make a characterized and dynamic street wall.	Adjust various utilizations for sustainable environment.	Comply with naturalistic aspects.	Integrate infrastructure network (streets, bridges, sidewalks, transportation systems ...).	Integrate clear architectural ideas toward the context.	Incorporate encompassing materials with building designs.	Consider the project's design from different viewpoints.	Supply dynamic building fronts.	Employ sustainable features	Integrate building techniques and materiality with the domestic context.	Consolidate landscape elements with public open spaces.	Integrate site topography.	Connect public open spaces with the streetscape.	Supply public spaces to enhance the physical comfort, diverse social activities and visu	Highlight the local characteristics.	Provide bicycling and public transportation.	Promote pedestrian pathways.	Consolidate social, environmental & cultural features.	Integrate social environment & cultural characteristics	Boost economic sustainability (land uses, business and other activities ...etc.).	Esteem naturalistic features (as connection to water or a view, open space, mountain...)	Consider the ecological features (climate, energy, water...).
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New Cairo Tower 2015	3.34	3.56	3.70	3.86	2.98	3.48	3.08	3.10	3.92	2.89	3.47	3.36	2.74	2.40	3.84	2.25	3.59	3.76	3.01	2.60	3.10	3.73	3.15	4.04	3.48	2.54
New Capital Tower 2016	3.04	3.20	3.46	3.78	3.11	3.37	2.84	2.99	4.05	2.75	3.51	3.53	2.61	2.31	3.91	2.27	3.67	3.69	2.89	2.38	2.90	3.65	3.09	3.79	3.17	2.22
New Capital Tower 2018	2.72	3.07	3.26	3.72	3.27	3.45	2.74	3.06	4.04	2.93	3.79	3.56	2.59	2.43	3.93	2.09	3.57	3.69	3.01	2.32	2.87	3.58	3.17	3.81	3.16	2.33
AVG.	3.25	3.24	3.77	3.86	2.93	3.32	3.37	3.29	4.17	2.78	3.73	3.48	2.64	2.16	3.95	2.62	3.54	3.77	2.90	2.48	3.23	3.75	3.17	4.02	3.81	2.55

The common weakness in context sensitive criteria were selected based on scores less than 3.00 from the survey results table and they are as follows:

- Incorporate encompassing materials with building designs.
- Make a characterized and dynamic street wall.
- Integrate building techniques and materiality with the domestic context.
- Integrate site topography.
- Highlight the local characteristics.
- Provide bicycling and public transportation.
- Consider the ecological features (climate, energy, water…).

The common strength elements in context sensitive criteria were selected based on scores more than 4.00 from the survey results table and they are as follows:

- Provide remarkable situations.
- Integrate clear architectural ideas.
- Integrate landscape elements with public open spaces.
- Supply public spaces to enhance the physical comfort, diverse social activities and visual accessibility.
- Boost economic sustainability (land uses, business and other activities …etc.).

This research paper concludes that there is no regular pattern for the students' reaction to the contextual sensitive design elements when designing high-rise towers. These reactions are subjective to each student's design approach and finally the research concludes some common weaknesses and strengths, which are conducted from the survey's findings as shown in Figure 12 and Table 4.

In order to develop the design models of the high-rise students in relation to the context-sensitive design the architecture students are encouraged to follow the guidelines in Table2 to be part of their holistic design approach and proposals.

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Analyzing Preschool Education Models in Architectural Design

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Abstract: *Pre-school period is the most critical period for children in which the child develops rapidly with high learning potential. Therefore, it is important to look after children and give them the possibility to develop well during this period. During this time, the physical environment affects child's body, movement, mind, language, emotions and social development. So, the aim of the study is to design educational environment that can meet the needs of the child and support its development while planning pre-school education institutions. In this study, interior and exterior parts of a standards preschool education model and common education models are analyzed. Then, the most common Training Montessori Kindergarten Ihsan Dogramaci has been architecturally analyzed. The interior and exterior spaces and various parts of the Montessori classes are well examined in terms of the physical environment criteria of Montessori education model. The results show, the capacity of the school's existing architecture and materials has direct effect on the quality of the education which usually reduces the quality. However, when deficiencies are eliminated by adhering to the principles, the quality of education will rise. This research was conducted based on available data, observation, on-site inspection and structured interviews.*

Keywords*: Pre-school education, educational environment, Montessori education, architectural design*

Okul Öncesi Eğitim Modellerinin Mimari Tasarımda İncelenmesi

Öz: *Okul öncesi dönemde fiziksel çevre çocuğun zihin, beden, hareket, konuşma, psikolojik ve sosyal gelişiminde önemlidir. Bu çalışmadaki amaç, okul öncesi eğitim kurumlarını planlarken, çocuğun ihtiyaçlarını karşılayabilecek ve gelişimini destekleyecek nitelikte bir eğitim ortamının tasarlanmasının vurgulanmasıdır. Bu çalışmada okul öncesi eğitimin fiziksel mekânları, iç ve dış mekânların oluşturduğu bölümler standartlara uygunluğu incelenmiştir, ayrıca dünya üzerinde farklı eğitim modelleri incelenmiştir. Çalışmada Türkiye'deki en yaygın eğitim modellerin Montessori Eğitimi'nin Konya'daki Selçuk Üniversitesi İhsan Doğramacı Montessori Anaokulu mimari açıdan analiz edilmiştir. Okuldaki fiziksel ortamlar iç ve dış mekânlar ve Montessori sınıfların oluşturduğu bölümler Montessori eğitim modelinin fiziki ortam kriterleri açısından incelenmektedir. Yapılan analizler sonucunda, İhsan Doğramacı Anaokulu eğitiminin ilkelerini mümkün olduğunca uygulamaya çalışan bir okul olmasına rağmen okulun mevcut mimarisi ve materyallerin yetersizliği eğitimin kalitesini düşürmektedir. İlkelere bağlı kalarak eksiklikler giderildiğinde eğitimin kalitesi de yükselecektir. Araştırma çalışmasının bu doğrultusunda yol gösterici olacağı inancındayım.*

Anahtar Kelimeler: *Okul öncesi eğitim, eğitim ortamı, Montessori eğitim, mimari tasarım*

1. INTRODUCTION

Pre-school education covers the year between 0-6 and plays an important role in the later life of children. It is an educational process in which children physical, psycho-motor, social-emotional, mental and

language developments are completed and their personality is shaped [1]. The foundations of the bad habits such as anxiety disorders, personal irregularities, excessive digital addictions and TV addiction in the future life of children are laid in the preschool period [1]. Therefore, preschool education is very important and it is the period when all aspects of the developments are most interrelated compared to other periods of the life [2]. In today's education system, the institutions that provide education to the children and support their development are called pre-school education institutions [3].

In recent years, educators, architects, and researchers have revealed that the design of the classrooms greatly influences children's behavior. In this study, it is tried to examine the relevant literature on what qualities the kindergartens should be designed in order to assure children to lead a healthier and more efficient life and support its development while planning pre-school education institutions. Within the scope of the study, technical drawings and images were used in the preparation of preschool plans. In the examination of the preschool, methods such as observation, on-site inspection, one-to-one interviews with educators and students were used.

2. CHILDREN AND EDUCATION

Design of the educational institutions consists of two important architectural structure features: institutional architecture and learning areas that reflect the pedagogical aspect of education [4]. While the institutional architecture reflects the side of the physical space related to the exterior spaces and its appearance, the educational environments reflect the pedagogical side of education can be affected by educational phenomena such as the teaching models to be used. For instance, an educational environment in which "Multiple Intelligence Theory" is used should be consist of unstable sequences and the field should be suitable for changing effectively and rapidly [5].

2.1. Planning Principles of Kindergarten

Interior principles:

The interior space arrangements in pre-school education institutions such as doors, windows and floors need to be visible from outside the building. Another factor that should be considered in interior arrangement is the provision of materials. Since the achievements and indicators of the program should be considered before planning; at this point, it should not be forgotten that the teacher has a big role in organization of the classroom [6]. Early childhood education centers in the United States covers six main areas: outdoor spaces, classrooms, multi-purpose room, healthcare area, teacher workspace and executive office. All areas in early childhood centers should be easily accessible for children with disabilities and comply with all local accessibility rules of the "American Disability Movement" [7].

Table 1. Places in Pre-School Education

		
Executive Room	*Cloakroom*	*Multi-Purpose Hall*
		
Multi-Purpose Hall	*Multi-Purpose Hall*	*Infirmary Room*
		
Kindergarten Kitchen	*Game Room*	*Game Room*
		
Kindergarten Toilet	*Kindergarten Toilet*	*Kindergarten Teacher Room*

Cloakroom: It is the area where children change their clothes and shoes. These areas should be located in the entrance and exit sections of the schools in line with their intended use. The floor structure of cloakroom needs to be made with non-slip material [8].

Executive room: This section should be located close to the central entrance to control the entrance and exit of the staffs [7].

Multipurpose hall: Multipurpose halls used to meet the needs of nutrition and large group events. If there are no separate areas for parents and volunteers, these halls also can be used for such activities. Moreover, this area can accommodate family seminars and reading space (informative books and materials for families) [8].

Teacher workspace: Usually, this area used for teacher's preparations and rest. It is also used for telephone conversations, group reading events and collaborative planning activities. This room should be equipped with computer, photocopy machine, professional library and television should be available, teachers should be provided with locked access to their private areas [7].

Infirmary: In this area, the health status of the children is checked. The infirmary staff must be doctors or nurses, and this room should be equipped with first-aid equipment, a sink and washable floor. This area at pre-school education institutions should be located in as far as possible from the playrooms [8].

Game room: It is the most important room in the kindergartens and has the most essential functions, should be handled with great care. The dimensional characteristics of the playroom should be adjusted according to the use, capacity and variety of activities [28]. Where there is no additional playroom in pre-school education institutions; we can hall, wide corridors, class breaks, etc. as game room [8].

Dining room and kitchen: It is important to pay attention to the sanitary and conditions of the dining room and kitchen areas, ventilation is important, and to provide better services the two areas should be located side by side. Furthermore, care should be taken to ensure the height and dimensions of the chairs are suitable for the children [9].

Toilets: Toilets should be located close to classrooms and washbasins should be adjusted based on the children's height [23] and they should be cleaned on a regular basis. Necessary precautions must be in place to prevent children from slipping on wet ground [27]. Child could move freely, it should allow individual and group activities, it should be aesthetic and its heating, lighting, ventilation and cleaning should be suitable for health care conditions [10]. While organizing activity areas in preschool education institutions, the arrangement of heat, light, materials, furniture and other materials in an integrity and the interaction of these areas with each other is a very important factor, the arrangement of educational environments in pre-school education institutions affects children's development, behavior and communication with each other and adults [11]. Creating spaces that allow large and small groups to come together at certain times within the scope of pre-school education program is also an important factor [9]. The materials and environment in the mostly established centers provide clues as to how many children can work here. The use of Figures and stickers that can be a clue about the number of children who can spend their time in the learning centers in the classroom makes this situation easily understood by children [6]. Furniture in the classroom should be suitable for the age group and developmental characteristics of the children, dangerous situations such as sharp corners of furniture, nailed nails should be checked and if the furniture is painted, the paint should be of a quality that will not harm children [9]. Furniture with fragile parts such as glass and mirrors should not be included in the classroom, while classroom furniture should be easy to clean, multifunctional, easily transportable and in harmonious

colors [25]. Bright and dim areas can be created for different learning centers, where light and shadows can be used indoors [11]. However, it is extremely important to choose light colors so that the colors used in the classroom create a natural atmosphere and make small areas appear wider than they are [8].

