CHAPTER XI

DISCUSSION AND INTERPRETATION

OF THE MAJOR FINDINGS

11.0.0. Introduction

The present chapter is devoted to overall discussion and interpretation of the major findings in the light of specific objectives of the study, existing literature and researches as reviewed earlier. The discussion and interpretation have been confined to selected parameters like topography, archaeology and toponomy of all the towns and cities under study showing similarity and dissimilarity among them. This chapter as a whole is divided into four sections. Section I contains the topographical aspects of the towns, Section II related to town planning and its architecture, Section III is concerned with the architectural and decorative features of the monuments, while Section IV deals with toponomy.

11.1.0. Section I - Topography

The analysis of the data related to topography of the towns shows that out of seven towns and cities the topography of the four towns and cities are almost similar
whereas the other two towns are same to some extent, while the last city shows quite a different topography. In the first group it is observed that they were the riverine towns and cities situated on badland topography. The monsoon erosional activities were clearly marked there as seen at Ahmedabad, Bharuch, Cambay and Surat. At Ahmedabad it is observed that the rain gullies transformed the topographical feature of the city into an uneven ground. Similar feature was also demarcated at Bharuch and Surat. In Cambay within its fortification the monsoon activities were not so predominant as its outer peripheral areas. Sand deposited by the river is predominant in Surat city while in the rest three towns and cities of this group the effects of sand deposition is comparatively less. The situation of Surat on the river bend is the main cause of sand deposition on its southern parts while at Ahmedabad and Bharuch rivers flow straight and causes less sand deposition. In Cambay mud-flats were clearly observed in lower level specially at Sachipada which caused less habitation.

In the second group two towns are located considerably on a plain land though rivers flow nearby the activities of the river did not affect the town or city to a large scale.
The monsoon erosional activities were observed outside the fortification. This feature is clearly found at Baroda and Patan. It is also noted that big water reservoirs and tanks are located on the outside of the fortification as seen in Baroda and Patan. Goharistan was found within the fortification as observed at Patan, Ahmedabad, Bharuch, Surat and Champaner. Comparatively Patan grew up on a sandy plain while Baroda developed on a plain composed of brownish soil.

In the last group it has been found that the city Champaner is situated on the foot of hill. This mountain fort or Giridurga developed on a gentle slope of the Pavagadh hill. Its two sides are strongly protected by natural defence. Proper utilisation of natural defence is an important factor of the mediaeval towns, cities and ports and even the geomorphological factors played the vital role for their patterns and layouts.

11.3.0. Section II - Town Planning and its architecture:

The analysis of the data related to this section indicate that three types of towns and cities viz., square, rectangular or linear and radial grew up in the mediaeval period (3.3; 3.4; 3.5; and 6.1)*. These towns and cities

* References have been made to necessary figures in the following way. The first figure indicates chapter number while the figure after this indicates figure proper. For example, number 2.4 indicates that this illustration belong to Chapter II and its number is 4.
were the safe-refuges against the external attacks. So the
kings or the viceroys of the kings fortified the towns and
cities to protect the inhabitants on the one hand and secure
them in the administrative centre on the other. Tradition
says that a warrior protected by the fort can fight with
hundred enemies that are outside and a band of hundred
warriors fighting from the fort can easily challenge ten
thousand enemy soldiers.¹ Thus the medieval towns and
cities were the centres of civil as well as military powers.

Primarily these towns and cities can be classified
in two main divisions -

(1) The royal palace with heavy enclosure and guarded
by magnificent gates,

(ii) The outer enclosing walls that protected the general
inhabitants.

The palace area was strongly protected by high and
massive walls with bastions and burjs at certain intervals.
The walls have rampart walks and parapet on the outer border.
The parapet walls were provided with arrow loops for the
archer and lancer. Important areas were provided with
catapults, and at Cheapangan such catapults still exist.
The royal enclosure was featured by magnificent gates (8.7) with towers or burjas. The towers were provided with stairs. The existence of barbican gate is another important characteristic of the mediaeval towns and cities. At Ahmadabad, Champaner, Cambay and Bharuch the existence of barbican gate is noticed. The gates were also provided with oriel windows through which the brigands or belligerents may be descried.

The walls of the royal enclosure are usually made of bricks and faced with stone slabs. Stone and wooden pins were used for joints, but in few cases iron nails are also observed. For brick-portion, lime-mortar was used for outer part and mud-mortar for inner part.

The palace area comprised of residential quarters, gardens, place of amusement and a mosque for religious prayers. Such devices were noticed at Ahmadabad and Champaner. At Champaner underground chamber with air cooling device is an important feature of the palace complex. Similar features can be found in the towns and cities that grew up under the rule of the sultan dynasty throughout the country. No doubt, in the case of capital cities there were few more buildings.
The outer walls of the towns and cities that protect the inhabitants were comparatively thinner than that of the royal enclosure. The walls of this part usually were built of bricks but the gates were of facing of stones. The gates of this wall were straight and were provided with huge doors. These gates were also featured by guard rooms flanked on either sides. At Baroda the upstairs of the gates (5.4; 5.5; 5.6 and 5.7) served as guard-room, while at Cambay the guard-rooms were on the either sides. Outside Gujarat similar feature can be found at Lulalabad, Rashlaqabad, Nadlabad, Firozabad and Lilla-i-Harinar Parbat in Kashmir.

