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## Alternate Arrangement of Different Base Isolation System for Seismic Protection of Building

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**Abstract** – the structural and non- structural components should remain operational and safe after earthquake. So to alleviate the effect of earthquake on the structure the base isolation technique is the best alternative as an seismic protection system. The idea of base isolation system is to shrink inertia forces induce by earthquake by increasing the fundamental period of the structure. The main object of this study is the use of High Density Rubber Bearing (HDRB) and Friction Pendulum System (FPS) as isolation devices and then to compare various parameters between fixed base condition and base isolation condition by using ETABS software. In this study two model of single building with alternate arrangement of both isolator on same building. Nonlinear time history analysis is carried out for both the structure by considering different earthquakes ground motion records. The Indian Bhuj earthquake data are used for the analysis. The results obtained shows the reduction in base shear, storey drift and storey acceleration in both direction and increase in the displacement and the time period for the base isolated structure. In the second part of this study response of alternate isolation system or mixed isolation system has presented for all the test models. Many projects use of one type of base isolator, but others use more than one base isolator device (alternate system). This report intended to give an insight on the seismic performance of seismically isolated buildings using alternate arrangement of base isolation devices. The report also answer the question, that what is the performance expected from the use of more than one isolation device. If the alternate arrangement gives a good level of seismic performances, so which one is better is presented here. Finally parameters such as storey displacement, storey drift, storey acceleration and base shear are compared and obtained result where presented by both graphically and in tabular format.

**Key Words:** Base isolation, HDRB, FPS, Non-linear analysis, ETABS.

### INTRODUCTION

Earthquakes have the negative impact on society. It causes loss of human life and heavy economic losses due to building damages. Earthquakes cause damage to structural element as well as non structural element of building. Earthquake mainly affects structural components of lateral load resisting system. Earthquake produces huge amount of stresses and deformations on structural element of building. From last few decades structural engineers have been doing research on the characterization and evaluation of structural damage. Damage quantification is always difficult, as structural

degradation processes is very complex. Different methods have been developed to evaluate damage state of structure. It includes analytical predictions and experimental measurements. Damage assessment investigates actual degradation state of a structure. Damage assessment technique is applied in different situations such as disaster planning, seismic vulnerability assessment and retrofit and repair, maintenance inspection and post earthquake evaluation. The different approaches to characterize damage such as ductility drift ratio, maximum deformation, strain softening and energy dissipation characteristics at component, element or structural level.

The purpose of the base isolation techniques to defend structures against damage from earthquake attacks has been considered as one of the most effective approaches and has gained increasing recognition during the last two decades. This is because base isolation limits the property of the earthquake attack, a flexible base principally decoupling the structure from the ground motion, and the structural response accelerations are usually less than the ground acceleration. Seismic isolation is being used worldwide to protect the structures like buildings, bridges etc., from the destructive effects of earthquakes. In base isolation the base becomes horizontally flexible, which strengthen the structure against earthquakes. There are so many factors and correctness explained for application of base isolation techniques.

### Behaviour of Building Structure with Base Isolation System

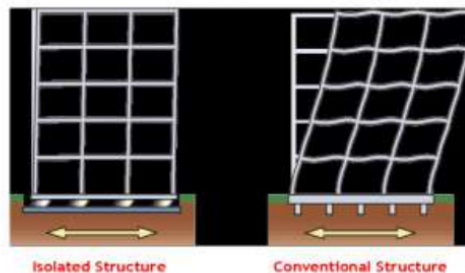


fig. Displacement of Fixed & Base Isolated Structure

The conventional technique is to strengthen the structural members in order to protect them against strong





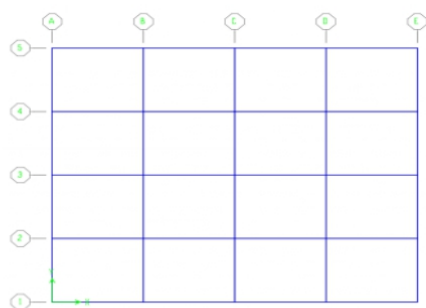
earthquakes. The special techniques to decrease inter story drifts and floor accelerations are increasingly being adopted. Base isolation is a design methodology that serves to decouple a structure from the hard-hitting ground motions caused by earthquakes. This decoupling of the structure usually occurs at the ground level, between the super-structure and the foundation. Base isolation is to avoid the superstructure of the building from gripping the earthquake energy. In seismic isolation, the fundamental intent is to diminish substantially the transmission of the earthquake forces and energy into the structure. This is achieved by rising the structure on an isolation system with substantial horizontal flexibility so that during an earthquake, when the ground vibrates strongly under the structure, only modest motions are induced within the structure itself.

## OBJECTIVES

The main objective of the present work is to study the analysis of RCC building with Fixed Based, Base Isolation system like Rubber Isolator and Friction Isolator:

- 1) To study Design and Analysis software ETABS
- 2) To study modeling of building with fixed based, rubber isolator and friction isolator by time history analysis method
- 3) To find effect of axial force and moment on model with different base system introduce to the building
- 4) To evaluate and compared modeling with different base isolation property are introduce to the building
- 5) To study the their different analysis & result as compared to each modeling
- 6) To study correlation between seismic acceleration parameter and base of the building with alternate base isolation system.

## PHYSICAL PARAMETERS



Plan of G+20 storey RCC Building

## Numerical Data for Ground + 20 Storey RCC Building

Live load	3 kN/m <sup>2</sup>
Earthquake Data	Bhuj Earthquake ground motion 1.078g
Depth of foundation below GL	1.5 m (consider as fixed)
Storey height	3.5 m of ground storey & 3 m for other storey
Size of Beam	0.30m x 0.5m
Size of Column Ground to 4 <sup>th</sup> storey	1.2m x 1.2m
Size of Column 5 <sup>th</sup> to 9 <sup>th</sup> storey	1.0m x 1.0m
Size of Column 10 <sup>th</sup> to 20 <sup>th</sup> and 21 <sup>st</sup> to 30 <sup>th</sup> storey	0.75m x 0.75m
Wall	230 mm thick RCC wall
Slab	130 mm thick as rigid diaphragm
Material Properties	Concrete- M25 HYSD reinforcement of grade Fe 415, Steel strut - X type bracing using IAS 150 x 150 x 6 mm

## Properties of Isolators for (G+20) storey structure without strut

Types	HDRB	FPS
Vertical Stiffness (U1)	2855317.347 KN/m	29000000 KN/m
Linear Stiffness (U2 & U3)	2379.40 KN/m	1450 KN/m
Non-linear Stiffness (U2 & U3)	2005.637 KN/m	29000 KN/m
Yield Strength (Q)	193.50 KN	-
Damping ( $\beta$ )	0.10	0.10
Radius of dish (R)	-	3.645 m
Friction Coefficient, Fast	-	0.05
Friction Coefficient, Slow	-	0.03



## Elevation of 20 - Storey building

### Calculation for High Damping Rubber Bearing (HDRB)

Maximum weight on single column = 8457 KN

Mass = 8.457 KN

Take  $T = 3.83$  sec.

$$K_H = w/g \times (2\pi/T)^2 = 8457/9.81 \times (2\pi/3.83)^2 = 2320.11 \text{ KN/M}$$

$$D_D = g/4\pi^2 \times (C_u \times T_D/B_D) = 9.81/4\pi^2 \times (0.64 \times 3.83/1.20) = 0.507 \text{ m}$$

Take  $G = 0.4 \text{ Mpa}$ ,  $\gamma = 1.5$

$$\gamma = D_D / t_Y \rightarrow 0.507/1.5 = 338 \text{ mm}$$

Now,

$$K_H = GA/t_Y$$

$$2320 = 0.4 \times A / 0.338$$

$$A = 1.9604 \text{ m}^2$$

$$A = \pi/4 \times \phi^2$$

$$\phi = 1.579 \text{ m} \approx 1.60 \text{ m}$$

$$\text{i.e. } A = \pi/4 \times \phi^2 = 2.0106 \text{ m}^2$$

$$\text{Actual Stiffness} = GA/t_Y = 0.4 \times 2.0106/0.338 = 2379.40 \text{ KN/m}$$

Take  $S = 10$

Thickness of one layer of rubber,  $t = \phi/4S$

$$t = 1.60/40 = 0.04 \text{ m}$$

$$\text{No. of layer} = 0.338/0.04 = 8.45 \approx 9 \text{ No's}$$

$$t_Y = 9 \times 0.04 = 0.36 \text{ m} \approx 360 \text{ mm}$$

Now,

$$E_c = 240 \text{ Mpa}$$

$$A_s = 2 \times \pi/4 \times 1600^2 = 4021238.597 \text{ mm}^2$$

$$\text{Vertical Stiffness, } K_Y = (E_c \times A_s) / t_Y$$

$$K_Y = 240 \times 10^3 \times 4021238.597/338$$

$$= 2855317.347 \text{ KN/m}$$

Now,

$$W_d = 2\pi k_{eff} D^2 \times B_{eff}$$

$$W_d = 384.293 \text{ KN}$$

Also,

$$W_d = 4QD$$

$$384.293 = 4Q \times 0.507$$

$$Q = 189.50 \text{ KN}$$

$$K_{eff} = K_2 + (Q/D)$$

$$2379.40 = K_2 + (189.50/0.507)$$

$$K_2 = 2005.637 \text{ KN/m}$$

$$dy = Q/9K_2$$

$$dy = 189.50/9 \times 2005.637$$

$$dy = 0.01049$$

$$W_d = 4Q (D - dy)$$

$$384.293 = 4Q (0.507 - 0.01049)$$

$$Q = 193.50 \text{ KN}$$

And

$$\beta = 4 \times 193.50 \times 0.49651/\pi^2 \times 2379.40 \times 0.507^2$$

$$\beta = 0.10$$

### Input Data for Rubber Isolation in ETABS Programming

$$U1 = 2855317.347 \text{ KN/m}$$

$$U2 \text{ \& } U3 \text{ (Linear)} = 2379.40 \text{ KN/m}$$

$$U2 \text{ \& } U3 \text{ (Non Linear)} = 2005.637 \text{ KN/m}$$

$$Q = 193.50 \text{ KN}$$

$$\beta = 0.10$$



## Calculation for Friction Pendulum Sliding Bearing (FPSB)

Maximum weight on single column = 8457 KN

Mass = 8.457 KN

Take  $T = 3.83$  sec.

$$T = 2\pi \times (\sqrt{R/g})$$

$$3.83 = 2\pi \times (\sqrt{R/9.81})$$

$$R = 3.645$$

$$D_D = g/4 \times \left[ \frac{C_u \times T_D}{B_D} \right]^2 \times (0.64 \times 3.83/1.20) = 0.507 \text{ m}$$

$$B_{eff} = 2/\pi \times (0.05/0.05 + 0.507 \div 3.645)$$

$$B_{eff} = 0.168$$

Vertical Stiffness  $K_v$  is 10 times more than vertical stiffness of Rubber Isolator