Outdoor principles

The outdoor spaces of pre-school education institutions are considered as an extension of the education given indoors and as environments that serve to reinforce the experiences gained evaluated in this area. These areas are designed considering the developmental characteristics of the children.

Table 2. The Outdoor Spaces Places in Pre-School Education

		
Play in Open Areas	*Play in Open Areas*	*Play in Open Areas*
		
Move Freely	*Exploring in Open Areas*	*Physical Movement*

Children can learn as much as they experience, the outdoor areas have great effects in child development, as playing in open spaces together with the processes of discovery and experience. Outdoor spaces prepare the ground for children to use their creativity, to establish a relationship with nature, to socialize and to move freely [26]. Physical movement is important for the child to use his / her ability to move frequently during the day in the preschool period. However, although institutions pay attention to the creation of an environment that will encourage children's large and small muscle activities, they neglect to provide opportunities for large muscle movement. Preschool education qualifications that should be in outdoor spaces; The playground should be built next to the classroom, there should be at least 10 square meters of space for each child. sunny and shady areas should be balanced, there should be large, grass-covered areas for children's games and major muscle activities, covered areas for children to play in very hot and very cold weather conditions must be found and playgrounds should be designed for both, group activities and individual activities [12]. In a school, children want to feel safe. The areas in the schools are very effective in children's learning, if the structure of the buildings meets the individual needs and expectations of the children, no doubt, children will feel better there. Along with expectations, school areas should also be free from dangers, child who feels safe will exhibit more positive behavior both academically and socially [13].

3. PRESCHOOL EDUCATION MODELS AROUND THE WORLD

Different models are applied in preschool education. They are, Reggio Emilia Alternative Education, High Scope schools, Waldorf schools, Montessori schools, Forest schools, Head Start schools and Summerhill schools [14]. The most common of them are listed below.

Table 3. Comparison of the Approaches of Reggio Emilia, High Scope, Waldorf, Montessori and Forest Schools in Terms of the Educational Environment.

Approaches	***Class Environment***	***Materials and places***
Reggio Emilia 	• *A natural home environment, places that resemble the city areas called "Piazza"*	• *Studio and laboratory* • *Natural material (clay, sand, wood)*
High Scope 	• *Angular environments where children can make discoveries in which they feel related*	• *'Corner of interest'* *Math corner, game corner, book corner* • *Materials* *Transparent boxes on suitable low shelves*
Waldorf 	• *Natural classroom environments* • *Feeding with the nature*	• *Nature table* • *No plastic materials and electronic tools*
Montessori 	• *Flexible, child – dependent environment* • *Carpets laid on the floor*	• *Corner spaces* • *Sensory materials* • *Math materials*
Forest Kindergartens 	• *Natural environment* • *Schools without walls*	• *Natural environment* • *Water* • *Soil*

Table 4. Comparison of the Approaches of Reggio Emilia, High Scope, Waldorf, Montessori and Forest Schools from the Theoretical Basis

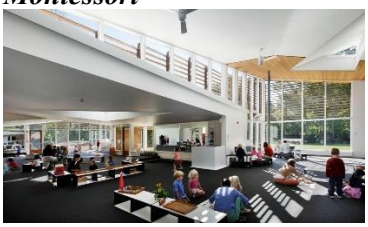
Approaches	***Theoretical Basis***	
	Purpose of Education	***Focal Points***
Reggio Emilia 	*Ensuring that the child can overcome the "walls" that prevent the child's development.*	*The focus is on the child's expression of herself in a symbolic way, which is conceptualized as "child's facial language".*
High Scope 	*Helping children develop their ability to make choices and make decisions about what to do and how.*	*The focus is on "active learning, positive adult-child interactions, a tolerant learning environment for children, a consistent daily flow, making daily evaluations of children by a team, family participation".*
Waldorf 	*With the help of art, the development of emotion and thought in the child and finally the development of self-consciousness.*	*The focus is on 'fully educating the child' through 'art'. 'Brain, heart and hands' constitute the basic philosophy of this program.*
Montessori 	*Developing the child's ability to take individual responsibility.*	*Expressed with the concept of 'absorbing mind', the focus has been on the child's absorption of her environment and experiences from birth.*
Forest Schools 	*It has been determined that the children who attended these schools are more socially competent, able to communicate better, and more curious. In addition to that, they have healthier bodies.*	*The only goal is to create an environment that is durable in all seasons, where they can always be free, where they are not stuck between four walls.*

Table 5. What are the similarities / differences of these education systems?

Approaches	***Reggio Emilia***	***High Scope***	***Waldorf***	***Montessori***	***Forest Schools***
Founder	*Loris Malaguzzi (1920-1994)*	*David Weikart (1960-1970)*	*Rudolf Steiner (1861-1925)*	*Dr. Maria Montessori (1870-1952)*	*Forest School members (2002-2011)*
Philosophy of	*Children's own interest field and education based on learning speed*	*Active learning by doing the experiences initiated by the child*	*Based on art imagination, creativity, common sense training for development*	*Children's own interest Field and Education based on learning speed*	*It is an inspiring method that provides an environment where children can develop self-confidence and self-esteem in the forest.*
Media type	*Teacher in the collaborator role*	*The teacher is in the role of "active learner, effective communicator, careful observer and planner-environmental organizer".*	*Teacher in the role of manager (Children the same with the teacher, it goes on for 8 years, family type class logic)*	*Teacher in the role of guide (varies with each group)*	*Teacher in the executive role (one teacher for every four students)*
Used materials	*Teachers prepare toys together with students*	*From materials such as chalkboards, blocks, sand and water children make creative games with support of teacher*	*Natural wood fabric, wool, paint, etc. are used and students prepare their own toys*	*Teacher teaches the concepts from materials such as natural wood and fabric specially prepared toys using it with a teacher*	*There are natural materials such as sand, water, mud. students make shelter from wood*
Teacher blow	*Children work in groups on longer term projects of their own interest*	*The child learns by living through his own experiences*	*Children work as a classroom on projects that increase their imagination and creativity.*	*Children take care of themselves in groups they work on the subject*	*An interest-oriented learning method managed by the child is applied*
View of art	*Art is handled within the framework of teamwork where they can use their creativity like every subject.*	*Effective learning with artistic experiences*	*There is a very heavy and detailed art education*	*Art is treated as part of other subjects*	*Art activities, entertainment and education seem to be intertwined*
Technology overview	*Technology is an auxiliary part of education*	*Computer corner is available as one of the training areas*	*Technology is absolutely absent, in theory thought to hinder creativity*	*Technology is absolutely absent, in theory it is thought to hinder creativity, but it is being discussed.*	*Technology is absolutely absent*
Special education overview	*Examples adapted to special education available a suitable system*		*Special education with the understanding that one subject is behind another subject.*	*Special education is very suitable, as everyone progresses at their own pace and capacity.*	*Examples adapted to special education; a suitable system available*
Activities	*Group studies supporting creative thinking*	*Fun science, creative drama, painting and visual arts, sports, music, thinking education, nature, environment and museum visits etc.*	*Picture-music gardening, handicraft knitting and wood carving, metalwork etc.*	*Science, geography, games used in traditional forms of education for the concepts of mathematics, language development*	*Making toys and building shelters*
Grade system	*Don't pass, don't stay, grading is out of the question in pre-school education.*		*Don't pass, don't stay, no grading, the child who is back in one field is good in another*	*Don't pass, don't stay, grading is not in theory, but schools can have different approaches*	*Don't pass, don't stay, no grading*

4. CASE STUDY

Konya, the largest province and the seventh most populous city in Turkey in terms of surface area.

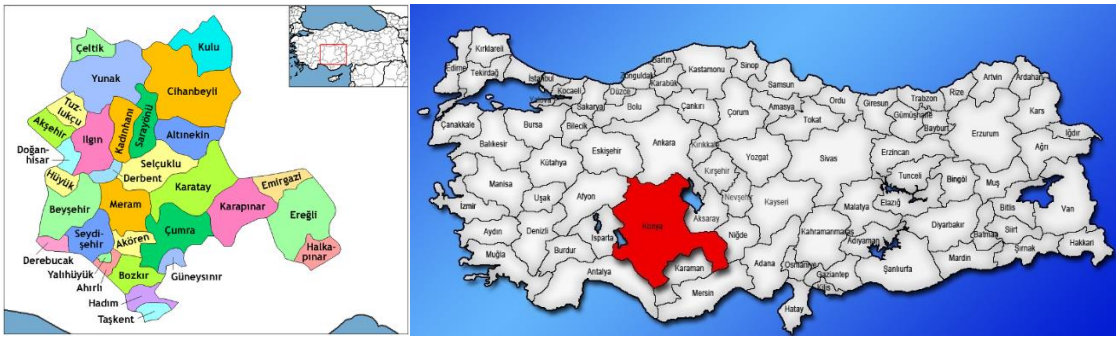


Figure 1. Konya Map

Figure 2. Location of İhsan Doğramacı Kindergarten
Konya Selçuk University İhsan Doğramacı Montessori Kindergarten

4.2. İhsan Doğramacı Montessori Kindergarten Approach

İhsan Doğramacı Practice Kindergarten provides education services under the Faculty of Health Sciences, Selçuk University, in order to prepare children aged 0-6 for life. Started to apply the "Montessori Education Model" as an alternative education model for children, parents were informed about this education model through various seminars and meetings. The Montessori education model is widely applied all over the world, its general purpose is to help the child for the independence of the child, to gain a sense of responsibility in free choices, to make experiences for self-realization, to make him look at the world safely and peacefully, to keep his culture alive, and to establish the awareness of the protection of natural balance [15]. Planning in Montessori classes is done individually in line with the development areas of the child; classroom environment is arranged with materials that the child can easily reach. Maria Montessori called this the preparatory environment [16]. One piece of these materials is presented to the child in an orderly manner, materials are not toying but a study tool, every material has a purpose; the child learns how to work with these materials by working with the teacher one by one. In this educational model, the toy is replaced by material, and structured games are replaced by work [17].
Studies are divided into five main groups which are mentioned below;

1. Daily life applications
2. Working with sensory materials
3. Working with math materials
4. Working with language materials
5. Working with cosmic educational materials

Figure 3-4. Daily Activities

Figure 5-6. Daily Activities

Figure 7-8. Daily Activities

Figure 9-10. Daily Activities

There are no divided time zones within this educational model. Uninterrupted training is given especially in the mornings. The age group is mixed, meaning there are students from all age groups (3–6 years) in a class. While one teacher works with one student, the other teacher and assistant takes care of the other children. After the adaptation process of the children to the classroom is completed, a calm and quiet classroom atmosphere is formed by children who are committed to studying. Students who want to relax can relax in the classroom or in the recreation room. In the afternoon, children can continue to work if they want to, if they do not want to watch documentaries, they can participate in art activities, games, music, and story listening activities. There are students from all age groups (3–6 years) in a class.