It is observed that the towns and city under study were also protected by moats on all sides. There were draw bridges over the moat which could be lifted whenever necessary. At Sharuch, Surat and Ratn towns, wide and deep moats existed. In the Islamic architecture the introduction of this device started at the time of the battle of Khandeq (Ditch), subsequently it became one of the important features of the towns and cities that developed under the Umayyads and Abbasids. During the Abbasid period, when al-ansur founded the city of Baghdad in 761-62 A.D., he strengthened its protection by a moat beyond the fortification wall. All the four gates of this circular city were featured by draw bridges. At Lulalabad fort the lifting bridge can still be seen. Under the saurih rule the developed cities like the Agra fort and
Red fort were also encircled by wide moats. The gates of these cities were approached by bridges over the moat.

The study indicated that for forms and patterns of the medieval towns and cities, the Muslim builder did not completely abide by the rules stated by the ancient Indian literature. Primarily the towns and cities grew up on square or rectangular plan but subsequently when the fortification wall expanded to bring the developed suburbs under protection, it passed in radial or irregular rectangular form that was greatly influenced by the geomorphological features.

It is observed that the towns and cities were divided into few major divisions by broad roads that usually radiated from the main gate of the royal enclosure and further terminated in the main gates of the outer walls. These roads served two purposes; firstly they were highways for traffic; secondly they divided the sites for buildings. These roads again intersected by a number of small roads at $30^\circ$, $45^\circ$, $60^\circ$ and $90^\circ$ angles at different places. Archaeological excavations indicate that main roads were paved with rubble and somewhat lime-like mud used for ramming the surface. The surface of the road was convex like that of the tortoise back. The open drainage system existed in the towns and cities. At Champaner such drain can still be seen near the Lidu cumbad mosque (8.27).
The planning of the towns and cities reflected the admixture of gridon system and that of circular one. The gridon system was observed at Jaloua and in few parts of Ahmedabad, Bharuch, Champaner and Surat. The analysis of the data related to this section revealed that the Muslim builder did follow the rules ascribed by the ancient Indian literature for site planning and zoning the towns and cities according to different occupational groups, castes and classes. The royal place always was located at a well protected site of the towns and cities as observed at Ahmedabad, Champaner, Bharuch and Patan. Similar features occur at Nagulaqabed, Adilabad and Red fort at Delhi.

The towns and cities were divided into few zones by broad roads and again these zones were sub-divided into square and rectangular divisions or quarters. It is observed that the houses of the nairs, nobles and rich persons were spacious having servant quarters, stables and garden in front of the house and in few cases private mosques were also associated within the same compound. The gardens were beautified with fountains and water circulating devices as noticed at the excavation site of Champaner city. The housing patterns were very congested and the rooms of the houses were square and rectangular in plan. The literary source indicates that most of the houses of the towns and cities were multistoried, built of bricks and stones.
and in few cases wooden pillars, beams were also used. The upper floors of the buildings were built of wooden beams and paved with stone slabs, but in few cases concrete floors were also noticed. It is noted that the raw materials locally available were the chief constructional media but those buildings constructed under the royal patronage or under the supervision of the Amirs, nobles or respected persons were built of stone transported from distant places and sometimes from outside Gujarat.

The topography of the towns and cities under study indicated that each town has its own pleasure resorts place. The names of these places have a suffix of bagh at the end such as ShaniBagh, Harmandir, LaiBaug etc.

The Jami Masjid was always at the heart of the towns and cities but outside of the royal enclosure. Main commercial areas were developed around the Jami Masjid. The topography of the towns and cities also indicate the distribution of markets in different localities. It shows that each town and city have mixed population. The lower castes always occupied the fringe of the towns and cities.

The analysis of the related data also indicate that the Idgah and Labarstan occupied the fringe of the towns and cities. Existence of Labarstans inside the towns and cities indicate the growth and expansion of the habitation.
11.3.0. Section III : Architecture and Decoration

This section is divided into two sub-sections. Sub-section I deals with the architecture and sub-section II sheds light on decorative motifs.

11.3.1. Architecture : Selected Monuments :

The analysis of the data related to this section represent a wide range of typical buildings in time and space throughout the period under study. About five hundred seventy monuments were explored and mapped out in seven towns and cities. Primarily these monuments can be classified into two major groups.

(1) Religious buildings
(2) Secular or Civil buildings.

(1) Religious buildings :

For in-depth analysis of the monuments in the light of the specific objectives of the study about fifty monuments were selected and these are shown both photographically and by detailed ground plans. Those of religious nature consist of five categories:
(i) Mosque
(ii) Jamaat Khana and Madrasa
(iii) Logan
(iv) Tomb, and
(v) Lazarstan.

The mosque is the first and most celebrated monument in Islam. In the mosque the Muslim perform their prayers (five times a day) including special Friday prayer. The renowned traditionist Abu Muslim relates that "wherever the hour of prayer may overtake you, there you must execute the Salat (prayer) and that place is the Masjid." The same traditionist also said that the "one prayer in a mosque to be worth twenty or twenty five in isolation." Even the Hadith said that "He who builds a mosque for Allah, Allah will build for him a similar house in Paradise." Islam emphasised on a life after death and this tradition ultimately inspired and encouraged the Muslim to build mosques for believers. Most of the inscriptions of the mosque of the towns and cities under study uphold this tradition.

The study of the data related to the mosque indicate that the mosques of Gujarat represent the following distinct features:
(i) The sanctuary with facade wall.
(ii) The sanctuary without facade wall.
(iii) The mosque having one aisle deep cloister.
(iv) The mosque with more aisled cloisters.
(v) The mosque without cloister.
(vi) The facade wall having two minars flanked on the either side of the central entrance.
(vii) The facade wall having minars at its either end.
(viii) The single storey mosque.
(ix) Multi-storied mosque.
(x) Mosque with raised puluk Khana.
(xi) Mosque with puluk Khana in the sanctuary.
(xii) Mosque without puluk Khana.
(xiii) The mosque with trabeate roof.
(xiv) The mosque with trabeate and arcuate roof.