Vertical Stiffness of Friction Isolator  $K_v = 10K_v$  of Rubber Isolator

$$K_v = 29000000$$

## Input Data for Friction Isolation in ETABS Programming

$$U_1 = 29000000 \text{ KN/m}$$

$$U_2 \text{ \& } U_3 \text{ (Linear)} = 1450 \text{ KN/m}$$

$$U_2 \text{ \& } U_3 \text{ (Non Linear)} = 29000 \text{ KN/m}$$

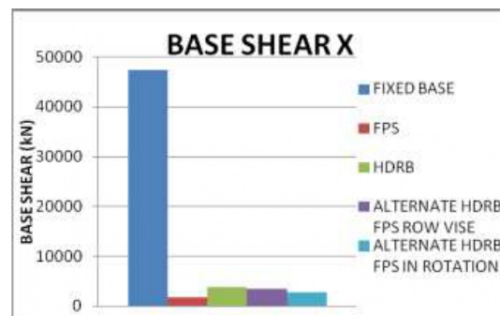
Friction Coefficient, Slow = 0.03

Friction Coefficient, Fast = 0.03

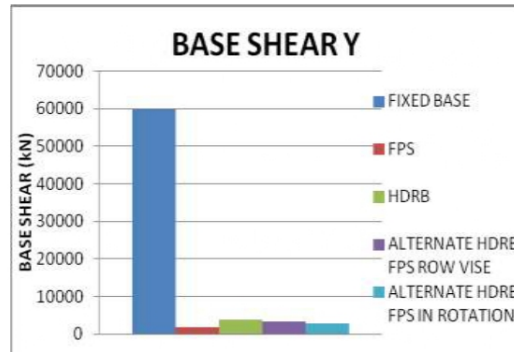
Radius of Sliding Surface,  $R = 3.645 \text{ m}$

$$\beta = 0.10$$

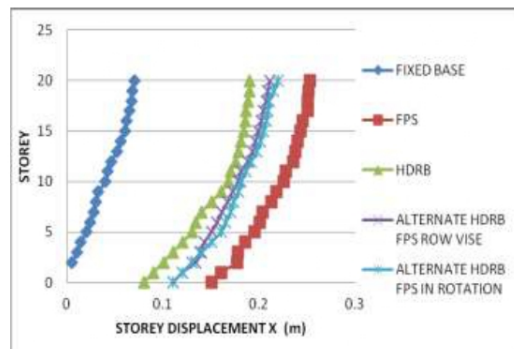
## Results for (G+20) Storey Building



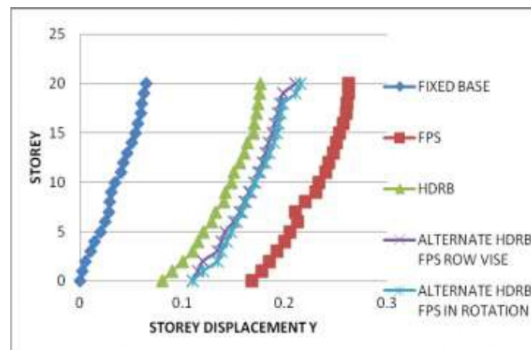
Base Shear in X-Direction



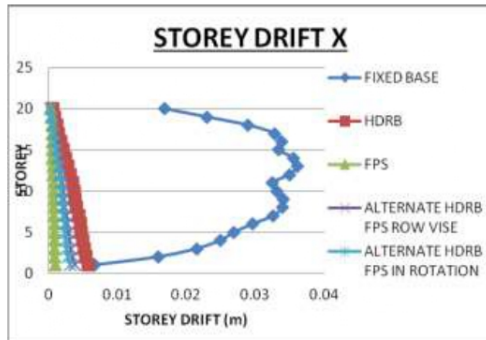
Base Shear in Y-Direction



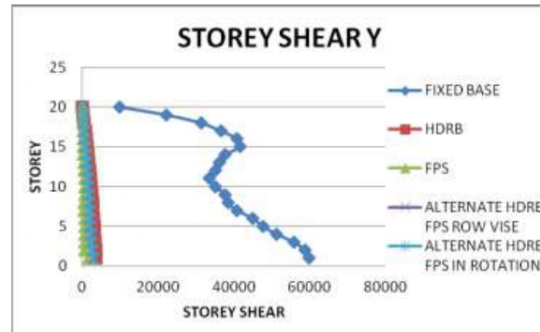
Storey Displacement in X-Direction



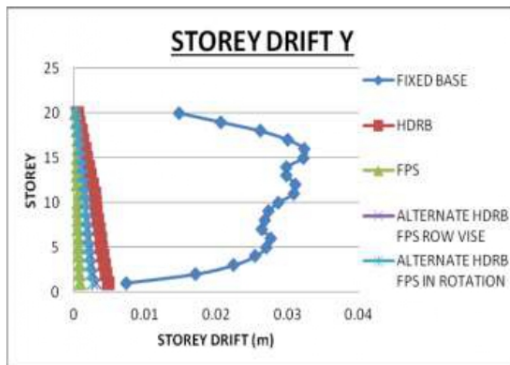
Storey Displacement in Y-Direction



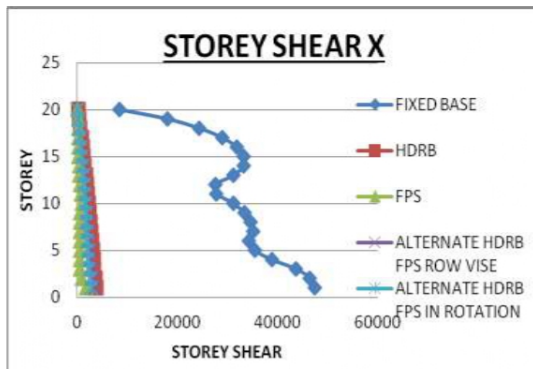
Storey Drift in X-Direction



Storey Shear in Y-Direction



Storey Drift in Y-Direction



Storey Shear in X-Direction

## CONCLUSIONS

- It is concluded that time period of the structure in case of FPS, HDRB & Alternate Arrangement of both. it is increased over conventional fixed base structure.
- It is concluded that base shear of structure reduces by the use of base isolator. But it is greatly reduces by use of FPS over HDRB & Alternate Arrangement of both.
- It is also concluded that FPS gives maximum base displacement compared to HDRB.
- Storey drift is reduce by both HDRB and FPS. But it is greatly reduces by the use of FPS.
- It is seen that base isolation technique lengthens the time period of structure at greater extent for mid rise structure. But, as the number of stories goes on increasing the proportion of increment in time period of base isolated structure goes on decreasing.
- It is concluded that as the number of storey's increase, the friction pendulum system give minimum value for top displacement. Hence, it is concluded that this type of system helps to minimize top displacement for multi storey structure.
- It is concluded that Friction Pendulum system helps in reducing storey drift & storey acceleration at greater extent than High Density Rubber Bearing for both mid-Storey and multi-storey structure.
- Friction pendulum system is beneficial than lead rubber bearing isolator & slightly higher than high density rubber isolator in terms of cost.

## Future Scope

Within limited scope of present study the broad conclusion are drawn. However present study may also be extended in following areas:



- The present study carried out by using HDRB & FPS type isolator, this can also extended by use of all three basic isolation system such as Lead rubber bearing (LRB), HDRB & FPS and their comparisons with each other.
- The present study also extended by taking various combinations using all three base isolation systems in single structure and to find the response of such structure.
- In this dissertation work, the study is carried out without considering the irregularity of building, study may also extended by considering this important factor.
- The present work also extended by considering pushover analysis for base isolated structure as present work is carried out by nonlinear time history analysis.

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## Applications

A base isolation technique has a number of applications all around world. Base isolation techniques used in many structural buildings which is located in strong earthquake zones. It is also used in constructing bridges to save these structures from earthquake. Now days, in many projects base isolation technique is used in constructing water tanks.

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## Festival Heterotopias: Exploring Temporal Transformations in Nagpur

Rukhsana Badar



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### Abstract:

India is one of the most culturally rich countries in the world with people of diverse religions, castes and communities. It is also the second most populated. This implies that at any given time, thousands of Indians are celebrating occasions and events across the nation which include above a hundred religious festivals. Celebrations within the urban sphere have changed across time. Traditionally, these rituals were moments of social celebrations played out within a family, village or mauhalla, but today they have become highly orchestrated affairs constructed on a grand scale. Where once the courtyards and neighbourhoods provided a suitable stage for festive ceremonies, today the city with its limited public spaces has to transform sporadically to accommodate those, thus creating new heterotopias. Heterotopia is a concept that describes places and spaces of otherness that are created between an ideal utopia and the real world. It is in these spaces beyond social and public norms that urbanites are able to interact freely with each other and collectively enact their joys and aspirations. This paper explores the transformation of the city of Nagpur, India during four popular festivals focusing on the creation and utilization of heterotopias within the urban framework. The modern urban society is plagued by heightening disconnection from the past and present reality due the rising preference for interactions in the virtual world. Thus, the study illustrates the importance of these temporal public spaces in increasing social interactions and cultural awareness.

**Keywords:** Urban celebrations, Nagpur, festivals, heterotopias, transformation

### 1. INTRODUCTION

The recent decades saw a growing interest in culture, especially in developed countries of Europe and North America through a phenomenon called "cultural turn." Cudry (2016) notes that many entrepreneurs, managers and politicians on the national and local level noticed the importance of cultural phenomena as products and used them for the socio-economic stimulation of regions. One of the most important cultural products is the festival. Festivals have been a major component of human culture, being connected with religious beliefs, from primitive ones (e.g. animism, shamanism, totemism) to the religions currently dominating the world (e.g. Christian religious festivals). In India religions and festivals are synonymous. Festive celebrations are an engrained part of our cultural heritage and form a

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## Light as a Factor of Sacred Power in Church Architecture

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### Abstract

Architecture is defined by the play of light and shadow. It gives character to architecture, without which for its form, colour and texture cannot be recognized. In Versune Architecture (Towards a New Architecture), Le Corbusier writes: "Architecture is the skillful, accurate and magnificent play of volumes seen in light." Through the centuries man has learnt that light can be used to generate diverse feelings and create special experiences. Religions have greatly exploited this quality in their structures. Light has been used in the sacred buildings, not only to provide the necessary visual condition for the ritual acts to be performed, but also to evoke mystical and spiritual feelings. The Greek and Hindu temples are both built to face east so that the deity in its dark chamber is illumined by the first rays of the morning sun.

Natural light also plays a determinant role in church architecture. The importance of light and darkness is dramatically presented in the opening sentences of the Biblical record, "In response to the darkness that was over the surface of the deep (Gen1:2), God spoke and light came into being." Tadao Ando's Church of Light, which stands in a small town of Ibaraki, 25km outside of Osaka, Japan is a powerful contemporary architectural statement of the capabilities of daylight. This simple concrete structure is illuminated by a cross shape void in the east facing wall. The darkness of the pure unadorned interior is humble and meditative until it is altered by the light pouring in through the cross, creating a surreal spiritual effect. Schielke (2014) speaks of how different approaches for using light have been used to bestow symbolic meaning and spiritual experience in religious spaces. Light has been used successfully to evoke the ethereal and command attention and at times it has been curtailed to generate humility and fear.

The progress in Christianity can be charted through its church architecture. By analyzing some of the most historically important churches through the ages from Early Christian Era (4<sup>th</sup> Century A.D.) to the present, this paper investigates the deviations in the use of light as a factor in worship. It follows a visual research method, exploring selected spaces through sketches and images to identify the lighting language (logic and meaning) and vocabulary (day lighting systems). The research is a step towards understanding the power of lighting schemes in creating a sacred environment within church architecture and the systematic changes in the luminous environment that occurred through the ages.