The other educational model used by students of 3-6 age group at school is the same as the Montessori education model in terms of its purposes, but it differs in terms of practices and educational materials, the general purpose of this educational model is to ensure that children become healthy individuals who are self-sufficient in cognitive, social, spiritual, physical and language fields. In these programs, there are goals and achievements that support the development of the child in all aspects. The teacher plans educational activities in line with the interests and needs of the child, taking into account individual differences. Activities are divided into processes such as leisure time, Turkish, science-mathematics, music, play and movement, rest, art, and preparation for reading and writing. Activities continue with smooth transitions with the personality and experience of the teacher. The class consists of corners of interest; these are house corner, block corner, puppet corner, book corner, music corner, science-nature corner, Atatürk corner. Children spend time in these corners in their free time, games, music and Turkish activities are held in groups, but children who do not participate are not forced. Since art activities are diverse (paper folding, salt ceramics, painting, collage, etc.), children work according to their own preferences. Classes are arranged according to age groups. (Such as 3–4, 4–5, 5–6 years).

4.3. Plans and Spaces from Montessori Kindergarten

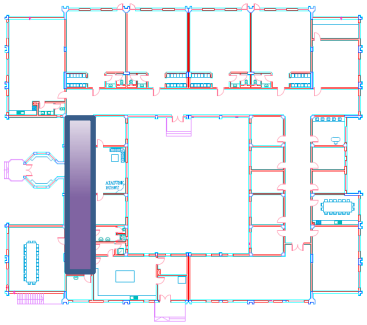


Figure 11-12. Building entrance

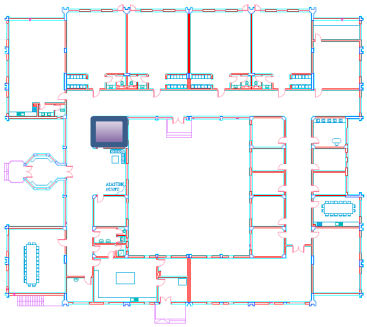


Figure 13-14. Teachers' room

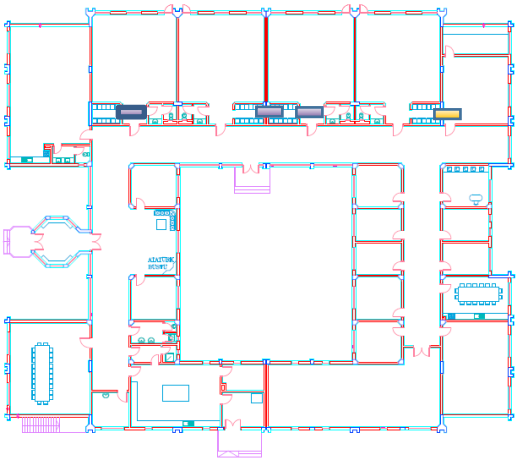


Figure 15-16. Cloakroom

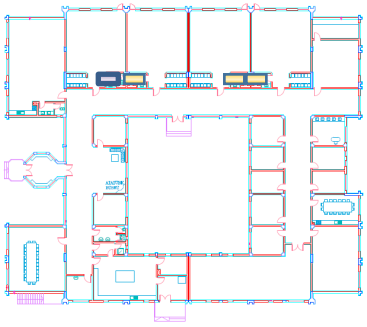


Figure 17-18. Toilet

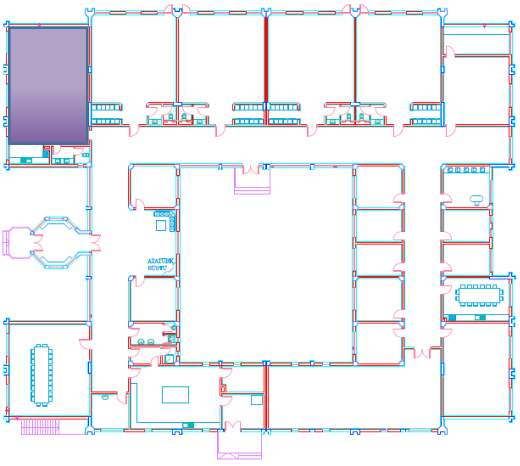


Figure 19. Class (0-3) children

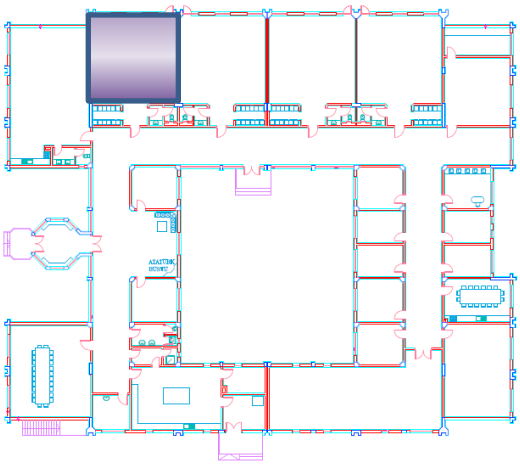



Figure 20 Class

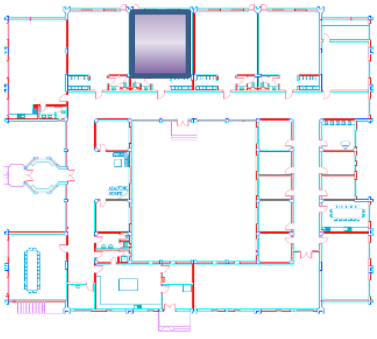


Figure 21. Class

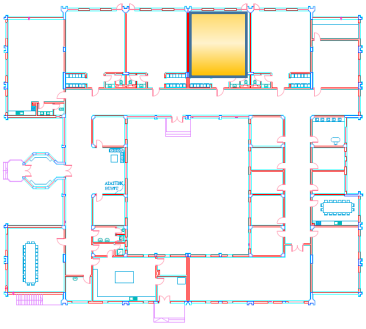


Figure 22. Class

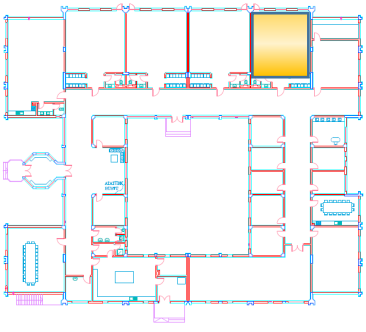


Figure 23. Class

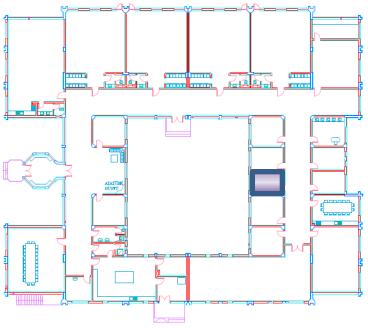


Figure 24. Chess Room

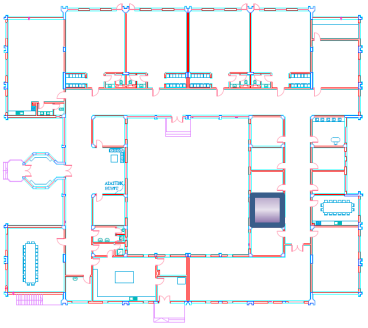


Figure 25. Art Room

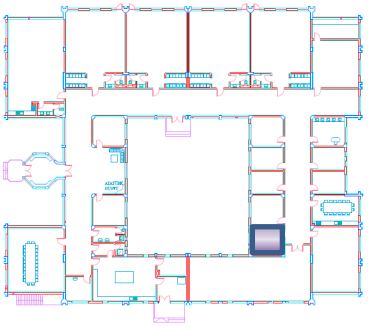


Figure 26. Nursery Class

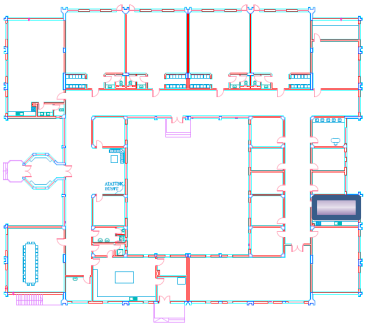


Figure 27. Children's Kitchen

Figure 28. Children's Kitchen

Figure 29. Sleeping Room

Figure 30. Kitchen Hall

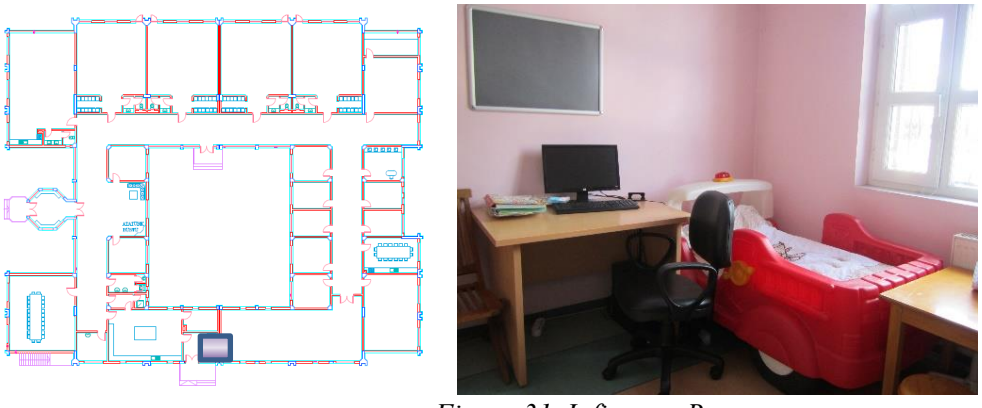


Figure 31. Infirmary Room

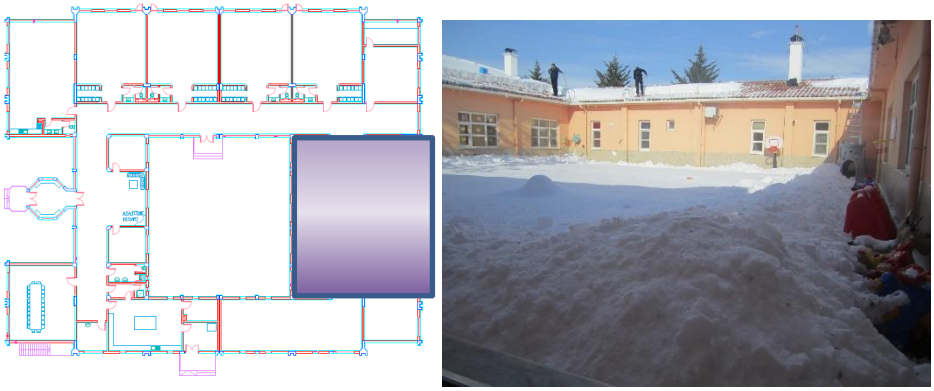


Figure 32. Playground

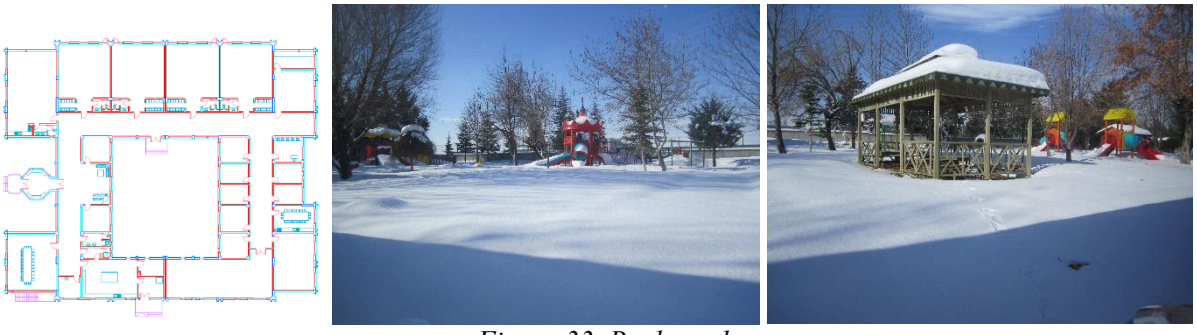


Figure 33. Back yard

Figure 34. Back Yard Entry View

5. CONCLUSION AND RECOMMENDATIONS

The results show that physical environment affects human behavior, child learning development and growth. The following conclusions have been reached:

- According to Montessori, children educational environment needs to be well-equipped and quality material should be considered.
- A multi-purpose landscaping in the kindergarten offers the children with problem-solving opportunities,
- As a result, İhsan Doğramacı Kindergarten, where Montessori education is given, covers the minimum places required by alternative education, but there is insufficient use of indoor and outdoor spaces.
- Moreover, there are inadequacies in interior design; there is no library and reading spaces, computer, photocopy machine and television is not provided in the teacher's room. In addition to that, it is important to position the dining room and kitchen areas side by side, it is observed that there are deficiencies in outdoor design (water and sand pool) as well. Soil, sand and water provide opportunities for experience, exploration and creativity.
- Considering the examined models in this study, future preschool education architecture design has to take into account those deficiencies in the interior and exterior spaces.