From the analysis of the plans and general arrangement of the mosque buildings it is observed that the ami mosque of anaruch (6.3), goli libarai's mosque (4.37) and jadi jali mosque (4.41) at ahmadabad; kajuri mosque (8.50) at chhapar; and the umada mosque (9.18); the mosque of shahana kayib (9.25), the mosque of sheikh joshali (9.30) are all at ratan have no screen walls in front of the sanctuary. Similar features occur at rond in the mosque of malik rughis; at laulatmed in the jali mosque, at dar in the jat xi mosque and kasal gula mosque, and at
In the early days of Islam the Prophet's mosque at Madina has no screen wall. The introduction of screen wall was probably only to keep the 'musali' (worshippers) aloof from the general visitors. But in few cases the screen wall functions as weight transforming media of the roof.

The Jami mosque at Ganway (7.9), Ahmad Shah's mosque (4.6) and the Jami mosque (4.13) of Ahmedabad; the Jami mosque (8.18), the Ragina mosque (8.28), the Bewara mosque (9.36) and the Shahi mosque (9.43) at Champaner have their screen walls in front of the sanctuary. This feature can be found in most of the mosques of India. Even the early mosques of India like the Jwvet-ul-Islam mosque at Delhi and Jami-din-ki Chompra mosque at Ajmer have their screen walls.

There are few mosques which have one aisle deep cloister around the courtyard as observed in the Jami mosque (4.4) of Ahmedabad and the Jami mosque (8.10) and the Lila Gumbad (8.45) mosques at Champaner. But the Jami mosque of Ganway (7.7) has four aisled cloisters. The roof of the cloisters of the Jami mosque of Ahmedabad (4.25) and the Jami mosque of Ganway (7.14) have lintel construction having small cupolas protruded on the roof like domes while
the roof of the cloister or the Jami mosque (6.12) of Champaner is backed by arcade and roofed by stone slabs which is covered by a thin layers of concrete plaster. All these cloisters are open to the court and backed by walls. The walls are provided with windows which are filled with perforated stone lattices.

It is observed from the analysis that there are some mosques which have no cloisters at all. The Junada mosque (6.17), the mosque of Shaikh Juan Bati (9.29), the mosque of Ali Bakhsh (9.26), Husain Shahi's mosque (6.27), the mosque of Nani Jivara (6.35), the mosque of Nani Said (6.46), the Raza Mosque (6.27), the Jiwara mosque (6.35) and the Shahi mosque (6.42) belonged to this group.

Minar is an important feature of the mosque. Its main function is to call the believers for prayers on scheduled times i.e. five times a day. But in some mosques minars were built only for decorative purpose as seen in the Rani Sabara's mosque (6.37) at Ahmedabad and at Champaner in the Shahi mosque (6.43) and the Shajuri mosque (6.51). Usually minars were constructed on the outside of the mosque or on the either end of the facade but in Gujarat they are generally placed on the facade, chiefly on the either side of the central entrance and occasionally at the end of the facade.
The minars of Ahmedabad mosques generally taper upwards with projected balconies at intermediate places (4.33). Originally they are square or rectangular in plan but in the successive stages changed to octagonal, polygonal and circular shapes. The lower part of the minar is richly carved with great care and taste while the minars of the mosques of the patan are elongated having small projected balconies and capped with receding moulded tiers. The minars of the Ahmedabad mosques—specially the minars of the mosque of Jali masjid and the Sidi ji ni mosque are famous for their soothing characters. Why does the minar shaker? Professor Patra says that the builders might have used a floating foundation for the minars constructed of stones which are sensitive to vibration. But Venkatavardhan, Director of Nehru Planetarium, Bombay gave a scientific explanation for the shaking of minars. According to him there are three factors involved in the phenomenon: a source of energy (which may be a human hand), a receiver and the environment in which the energy is dissipated. If the frequency at which the energy is supplied matches perfectly with the natural frequency of the whole system, vibration takes place. When the investigator was on exploration in December, 1981 with Professor Siraj-ul-Islam, of Dacca University, Bangladesh, ascended on the upper storey of one of the minars (north) of the Sidi ji mosque and the
Amenazin of the minare begun to push the miner. After few seconds a mild tremor started in the miner and it was felt that the miner was shaking. Even after the push was stopped, the miner continued to shake with lesser vibrations and then stopped automatically. It is believed that the building techniques of the miner are the causes of shaking. It is observed in the southern minar of the same mosque that the upper part of which had been opened out by the British with the intention of discovering the shaking clause, have stopped shaking after that incidence. It is found that the techniques of the building stones were prepared in such techniques that it creates elastic phenomenon within the socket through balls. This peculiar joints ultimately is the cause of shaking. It is noted that the gum resins used for joining the slabs also worked as elastic medium of the miner. Secondly these miners might have been built of Itacolumite stones (a term used by the geologist for a special kind of sandstone which is slightly flexible in thin slabs owing to a “ball and socket” arrangement of the grains and cement), which have elastic character. The miners are well proportionate and balanced. It is observed that the ratio between the mosques and minars of the nineteenth mosques are 2:1 and 4:7 while the minars of the nineteenth mosques have 1:3 and 2:1. At Champaran the
Builders might have aimed to maintain the 1:3 ratio in their constructions which ultimately increase the height of the minars. Visibility is another cause for elongation of the Champaner minars.