**Keywords:** architecture, sacred, daylight, Church, history, contemporary

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### 1. INTRODUCTION

Inspired by the central role of light for our culture and technology, the United Nations proclaimed 2015 as the "International Year of Light and Light-based Technologies" (IYL2015). It aimed to raise awareness of how light effects our lives and our future. As architects we would agree with Palacios (2015) when he remarks that light is the most important factor in the appreciation and understanding of Architecture. Vision is the primary sense through which we experience architecture, and light is the medium that reveals space, form, texture and colour to our eyes (Baker & Steemers, 2013). Visual impressions depends both on the quantity and quality of light.



Architects have long recognized the usefulness of this feature in the creation of atmosphere aimed to control human functions and emotions.

A well-lit space is associated with safety and well-being. Darkness evokes fear and other negative emotions. The play of light and shadow is employed most powerfully in religious architecture. Baker & Steemers(2013) argue that light is an influential factor not only in the spiritual relation between the believers and the religion but also in the spatial relation between the believers and the building. It is the key to creating a religious experience. Coch (2015) claims that as people's understanding of faith changes over time it affects the identity of religious spaces. This causes a change in the use of light in the religious environment.

Researchers have long studied the importance of light in religious architecture. Its role is most evident in church architecture. The present study uses the visual research method to investigate the luminous environment of seven selected churches from the Early Christian Era (4<sup>th</sup> C.E.) to the present. By then connecting the results to the history, social background and structure of each church, the paper aims to chart the reasons behind the changes in interior illumination through time.

## **2. EARLY CHRISTIAN(260-525 C.E.)**

### **2.1 SANTA MARIA IN TRASTEVERE, ITALY**

#### **2.1.1 History:**

Christianity was born during the Roman Empire. The new religion was seen as a threat to the state and was thus prosecuted until Emperor Constantine issued the Edict of Milan in 313 Common Era (C.E.) accepting Christianity. The Christians could now worship openly and so the first churches were built. Trastevere is among the first areas of Rome where early Christian preaching took root. The Basilica of Santa Maria in Trastevere dates back to mid-4th century.

#### **2.1.2 Social setting:**

The Romans were strong believers of their state religion and did not take kindly to other beliefs. Christians were in a minority and under threat.

#### **2.1.3 Structural System:**

Early Christian builders were Roman craftsman who continued with their traditions. They found the plan of the basilica more appropriate for the first church than the temple because it had no connection to pagan worship and also its plan was more fitting to the congregational worship required in churches.



Santa Maria preserves its original basilica plan with a longitudinal hall ending in a semi-circular apse on one of the small ends. The central nave is separated from the aisles by twenty-two granite columns and is lighted by clerestories. The church is covered by a simple timber roof. The apse is domed. The walls are constructed in stone rubble faced with plaster. Mosaic is used to decorate interior walls. The exterior was kept simple and subdued in a conscious effort to not challenge the official state religion.

#### **2.1.4 Use Of Light:**

In general, in southern countries where the sun is strong the mysticism is usually more related with the darkness (Coch, 2015). This is exemplified in the temples of Egypt, Greece and Rome. In contrast to these pagan temples which were used by only a small group of priests, the first churches were designed to function as an assembly point. The central space held the worshippers and had to be lighted properly. The nave in Santa Maria is lighted by clerestory windows. The sunlight is filtered through the alabaster panels of the window creating a golden hue which creates an atmosphere of prayer and sanctity. The window size is constrained by the load bearing walls. But at the apse the openings are larger, helped by the dome. This works well with the required religious atmosphere since the altar under the apse is brighter than the rest of the church and becomes the focus of the congregation.

*When Jesus spoke again to the people, he said, "I am the light of the world. Whoever follows me will never walk in darkness, but will have the light of life." (John 8:12)*

Light became a symbol of the Divine and of Christ's resurrection.

### **3. BYZANTINE (330-1453 C.E.)**

#### **3.1 HAGIA SOPHIA IN ISTANBUL, TURKEY**

##### **3.1.1 History:**

The beginning of the Early Middle Ages in the 5<sup>th</sup> century C.E. witnessed the fall of the Western Roman Empire and the fragmentation of Europe into warring groups. At the same time the eastern half, known as the Byzantine Empire, survived and flourished, centered around the city of Constantinople (Istanbul, Turkey). Christianity was declared the official religion of the Roman Empire in 380 C.E. The Council of Chalcedon in 451 C.E. established Constantinople as one of the five patriarchates of the Christian world with the Byzantine emperor as the patriarch thus unifying the church and state. With this the Eastern Roman Church grew in wealth and power.

##### **3.1.2 Social setting:**



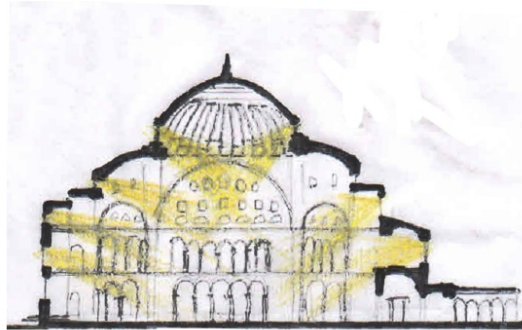
The Byzantine society had a strict hierarchical structure with the Emperor wielding supreme power. This strong central authority resulted in stability and prosperity. The increasing influence of the Church bore down on the social laws. Daily life was dictated by the commandments of the Christian religion.

### 3.1.3 Structural System:

Constantinople was founded as a new Rome in the East. It was built using plundered remains of Roman buildings and used the Roman style of architecture. The greatest achievement of Byzantine architecture was the Church of Hagia Sophia in Constantinople. The building was ordered by Emperor Justinian and completed in 537 C.E. It is a synthesis of the basilician and centralized temple plan consisting of a huge square shaped central nave covered by a low saucer dome. For the first time pendentives were used to transition the circular base of the dome to square plan. The dome is supported by two half domes which are in turn supported by quarter domes, creating a group of cascading domes. Marble, stone and special light weight bricks are used for their construction.

### 3.1.4 Use Of Light:

There was a dramatic shift from the dark interiors of the early Christian churches to the divinely illuminated interiors of the Byzantine church clearly heralding the growing power of the Church. The use of the light in this period was intimately related with the objective of creating the feeling of being in-habiting in a reflection of heaven inside the church (Coch,



*Figure 1: Hagia Sophia, Constantinople*

2015). The large dome is lit by the ring of forty arched openings at its base. It is the brightest part of the church and centrally located echoing the central authority of the Church. A worshipper entering the church is pulled towards this overwhelming spiritual light and experiences the presence of the Divine(Figure 1).





## 4. ROMANESQUE (800-1200 C.E.)

### 4.1 PISA CATHEDRAL IN PISA, ITALY

#### 4.1.1 History:

While the Eastern Roman Empire thrived, the Western Empire had fallen to barbaric invasions and political upheaval. Europe was plunged into the “Dark Ages” and progress was at a standstill. The Church grew into the most powerful uniting force. In 800 C.E. Charlemagne was crowned Holy Roman Emperor, briefly restoring peace and stability to the region. He sought to unite the people under Christianity by leading military exploits and building large scale churches. The end of the 11<sup>th</sup> century saw the beginning of the series of holy wars called Crusades fought by the Western Church and the Muslims.

In 1064 C.E. the Republic of Pisa commissioned architect Buscheto to build a cathedral to symbolize its wealth and prestige after successful excursions on Palemaro (Sicily) against the Muslim rulers.

#### 4.1.2 Social Setting:

Religious enthusiasm was the heart of medieval life. By limiting knowledge and partaking to magic and superstitions, the Church maintained a position of authority over its followers. People lived in fear of God. Kings and nobles donated heavily to the Church. People undertook pilgrimages to holy sites as validation of their devotion. In doing so they helped the spread of goods and ideas.

#### 4.1.3 Structural System:

When after a gap of two hundred years of architectural dormancy Charlemagne took to building churches on a large scale he used the Roman semicircular arched system. The arch was used to develop the vault which covered larger areas. Romanesque architecture is characterized by massive solidity and strength, required for defense against attack. In case of churches, the increase in proportions also signify the growing power of the Roman Church and increase in number of worshippers.

The Cathedral of Pisa is a massive fortress-like building with classical elements only as decoration. The plan consists of a central nave with two aisles on each side. A transept consisting of three aisles is added to this basic basilican plan. Stone vaulting replaces the usual timber roof and its added weight is supported by massive walls and piers with few openings. Security reasons also restricted the size and number of openings.

#### 4.1.4 Use Of Light:

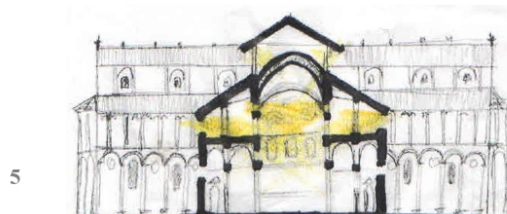


Figure 2:Pisa Cathedral, Italy



The secrecy of the cult and the decline of technological progress in the first period of the Middle Ages originated in architecture- again characterized by the darkness, with small openings in the facades (Coch, 2015). The Pisa Cathedral is marked by dark solemn spaces. The nave is lighted by clerestory windows but due to the added height light reaching the worshippers is limited (Figure 2). The apse faces east and receives more illumination. This change in light creates a linear progress from the west facing entrance to the altar on the opposite side promoting movement towards the altar.

## **5. GOTHIC (1120-1500 C.E.)**

### **5.1 BASILICA OF ST. DENIS, FRANCE**

#### **5.1.1 History:**

Between 11<sup>th</sup>-14<sup>th</sup> centuries C.E. there was dramatic growth in trade and commerce. It was a period of political stability as kings began to enforce their authority. The Church reached the apex of its power. The Crusades added to its glory and wealth. The Basilica of St. Denis is the first major structure to be built in the Gothic style. It was built under directions from Abbot Suger in the 12<sup>th</sup> century C.E.

#### **5.1.2 Social Setting:**

Advances in agriculture ensured there was plenty to eat. A new middle class rose to be a strong, independent section of society. With this the feudal system came to an end. Though life was still dominated by religion, there was a change in meaning of faith. From a dark and cruel god that resided in the mystery, there was a change to a more benevolent and light conception (Coch, 2015). Churches were now built by the community rather than through royal patronage.

#### **5.1.3 Structural System:**

The Crusades brought the Europeans in contact with other civilizations such as the Arab Muslims. From them they learned the use of the pointed arch which revolutionized construction. Rib vaults were developed using pointed arches. These channel weight more directly downwards than do round arches and so the vaults require less buttressing to counter the outward force. The builders channeled this force to an external semi-arch, termed as flying buttress and in doing so were able to replace the walls with large windows. Pointed arches also make the vaults appear taller thus aiding the Gothic builders in their quest for soaring heights.