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Development Opportunities in Egyptian Less-Inhabited Cities: Qaha as a Case Study

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Abstract: *In the last three decades, Egyptian cities have witnessed fast growth in population, which contributed to the continuous expansion and transformation in the urban fabric of both, metropolitan areas and less inhabited cities. Fueled by internal migration, the growth is significantly higher in the former as people often seek job opportunities in destination cities that are better than the ones available in their hometown. This process has led to the creation of formal and informal settlements on the outskirts of metropolitan destination cities and came with a higher price in departure areas, where either large area of prime agricultural lands has been lost, or the urban fabric status has deteriorated. Cities transformed by emigration do not naturally need to be in deteriorating conditions; however, the emigration process itself is indeed a development constraint to Departure cities. Even if the departure of some population groups is a core feature of the departure area, its development should not be reduced to abandoned structures, absence of the urban life and deterioration. Departure cities' rhythm and public spaces are similarly influenced by awaiting the gradual return of emigrants and related urban arrangements, as well as the possible consequences that might occur. This paper deepens on the urban and territorial regeneration opportunities in Egyptian less-inhabited cities to grow into new urban centers ending the efflux phenomenon and attracting people away from chocked metropolitan cities. To reflect on such opportunities, Qaha will be demonstrated as a case study to analyze both, limitations and probabilities of interventions. Based on the findings, recommendations including the proposal of integral development projects depending on the identified needs of each, the territorial, demographic economics, and social factors in the study area, are made to reverse the negative effects of emigration.*

Keywords: *Emigration, urban deterioration, development opportunities, Egyptian cities, Qaha.*

Mısır'ın Daha Az Yerleşik Şehirlerinde Kalkınma Fırsatları: Qaha Alan Çalışması

Öz: *Son otuz yılda Mısır şehirleri, hem metropol alanların hem de daha az nüfuslu şehirlerin kentsel dokusunda sürekli genişleme ve dönüşüme katkıda bulunan hızlı nüfus artışına tanık oldu. İç göçün tetiklediği büyüme, ilkinde, insanlar genellikle kendi memleketlerinde mevcut olanlardan daha iyi olan hedef şehirlerde iş fırsatları aradığından, büyüme önemli ölçüde daha yüksektir. Bu süreç, metropoliten hedef şehirlerin eteklerinde resmi ve gayri resmi yerleşimlerin oluşmasına yol açtı ve büyük tarım arazilerinin kaybedildiği veya kentsel doku durumunun bozulduğu çıkış bölgelerinde daha yüksek bir fiyatla geldi. Göçle dönüşen şehirlerin doğal olarak kötüleşen koşullarda olmaları gerekmez; ancak, göç sürecinin kendisi gerçekten de Ayrılış şehirleri için bir kalkınma kısıtlamasıdır. Bazı nüfus gruplarının ayrılması, hareket alanının temel özelliği olsa bile, gelişimi terk edilmiş yapılara, kentsel yaşamın yokluğuna ve bozulmaya indirgenmemelidir. Ayrılan şehirlerin ritmi ve kamusal alanları, göçmenlerin kademeli dönüşünü ve ilgili kentsel düzenlemelerin yanı sıra meydana gelebilecek olası sonuçları beklemekten benzer şekilde etkilenir. Bu makale, Mısır'ın daha az yerleşime sahip şehirlerinde, akış*

olgusunu sona erdiren ve insanları tıkanmış metropol şehirlerden uzaklaştıran yeni kentsel merkezlere dönüşmek için kentsel ve bölgesel yenilenme fırsatlarını derinleştirmektedir. Bu tür fırsatları yansıtmak için Qaha, müdahalelerin hem sınırlamalarını hem de olasılıklarını analiz etmek için bir vaka çalışması olarak gösterilecektir. Elde edilen bulgulara dayalı olarak, göçün olumsuz etkilerini tersine çevirmek için her birinin belirlenen ihtiyaçlarına, bölgesel, demografik ekonomiye ve çalışma alanındaki sosyal faktörlere bağlı olarak bütüncül kalkınma projeleri önerisini içeren önerilerde bulunulmuştur.

Anahtar Kelimeler: *Göç, kentsel bozulma, gelişim fırsatları, Mısır şehirleri, Qaha.*

1. INTRODUCTION

Migration can be clearly defined as relational a phenomenon, which is always associated by Departure and Arrival cities; all immigrants are emigrants in the first place. And we can define Departure cities, as cities in which spaces are fundamentally shaped by emigration (i.e., the deterioration of the urban fabric due to changes in population fueled by the emigration process. Migration occurs when an individual permanently relocates from point X to Y.

The relation between the emigration process and development is supposed to offer a convenient cycle, which is practically appealing; the more the economic situation in the country of origin improves, the more the inequality among countries is reduced and this offers vast opportunities for local residents. Accordingly, people will be less triggered to emigrate from their homeland and the rhythm of migration will slow down. If the living standards improved further, the migration curve is expected to shift as old emigrants return to their homeland [1].

Although it might be convincing that on the long term, the improved economic conditions will contribute to a change in the migration pattern and decrease the rate of emigration, common migration policy statements reflect that putting resources in development is an effective approach towards reducing the mass outflows of people from their country of origin.

2. CONSEQUENCES OF EMIGRATION ON DEPARTURE CITIES

While the migration phenomenon may have brought about positive outcomes in certain areas, it was the contributing factor behind deterioration in other areas. The phenomenon sure came at a high price, now that both, emigration and immigration, are affecting the urban fabric and the human scale in Arrival and Departure cities.

In the current mass emigration from the MENA region to Europe made the local governments in countries of origin, in a race with time to control the outflows. As a result, we see imitation and recombination of the western styles as a trigger to reduce the net emigration. Property investments by the diaspora is one of the reasons contributing to the spread of Turbo Architecture, however, the influence of this process on the urban setting of a Departure city is not limited to investments [2]. In cities of origin, almost every year, many variations of apartments and single-family houses are being built; in this sense, emigrants are the clients and at the same time the investors. Yet, most of these second homes or potential return homes remain unoccupied for a long period of time.

In both the Arrival and Departure cities, with a higher chance to occur in the latter, symbols as well as relationships triggers the relational proximity to Elsewhere; in destination countries, immigrants can find several places named after their countries of origin. An example to consider is the influence the mass emigration from Kosovo to Switzerland left on the built environment. In the Kosovan capital Pristina and

its hinterland, we can find a Swiss Diamond Hotel, a Swiss Casino, a Swiss IT-Factory, a Swiss Wellness Park and numerous boutiques, barbers and diners, which carry the name Swiss. The Swiss flag, likewise the flag of the United Kingdom, France and China, is global. It appears that the idealization of the urban setting in target countries is the reason behind the frequent negative narratives of one's own city [3].

3. NEW POTENTIALS IN LESS-INHABITED (DEPARTURE) CITIES

As a first approach towards investing in any city, the investor, either the public sector or the private one, should consider the ideal conditions for an attractive urban investment. Outlining the assessment of urban investment attractiveness given in scientific resources, it may be possible to define an investment attractive city as "a city where the environment is favorable for investment, there are available region's natural resources and the concentration of workforce potential" [4]. The academic research recognizes the forming factors of investment attractive cities as static and variable.

Static factors are always the irreplaceable factors, which portray particular characteristics of cities. These include the geographical location (coastal cities, cross-border cities or towns, and so forth), capacity, significance on the local level (the capital, the locale's biggest metropolitan area, resorts), and existing natural resources (useful either for tourism or for production). The other factors are variable, which are usually framed to maintain or improve the urban investment attractiveness factor: the urban setting, livelihood conditions, demography, the workforce, practicality of the business area, accessibility to education, the communal sense of belonging, and the adequacy of healthcare systems [5].

By recognizing the attractive factors for investment, researchers broaden our knowledge that market visionaries focus solely on cost-benefit ratios. The dynamics that drive us to certain locations are directly linked to estimates of cost production: land, labor, transportation and natural resources cost. In a logical setting, there are always other factors that would emphatically create an attractive environment for investments. These include the convenience to access target markets as well as the reaching suppliers, the degree of competency in the market, the proximity of institutions offering correlative types of services (financial, educational, social, etc.), the scale of regional economic development, successful competitors in the region, the independence of the management authorities in companies [6].

3.1. Natural Resources

One of the key resources that come on the top of natural resources list is the land source itself as a finite resource. Land provides space for various human activities and supports terrestrial ecosystems that provide vital services for the urban society (such as biodiversity, production of food, open spaces for recreational areas, etc.). Land use and management are one of the major factors determining the capacity of ecosystems to provide further developments and/or future investments. All landforms, either mountain, desert, forest or agricultural have potentials in a way or another and can have a significant impact on any future development strategies.

It is true that the landforms have an impact on investors or aiding countries decision, however, there are other factors affecting the investment attractiveness factor in a city. This includes the land price, geographical location and connectivity to other cities and/or countries. The lower the land price, the more attractive the land is for investors. In addition, the strong connections to other areas locally or internationally, ensure more or closer markets, easier trade and the proximity of labor and products to the land. In that sense, it is logical to think that even within each Landform, the investment attractiveness factor differs from one place to another.

Landforms are not the only natural resources affecting the investment attractiveness factor in a city; Water-bodies and renewable energy sources are other factors that have a significant impact as well. These include the fresh and salt-water bodies, as well as wind and solar energies.

3.2 Human Resources

After discussing the importance of natural resources, mainly represented in Landforms, it is clear that it has significant impacts on the production and development or investment decision-making. However, the Land is a passive factor whereas human resources are an active factor of production. Actually, it is the human resource that makes production or development possible, using the land.