The study of the data revealed that the screen walls of the mosques of Gujarat are featured by semi-circular pointed arches. True arch construction method was observed. The central arch opening of the mosques is comparatively raised and crowned by semi-circular arch which was longitudinal character.

It is a noteworthy feature of the Gujarat mosques that most of the mosques of the towns and cities under study are multistoried. This type of construction was started in the Jami mosque of Sabaray (7,9) and subsequently was followed in the mosque of Malik Alam. Haidat Khan's mosque and in the mosque of Ahmad Shah. But in the Jami mosque of Ahmadabad the technique of building was improved and modified. In the Jami mosque of Ahmadabad the transept of the mosque is raised into three storeys by cutting the roof into two stages which roughly took the form of pyramid. The upper galleries were enclosed with stone railing. The intrados of the railing is beautifully carved. The constructional trend which starts here was later on followed in the mosques of Champaner. At Champaner the builder strongly maintained the proportions of the upper storeys. lintel is the chief
backing medium of the roof as well as for 'phase of transition' specially for the mosques where stones were abundantly used. The intermediate spaces between the domes were filled by large stone slabs which engulfed the space between two lintels. These slabs were further covered by a thick layer of concrete. Due to inadequacy of stones wooden beams were used for roofing and for 'transition phase' squinch system was noticed in the mosque of Sara Idrus at Surat, Kaxkai Kothar and Navalakshi Kothar at Champaner and the tomb of Lary Khan in Ahmedabad.

The analysis shows that all the mosques were provided with two types of windows:

(i) rectangular window with plain surface.
(ii) oriel windows.

The windows are filled with perforated stone grilles, but the oriel windows are usually opened. Except doors and windows no mode of ventilation were observed in the walls of the mosques. Sometimes oriel windows were placed in the facade wall above the arches of the doors as observed in the Jama mosque of Champaner (3.18) and in the Shahis Khan's mosque at Ahmedabad (4.33).
(ii) Jamat Khana or Madrasa:

In the very early days of Islam the mosque was only the place where the believers congregationally worshipped, learnt religious and spiritual knowledge as well as took decision about the important affairs of the state. In the subsequent period the former function remained in the mosque while the latter functions were shifted in the Jamat Khana or Madrasa and royal court or assembly house respectively. Jamat Khana usually was built near the settlement of the preacher of Islam. In Gujarat such buildings were noticed within the compound of the saint’s refuge as found at the tomb of Maulana Sakhdu Hisham-ud-Din, at the tomb of Shaikh Farid, at the tombs of Maulana Yaqub and Maulana Husain at Patan. Tradition says that these buildings had been also used as Madrasa for the Muslim students.

(iii) Idgah:

Idgah, is the place where the Muslims perform their prayers two times in a year. The Muslim calendar year has two canonical festivals - the Idul Adha (also called Id-ul-Lurbar or Id-ul-Saniar) sacrificial festival and Id-ul-Fitr, the festival of 'Alms'. The former is observed on the 10th day of the month of Zul-Hijja while the later is observed on the 1st day of the month of Sawwal after completing compulsory fasting one month in the month of Ramadhan. Common to both festivals is the Sulat-ul-Id(ain) festival of public
prayer of the whole community which is considered as
Sunnah (wajib). It should be celebrated in the open air
on the musullah (Idgah) though in mosques the salat can
be offered.

The analysis of the data related to Idgah reveals
that the location of the Idgah was on the outside of the
town or on the fringe of it as found at Ahmedabad, Baroda,
Bharuch, Cambay, Patan and Surat. The Idgah -aalan of
these towns and cities are usually an open but enclosed
rectangular area. The western enclosure is higher and
provided with minarets, mimbar and minara (6.15), though
latter has no function. In few cases the musullah is paved
with stone slabs as well as bricks and concrete as observed
at Baroda and Patan.

(iv) Tomb

The holy Quran is quite silent about the erection
of tombs and monuments over the graves of the Muslims. The
Prophet (s) strongly opposed to build any structure on the
graves. The following hadis indicate the same. Hazrat
Jabir (r) says “the Prophet(s), prohibited building with
mortar on graves”9. Abul Haiyaj Al Asadi relates that the
Kalifah Ali said to him, “shall I not give you the orders
which the Prophet(s) gave me namely, to destroy all
pictures and images and not to leave a single lofty tomb
without lowering it within a span from the ground”.10
Ibn Saggas said when he was ill, "Make me a grave towards Mecca and put unburnt bricks upon it as was done upon the Prophet's". But notwithstanding the general concensus of the orthodox opinion, the erection of tomb buildings are common to all Muslim countries. Tombs are always constructed over the graves of persons of respectability.

The present study brought into light few important tombs of Gujarat architecture. These monuments can be classified into four main groups on the basis of their general plans:

i) square tomb,
ii) rectangular tomb,
iii) octagonal tomb, and
iv) duodecagonal tomb.

The first group again can be sub-divided into three types:

(a) the square tomb with projected porch on the four facade such as the tomb of Pir Ghora at Baroda (5.17) and the tomb of Ahmed Shah in Ahmedabad (4.27).