## 5.1.4 Use Of Light:

With France and England emerging as strong independent nations there developed a new style of church architecture which suited the colder and cloudier climate of north Europe as compared to sunnier Mediterranean Europe. The Gothic builders sought to bring in more light also in keeping with the medieval Christian emphasis on light related with God. Gothic architecture uses vertical dynamism to symbolize God in heaven and uses large sheets of stained glass to pour His divine light onto the worshippers (Figure 3).



Figure 3: Basilica of St.Denis, France

Greater amount of light was also required to showcase the relics brought back by Crusaders returning from the Holy Lands. All in all, the general impression given to the individual entering in the gothic cathedral is of insignificance of the human in front of the grandiosity of God (Coch, 2015).

## 6. RENAISSANCE(1350-1600 C.E.)

### 6.1 ST. PETER'S BASILICA, ROME, ITALY

#### 6.1.1 History:

In the 14<sup>th</sup> C.E. Italy witnessed a revival of the classical style as an anti to the spread of Gothic architecture in the north. It was also an objection to the growing power of the Church leading to a shift from a the centric society to an anthropocentric one. St. Peter's Basilica in Rome is the world's largest church. Begun in 1506 C.E. it was attempt by the Papacy to restore eminence to Rome.

#### 6.1.2 Social Setting:

Renaissance is termed as the age of reason and invention. The decline of the supreme authority of the church opened the people, especially the new middle class to the pursuit of knowledge. The importance of the individual grew.

#### 6.1.3 Structural System:

Renaissance architects studied classical buildings for inspiration but also devised their own techniques. The mathematical method of preparing a perspective was rediscovered enabling the design of buildings which were staged to look beautifully proportioned when viewed from a specific distant view point. Human proportions were also studied and replicated in architecture to achieve perfection.



The plan of St. Peter's is a Greek cross with four equal arms. A vast central dome is supported on pendentives at the crossing of two barrel vaults. Michelangelo added a drum at the base of the dome to add height and also to add a ring of openings bringing in light.

#### 6.1.4 Use Of Light:

The Renaissance revival of interest in visual harmony and proportion, inspired by classical architecture, results in a more subtle and clever manipulation of daylight, used to emphasize form and dramatize space (Baker & Steemers, 2013). Unlike the excessive brightness of Gothic architecture, Renaissance architecture limited the amount of light entering inside in keeping with the need for coolness in the hot Italian climate. Light was no longer linked to Divinity but was a tool to emphasize the design of the building and certain decorative elements. For this reason stained glass was replaced by transparent glass which allows entry of pure light. St. Peter's Basilica displays the characteristic modular and rhythmic placement of tall windows providing a 'universal light' (Figure 4).

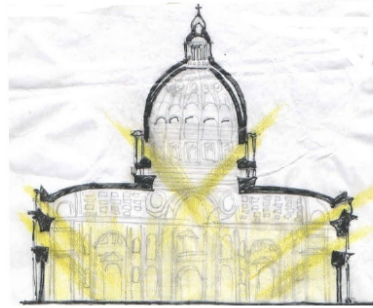


Figure 4: St.Peter's Basilica, Rome

## 7. MODERN (1920-1970 C.E.)

### 7.1 NOTRE DAME DU HAUT CHAPEL, RONCHAMP, FRANCE

#### 7.1.1 History:

The Industrial Revolution (1760-1820 C.E.) paved the way to 20<sup>th</sup> century modern architecture. During the 19<sup>th</sup> century agrarian, rural societies became industrial and urban. This was also the Age of Enlightenment as people believed in the idea of free thinking and liberalization. The modern architects sought to throw off the chains of tradition and create architecture anew. One of the most noteworthy works is the Ronchamp Chapel built in 1954 by Le Corbusier.

#### 7.1.2 Social Setting:

There was a marked move from religiosity to materialism among the working class as they struggled to survive in the altered environment of the city. Faith changed to a more personal level as people were isolated from their communities. Reformation of the Church separated religion from secular life.

#### 7.1.3 Structural System:

The Industrial Revolution made available new materials like iron, steel and sheet glass and advanced building technologies. The architecture of the 20<sup>th</sup> century saw architects attempting to



break away from historical references and use revolutionary methods of construction. The chapel at Ronchamp consists of thick masonry walls, curved to improve stability and roofed by a curved concrete shell structure. The interior has a central main space leading to three smaller chapels.

#### 7.1.4 Use Of Light:

Decorativeness of the church of the previous periods is replaced by purity of form and material. There was a change in expression from light as divinity to a meditative light. This is evident in the chapel of Ronchamp. Le Corbusier uses various daylighting methods to exclude sky glare and regulate incoming light creating a contemplative luminous environment (Figure 5). Light enters through randomly placed punctures, a light tower and a slit between the roof and wall. The illuminance is set to chart the path of the sun across the sky.



Figure 5: Ronchamp Chapel, France

## 8. CONTEMPORARY (1970 C.E.-present)

### 8.1 JUBILEE CHURCH, ROME, ITALY

#### 8.1.1 History:

The advances in transport and communication have lead to globalization and multiculturalism. The trend is evident in church architecture. Architects defy traditions to develop distinct individualistic interpretations of faith. The Jubilee Church, designed by Richard Mier is located in a suburb outside Rome. It was built in 1999 as part of a project to develop the outskirts of the city and revive Christian presence in the new Millennium.

#### 8.1.2 Social Setting:

Contemporary society is defined by technological innovation and increasing human interconnection. This has cause a hybridization of cultures and faiths. Within Christianity there is a decline of centralized authority and move toward more individualistic expressions of faith.

#### 8.1.3 Structural System:

The church now needs to be a flexible space that allows for worshippers from a wider range of backgrounds. Mier's idea of the Jubilee Church as a place for the entire world community is evident in the five bells in the belfry that correspond to the five continents. Three concrete shells, generated from three circles of equal radius cover the nave and are constructed using tiles of white concrete. Fundamental elements of squares and circles are deconstructed using asymmetrical angles and cutouts.





## 8.1.4 Use Of Light:

There is a shift from the more intellectual use of light in the modern phase to a more expressionist one. Light is at the origin of the design of the Jubilee Church. The spaces between the shells and the walls are filled with glass, allowing light to enter from all angles yet avoid glare (Figure 6). The nave is characterized by the constant changing pattern of light and shade. Mier uses the pure white of the daylight as a metaphor for the presence of God.

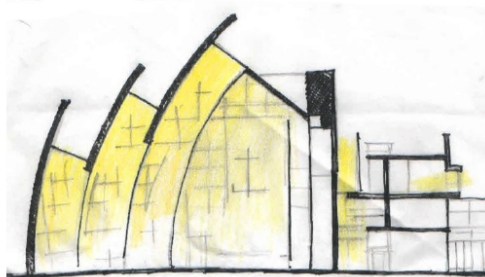


Figure 6: Jubilee Church, Rome

## 9. CONCLUSION:

*In architecture as in any other creative expression, light has always been a source of ecstasy and of inspiration..." -Richard Meier.*

Table 1: Comparative Study

TIME PERIOD	SOCIAL BACKDROP	AIMED ATMOSPHERE	STRUCTURAL DEVELOPMENT	USE OF LIGHT
Early Christian	Roman threat	Assembly place	Roman construction techniques	Restricted
Byzantine	Powerful Eastern Empire	Heaven on Earth	Dome on pendentives	Brilliance centered at dome
Romanesque	Political upheaval	Fear of God	Massive solidity	Movement from dark to light
Gothic	Growth in religious zeal	Divine Light	Pointed arch, ribbed vault & flying buttress	Special light from
Renaissance	Importance of Individual	Human perspective	Dome on drum	Universal light
Modern	Enlightenment	Meditative	Industrial Revolution	Controlled daylighting
Contemporary	Globalization	Expression of faith	Technological advancements	Staged daylighting



The study of sections of churches through the ages illustrates the importance of light in the creation of the aimed atmosphere in the religious space and its link to the social and structural changes that occurred. The restricted use of light in the early medieval ages evolved to a more open one aided by the development of a new lighter structural system. This paper concludes that light has been and will remain the key element in attaining the required experience of spirituality in a religious space.

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## — Rukhsana Bhatia

Fig. 2. Skyline of Harriet State City, Newark, (Source: Newark City's website, 2010; Harriet State City, Newark)

Fig. 8. Harriet M. Kinsley, *Portrait of a Young Girl*. <http://www.parramatta.com.au/photo/112641176>

P. No./Year	S.No.	NAME	CHARACTER				
			HYDROPHOBIC	HYDROPHILIC	PHOBIC	NEUTRAL	PHOBIC
ENVIRONMENTAL SURVEYS	1	Spores	Hydrophobic	Hydrophilic	Hydrophobic	Hydrophilic	Hydrophobic
	2	STYRIE (1978)	Spores develop with hydrophilic surface	Plasma develop with hydrophobic surface	Hydrophobic	Hydrophilic	Hydrophobic
	3	STYRIE (1978)	Spores develop with hydrophilic surface	Plasma develop with hydrophobic surface	Hydrophobic	Hydrophilic	Hydrophobic
	4	GRANTON	Yes - Hydrophilic	Yes - Hydrophobic	Yes	Yes	Yes
	5	GRANTON	Yes	Yes	Yes	Yes	Yes
	6	GRANTON	Yes	Yes	Yes	Yes	Yes
LABORATORY SURVEYS	7	GRANTON	Yes	Yes	Yes	Yes	Yes
	8	GRANTON	Yes	Yes	Yes	Yes	Yes
	9	GRANTON	Yes	Yes	Yes	Yes	Yes
	10	GRANTON	Yes	Yes	Yes	Yes	Yes
	11	GRANTON	Yes	Yes	Yes	Yes	Yes
	12	GRANTON	Yes	Yes	Yes	Yes	Yes





## TECH-CHRONICLE

AN INTERNATIONAL E-JOURNAL ON  
EMERGING TRENDS IN SCIENCE, TECHNOLOGY AND MANAGEMENT

### Utilization of plastic waste in Geopolymer concrete

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**Abstract:** A considerable growth in the production of plastic leading to generation of huge quantity of plastic waste. Reusing this as a sustainable construction material may be an ideal solution. This paper represents some of the recent developments in the field of utilization of waste material for green and sustainable construction material called Geopolymer concrete. It also reveals possibilities of utilization of plastic waste as a constituent, from the work done so far. From the review of past research works it can be concluded that utilization of plastic waste materials shows scope towards development of green concrete which resembles the cement concrete.

#### 1. INTRODUCTION

Since the dawn of human civilization, we are utilizing natural resources for our comfort, betterment and especially to get evolve. In early stages we were utilizing natural resources in its natural form. Due to advancement in science, we forget natural resources as per our needs. When these resources reach to end of their life, we consider them as waste materials.

Today tons of waste is floating all over the world, which leading to waste disposal muddle. Manufacturing industries are growing haphazardly which results in immense amount of organic and inorganic waste. Disposal of these waste is a major problem that we are facing right now. Plastic is one of the most consumptive material all over the world. Plastic was invented in late 20 century. What makes plastic so special is its strength, durability, low cost, ease of manufacture, versatility that also makes it problematic when it comes to its end of life. Plastic waste might be used as a partial or total replacement of fine aggregates as well as coarse aggregates to obtain desired properties of Geopolymer concrete.