Human resources are often demographics represented in numeric and graphical data showing a set of indicators. These data are usually published by the local government and offered to private or public investors. The indicators are a sign of either healthy or poor urban society and investment field, and thus directly affecting the investment attractiveness factor in a city. Each indicator is a potential in a way or another, which definitely has a significant impact on foreign direct investments (FDI) or governments' development strategies. These indicators include:

- Population: are estimated by gender, age group, geographical location and growth rate.
- Labor: reserves the capacity to provide the market with the necessary quality and amount of human effort required to produce goods and services.
- Income, Expenditure and Consumption: are estimates on the average annual wages and their main sources, expenditures on products, services or activities

3.3 The Know-How Resources

An integral part of Human resources is the know-how, which also plays a crucial role in impacting the investment attractiveness factor in a city. The know-how is a term for practical knowledge on how to accomplish a certain operation. It is believed that the rate of know-how transfer is influenced by characteristics of effective learning, accuracy of the specified purpose, learning and assessment methods, and both the external and internal environment characteristics of the stakeholders engaged in the process [7]. There are several know-how resources that might affect the investment attractiveness factor, these include the labor skills, education and the governmental polices that ensures stable, encouraging and suitable conditions for both, workers and investors.

4. EGYPTIAN LESS-INHABITED CITIES

This chapter will be addressing Egypt, an African Mediterranean country, as a pilot project to introduce the methodology behind selecting Qaha as a case study. The methodology includes the analysis of the current situation of Egyptian cities that hold opportunities for re-urbanization. This analysis will undergo a process of evaluation to evaluate the current socio-economic and territorial situation.

The aim behind the evaluation process is to filter the cities and towns in Egypt in order to select the cities, which are most suitable for re-urbanization as new Arrival Cities. The filtration process will start by analyzing vital figures of 211 cities and towns in Egypt and shrinking the selection until arriving to the case study.

The first in a series of evaluation is filtering the Egyptian cities by the average growth rate in the previous 20 years and the current density. Given that the data on the areas of cities and the population in 1996 and

2017 is extracted as an average of data from several sources due to lack of data in the case of depending on one source, and to guarantee transparent results[1].

Lower growth rates and densities can be assumed to be initial indications for emigration or urban deterioration. Thus, cities that have relatively low densities and lower growth rates than that of the average between 1996 and 2017 are shortlisted for further evaluation.

As a result of the previous analysis, 29 Egyptian cities were shortlisted. The results include the following:

- City on the Red Sea
- 2 Cities on the Mediterranean
- 3 Desert cities
- 7 Cities in 1 Upper Egypt along the Nile valley
- 16 cities in the Nile Delta

The second in the series of evaluation is filtering the 29 Egyptian cities by the area of developable lands. The satellite images of the 29 shortlisted cities were compared together in the same scale to showing the current territorial state of the selected cities, from which, it can be seen whether the city holds opportunities for urbanization or not.

Given that some cities were eliminated due to their very low capacity to expand, either because it has been built on agricultural lands or lack significant voids necessary for urbanization. Cities that hold opportunities for urbanization were shortlisted to undergo another evaluation in the series of evaluations.
As a result of the previous analysis, 13 Egyptian cities were shortlisted. The results include the following:

- 1 City on the Red Sea
- 1 City on the Mediterranean
- 2 Desert cities
- 1 City in Upper Egypt along the Nile valley
- 8 cities in the Nile Delta

The third in the series of evaluation is analyzing the 13 cities by the area of developable lands, available for urbanization and future regeneration. Given that the data provided on the urban areas and areas of developable lands are measured by the author from Google Earth.

Developable lands include voids, under–utilized urban land on potentially most valuable locations (such as waterfront and harbor areas) and declined or abandoned industrial or military areas.

The evaluation occurs through mapping the developable lands in each city of the 13 cities, besides, calculating the current urban area and the area of developable lands in order to calculate the area of developable lands as a percentage from the urban area.

[1] Due to lack of data in some cases and conflicting data in other cases, these statistics and figures were obtained as an average of data from 3 different sources as follows:
Retrieved from http://citypopulation.de/Egypt-Cities.html in Oct. 2020.
Retrieved from http://worldpopulationreview.com/countries/egypt-population/cities/ in Oct. 2020.
Retrieved from http://www.capmas.gov.eg/Pages/Publications.aspx?page_id=7195&Year=23354 in Oct. 2020.

After analyzing the developable lands in terms of mapping and calculations, comes the fourth and last in the series of evaluation. This evaluation has been designed using marks to assess the 13 cities by attractiveness factor. The higher the assessment mark, the more attractive the city is for re-urbanization. Given that the assessment marks were distributed among certain criteria through strong observations and initial research.

These criteria include the Geographical location, Significance on the National level, Natural resources, Regional connectivity, Capacity for urbanization, Industrial and production activity, and the Agricultural activity. The assessment marks were distributed as follows:

Table 1. Evaluation criteria & assessment method for cities holding opportunities for re-urbanization (Author)

<table>
<tr><th>Evaluation</th><th>Geo-graphical Location</th><th>Significance on the National Level</th><th>Natural Resources</th><th>Regional Connectivity</th><th>Capacity for Urbanization</th><th>Industrial / Production Activity</th><th>Agricultural Activity</th></tr>
<tr><td>0</td><td>Not Present</td><td>Not Present</td><td>Not Present</td><td>Not Present</td><td>Not Present</td><td>Not Present</td><td>Not Present</td></tr>
<tr><td>1</td><td rowspan="2">Desert City</td><td>Very low</td><td rowspan="5">One mark for each:
Agriculture,
Sea,
River,
Canal,
Minerals.</td><td rowspan="5">One mark for each:
Main Road,
Highway,
Railways,
Near Airport,
Port.</td><td>0-10 %</td><td>Very low</td><td>Low Capacity & Quality</td></tr>
<tr><td>2</td><td rowspan="3">Rural city with one mark for each:

River
Canal
Proximity to a main city</td><td>Low</td><td>10-20 %</td><td>Low</td><td>Low Capacity - Medium Quality</td></tr>
<tr><td>3</td><td>Normal</td><td>20-30 %</td><td>Moderate</td><td>Moderate</td></tr>
<tr><td>4</td><td>High</td><td>30-40 %</td><td>High</td><td>High Capacity - Medium Quality</td></tr>
<tr><td>5</td><td>Coastal City</td><td>Very High</td><td>40+ %</td><td>Very High</td><td>High Capacity & Quality</td></tr>
</table>

Although all the 13 cities are eligible for development, the fact that 8 cities out of the 13 are agricultural cities within the Nile Delta draws a disturbing conclusion in that region. This indicates one dominant reason of emigration; the rate of people still farming and cultivating is decreasing, instead, they tend to seek for more urban life in the metropolitan cities.

It is true that the evaluation process shows the higher opportunities in Port Fouad, Ras Ghareb and Qaha respectively, However, being aware of the disaster that would happen if agricultural cities were kept neglected without healthy development, one of the cities within the Nile Delta will be selected as a pilot project to show what kind of developments opportunities these cities are holding. Therefore, Qaha, being

on top of the list of agricultural cities upon evaluation and the most proximate to the capital of Egypt, is selected to be the case study.

Table 2. Evaluation for the 13 Egyptian cities holding opportunities for re-urbanization (Author)

City / Town	Geo-graphical Location	Significance on the National Level	Natural Re-sources	Regional Connectivity	Capacity for Urbanization	Industrial / Production Activity	Agricultural Activity	Evaluation /35
Būr Fu'ad	5	5	3	3	5	5	0	26
Ras Ghārib	5	4	3	4	5	4	0	25
Qahā	3	3	3	4	4	4	4	25
As-Sarw	4	3	4	3	1	3	5	23
Quṭūr	3	2	3	4	3	1	4	20
Fāraskūr	3	2	3	3	2	1	5	19
Qallīn	3	2	3	3	2	1	4	18
Sīdī Sālim	2	2	3	2	2	1	5	17
Kafr Shukr	3	2	3	3	1	1	4	17
Basyūn	2	1	3	2	2	2	4	16
Mūṭ	1	2	2	3	4	2	2	16
Qifṭ	3	3	2	4	2	1	1	16
Al-Khārijah	1	2	1	3	4	2	1	14

5. CASE STUDY: QAHA

In this chapter, it is intended to deep on and evaluate, through several development factors, the current situation in the city of Qaha as the Egyptian city holding the most opportunities for re-urbanization and future developments. The chapter is divided into two parts; the first part is about the urban situation of the city in order to investigate and analyze the urban weaknesses and economic opportunities of the city. The second part is about the smart growth of the city, which is possible through strengthening its weaknesses and make use of the opportunities to prepare the city for global economic competition. This will be carried out in a form of proposal for a strategy of re-urbanization for Qaha.

The analysis of the urban situation includes the following:

- Territorial factors (Infrastructure, utilities and services – Transportation – Housing)
- Demographic Economics factors (Population – Employment – Production Centers)
- Social factors (Integration and Social cohesion – Accessibility to Education - Accessibility to Healthcare)

Qaha is one of the cities studied by the UN-HABITAT and included in its project "Strategic Urban Planning for Small Cities (SUPSCP)[2]", which focuses on urban-rural linkages in order to develop small and medium rural enterprises; on improving the living conditions of slum dwellers.

The city is one of two cities included in the Centre of Toukh in Al Qalyubia Governorate, according to the latest administrative division. It is located in the Delta, on Cairo – Alexandria Agricultural road, 25 kilometers away from Cairo, the capital.

5.1. Analysis of the Current Situation

Qaha has been always a rural village till 1976 when it became a city by a governmental decision. It started by a capacity: of 29 feddans, and since then, no strategic plan was made for the city.

The city grew, in an unplanned way, East and West to reach the main mobility axes. And because the city is confined between a highway and the railways, the city grew to the North and South. However, the limitations of the surrounding context and the lack of strategic planning do not allow much extensions around the city, especially that it is surrounded by Agricultural lands from all directions. Thus, the further expansion of the city stretched irregularly to take the shape of the surrounding residential masses at that time.

While on the Eastern side overlooking the railway lines, the expansion grew linear parallel to the railways. However, these extensions again grew without strategic planning, which was the reason behind the emerge of irregular unplanned masses to the East of the railways. Still without a strategic plan for the city, in the end of the 20th century the government has put an urban border for Qaha as shown in (Figure 1).

[2] This project provides fundamental facts and data for the case study, which are obtained from the official UN-HABITAT website upon project data in Egypt, Africa. Retrieved from https://unhabitat.org/city-profile-for-strategic-urban-plan-of-qaha-city/ in Oct. 2020.

Figure 1. Current Situation | Urban Border in Qaha (Author)

5.2. Limitations for Intervention

- **Territorial**

Qaha started as a small rural village back in the 1930s, and it continued to grow in an unplanned in all directions, with the absence of a strategic plan, until it got confined between the highway and the railways. However, the informal sprawl continued to the east beyond the railways.

Being a rural city, it is surrounded by Agriculture lands from all sides. And accordingly, the current urban border, set by the government in 1976, limits its capacity to formally expand and lower the opportunities for investments or providing vital services.

The urban core of the city is so dense with very poor overall urban qualities, which makes the livelihood level there in a deteriorating condition. Moreover, it is hardly accessible because most of the streets are very narrow and unpaved.

The population suffers from poor quality of drinking water due to higher levels of manganese. There are 10% of the population who lacks continuous access to safe drinking water.

Due to the informal urban sprawl that happened in the city, about 30% of the areas are deprived from a continuous and good quality of sanitation.

Most of the main roads leading to the highway are in poor condition and need to be maintained.

Housing represents around 92% of the total land-use in Qaha. So, there is relatively no housing crisis in the city. However, it lacks the accessibility to affordable housing. This is more likely to be the result of absence of public or social housing.