(b) square tomb with projected verandah in all sides, such as the tomb of Khwaja Mu'in Salmaani at Surat (10.6) and the tomb of Maulana Yaqub at Patan (9.24).
Square tomb without verandah and porch such as the tomb of Bani Libari in Ahmedabad (4.35), the tomb in front of the Nagina mosque at Champaner (6.27 tomb), the tomb of Jairan Khan (9.10), the tomb of Baba Shahwali at Vatana (9.21 A3), the tomb of Maulana Idras at Sharuch and Surat (6.22 and 10.11), and Sibiji ki Nagbara (5.28) at Baroda. It is observed that the lintel, squinch and arch-bridging at the corner of the tombs were the principal methods for transformation of square space into a circle. The last device is an important innovated technique that was introduced in the Muslim architecture of Gujarat. It was noticed in the eastern porch of the Jami mosque of Champaner (6.25), in the tomb in front of the Nagina mosque (6.33) in the tomb of Khwaja Shafer Salmori at Surat, and in the tomb of Sairanekhan and Maulana Naqib at Vatana.

From the analysis it is revealed that a small number of rectangular tombs such as the tomb of Shaik Barid (9.10) at Vatana while in the third group three specimen were found in the towns and cities under study i.e. the tomb of Jumhoor in (5.26) at Baroda, the tomb of Bana Shahib at Surat and the Rani ki Khalal (9.29) at Vatana. The tomb of Bana Shahib is featured by a porch on its eastern facade while the rest have no porches.
In Muslim architecture, the octagonal plan was introduced by the Caliph Abdul Malik with the construction of the Dome of the Rock at Jerusalem in between 688 A.D. to 692 A.D. Subsequently, a monument built in 662 A.D. on the western bank of the river Kyris, on the grave of the Caliph al-Mustasim which locally known as Subbat-al-Lulaybiyah was modeled after the Dome of the Rock. Other such monuments are those of Sulah-ud-Din in Damascus and Sultan Ujayn in Cullilah. But the most celebrated of the octagonal type is the Tomb of Flaur, the Sur-i-Sair in Samarkand dated 1404 A.D. In Turkey the so-called Green Mausoleum in Bursa was built in the same plan in 1421 A.D.

In India the conception of octagonal tomb is initiated at the tomb of Sultan Ghiyath built in 1231 A.D. and subsequently, in the tomb of Shah-i-Jahan Tilangini (1368 A.D.) where the plan appeared with structure and form. The immediate influence is boldly reflected in the tombs of Fubarak Shah Sayyid (1434 A.D.), Muzahmad Shah Sayyid (1445 A.D.) and Sikander Lodhi (1489-1517 A.D.). Another octagonal tomb is noticed at Najara in Rewat which was erected earlier than that of Sikander Lodhi. The tomb of Shujah Shah Mur in Kasuram (1540s A.D.) was also based on octagonal principle. The tomb of Ila Khan (1547 A.D.) and the tomb of Adam Khan (1561 A.D.) were also built on the same plan.
The existence of duodecagonal tomb in the Indo-Pak-Bangladesh sub-continent is rare. No architectural historians hitherto noticed such type of tombs in their works. Even the conception of twelve sided in the 'phase of transition' is also rare. It is observed in the 'phase of transition' that the square space is changed into octagon, polygon (16 sided), polygon (32 sided), where there is no scope for twelve sided which seems to be against the principle of the building technique for the 'phase of transition'.

The investigator came across a duodecagonal monument at Sharuch which stands on the grave of Sibi Ayesha, the wife of Isac-ul-ulik. It was built in 1563. The earliest duodecagonal Muslim monument outside India is the Boncuk mosque built about 1275 A.D. in Turkey. Subsequently, the tomb of Such Abbas II built at Sur in Persia is also followed the same plan. Another duodecagonal monument is noticed at Chaukundi in Sind in Pakistan.

(v) Tabarestan :

In Islam belief in "life after death" is one of the important parts of faith. The holy Qur'an clearly mentions that 'you are created from dust (earth) and you have to return in it and you will be raised in the day of resurrection'. The holy Prophet(s) says 'Jabar (grave)
is the first manjil (stage) out of the manjils (stages) of the way of resurrection.13 This hadith ultimately uphold entombment system in Islam. Graves are architecturally speaking expressions of the horizontal axis. Bodies are buried in a recumbent posture at right angles to the qibla in such a way that they would face makka if turned on their side. Thus the believer enjoys the same physical relationship with the qibla both in life and in death. The excavation at Amilived Estan unearthed some skeletons of the 16th/15th centuries which were at right angle and qibla direction.

The analysis revealed that the burial grounds of the towns and cities under study were on the fringe or a little distance from the habitation. But when towns or cities developed some graveyards came within the habitation as found at Ahmadabad, Estan and Burat. The recumbent stones of the graves were of bricks and stones with receding terraces or odd numbers. In few cases upper terrace contains Kalasan as observed in the tomb of Ahmed Khan and in the tomb of Ahmad Sayyarah. Occasionally, the upper terrace was decorated with chain and bell motif within an engrave arch as seen in the tomb of Sheikh Farid. The recumbent stones of the respected persons were also provided with arched shape head-stone (7.21 and 7.22).
The study brought into light some civil buildings of the towns and cities. The civil architecture can be grouped in the following categories:

(i) Palaces
(ii) Fortifications,
(iii) Water reservoirs, cisterns and wells,
(iv) Sarai Khanaas, and
(v) Markets.

(i) Palace: Palace was the residential quarters of the king and his family. It was always built in a heavily protected area. Though none of the palaces of the Sultans of Gujarat exist but archaeological remains of the area lead to the hypothesis that the palace complex was divided into four main divisions:

(a) The outer court,
(b) The inner court,
(c) The building complex, and
(d) The garden with fountains.