Utilization or reusing/recycling of these waste as a construction material is a solution to environmental problem. Use of these materials not only helps in getting them utilized in cement, concrete and other construction materials, but also helps in reducing the cost of cement and concrete manufacturing, and also has numerous indirect benefits such as reduction in landfill cost, saving in energy, and protecting the environment from possible pollution effects.

Concrete is being widely used as a construction material all over the world. Generally concrete ingredients are cement, sand and aggregates which are used globally for making concrete. Ordinary Portland cement production is the second major source of generation of carbon dioxide after automobile. Hence, it is necessary to look for an alternative material. Geopolymer is an innovative, green and

sustainable construction material which is produced by the chemical action of inorganic material. Fly ash which is rich in silica and alumina reacted with alkaline solution producing alumina silicate gel that acts as a binding material for concrete. Geo-polymer can be casted without using ordinary Portland cement. Geo-polymer concrete which already is a green and sustainable construction material by blending it with waste material we can achieve an ultimate green concrete. This paper emphasize the constituents of Geo-polymer concrete and its potential application.

#### 1.1 BRIEF OF GEOPOLYMER CONCRETE

Davidovits in 1988 proposed that an alkaline liquid could be used to react with the silicon-(Si) and the aluminium-(Al) in a source material of geological origin or in by-product materials such as fly ash and rice husk ash to produce binders. Due to the chemical action that takes place in this case is a polymerization process, he named the term "Geopolymer" to represent these binders. Geopolymer concrete is concrete which does not utilize any Portland cement in its production. Geopolymer concrete is being widely studied extensively and shows promise as a substitute to Portland cement concrete. Research shifted from the chemistry domain to engineering applications and commercial production of Geopolymer concrete. There are two main constituents of Geopolymer, namely the source materials and the alkaline liquids. The source materials for Geopolymer based on alumina-silicate must be rich in silicon-(Si) and aluminium-(Al). These could be natural minerals such as kaolinite, clays, etc. Alternatively, waste materials such as silica fume, fly ash, rice-husk ash slag, red mud, could be used as base materials. The alkaline liquids are from soluble alkali metals that are mostly sodium or potassium based. The most common alkaline liquid used in geopolymerisation is a combination of sodium hydroxide (NaOH) or potassium hydroxide (KOH) and sodium silicate (Na<sub>2</sub>SiO<sub>3</sub>) or potassium silicate.

#### 1.2 ADVANTAGES OF GPC OVER PCC

Geopolymer concrete is considered to be an innovative material that is a viable alternative to traditional Portland cement concrete. There are numerous advantages of Geopolymer over Plain cement concrete.

##### 1.2.1 High compressive strength:

Geopolymer concrete has higher compressive strength than ordinary Portland cement. It also has a properties of rapid

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strength gain and it cures very quickly which makes Geopolymer concrete an excellent option for quick builds. Geopolymer concrete has upper hand over ordinary Portland cement concrete when it comes to resist tensile forces. In other words Geopolymer concrete has high tensile strength and is less brittle than ordinary Portland cement. It also consist higher moment than OPC which makes it suitable for earthquake resistance building.

##### 1.2.2 Very low creep and shrinkage:

Shrinkage may be define as the contracting or shrinking of concrete in its hard form because of loss in capillary water. This shrinkage is a responsible factor for an introduction of tensile stresses in concrete which may cause cracking, deformation of concrete even before the concrete is subjected to any amount of external force. Geopolymer has very less amount of water and have very less pores than OPC which prevents losses of capillary water so it will not experience significant shrinkage Creep is defined as deformation or change in shape of structure subjected to sustained load. Basically, long term pressure or stress on concrete can make it change shape. The creep of Geopolymer concrete is very low.

##### 1.2.3 Resistant to heat and cold:

Geopolymer concrete has high resistance to fire and its

curing in their study. The compressive strength of the geopolymeric concrete under external exposure conditions developed up to 28 days however; there was no significant increase in strength beyond this time. The best performing geopolymeric concrete mix design, based on the results of compressive strength tests and a microstructure study, was the concrete mix cured under external exposure conditions. This mix comprised

Sr. No.	Materials	Mass	Unit
1	Fly Ash	350	kg/m <sup>3</sup>
2	Sodium Hydroxide (NaOH)	41	kg/m <sup>3</sup>
3	Sodium silicate (Na <sub>2</sub> SiO <sub>3</sub> )	103	kg/m <sup>3</sup>
4	Table sugar	10.5	kg/m <sup>3</sup>
5	Extra water	35	kg/m <sup>3</sup>
6	Fine aggregate	645	kg/m <sup>3</sup>
7	Coarse aggregate	1200	kg/m <sup>3</sup>

concrete and their fellows worked on Aspects of



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## SUFISM AND TOURISM INTERFACE

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### ABSTRACT

*Sufism is the mystical aspect of Islam. It began at the inception of Islam as an integrated internalized part of the religion but later, by the 12th Common Era (C.E.) developed into a sect. During the 13<sup>th</sup>-16<sup>th</sup> C.E. it flourished and spread leaving behind various physical structures including dervish (Sufi monks) lodges and large complexes such as the one surrounding the Suleymaniya Mosque in Istanbul which consists of a lodge, kitchen, library and other structures. These symbols of Sufism have become important parts of the cultural heritage of the cities to which they belong. Many of them are witnessing a steep addition in visitor numbers caused by the significant growth in the number of people that are turning their attention towards the theory and practice of spirituality.*

*Countries worldwide, especially India are capitalizing on this rising preference by specifically marketing destinations that are linked to Sufism. The paper aims to explore how the increase in Sufism-Tourism interface can benefit both the tourist and the heritage structure. Case studies of three Sufi shrines at Ajmer (India), Konya (Turkey) and Fes (Morocco) have been considered.*

**Keywords:** *Sufism, tourism, spiritual tourism, religious tourism*

### Introduction

*"A religion is a belief in divine (superhuman or spiritual) being(s) and the practices (rituals) and the moral code (ethics) that result from that belief. Beliefs give religion its mind, rituals give religion its shape, and ethics give religion its heart." - Religion for Dummies, by Gellman & Hartman (2002)*



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Sufism and Tourism Interface

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People all over the world put their faith in various religions. The five major religions of Christianity, Islam, Buddhism, Hinduism and Judaism and the minor religions of Confucianism, Taoism, Shinto, Zoroastrianism, Jainism and Sikhism are supported by thousands of indigenous religions and new religious movement like Scientology. Islam is the world's second largest religion with 22 per cent of the world's population as its followers. A popular expression of Islam in the Western world today is Sufism.

Travel is an important part of most religions. In Islamic practices three types of travels have been observed: *hajj/ umrah*, *rihla* and *ziyara* (Timothy and Iverson (2006); Kessler (1992)). Of these *Ziyara* is an inherent part of Sufism. It can be categorized into two kinds of spiritual travels. First are the journeys to meet Islamic religious and spiritual scholars, to attend Islamic festivals, events, seminars or gatherings, or to follow in the footsteps of the prophets, Sufis and spiritual celebrities (Bhardwaj, 1998). Second are journeys to holy places in search of spirituality to improve their quality of life (Timothy and Iverson (2006); Bhardwaj (1998)). The need to perform *Ziyara* resulted in development of built spaces where the requirements of a traveler could be met. Sufi structures such as the *khanqah* welcomed visitors and provided them with meals and lodging.

With the rise in interest in spirituality around the world, Sufi holy places have witnessed a marked increase in visitors. The tourism industry has also recognized the business significance of spirituality (Andriotis (2009); Cochrane; Finney, Orwig & Spake (2009); Geary (2008); Tilson (2005); Cohen (1992)). Many tourism marketers use religion to market spiritual tourism, such as Catholicism for the Vatican, Hinduism for Ganges and Indian Temples and Ashrams, Islam for Mecca and Sufi Shrines (Medhekar & Haq (2012); Timothy & Olsen (2006); Sharpley & Sundharam (2005)).

In modern times Sufism and Tourism are constantly being thrust together. This has developed a need to explore the relationship between Sufism and Tourism. Researchers have contributed to the study of the mutual importance of religion and tourism (Vukonic (1996); Cohen (1998); Bremer (2005); Raj & Morpeth (2007); Sharpley (2009); Collins-Kreiner (2010); Norman. (2011); Stausberg (2011)) and have revealed that Sufism and travel share a historical bond (Le Gall (2007); Kumar (2015)). Based on the comparative study of three Sufi shrines at Ajmer (India), Konya (Turkey) and Fes (Morocco), the research delves into the idea that the interface between Sufism and Tourism can be mutually beneficial by promoting and maintaining of the heritage site and allowing visitors an authentic experience of the sacred place.





Rukhsana Badar & Shashank Chakradeo

## SUFISM

Sufism (Islamic spirituality) is known to be the spiritual or inner (*batin*) dimension of Islam (Khaliq, 2013). The word *sufi* can be traced back to the Arabic word *safa* which means "purity" or to the Arabic *suf* meaning "wool" referring to the woolen garments worn by the early Sufis. It is also suggested that the word comes from the term *ahl as-suffah* ("the people of the bench"), a group of followers of the Prophet Muhammad who gathered for regular devotional meetings.

Ibn Khaldun, the 14th century Arab historian, described Sufism as:

... dedication to worship, total dedication to Allah most High, disregard for the finery and ornament of the world, abstinence from the pleasure, wealth, and prestige sought by most men, and retiring from others to worship alone (Keller, 1995).

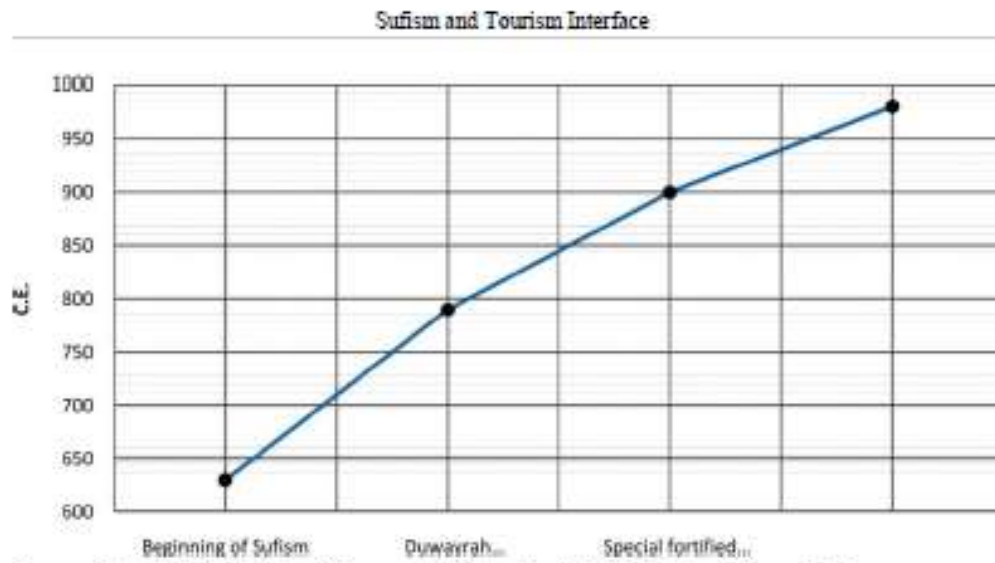
## History of Sufi Architecture

Phillips, Seddon & Bokhari (2012) track the roots of Sufism to the Prophet and his companions. They observe that Sufi goals are derived from the Quran and Sunnah. Sufism first exhibited itself as Asceticism since many Muslims turned to worship and piety to counter the growing materialism in society as Islam flourished.