- **Demographic Economics**

Although the city has plenty of production centers, it lacks commercial spaces and small businesses such as workshops to encourage the local products industry. Moreover, there is one single local market in the city with inadequate products, which is insufficient to meet people demands, so the population relies on neighboring cities.

- **Social**

The lack of governmental services in the city, which increases the administrative dependency on Banha, the capital of the governorate.

The population suffers from the extreme lack of public spaces and green areas in the city, which decreases the wellbeing level. Moreover, except the only club and youth center, the city is in desperate need for leisure spaces.

The number of educational services seems to be enough for the population, however, there are no technical, industrial, and vocational schools nor universities. This increases the educational dependency on the neighboring cities as well.

There are insufficient healthcare services in the city. And the only hospital in the city is situated in the far North, and deprived from many medical services.

5.3. Opportunities for Intervention

- **Territorial**

Qaha can be considered a city with a relatively high territorial capacity for re-urbanization, and therefore it holds many investment opportunities.

The city is well connected on the regional level with the rest of Egyptian cities. This is due to its proximity from the capital, and because of the enclosure created by the agricultural highway and railway lines.

The small scale of Qaha makes the city lies within a walkable distance from the center of the urban core. Which increases the alliances and synergies between home, work and leisure.

Because of the narrow streets, people tend to walk, or use bicycles and Tuk-tuks for far distances. As for the reachability to neighboring cities, people have to use microbuses, which are on the outskirts of the city, or the train. This lowers the percentage of noise and air pollution in the urban core of the city.

- **Demographic Economics**

Qaha has been maintaining a slow growth rate, and it is even expected to have a lower growth rate in the future.

More than half of the population is out of workforce for several reasons. Around two thirds of the total workforce are employed and one third are unemployed. This ensures the availability of human resources as labor force for future investments.

Although there isn’t a remarkable difference between the ratio of males and females in the society, the number of males employed is almost triple the number of females, which paves the way for female dependent industrial activities.

The private sector is the most dominant in the labor market, followed by the city council and the governmental sector respectively, which raises the level of competition in the market.

The level of production in Qaha, although not identified by numbers due to lack of data, seems to be moderately high, which makes the city eligible for national competition contributing to the Egyptian economy.

The productions in Qaha mostly rely on the preserved food industry, followed by agriculture, which are always in high market demand, and would attract more investors to the city.

Qaha maintains a strong commercial tie with the neighboring cities in terms of trading.

- **Social**

The level of education in the city is an average. Most of the educated population have only obtained an intermediate degree and only 9% obtained their bachelor degree. Which ensures the availability of moderately educated labor force required for most industrial, commercial and production activities.

5.4. Strategies for Re-urbanization

In small-scale cities like Qaha, the concept of re-urbanization and adaptation to higher levels of attractiveness has not yet been implemented. The structure of an attractive city can play a vital role as spaces oriented to the development of the city towards globalization, which opens the discussion for large-scale projects boosting vast economic opportunities.

Thus, the aim of the following strategies is to introduce guidelines for the characteristics and functions of a re-urbanization plan for eventual areas to be implemented and diffuse with the existing urban areas in Qaha, increasing the city overall attractiveness factor. Since each city is different and has its own identity, the re-urbanization plan for each city has to be adapted according to the needs of city and not only a prototype that might be implemented anywhere else.

From the previous sub-chapter, we can conclude that the city holds many economic development and expansion opportunities, yet it is currently facing some urban challenges due to lack of services, in addition to the relatively low livelihoods and poor urban qualities in many areas of the city. Therefore, a set of guidelines is proposed aiming to improve the overall urban situation of Qaha, opening new gates for future economic and urban developments, as follows:

- **Territorial**

Impose a new urban border as an extension of the city to absorb the growing population

Add all the new areas to the extension, whether it was vacant lands or cultivated areas that are included in the new border and classify their land-use according to their respective purpose

Develop a communication strategy to maintain a dialogue with property owners and compensate those who will be affected, either by buying the land or relocating their properties within the eventual strategic plan

Efficiently plan the eventual added lands for residential, production, education, public services and spaces expansions respectively

Develop and apply urban design guidelines to control property development and restoration

Work on a strategic plan to ensure the availability of public spaces in the city

Implement social housing projects to accommodate the youth and newly-formed families

Set up a monetary fund to develop the poor areas in the city

Plan the new residential areas around the informal areas to limit further sprawling

Engage the private sector in housing investments, which raise the level of competition in the market and accordingly lowering the prices

Improve the accessibility to the heart of the city and encourage the investments in small-scale businesses on the ground floor

Develop the unplanned area to the East of the railways by improving the urban quality and strengthening its connection the Western area and the regional roads

Implement a main parking lot for microbuses with a set of smaller stations on the outskirts of the city, in order to facilitate the people movement to and from Qaha

Pave the still deteriorating unpaved roads in the urban core, and encourage having a pedestrian friendly environment in the heart of the city, which is already clogged

Encourage replacing the Tok-toks by environmentally friendly small electric cars

Ensure the supply of clean water and healthy sanitation to deprived areas in the city

- **Demographic Economics**

Implement an area specified to craftsmanship in the city where most of the workshops shall move to in order to encourage the small business and the industry of local products, which will eventually lower the unemployment rate

Specify an area on the agricultural highway to accommodate large-scale industrial projects, which will positively contribute to unemployment

Ensure the availability of vacant lands in the future, required to accommodate different development projects or providing vital related services

Develop and expand the local market in Qaha, by finding a more suitable area for it and transform its original space into an urban public space

Plan new markets areas in the city to meet people essential demands

Create a central business district at the edge between the existing fabric and the new extension, as future medium of diffusion between both living societies

Establish vocational schools and workshops to train the females in Qaha on developing the ready-made clothing industry, which would eventually equalize the employment ratio between males and females

Set up monetary funds to provide the needed financing for establishing small businesses

Engage the private sector with the farmers aiming to increase the quality and quantity farming and cultivating in Qaha, through expanding in food and dairy products industry, exporting crops, and establishing new poultry farms city

- **Social**

Establish a governmental complex to facilitate the process of issuing official documents and permissions instead of going to Banha

Facilitate the permissions and paperwork required to establish new business to encourage more economic developments

Implement a network of secondary medical centers to include all the missing specializations and cover the whole urban area

Establish more educational institutes, including private schools, in order to expand the educational services to include the compulsory education, as well as vocational, industrial and technical schools

Establish a public library and cultural hubs to increase the general cultural level

Create urban public spaces oriented to higher level of social interaction

Establish public gardens in the areas of extension according to international urban design standards, to meet the demands of the share of green spaces per capita and achieve adequate living standards

Engage NGOs and non-profit organizations in the development process

Raise awareness for the importance of public participation and engage the inhabitants in the planning process of the extension

6. FINDINGS AND CONCLUSION

The case study selection methodology included a filtration process for 211 cities and towns in Egypt. From those, only 13 cities showed the first signs of emigration. In which, 8 cities are in the Nile Delta, indicating higher rates of emigration and possibly deterioration of the urban fabric and public services in such region related to agriculture. The analysis showed the availability of developable lands for future regeneration and the capacity for re-urbanization in all the 13 cities.

The territorial, social and demographic economic analysis in those cities shows the lack of governmental, educational, commercial, healthcare services and facilities, as well as relatively low quality for livelihood conditions, which increases the dependency on the neighboring cities and eventually urges emigration.

The situation in Qaha raises a need for interdisciplinary urban design strategies and rethinking guidelines to direct future developments towards a productive city approach, which if adopted, would not only limit the emigration from the city, but turn it into a hotspot that absorbs the surplus of the neighboring cities as well.

Departure cities hold many opportunities for future developments; however, it usually lacks both, the required financing for such developments and the proper planning from the local governments. One could recognize that the solution to the problem may be in the origin of it. Accordingly, the paper raises the question of whether such collaborative strategies, that involves both the Departure and Arrival cities, would end the phenomenon of emigration.

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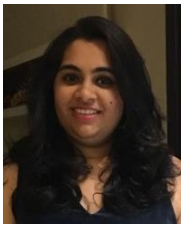
Cultivating Culture in the lost Portuguese Village in Mumbai, India



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Abstract: *Culture connects everyone either actively or passively. It has evolved through generations and the millennials are contradicting the ways of the old times. This new generation has begun to lose their sense of belonging to their community and place. The concept of 'cultivating culture' talks about both ends of culture, i.e. the past and present. The same will be understood with a case study of Ranwar village, Bandra in a suburb of Mumbai. With time the culture of this village cultivated that is it was close-knit communities since generations, even today seen today through local community participation, take place in the village square for events. This paper explores how with time the sense of belonging within the community changed. Once where there were Portuguese cottages, are being destroyed today to build skyscrapers is one of the many issues faced by this community. Overall, this case study will help in understanding how the community cultivated their culture in order to protect their 'Portuguese' identity.*

Keywords**:** *Cultivating culture, Portuguese, place attachment, community spaces, adapting*

Kültür Geliştirme, Hindistan Mumbai'deki Kayıp Portekiz Köyü Örneği

Öz: *Kültür, herkesi aktif veya pasif olarak birbirine bağlar. Nesiller boyunca gelişir ve eski zamanların yöntemleriyle çelişebilir. Yeni nesil, topluma ve bulunduğu yere aidiyet duygusunu yitirmeye başlamıştır. "Kültür geliştirme" kavramı, kültürün geçmişini ve bugününü içerir. Bu çalışmada kültür geliştirme çalışma alanı konusu olarak seçilen, Mumbai'nin bir banliyösündeki Bandra, Ranwar köyü örneği üzerinden anlaşılmaya çalışılacaktır. Zamanla gelişen köy kültürü geçmişteki bağlarını kaybetmemiştir. Yerel halkın katılımlarını içeren köy meydanı etkinlikleri bu konuda önemli bir örnektir. Bu makale, topluluk içindeki aidiyet duygusunun zamanla nasıl değiştiğini araştırıyor. Bir zamanlar Portekiz kulübelerinin bulunduğu yerde, bugün gökdelenlerin inşa edilmesi bu topluluğun karşılaştığı birçok sorundan biridir. Genel olarak, bu vaka çalışması, topluluğun 'Portekizli' kimliğini korumak için kültürünü nasıl geliştirdiğini anlamaya yardımcı olmaya yöneliktir.*

Anahtar Kelimeler: *Kültür geliştirme, Portekiz, topluluk hissi, topluluk mekânları, çevreye uyum*

1. INTRODUCTION

Culture is one of the most common terms used to describe one's being. It can be a lifestyle, food, festival or even a dressing style. According to the Oxford University, culture is the "way of life of people, their attitudes, values, beliefs, arts and the knowledge they have gained in the processes" [1].

When it comes to historians or conservators to explain this term, they often began romanticizing with the past and would be unhappy with the "culture" of the current generation. But it cannot be ignored that culture is a process, and in new times, culture will also evolve. Hence, a tiff is always seeing in whether one should adopt to the new ways or hold on to what was been practiced by our ancestors. The *Bhagvad Gita*, which

is considered to be as holy as The Bible or The Quran for Hindus, also mentions that "Change is the law of the universe". It explains that this world, whether its living or non-living will change fast but the only thing that will remain intact is the "process of change", hence one should accept and embrace this change. With time the lifestyle and environment changes, resulting in evolution of towns and cities. But with this evolving time, it is also important to know about our ancestral roots and how to hold them along with embracing the changing times. The case study taken into consideration for this paper will explore how an urban village is successful to sustain its ancestral culture along with the changing times.