The ruins of the palace complex of Champaner indicate the same. Besides, some other buildings like private mosque for the royal family and storage rooms were also noticed. Similar divisions can be found in the constructions under the Mughul dynasty at Delhi, Agra and Fatehpur Sikri.
The palace of Azam Khan, the governor of Gujarat under emperor Shah Jahan still exists with some renovation.

(ii) **Fortification**: It was found from the analysis that all the towns and cities under study were fortified with massive walls. The walls were provided with huge gates, towers and bastions. Mostly they are massive constructions built in materials characteristic of the region in which they are found. For instance backed bricks at Bharuch, Cambay and Surat and various mixture of stones and bricks at Ahmedabad, Baroda, Champaner and Patan. Round, square, and octagonal towers served as buttress, lodgings, arsenals or whatever other military purpose may have been required. In few cases benjanikas (catapults) were also noticed.

The fortification walls and the city walls were provided with gates at irregular distances. Two types of plans predominate for the gate: the straight gate which was primarily a passage way and the bent entrance which had obviously defensive uses. In Champaner the barbican gate ways still exists.

(iii) **Water Reservoirs, Tinters and Wells**

(a) Water Reservoirs: The exploration in the towns and cities brought into light some artificial water
reservoirs. The water reservoirs were usually built on the fringes of the habitation such as the haiz-i-utb in Ahmadabad (3.3), Mahudi talav and Ajabdi talav in Baroda (3.5), Katam talav and Hatsa talav at Bharuch (6.1), Madhu talav at Cambay (7.6), tank of Imd-ut-ul at Champaner (3.4) and Copi talav at Surat. These reservoirs were excavated by the kings, or his viceroy or nazim, or some magnanimous persons on his cortilian ground. Reservoirs are generally square, octagonal, polygonal and circular in plan. The tank barover at Katam is square, the reservoir of Ali Khan at Cholka is octagonal, the haiz-i-utb at Ahmadabad is polygonal (32 sided) and the Copi talav at Surat is circular in plan. It is noted that the edge of few reservoirs were paved with stones and bricks as noticed in Khan barover, Ali Khan’s tank, haiz-i-utb and Copi talav. Sometimes broad flagged slopes were made for castle. 14 The existence of sluice gate is another important characteristic of the reservoir. The inlet and outlet sluice gates were found in Khan barover, haiz-i-utb and Ali Khan’s tank.

A few reservoirs were provided with an island at the centre as found in the haiz-i-utb in Ahmadabad, Shrivara talav at Cambay. The island was connected by a narrow road.
(b) **Cistern** : Usually cisterns were constructed to preserve rain water specially for drinking purposes. At Champaner besides the ruins of a palace (appendix VI, serial no.36) near Shadra Mahal temple a cistern is found in a good state of preservation. It is about 15 m x 6 m x 8 m. and its concrete roof is supported by pillars. The pillars are interconnected by arches. Similar structure was found in the courtyard of Bada Harir Mosque and tomb in Ahmedabad. The cistern in the courtyard of the Harir mosque at Champaner and in the courtyard of the Idrus group of monuments at Surat are still in use. Few open cisterns have been found at Champaner within the fort line VII. But water pulling devices of these cisterns are now destroyed completely.

(c) **Well** : Well is an important artificial water source generally dug up in such an area where other water source is scanty nearby a habitat. Gujarat is well known for its well architecture besides its standing monuments. Primarily the well can be classified into two main categories:

1. **Circular well**
2. **Step well**

The circular well was generally built of rings made out of brick-earth. In Gujarat the rings are locally known as cauces. It is noted that pits lined with circular
terracotta rings are one of the common features that one comes across in excavations. Specially in alluvial lands (Loab areas) such type of well enormously exist. In Bangladesh most of the wells belong to this group. In circular wells in few cases are flagged with bricks and stones. Some circular wells are provided with water pulling devices as seen at Baroda, Patan, Anaruch and Surat.

(ii) A big well with narrow passage from one side is known as Vav. The architectural techniques of a Vav is quite different from that of an ordinary well. A Vav is a large structure, picturesque and stately, as well as peculiar in design. It is provided by a broad flight of steps descending from the uppermost platform till the water level is reached. Sir John Marshall remarks that "there are no other wells in the world that structurally and decoratively can compare with those stepwells of western India and it was because their builders were content to keep to the established traditions of the country that they were able to attain such perfection". The step-wells which were found during the time of exploration can be classified into three main groups.

(a) A vav with spiral staircase inside. This type of vav is not protective for water carrier. Water-carrier could fall or slip any moment from the stairs. Such type of vav is noticed at Champaner and Baroda.
(b) A vav provided with descending staircase on its outer peripheral ring. The well between the well and staircase works as protective media. It is more protective than the former group. Such type of well is noticed at Sirpur in Kheda district.

(c) A vav with a narrow staircase from one side. On the staircase between the flights are pillared galleries, the tiers of which are multiplied as the depth increases. This type of well is highly ornamented. Commissariat says that "they serve as supports to counteract the inward thrust of the long side walls and as cool resting-places in the heat of summer". 17

(iv) Wali Chana

Islam was born in a land where people were experienced on land-routes trade from many centuries (as has already been mention in the chapter II). The main mode of transportations of that region was camel caravans. The rapid expansion of Islam in the three continents - Asia, Africa and Europe ultimately opened a new era for traders. The four Khulifas of the Islamic world encouraged, patronized and protected the traders by establishing caravan caravans on the major trade routes.
In addition to this commercial tradition Islam imposed upon its followers the supreme reason to travel: the performance of Hajj in the house of al- Kaaba, Kaaba being a principal religious centre of the Muslims, hence they gathered to perform the compulsory duty of Hajj from far countries. Thus, the commercial as well as religious factors are responsible for the growth and development of Sarai Ahana in different places of different countries.