Omer (2014) traces the formation and rise of Sufism through its institutions (Figure 1). At the beginning Sufi teachings were preached in mosques as part of the mainstream Islamic understanding. The designation of *tasawwuf* (Sufi) did not become common until the first half of the 9<sup>th</sup> century C.E. By then Sufi concepts and techniques of practice were developed. In the 10<sup>th</sup> century C.E. individual asceticism lead to organized groups with rules and methods. There was an increase in the followers so there was a need for an extension to the mosque precinct. This extra space sometimes came in the form of a house or shop of the teacher.

To intensify and widen the maturing Sufi mission, multiplying and diversifying its audience as well as the perspectives and modes of delivery, many Sufis had a fondness for travel and strongly recommended the same to their brethren (Omer, 2014).

The groups gradually organized themselves into Orders, known as *tariqahs* each led by a Sufi master, preaching the path of spirituality. Harith Ramli (2010) mentions that these early mystics were found mainly in the central Islamic lands of Iraq, Syria, Arabia and Persia. Each *tariqah* now felt it necessary to have an independent enclosure for its followers as well as the travelers who visited in search of refuge or knowledge. The first instance of



Source: Omer, S. (2014) from Mosques to Khanqahs: The Origins and Rise of Sufi

Institutions **Figure 1** : Dateline Marking Development of Sufi Institutions

an independent Sufi institution was the establishment of a Sufi *duwayrah* (small house or convent) by some followers of the early Sufi master Abd al-Wahid bin Zayd (d. 767 C.E.) (Omer, 2014). This was built in Basrah, Iraq. During the next century the house evolved into a larger lodge which functioned as a multi-purpose gathering place and shelter for the members. It was also a hostel for traveling and visiting Sufis. Yusupova (1999) reports that at this time in Central Asia Arabic military structures called *rabats* became trade and hostel complexes of the caravanserai type and were sometimes used as prayer complexes. By the 9<sup>th</sup> C.E. special *rabats* were built for Sufi followers.

From the 10<sup>th</sup>- 12<sup>th</sup> C.E. a new scheme of instruction was developed using a teacher-student (*pir-murid*) method. For this purpose there came into existence a more specialized Sufi religious and educational institution called the *khanqah*. While *ribats* and *duwayrahs* were shelters for Sufi dervishes, *khanqahs* were Sufi complexes with a wider function. The first complex appeared in Khurasan, in northeastern Iran. The term *khanqah* is a Persian word meaning 'place of the table' or 'place of recitation'. A typical *khanqah* was a self-reliant hostel, a meeting and socialization place, a madrasah or school and, to some extent, a mosque, with all of the necessary annexes, services, amenities and facilities (Omer, 2014).

The 12<sup>th</sup> CE century saw the creation of numerous Sufi institutions. Most were set up by the grand masters of the various *tariqahs* such as the *khanqah* in Konya, Anatolia established by





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Mevlana Jalaluddin al-Rumi, the founder of the *Mawlawiyah* fraternity. These Sufi *shaykhs* were then usually buried within their *khangahs*. Thus the shrine (*dargah*) became a part of the complex and rose in importance as a place of pilgrimage. By the 14<sup>th</sup> C.E. the complex of buildings in the *khangah* included the saint's tomb, a small mosque, a dwelling for the *shaykh* and his family, rooms for reading the Holy Koran and teaching pupils (*murid*), cells for the pupils, and a free hostel for travelers and pilgrims (Yusupova, 1999).

Although majority of the *khangahs* enjoyed royal patronage as sponsored by the government especially in early medieval period, besides there were merchants and trade guilds who were leading financial supporters since all the caravan routes were dotted with Sufi *khangahs* to help them for their smooth journey (Kumar, 2015).

With the aid of the traveling dervishes and development of *khangahs* between the 12<sup>th</sup> and 17<sup>th</sup> C.E. a number of Sufi orders spread to Central Asia, Anatolia and onto North Africa. Moinuddin Chisti (c. 1142-1236), a native of Sijistan (the border region between Iran and Afghanistan) brought Sufism to India, establishing the Chistiyya order in Ajmer. In her study of *khangahs* in India during the medieval period, Hussain (2009) describes it as a power center which revolved around the *Shaykh*. She notes that hospitality was one of the most important aspects of the *khangah* and created a new paradigm for pluralism since it showed no distinction between the visitors of various religions, castes and creeds. A significant social activity of the Sufi inmates was their organization of the *langar* (community kitchen). The *langar* depended on the regular flow of gifts and donations from rich patrons. The travelers and pilgrims, who were guests of the *khangah* were fed lavishly here. There were also special feasts to celebrate religious events and festivals.

In his identification of the three stages of Sufi organization, Tumingham (1971) claims that by the 17<sup>th</sup> C.E. century Sufism had reached the ultimate *Tai'fa* (guild) stage of its development. *Dargahs* replaced *khangahs* as the physical structures upon which Sufi movements are based. Sufism became a more devotional than mystical movement. It rose in popularity among the common people who showed devotion to the saint though their veneration of his descendants and his tomb. Their goal was usually the fulfillment of worldly desires as opposed to the spiritual affinity with God.

The *tariqahs* still survive today through the family lineage of the original Sufi Masters. The interest in Sufism was renewed after the tragedy of 9/11 as both Muslims and non-Muslims sought to highlight the inclusive, peace and love-focused essence of this faith (Baran, 2004).





## TOURISM

In the agreement signed by The World Tourism Organization (UNWTO) and the International Labour Organization (ILO) in Madrid (Dec, 2008) the term 'tourism' was defined as:

"Tourism comprises the activities of persons traveling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes."

Researchers and authorities agree that the following criteria are required to characterize a trip as belonging to tourism:

1. Displacement outside the usual environment, it may be domestic or international travel.
2. The purpose of travel is not restricted to recreation or visiting friends and family but should not include wage-earning in the place visited.
3. The duration of stay should not be more than a year but can be less than a day (same day excursions).
4. Tourism involves activities and expenditures of the visitors (demand) and the facilities and products (supply) that they consume.

Tourism has unclear origins, but is commonly associated with religious pilgrimages and 'Grand Tour' and various other significant movements of people from their usual place of residence to some other destination (Lavery (1987); Holloway (1989); Towner (1985)). According to Rinschede (1992) modern tourism began with the 'great religious tour' organized by Thomas Cook in the mid-19<sup>th</sup> century (Shinde, 2008).

Modern tourism has been packaged into different categories according to the purpose of visit. Of these numerous forms of tourism, religious tourism is the oldest and according to the World Religious Travel Association (WRTA), it is also the fastest growing segment of the tourism industry.

## Religion and Tourism

Wherever there is religion there is potential for tourism. (Norman, 2011). There is a strong historical link between religion and travel. Sherrat and Hawkins (1972) note that it was Prophet Muhammad's migration from Mecca to Medina in 622 C.E. that led to the rapid spread of Islam throughout the world and it was the extensive travelling by Methodist founder John Wesley that stemmed the emergence of Methodism in England.



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Wall and Matheison (2006) acknowledge that 'Religion has been a powerful force which has long caused people to travel to religious centers in many parts of the world'. Vukonic (1996), states that religious belief is a significant motive for a tourist to visit a religious site whereas Norman (2011) disagrees, observing that the data on the religious make-up of tourists visiting particular holy sites show that most have either an interest in the religious buildings as tourist sites or in the other cultures in general. This leads to exploring the term religious tourism and the motivation behind it.

## Religious Tourism

Nolan and Nolan (1992) were among the earliest authors to address religious tourism (Raj & Griffin (2015)). The major difference between religious tourism and other forms of tourism lies in the tourists' religious motivation (Gurita, 2001). Religious tourism takes various forms such as 'devotion to a saint', 'penitence', 'fulfillment of a vow', 'religious sacrifice' (Kaelber, 2006:58; Palmer, Begley, 2012:73; Rizzello, 2013).

The term religious tourism originated in Europe in the late 1980s when churches felt the need for visitors to maintain their religious vitality and realized that tourists and visitors who visited churches provided them with a captive audience and opportunities for mission activities and for generating revenue. In tapping this potential, churches began to promote, organize and manage such visitation formally as a religious tourism activity (Nolan & Nolan (1992); Shinde (2008)).

Shackley (2000) demarcates the main forms of attraction within religious tourism as:

- Natural attractions (even associated with the idea of natural phenomenon) with religious implications- lakes, mountains, islands, caves, places with a religious "load" etc.
- Buildings carrying religious significance
- Special religious events that take place outside religious buildings
- Sacred places associated with tragedies (the place where the Twin Towers in New York were built) but also important political events (prisons, buildings that housed conspiracies etc.)

In the recent years though the destination of the religious tourist remains the same, the motivation behind the journey has changed. According to Lois-González, et al, (2014) the overall purpose of travelling has shifted from essentially religious endeavor to a 'search for meaning', for a form of emotional involvement and physical, mental and spiritual





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## Sufism and Tourism Interface

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well-being. Travelers seek educational, social, participatory and emotional experience that enables to imbibe the character of the place.

The “new” religious tourists are also more likely to visit other tourist objectives while in the area and also make more use of the local hotels, restaurants or local transport which recommends religious tourism as an important economic sector especially for those regions that lack other opportunities for development. (Egresi, et al; (2012)).

As stated by Trono (2014), a religious traveler demands satisfaction of emotional and intellectual needs, in their search for culture, authenticity and spirituality. Whatever their reasons for visiting a sacred site, tourists and pilgrims both need services and from the need is born the potential for economic development in the community or region where in the sacred attraction is located. Tourist facilities at sacred sites can and do help to improve the economic fortunes of the host community. They do this primarily by increasing the year-round touristic attractiveness of the location through the creation and marketing of a competitive product. There is also the other side of the coin. The tourists can cause a negative impact on the place they visit. Brayley (2010) argues that it is important to maintain the sacredness of a site from the hordes of visitors who, by their presence threaten to detract from its holy, reverent nature. A better understanding of the contribution of tourist facilities to the meaningful experience can also lead to an improved understanding of the contribution of tourist facilities to local and regional economic development (Brayley, 2010). Therefore by studying the relationship between Sufism and tourism and exploring their interaction this study hopes to be of aid to tourist managers of the frequently visited Sufi holy places.

## SUFISM AND TOURISM

According to Alsandogan (2007) Sufism is the empathetically inclusive and compassionate perspective of the spiritual tradition, its non-violence, friendship and hospitality that has made it increasingly popular in the world today. After a detailed discussion of both historical and current developments involving Sufi orders, Martha B. Olcott of Carnegie Endowment for International Peace concludes that “Sufism has a strong potential” in all countries of Central Asia (Olcott, 2007). It is this popularity that has seen an increase in number of tourists visiting Sufi holy places all over the world during the past decade.

Researchers have already established that travel was a central Sufi practice and that by the medieval era *dargahs* and *khangahs* had become destinations of pilgrimage and have also explored the relationship between Religion and Tourism. With the growing Sufi-Tourist interface there is a need to study of the implications of their relationship on the holy sites,



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the surrounding communities and the tourist experience.