The *Ranwar* Village, an urban village, has its roots from the seventeenth century and even today it holds a historic touch in spite of being located within the hustle-bustle of one of the most populated cities in the world, Mumbai. In this village, even today there are many houses which have with Portuguese origin and the bungalows are built in the colonial-style. Each of these houses would be more than a hundred years old and has an undying culture attached to it. And with time the culture of this village is being cultivated, where the younger generations are taking steps to help their close-knit community to survive.

2. BACKGROUND OF RANWAR VILLAGE, BANDRA, MUMBAI, INDIA

2.1. Location

The Ranwar Village is a part of suburb, Bandra on the western side of Mumbai.

2.2. Portuguese Influence On The Islands

Until the twelfth century the islands did not exist on any political maps of the native kingdoms or on other invading foreign armies. These islands were nothing but archipelagos of seven quaint islands off the Western coast of India. It was in the fifteenth century when Vasco De Gama first reached the Southern tip of the subcontinent and slowly by the sixteenth century the Portuguese acquired several territories and began constructing churches and forts.

According to the Bombay Gazetteer volume III, it was in 1534, when the Portuguese signed a treaty with the Sultanate of Gujarat, which allowed them to build fort on the island. Since, the territory of Bombay did not have any claim of governance; and this gave the Portuguese to establish their colonial "presence" in Bombay. They called this place as the "*Bom Bahia*", in Portuguese which meant "'the good bay".

These islands were surrounded by shallow sea, which restricted the land use to rice and coconut cultivation. Although the major landmass was the territory of the Portuguese but it also had a small number of settlements, inhabited by the native fishermen or *Koli* community and a small Hindu population. These *Koli* communities were the oldest residents, with a possibility that some of the sites may have been in existence in since the Iron Age, as mentioned in the Gazetteer.

The Gazetteer also mentions that the landscape of these islands was not changed since the thirteenth century including the social, cultural, or economic patterns of the locals. The primary intention of the Portuguese rule was the spread of Christianity, and economic activity was a secondary objective. This could be seen in the pre-British landscape where there were no major city building efforts or any civic building of importance [7].

2.3. East India Company And Its Impact On Bandra

The crucial times between British and Portuguese began from the 1660s. On one hand, the British had just initiated their colonial project in India, and on the other hand, the Portuguese were undermined to continue to their religious policies to hold their the control over Bombay. The faith of these islands changed in the seventeenth century after a "marriage treaty". It was between Charles II King of England and Donna

Catharina of Portugal was arranged in 1661. The seven islands were one of the items given to the British Crown as a dowry [7].

During the 1670-1680s, British began building their forts on strategic locations, i.e. the Sion fort which was built on the northernmost tip of the islands, and then the Mahim fort was also created. Sion fort overlooked the only land rout that connected the archipelago to the Portuguese claimed Salsette. The Bandra fort or the "Castella de Aguada" overlooked the Southern shore as a post against any naval threats. Mainly the projects undertaken by the Company were aimed to protect the settlement of Bombay. Now, soon the forts which were built by the Portuguese on Salsette became active and saw more foot soldiers to protect their territories.

2.4. The East Indians

With the Portuguese invading India, they introduced the concept of Roman Catholicism and the locals were forced to follow Christianity. The high-class Hindus who decided to get converted, the Portuguese began to distinct them from others treated them with honor. Even while the East India Company was busy reclaiming their seven islands and building forts, the community remained a separate entity on the mainland. They often referred to them as "Portuguese Christians". It was only the 'Portuguese Christians' who were able to read and write Roman characters. As a result, the British gave them the posts of clerks, assistants and secretaries. This was nothing but a boon for the Indian Christians, because with development of railways and steamships, more Christians from the Southern parts of the subcontinent (which were once Portuguese territories) came to Bombay for jobs [7].

Now, with the British inviting merchants from various regions of the subcontinent to settle on the islands, the "Portuguese Christians" wanted to have their own identity, which would protect their original ancestry on the region. It was on the Golden Jubilee of Queen Victoria where they demanded to be called "East Indians". By demanding for a tittle, they not only impressed the British Government of Bombay but also claimed that they were the earliest Roman Catholic Subjects and local to the British Crown. Moreover, being the original settlers of this region, they requested on the British to entitle them to certain natural rights and give privileges against the emigrants who were settling in the new reclaimed islands of Bombay [7].

The Ranwar Village is one of the many villages of the "East Indians". Even today, the East Indian Catholics can speak Marathi, which is the local language of the state, and follow Christianity, maintaining their ancestral culture with Portuguese influence and cultivating their culture with the changing times of the society.

2.5. Historical Significance

As seen above, the history of the Ranwar Village exists back to even before the India was invaded by the Portuguese. With these layers of invasion and events, history of this urban fabric can be traced back to the 1580's.

Figure 1. Sketch of a conceptual vision of the Ranwar Village in 1610 (Kishnadwala, 2021)

2.6. Architectural Significance

Architecture of the Ranwar village is one of the important aspects which have helped to read the Portuguese and Colonial influence on its urban planning and cottages. The houses are concentrated along an organic street spine and the opening up of narrow streets and form squares has given a distinct variety of styles and streetscapes in different sections of the precinct.

A Typical East Indian House has different proportions when compared to the other housing forms from the past. Their spaces are designed such that a major proportion space is dedicated for community activities, which was much larger in earlier days than today. The verandahs are large, generally open to streets. These verandahs are also designed for people to chat or gather while doing their household chores. Since, they are close-knit communities the whole neighborhood is invited for the most of the events and hence the living room is a large area, to occupy everyone. Generally birthdays, marriages and other events the whole community is invited.

In an interview with Times of India, Mr. David Cardoz talks about this village and emphasis the ambience in detail, "links pervasive sense of comfort to the low-scale village-scape, where the houses sprang up in organic response to the surroundings, be it climate or neighbors. The old-cottages have low-windows for the wind to breeze to have a non-disturbed entry to the houses and delicate fret worked verandahs, which help in demarking the open and semi-open spaces. The entire village has awkward nooks and corners to accommodate cycles and scooters, all roads merging at the town square" [2].

Another typical architecture feature is sloping roofs, to adapt to the weather of Mumbai where there are heavy rains four months of the year. In addition, these houses are mostly load bearing and one or two storied, structurally members are timber, walls of bricks and lime plastered. One of the easiest ways of identifying an East Indian house is by big wooden porches and external staircases.

Figure 2. Image of a typical house (exterior) at the Ranwar Village (Kishnadwala, 2017)
Figure 3. Sketch of a façade of typical house (exterior) at the Ranwar Village (Kishnadwala, 2021)

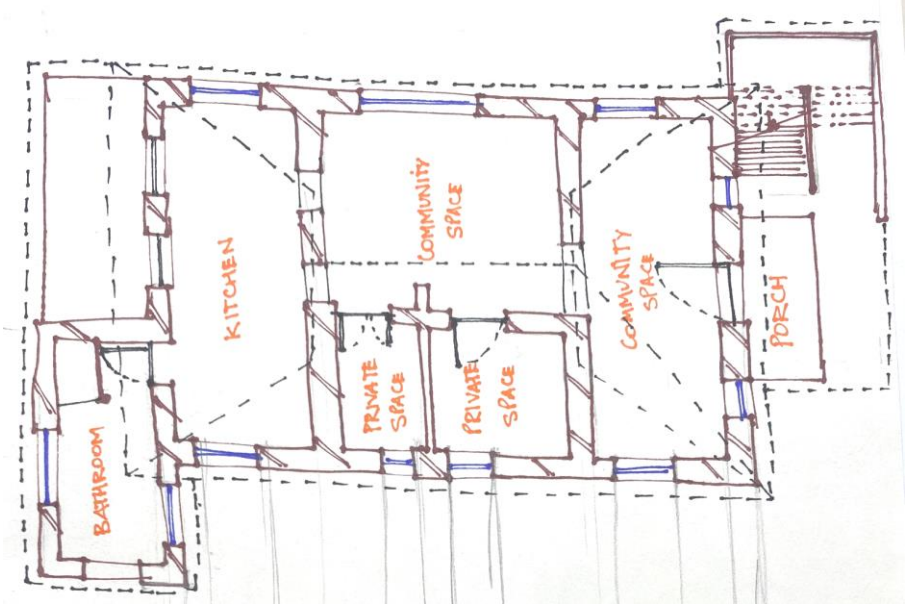

Figure 4 .Sketch of a plan and elevation of a typical house at the Ranwar Village (Kishnadwala, 2021)

2.7. Associational Significance: The Community

The community is a close-knit, which is not limited to only the residents of a particular hamlet but as "a community of East Indians". Even though they belong to different regions, i.e. Basin, Salsette and Thana they take pride as original inhabitants of Bombay (now Mumbai). They also have a webpage for in order to promote and protect their culture, an initiative to maintain their association this community [7].

2.8. Living Heritage

The spaces in this village are active and vibrant if compared to any other village. Since the community is close-knit they will be found most of the time together either praying or gathered around a corner chit-chatting. Most of the elderly would also be seen sitting in the verandah busy reading a newspaper with a grandchild sitting along playing a musical instrument. Many cottages and houses have been converted to cafes or bakeries, and these would constantly have the fresh aroma of the breads baked, complementing the fragrance of the coconut milk curries cooked in these houses.

Another important aspect adding to value to living heritage is the Christ Crosses. There are around 36 old churches, most of them dating from nineteenth century. These were not built only for religious purposes, but in order to ward the evil from entering their village. But, there are also many others who mention that they were built during the plague that broke in the city in mid-nineteenth century and to protect them from the people suffering the plague.

In case weddings, the entire town square would be lit, women conducting their prayers for the bride and groom, with dancing and singing, which would not be identified by a commoner since they are neither in Marathi or English or Hindi. The rituals during weddings and birthdays are also quite elaborate, where the community ensures that everyone whether it is an adult or a child present actively participates in these activities.

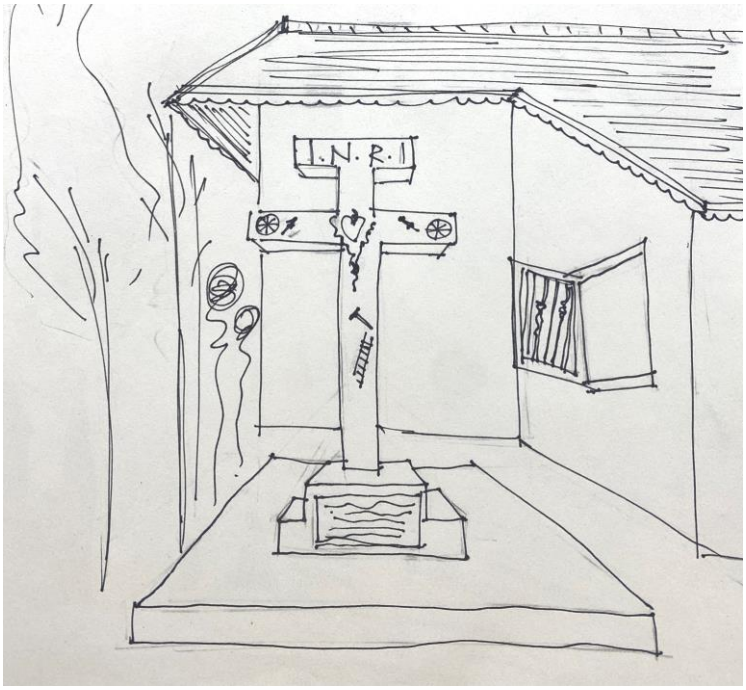

Figure 5. Sketch of Christ cross next to cottage in the Ranwar Village (Kishnadwala, 2021)

3. "CONTRASTING WORLDS": THE CURRENT SCENARIO

Bandra, a suburb in Mumbai, which is also known as the "The Queen of the Suburbs" and *Ranwar* is one of the twenty-one original "Pakhadis" *or hamlet* which is still existing in Bandra. According to a news report, *Ranwar* has a cluster of forty-two houses and a population of four hundred residents registered and this village is like a time capsule, taking one back 150 years back through the village.