In India specially in the famous western Indian port town of Surat a Sarai Ahana is found at the time of exploration (10.15 & 10.16). This Sarai Ahana was built by Emperor Shah Jahan in 1664 A.D. The rules and regulations of this Sarai Ahana is clearly mentioned on a stone tablet (as mentioned in the chapter A).

(v) Markets

The present study resulted that the main commercial areas of the towns and cities were generally developed around the Jami mosque as observed at Ahmedabad, Baroda, Calbay and Surat. Markets generally developed on gridon pattern. The place-name like 'Khaz bazar' in Ahmedabad indicates existence of special market for the royal family. The location of Khaz bazar at Ahmedabad in between Shamsa gate and Teen Barwaja also indicates the same. Similar bazar
also existed in the fortified towns and cities under the
Sahari dynasty as seen in Red fort in Delhi. In Red fort
the area 'china bazar' can be compared with that of the chas
bazar in Ahmedabad.

11.3.2. Building techniques and Chief decorative motifs
of the Islamic architecture of Gujarat:

11.3.2.1. Techniques:

The analysis of the data related to this section
revealed the following major aspects of building techniques
and decorative designs and motifs of the monuments of the
towns and cities under study.

(i) The fusion of trabeate and arcuate systems were the
key notes of the building techniques. lintels is used for
spans short distances while arch is the main media of
covering long distances. In low buildings barrel vault
and groined vault are observed. For instance the rajput
bazar at barat and the ottom shah's bazar at ahmedabad have
barrel and groined vaulted rooms; but their entrance gates
are covered by domical vaults with netting ceilings.

(ii) Methods of affecting the transition from square
room plans to circular dome plans the squinch system,
bridge system and arch-bridging system were observed.
Squinch system observed in the case of brick buildings and bridge or lintel system was familiar with stone constructions. But in few buildings arch-bridging system was the principal mode of transformation. The Muslim architects learned the principle of converting the square plan into a polygon by the use of squinch arches across the corners and final transition from the polygon to the circular base of the dome could be achieved by further slight corbelling across the corners of the polygon.

The domes of the earlier mosques like the Jami mosque of Samarkand and the mosque of Ahmad Shah were of corbelled intrados but the extrados are conical and pyramidal in shape. Under Ahmad Sayyad's reign few domes show advancement of techniques. During this time domes with ribs in the intrados (8.17) and on the extrados (8.41 & 8.48) were observed. It is noted that the Islamic architects of Gujarat used the ribs for decoration than for structural purpose.

(iii) The investigation brought into light the following noteworthy type of arches: true method of arch construction (youssoufia method) was the key of construction of these arches.

(a) Semicircular pointed arch.
(b) Semicircular stilted pointed arch.
(c) Multifoiled arch.
(d) Horseshoe pointed arch.
(e) Tudor arch.
(f) Four centered pointed arch.
(iv) Technique of joints (i.e., 11.1).

It is observed that the architects of the buildings under analysis used the following techniques for joint of the different parts of the monuments.

(a) dovetail technique,
(b) nail and socket technique,
(c) cap joint technique,
(d) groove and ridge joint technique,
(e) corbel technique,
(f) tenon joint technique.

11.3.2.2. Decorative elements:

The analysis reveals that the decorative devices of the monuments under study represent predominant indigenous decorative designs. It is due to the presence of beautiful Brahmanical and Jain architectures which have already flourished in Gujarat. In the works of the Islamic builder the local artisans were engaged who might have been instructed to show their ingenuity. Thus the decorative devices of the Muslim buildings are carved with great care and taste and a few of which are unrivalled in the world (4.43, 4.44, 8.15). The study reflects that the following are the chief decorative elements of the monuments under study.
Calligraphy

Calligraphy is considered one of the most important decorative elements of the Mamluk architecture. It has closely linked to geometry. The proportions of the letters are always maintained by mathematical proportions. Inscription on the buildings are generally written in an angular, sober and monumental script – naskh or in later more cursive styles such as nastaliq, maskh and Thulth. Nastaliq, nastaliq, maskh and Thulth bands can also be found in the same inscription. It is found in the tomb of Sultan Al-Mu'ayyad, tomb of Bibi Ayesha, and the tomb of Sara Idris that the calligraphic bands in maskh style richly ornate the interior of the buildings.

Geometric Designs

As Islam opposed to produce figurative devices, an abstract form of geometric design is found in a bewildering variety of combinations at its all periods. Mitchell says, "Islamic art inherited the geometric patterns common to the later classical world, but developed these to a degree of complexity and sophistication previously unknown, transforming decorative geometry into a major art form". The study sheds light that the basic unit of geometric pattern is developed into a square, a triangle or a polygon. Squares, pentagons, hexagons, octagons and
Frequently star-shaped within a circle are observed (4.20, 4.22, 4.30, 5.20, 5.26, 5.27, 6.6, 6.7, 6.8, 6.9, 7.12, 8.21, 9.15, 9.23, 10.10). These forms are elaborated by multiplication and subdivision by rotation and by symmetrical arrangement. The star-shaped designs is found in countless variations with four to sixteen petals. The geometric patterns represent unity in multiplicity and multiplicity in unity.