A few of the important Sufi sites include:

- |   |                        |
|---|------------------------|
| 1. Shrine of Shaykh Abdul Qadir Jilani      | at Baghdad, Iraq       |
| 2. El-Mursi Abul Abbas Mosque               | at Alexandria, Egypt   |
| 3. Shrine of Sidi Abu Abbas Ahmad al-Tijani | at Fes, Morocco        |
| 4. Mosque of Uqba                           | at Kairouan, Tunisia   |
| 5. Shrine of Shaikh Aamadu Bamba Mbakke     | at Touba, Senegal      |
| 6. City of Harar                            | in Ethiopia            |
| 7. Shrine of Khoja Ahmad Yasavi             | at Turkestan, Kazakh   |
| 8. Shrine of Shah Bahauddin Naqshband       | at Bukhara, Uzbekistan |
| 9. Shrine of Hazrat Data Ganj Baksh         | at Lahore, Pakistan    |
| 10. Shrine of Mawlana Rumi                  | at Konya, Turkey       |
| 11. Shrine of Khwaja Moinuddin Chisti       | at Ajmer, India        |
| 12. Shrine of Hazrat Baba Fareed            | at Pakpattan, Pakistan |
| 13. Shrine of Hazrat Nizamuddin Awliya      | at Delhi, India        |
| 14. Shrine of Hazrat Shah Jalal             | at Sylhet, Bangladesh  |

*Dargahs* of Khwaja Moinuddin Chisti (Ajmer), Mevlana Rumi (Konya) and Shaykh Ahmad al-Tijani (Fes) are three Sufi sites which are studied here to analyse the significance of the relationship between Sufism and tourism. The criteria of their selection are: their religious and spiritual significance among the Sufis, their importance as pilgrimage sites and their growth as centers of religious tourism.

The importance of the city as a Sufi holy place is reiterated with a brief review of the history. The areas are then researched for: i. the events that take place through the year; ii. the number of tourists that are visit annually; iii. peak months for tourists; iv. extent of conservation of architectural character of the *dargah*; v. accommodation availability and type; and vi. connectivity to the city. Lastly tourists' expectation and experience is summed up. The study uses tourist reports, newspaper articles, government websites and travel sites.

## **DARGAHS OF KHWAJA MOINUDDIN CHISTI, AJMER (RAJASTHAN, INDIA)**

The city of Ajmer lies in a valley in central Rajasthan. It is the final resting place of the Sufi saint, Khwaja Moinuddin Chisti.





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Moinuddin Chisti lived in the town of Chisti, in the Sijistan region of central Afghanistan. He traveled to Balkh and Samarkand in his search for knowledge and finally arrived in India. He established himself in Ajmer by the first decade of the 13<sup>th</sup> century C.E. He founded the Chisti Order in India.

When his soul departed from this world on March 16<sup>th</sup>, 1236, his shrine was built in the cell he used during his lifetime (Figure 2). It now stands in one of the two courtyards around which the other white marble buildings of the *Dargah* complex (Figure 3) are arranged. The main gate to the shrine is the Nizam Gate, followed by the Shahjahani Gate, erected by the Mughal emperor Shah Jahan. In front of this gate, there are several shops selling flowers and offerings for worshipers to take inside and place on the tomb of Moinuddin Chishti. This is followed by the Bulund Darwaza built by Sultan Mahmood Khilji. Akbar built the huge, red sandstone mosque Akbari Masjid within the complex in 1571 C.E. It is now a school for religious education.



Source: British Library Online

**Figure 2:** The Dargah and its Surroundings, as seen in 1880





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Source: 1. Nizam Gate                      2. Dargah Masjid                      3. Buland Darwaza  
4. Dargah Sharif                      5. Mahfil Khana

**Figure 3: Map of Dargah Complex**

An axis is formed by the main approach road leading from the important city gate called Delhi Gate to the Nizam Gate. This stretch is a commercial zone providing tourist facilities such as shops, restaurants and hotels.

## Events

From the time of Khwaja Moinuddin Chisti, food is cooked twice daily in the *langar* (community kitchen). The complex has two cauldrons (*degs*) for cooking the food. The large *deg* was presented by Akbar and the smaller *deg* by Jahangir. Both cauldrons are fixed into solid masonry on either side of the Bulund Darwaza. A mixture of rice sugar, ghee (butter) and dried fruits is cooked in them for distribution to the public as *tabarruk* (blessing). The cooking is sponsored by pilgrims or devotees.

One of the major events at the Ajmer Dargah is the celebration of the death anniversary (*Urs*) of the saint Moinuddin Chisti in the month of *Rajab* (seventh month of the Islamic lunar calendar). This is a six day annual festival which attracts pilgrims of all faiths from around the country and also from abroad. A reported 1.32 million tourists arrived here in 2000, out of which 95 per cent were Indians. The Ministry of Tourism, Art and Culture



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(MoTAC) Department of Tourism Report, 2001, reports a 19 per cent rise in domestic tourist traffic from 1996 to 2001.

The pilgrims throng the *dargah* to seek blessings and make rich offerings of flowers and incense at the tomb of the saint. There are also donations to the *langar* for feeding of the public. In front of the *dargah* and at other locations in the city where *mehfils* (gatherings) are held, professional performers called *qawwals* sing in praise of the saint. Some groups meet for the purpose of *dhikr* which means to practice consciousness of the Divine Presence and thus achieve a state of god-wariness. It covers a diverse range of forms of worship such as the repetition of Divine Names, the recitation of the Quran and Hadith and may also include singing, instrumental music, dance, trance and ecstasy.

The religious festivities is accompanied by a fair selling religious paraphernalia like books, rosaries, prayer caps, embroidered carpets and so on.

### Architectural Character

Green (2012) examines how the shrines of Sufi saints helped create a place of belonging in India for the migrant Muslim community from Iran and Afghan. They form what he calls 'memory space' which linked the history and rituals of distant lands to the new geography of India. The shrine and surrounding buildings were built in the Mughal style of architecture which has a strong Persian influence. They remain preserved. The three gates and intermittent courtyard help in segregating the commercial bazar road from the inner sanctity of the shrine.

### Facilities and Infrastructure

Ajmer is an important junction on the Western railway (Mumbai–Delhi via Ahmedabad). A well-developed rail network connects Ajmer to Mumbai, Delhi, Kolkata, Pune, etc. Special trains are run during the peak season surrounding the *Urs* festival. Ajmer is also well connected by roads since National Highway (NH8) passes through it and being centrally located it has excellent road connectivity with most circuits in the state.

The *Dargah* has a guest house with 180 rooms which are available to pilgrims. Besides that Ajmer has 117 hotels and *dharamshalas* (dormitories) providing 4397 beds in a vast range of budgets (City HRIDAY Plan for Ajmer, 2015). Four paying guest accommodations are also available. During the *Urs* festival pilgrims are accommodated free of cost in special temporary camps with basic water and mobile toilets provided by UIT and Municipal Council of Ajmer.





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In 2015 Ajmer was included under the Heritage City Development and Augmentation Yojana (HRIDAY) by the Ministry of Urban Development. The scheme proposes to improve approach road to the *dargah*, parking areas, pedestrian access and facilities such as toilets.

## Tourist Expectation and Experience

The Development and Research Organisation for Nature, Art and Heritage (DRONAH) report (2015) for HRIDAY Scheme mentions that the majority of visitors to Ajmer are day tourists stopping to pay respects at the *dargah*. Large shrines such as Muin al-Din's Dargah at Ajmer are constantly full of people whose relationship to the shrine and to the Sufi master may be understood in terms of varying degrees of spiritual closeness (*qurbat*) to them (Ewing, 1980). Sanyal (2004) identifies that majority of the visitors come seeking the saint's help to solve worldly problems or return to show their gratitude and make a monetary donation. A smaller group of disciples who are under oath to carry out religious duties faithfully, come to the *dargah* to honor the saint and pay their respect. The first group is drawn by the commercialization of the *dargah* complex, with its many shops, *qawwali* performances and other entertainments.

## KONYA (CENTRAL ANATOLIA, TURKEY)

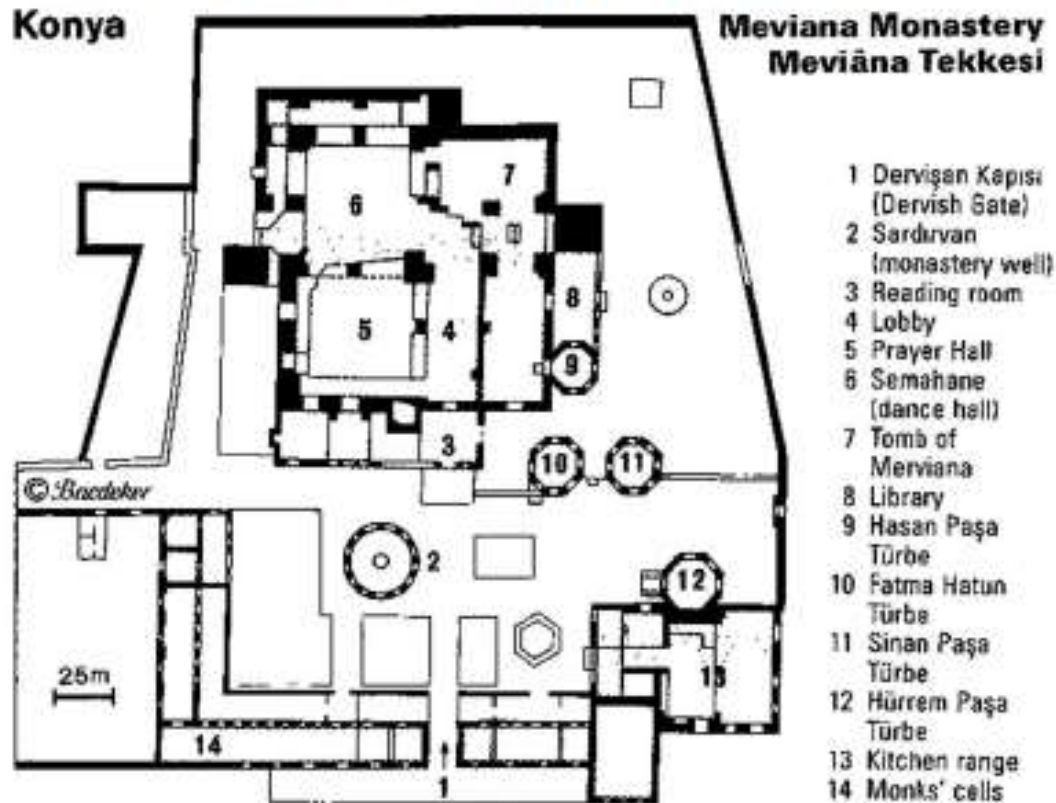
Based on data from the World Tourism Organization (UNWTO, 2011), Turkey is one of the most important countries in the world for international tourism with approximately 27 million tourists visiting the country in 2010 (Egresi, Bayram, Kara, & O., 2012). So far religious tourism accounts for only 1 per cent of the total number of foreign tourists to Turkey (Aktaş & Ekin, 2007).