However, one of the most unfortunate parts is that this urban village is also on the verge of decline. Mainly, due to the insensitive developments forced due to the ever-expanding need of space in the city. With the city center changing its focus to this suburb, there is a serious market force to convert this village amongst the others as a commercial, retail and residential hub.

The developers and the builders see these houses as "waste of spaces" and encourage the residents to build a skyscraper by showing them the 'good image of modern lifestyles". In addition, adding to this, the developers are successful in convincing them that these are waste spaces and living in a skyscraper would provide them the required modern necessities.

This village is a basic example of urban development, which is affecting village life and comprising the ancestral culture by giving away their leftover open spaces. The situation is such today that one will see newly built skyscrapers coexisting with a 1 -2 story Portuguese cottages and bungalow, a "Contrasting World". This, however might be seem pleasing to many, but it is not as peaceful as it looks, because with these high-rise buildings comes the others issues such as; population, waters, bad sanitation, heavy traffic, lack of risk preparedness and so forth.

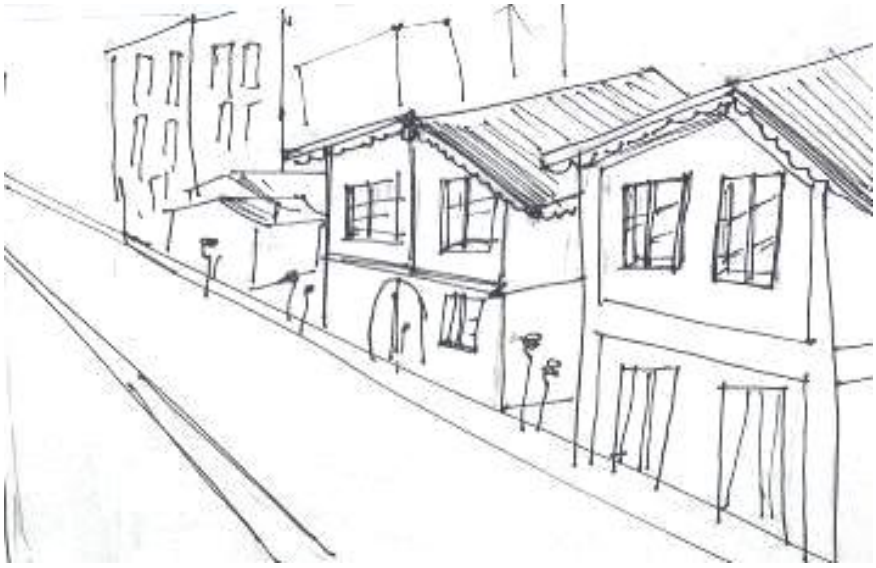

Figure 6. Sketch of one of the streets of Ranwar Village showing the contrasting worlds (Kishnadwala, 2021)

3.1. Heritage Byelaws For Bandra Prescient

In 1995, Bombay was the first city in the country to have Heritage Byelaws formulated to protect the heritage of the city. In this the Bandra prescient (of which the Ranwar is a part) was included. However, this was an advantage for the prescient but a major disadvantage was that it was graded Grade II B.

This grading does help in protecting the unique features but also encourages changes on the exterior façade. As a Grade II B, the prescient only needs to maintain its authentic character, but the reconstruction of buildings is permitted if it is structurally weak or affected by a calamity. And for reconstruction they need to seek permission from the Development board of Mumbai. The owners in hope of living in a skyscraper had over their properties to the builders for reconstructing under false reports, resulting in loss of these bungalows and cottages.

4. CULTIVATING CULTURE TO ADAPT TO THE CHANGING SCENARIO

As it has already been studied, Bandra is one of the few places surviving, giving a glimpse of the past, bears of the East Indian culture, sense of community. Even today, people still know their neighbors with a surviving street and pedestrian culture, encouraging foster incidental interactions. But in spite of all of this, the *Ranwar* Village is constantly adapting and accepting the changing times. It is not only that their houses, the tangible part which they are supposed to protect, but also their intangible culture. Along with this a constant fight of proving themselves the original natives of this city, the "East Indians", along with the pressure of urbanism.

In today's scenario, there are many who have recognized the significance of this village and have been taken many initiatives such as to revive the main Town Square. Also, the existing houses were revived so that a passerby would be able to imagine the original grandeur it would carried in those days. The younger generations have also actively participated in their ways to keep the vibe of the village lively by converting their homes to small cafes and by encouraging the artists to use their walls for graffiti, in a way introducing many photographers and foreign nationals to visit their village, in a way creating awareness [3].

4.1. Urban Conservation and Regeneration of Ranwar Village

Many locals who also were professionals realised the value of this village and took initiative to protect the losing culture of the village. One of them was "The Busride Studios", based in one of these cottages at the *Ranwar* Village in Bandra. In 2010, they realized that there were many similar hamlets in Bandra which were more than a century old cottages and have the local vernacular styles that might have been existed even before the Portuguese invasion.

The project was to document this hamlet that was through the East Indian Catholic community, which originally belonged to the "agrarian paddy cultivators". They carried the lineage from centuries, and it was reflected in their ways of living in these houses, their lifestyle and so forth, differentiating them the other city dwellers. Their work was based on the philosophy from Aldo Rossi's book Architecture of the Cities, which said that a city is a memory of the people and like memory it is associated with its objects and in their way of living. It is this which becomes the "city's predominant image", which is reflected in their architecture and landscapes.

The aim of the project was to identify and understand the character on this hamlet and make the common people understand the value of their neighborhood. They also highlighted the never ending conflict between the conserving these houses and to match the ever-ending need of the city. The studio began their documentation of the hamlet by first understanding the lifestyle of the residents with respect to the spaces they lived in. Later, they conducted a detailed qualitative spatial analysis of the environment, which emphasized the significance of their hamlet. After identifying the significances, the team lead analysis and worked on conservation plan. Blogging was another tool which allowed them to reach the larger base of people to get their opinions. These modes also become a mode for people to share their ancestral stories which helped in documenting the project [3].

4.1.1.The Town Square Revitalization

With some awareness about this village in the 2015s, an architecture firm, SDM Architects (based in Mumbai) sent their proposal to the Mumbai Metropolitan Region's Heritage Conservation Society. The society agreed to fund along with some local politicians. The main aim of this project was to revitalize the Town Square of the Ranwar Village [4].

The revitalization included the reviving the front façades of these hamlets and paving the town square, making it more accessible and user friendly.

Figure 7. Recent image of the Ranwar Village Town Square (Kishnadwala, 2016)

4.2.Economic Model For Sustainable Conservation

With the some conservation projects being successful, it was also important to design an economic model for the village. Since, conservation of any place is successful only if it is sustainable. In the case of the *Ranwar* Village, where the community had strong sense of belonging they needed to design an economic model showcasing the same. This would help them to sustain their livelihoods in this neighborhood. Hence, again with the help organizations such as The Busride Studio, they took initiatives and opened their doors to visitors to have a sneak peek to the life of an "East Indian" family. Many of these initiatives are mentioned below.

4.2.1.The Ranwar Festival

Amongst the many initiatives, one was the *Ranwar* Festival, an annual festival that is organized by the locals for everyone. The locals, mostly being Christians organize it some days prior to the Christmas so that visitors could prepare of the festive season and also help in selling goodies needed for Christmas. Most of the stalls are by the locals, many of these offer authentic meals and desserts from their household, which are a blend of the Portuguese and Marathi culture. This festival, not only helped the locals to open their doors for outsiders, but also encouraged outsiders to be able to part of the culture which many would not have even heard or seen anywhere else.

4.2.2.Graffiti

During the 2010s, Bandra opened up some of its walls to encourage street art projects to liven public spaces with color, form and texture. Within the neighborhood of *Ranwar*, many iconic works can be found. These graffiti portrays the most common subjects from the daily life of Mumbai in various forms. Some would look back at the Bombay of the past or to the contemporary life or stills from Bollywood. It so happened that today, these cottages and streets of *Ranwar* have become quite vibrant, making it a part of art lover's paradise. Further, this has also encouraged tourists and indirectly helping to boost the economics for the residents [3]

4.2.3.Heritage Walks

Another initiative that has brought this village in light is the Heritage Walks. Heritage walks are often described as an activity for elite to spend their Sunday mornings. But on the brighter side, these help in creating a lot of awareness. Many times, these walks are arranged specially for architecture students, so that they can take up it as their case studies and document these losing gems. With the help of social media, where the heritage walk participants often share their experience, have created more awareness and their followers take an attempt to visit these locations.

Figure 8 .Poster for heritage walks at Ranwar Village (Kishnadwala, 2017).

Figure 9. Image of the corresponding author with her students at the Heritage Walk (Kishnadwala, 2018)

4.2.4.Cafes And Bakeries

Cusine is the 'East Indians' have also been discussed but the recipes are not known to many in the city. Taking this to their advantage, locals have invested in cafes and bakeries. Also, the location, i.e. the suburb, Bandra has its own vibe, very the residents are quite at leisure. One would often find them playing a musical instrument and singing or sipping beverages in their verandahs. A similar vibe with their cuisine is offered in their cafes. Many locals have converted their cottages or bungalows to a cafés, offering some lost dishes from their past. This kind of an economic model helps not only helps the residents financially but also maintains their Portuguese culture. *Ranwar*'s Judee Bakery is one of the finest examples of converting their cottage to a financial model amongst the many others found in the neighborhood.

5.CONCLUSION

With time; culture, traditions, livelihood and etc. all tend to change and one need to begin to accept this change, as it is seen in the *Ranwar* village. The village has not only survived through the change of rulers to change in their religion to their professions, to protecting their identity in these political times but even today they have been able to maintain their culture with a twist of the modernity in their own way.

This village can be considered as a classic example for how to make conservation, sustainable, by cultivating their culture and making it appreciated by a much larger group of people. It is also important for conservationists or professionals like us to encourage locals to understand the significance and value of these communities, instead of just laying a road for them which has no relation to their past or culture. Further, it is a community that can only protect their culture, but only by cultivating with new times these cultures can survive.

This has paper has discussed a case study of only a small village but there are many such examples in Mumbai, such as *Khothachiwadi*, *Makhepakdi* and many more. These too need to maintain their character and have been fighting to protect their identity in a city which is fonder of constructing and living in skyscrapers.

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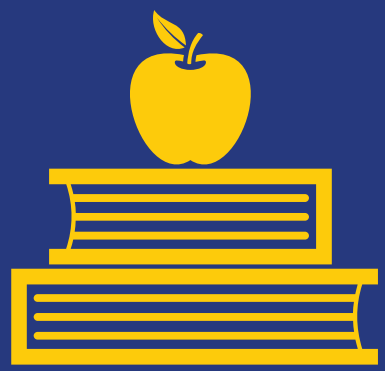

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