(iii) *Floral patterns*

In *Mamluk* art natural scenes were produced on a large scale. Emphasis was given to floral designs mostly to the abstract leaves. The analysis reflected the following major floral patterns:

(i) Fully-bloom sunflower design within a small string half circle necklace suspended from the top (7.12, 7.17, 7.20).

(ii) *Lotus* flower design (4.24, 7.11, 7.19).

(iii) Acanthus leaves (6.15).

(iv) Abstract leaves and creeks (4.23, 4.24, 4.43, 4.44, 8.16, 8.19, 8.39, 8.40).

(iv) *The arabesque*:

The arabesque is a scroll and interlacing plant form which was developed by the Islamic artists from naturalistic form to more and more complicated designs. The arabesque is
featured by a continuous stem which splits regularly producing a series of counterpoised leafy secondary stem which can in turn split again or return to be reintegrated into the main stem. This limitless, rhythmical alternation of movement conveyed by the reciprocal repetition of carved lines produces a design that is balanced and free from tension.20

The arabesque is found on the postal of the Jami mosque of Ahmadabad and the Jami mosque of Champaner. The arabesque patterns that were carved on the shaft of the tomb in front of the Jagina mosque (9.34) unrivalled of its kind in Gujarat. It produced self-multiplication as term denotes.

(v) Miscellaneous motifs

From the analysis of data related to decorative motifs of the monuments it is observed that some decorative devices such as the stupa designs, chain and bell motifs, strigil patterns, kalasa, amika and vase designs are purely indigenous in character.

11.4.0: Section IV: Toponomy

The analysis of data related to this section reflects that the toponomy of the towns and cities under study are mainly influenced by the following factors:
(i) Geographical factors.
(ii) Social factors.
(iii) Religious factors.
(iv) Zoological factors.
(v) Botanical factors.
(vi) Commercial factors, and
(vii) Language.

Besides these factors some place names are the outcome from the personal names. Efforts have been made to find out the place names of different localities of the towns and cities based on the above parameters. The analysis also indicate that the higher class people always occupied the main area of the town while the lower castes on the fringe of the towns and cities. The place names indicate that the then social structure comprised of a number of social groups having their own area during the period under study.

The place names also helped to study the growth pattern of the towns and cities. Any expanding habitation had a tendency to throw satellite suburbs that coalesce to form a conurbation and such suburbs maintained their identity under the place-names ending in wada, pada, para, pura etc. as found at Ahmedabad, Baroda, Bharuch and Surat.
REFERENCES

1. Manus 7/74 as quoted by P.V. Budge in 'Ancient and
   Medieval Town-planning in India', p.81.

2. R.M. Mehta, Excavation at Champaner (excavation
   reports under preparation).


5. Ibid.

6. This hadith is quoted in most of the inscriptions
   of the mosques of India as well outside India.


8. Ibid.


10. Ibid.

11. Ibid.

12. Journal of the Indian Society of Oriental Art,

The monuments represent splendid types of architecture throughout the Muslim rule over Gujarat. This is due to assimilation of various elements in the art of construction. The Muslim who had come as conqueror did not bring with them artisans and hence they engaged local craftsmen to erect their buildings. The local craftsmen were very skilled in stone works for generations as evidenced by the older monuments of the area. Thus the resultant architecture shows the blending between the Islamic concepts and plans with that of the Indian.

The analysis indicates three types of mosques:

(i) the mosque having one aisled cloister.
(ii) the mosque having more than one aisled cloisters.
(iii) the mosque without cloisters.

The mosques have multi-mihraabs of odd number. Three types of mihraabs were noticed:

(i) concave mihraabs.
(ii) rectangular mihraabs and
(iii) pentagonal mihraabs.

The most important discovery during this study is a duodecagonal monument. Hitherto, there were three types of tomb buildings, viz., square, rectangular and octagonal types were noticed by the scholars in this sub-continent.
18. It is observed that the arcuate system was one of the important media for changing square or rectangular space into a circle and it was noteworthy innovation of the Muslim builders of Gujarat.

19. This study has also put the chronology of the art and architectural tradition of medieval Gujarat on a new footing. It has helped to study these monuments and examine their relationship with other monuments in India as well as outside India. It also helped to find out the regional variations of materials as well as architectural and decorative features of the monuments.

20. The main decorative devices of the monuments were calligraphic bands, geometric patterns, floral motifs and the arabesque designs. These devices reflect that the motifs, patterns and designs were admixture of indigenous style and the Islamic traditions of other countries.

21. The building materials were locally produced but the use of particular stones such as white marble and red sandstone indicate the movement of stones from considerable distances.

22. Toponomy of the towns and cities indicate that they had mixed population. The geographical, social, religious, commercial, zoological, botanical as well as language had a greater impact on the formation of place names.
Besides, some place names were the direct outcome from personal names of the Asias, nobles, rich and influential persons under the sultans of Gujarat and under the Sury dynasty simultaneously.

In conclusion, it seems that the medieval towns and cities of Gujarat present a typical group of habitations planned after considering the natural geographical setting in relation to political condition of the region. Their forts, streets, residential areas, administrative units, royal palaces and religious monuments were located on a typical pattern followed almost by all these towns. The basic plans of the mosques and tombs were no doubt Islamic in nature but their architectural components like walls, pillars, base of minara, lintels etc., were adopted from temple architecture and transferred to suit the needs of mosques. The decorative motifs were particularly adopted and developed in a typical style.

Thus finally, it could be concluded that the picture of town planning, architecture and decorative art is a product of technical skill, artistic abilities and scientific planning and skill which produced a harmonious blending of art and science.