Konya has been an important center for Islam. It was the place where Jalaluddin Muhammad Rumi (or *Mevlana*), an important Persian-born Islamic scholar lived most of his life. He was born in Balkh in Khurasan (Iran). His family fled the Mongol attack and after years of wandering finally settled in Konya. It was here that he established his *khanqah* and formed the *Mevlevi* Order of Sufism. His followers created the Order of Whirling Dervishes who are famous for their dance.

Mevlana's shrine is located in his lodge (*khanqah*). It is called 'The Green Tomb' because of its distinctive green tiled dome. On the west of the shrine are rooms for dervishes. There are three gates in the lodge; the 'Dervishan Gate' was used by the dervishes, 'The Garden of Soul' is the second gate fronting the graveyard and the last is the 'Celebi Gate' on the north side.

## Sufism and Tourism Interface

In 1926 the lodge was converted into a Museum (Figure 4) describing Mevlevi's way of life, telling the history of the Dervish lodge and exhibiting related works with religious historical values. The *matbah* (kitchen) of the lodge and the dervish cells are also a part of the museum. About 1.5 million people visit the institution every year.



Source: Lee, 2016

Figure 4: Plan of Mevlana Museum, Konya

## Events

The Whirling Dervishes (Figure 5) perform once a year during the Mevlana Festival in December marking the death anniversary of the Sufi saint. This is an annual ten day event marked by ritual visits to the main shrine of Mevlana as well as the many shrines





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of other Sufi saints spread across the city. There are *dhikr* meetings, poetry recitations and musical presentations playing the Ney and drums. The *Sema* is a whirling dance practiced by Mevlevi Sufis as a deeply spiritual exercise to bring them closer to God. In 2005, the Mevlana Sema Ceremony was proclaimed by United Nations Educational, Scientific and Cultural Organization (UNESCO) as one of the Masterpieces of Oral and Intangible Heritage of Humanity.



Source: ([www.turkishheritagetravel.com](http://www.turkishheritagetravel.com))

Figure 5: Sema, Whirling Dervish Ceremony

### Architectural Character

The tomb, built in 1274 C.E. was inspired by the Armenian churches in Anatolia. The conical dome over the mausoleum is externally covered in turquoise tiles because of which it is called 'Green Dome'. The rest of the complex was built in the 16<sup>th</sup> C.E. Though the built form is maintained, the functions have been altered in line with the secular activities of the museum. This has caused a loss in the spiritual authenticity which draws religious tourists to Sufi shrines.





## Facilities and Infrastructure

Konya is in the center of Turkey and is therefore situated at the crossroad of National Highways running from south to north and east to west. It is connected by high speed train from Ankara and Istanbul. It has an airport with daily flights from Istanbul. Special seasonal direct flights are also available to cities in Europe during the summer months. It has 28 hotels with a bedding capacity of 4,533.

## Tourist Expectation and Experience

Aslan (2014) describes the different types of visitors to the Mevlana Museum. Many are religious pilgrims looking to gain the saint's blessings. Other visitors seek to learn more about Rumi, the Turkish heritage or to see the Seljuk-era architecture. She argues that by converting the shrine into a museum the government has made it difficult for the visitors to experience the tomb complex and Sufi lodge as it was historically. Despite its efforts, though, the state has not stopped people from performing pilgrimage to the shrine and experiencing the sacred in the Museum (Aslan, 2014). The statistics (Table 1) illustrate though religious tourism doubled in two years it still accounts for less than 1 per cent of the total tourist arrivals in Konya (Table 1).

**Table 1:** Number of Tourists visiting Konya in 2001 and 2003 and the Purpose of Visit

Purpose of Visit	2001	2003	Per Cent Change	Per Cent of Total Tourists
Leisure	5231272	6815797	23	65.5
Culture	917368	1004079	9	10.0
Visiting relatives and friends	794651	839086	5	8.0
Shopping	829207	968486	14	9.5
Health	96860	103404	6	1.0
Religion	30962	58456	47	0.5
Sport	127657	156162	18	1.5
Fair-Exhibition	503300	442431	-14	4.0

Source: Sari, 2010



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## FES (MOROCCO)

Religious tourism in Morocco has picked up steam over the past few years thanks to a galaxy of shrines and mausoleums that draw hundreds of thousands of committed followers yearlong (Abeddour, 2011). Morocco is home to almost a thousand different Sufi brotherhoods (*tariqahs*). The city of Fes is located in northeast Morocco. It is known as the cultural capital of the country renowned for its walled medina featuring medieval architecture. It was founded in 810 H by Moulay Idriss II of the Idrisid dynasty. His grave in the city is an important place of pilgrimage in Fes. The city is home to many mausoleums for revered Sufi saints as well as *zawiyyas*, *madrassas* (schools) and other Sufi structures (Figure 6).

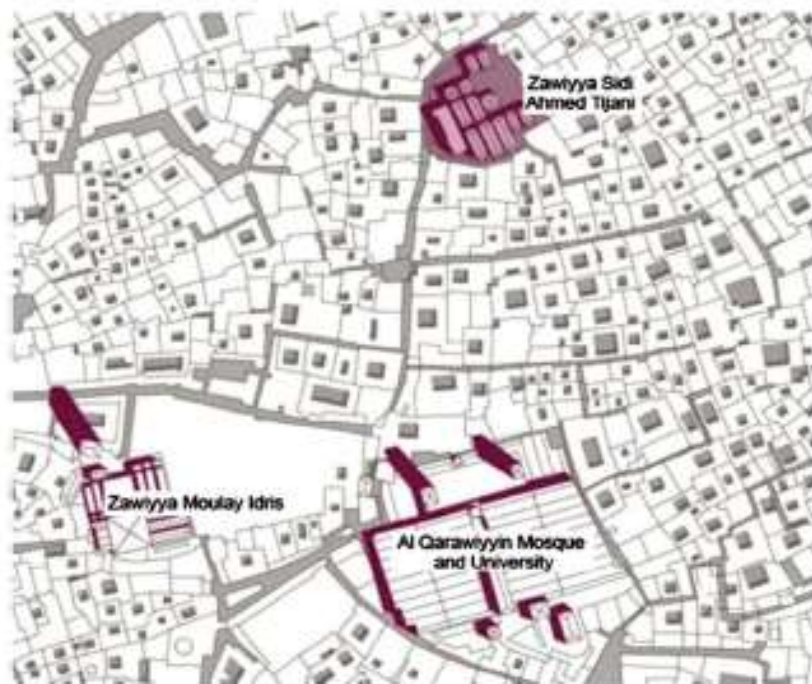


Figure 6: Part Plan of Fes, Morocco showing Zawiyya Tijani





## Sufism and Tourism Interface

Sufi saint Sidi Abu Abbas Ahmad al-Tijani was born in the Southwest Algerian town of Ain Madi in 1737 C.E. After years of religious and spiritual learning he set up the *Tijaniyya* Order. He took residence in Fez in 1798 C.E. Here he had royal support from Sultan Mawlay Sulayman. The Sultan gave him a large house called the House of Mirrors which became the center of prayer and teaching for the *tariqah*. It still stands today with its large courtyard flanked by rooms on two floors. As the *Shaykh's* following grew he began construction of his *zawiya* which serves as a place of congregation for the order to this day (Figure 10). He was buried within its premises in 1815 C.E.

Another leading figure, Sidi Ali ibn Harzihim was a Sufi teacher and master of the Ghazalian *zawiya* in Fez. He is also known as Sidi Ali Boughaleb and is considered the patron saint of doctors and barbers. He was buried in 559 H (1163 C.E.) at the Bab Ftouh (south-eastern gate) in the cemetery at Fez. His resting place is marked by a mausoleum which also houses a library.

The Hamadcha *tariqah* is an important Sufi Order in Morocco. It was founded by Sidi Ali Ben Hamdouch in the 17<sup>th</sup> C.E. century and is renowned for its extremely complex melodies and their specialized musical instruments. The Hamadcha of Fez are led by their master Adderrahim Amrani Marrakci.

Al Qarawiyyin Mosque and University was founded over twelve hundred years ago in 859 H. by Fatima Al-Fihri, a young princess who had migrated from Tunisia to Fez. Al Qarawiyyin library has a huge collection of books on Sufism and Moroccan *zawiyas*.

### Events

According to the official tourist site, [www.muchmorocco.com](http://www.muchmorocco.com), a *mousseum* is firstly a religious festival, bringing people together who have sometimes traveled a long way to celebrate and honor a saint. An annual three-day *mousseum* is held in July at the mosque of Shaykh Ahmad Tijani in remembrance of the saint. The mausoleum of Sidi Ali Boughaleb also holds a two-day *mousseum* in October.

An annual Sufi Cultural Festival is an 8-day celebration which is organized every April to honor Sufi teachings and history in Morocco. It brings together religious leaders from the world over to discuss important topics relating to Sufism. There are conferences and seminars. Tourists seeking spirituality can involve themselves in daily concerts, *samaas* and art exhibitions (Figure 7).



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The Fes Festival of World Sacred Music is also held annually, in June, bringing together musicians from all over the world to perform different forms of spiritual music.



Source: [www.moroccoworldnews.com/wp-content/uploads/2013/03/Night-at-the-Medina-Photo-by-Omar-Chennafi.jpg](http://www.moroccoworldnews.com/wp-content/uploads/2013/03/Night-at-the-Medina-Photo-by-Omar-Chennafi.jpg)

**Figure 7:** Night at the Medina

In 2007, the Forum for the Followers of the Tijaniyya Order held the Worldwide Tijani Conference at Fes from 27<sup>th</sup> to 30<sup>th</sup> June. Scholars and *shaykhs* from Senegal, Nigeria, Mauritania, Egypt, Indonesia, Pakistan, Dubai, Sudan, South Africa and America to present and discuss the significant historical and present-day role of the Tariqa Tijaniyya.

### Architectural Character

In 1981 the *medina* (medieval city) of Fes was listed as a World Heritage Site by United Nations Educational, Scientific and Cultural Organization (UNESCO) in order to preserve the traditional city and its unique Arabo-Andalouse style of architecture. The Regional





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Council of Tourism (CRT-Fez) has worked to maintain the city's image as a traditional medieval city by restricting vehicular traffic in the old medina, creating craft guilds and developing a home stay program called *Ziyarat* which gives tourists an opportunity to stay in the medina with a Moroccan family. Alternately, the age old restrictions in the old city caused residents to leave, renting their large family homes to several poor migrant families from the countryside. This has resulted in architectural degradation and densification of population. The Regional Tourist Development Program (PDRT) aims to convert Fes into a tourist destination by developing its infrastructure such as the airport and facilities such as accommodation.

### Facilities and Infrastructure

The Fes-Saïss airport to the south of the city is connected directly to most European cities. The train station Fes-Ville is in the new part of the city. Regular trains run between the city and Marrakesh, Rabat, Casablanca and Tangier. Fes is connected by highway to Casablanca.

In 2008, there were 7,224 beds in Fes. In December 2012, the Regional Association of Guest-Houses (ARMH) listed 63 official guest-houses and 16 *locations de meublé* (furnished rentals) (Istasse, 2013). By the end of 2011 there were 26 participating houses in the *Ziyarat* program.

### Tourist Expectation and Experience

Abeddour (2011), notes that tourists arriving in Morocco come looking for spiritual rejuvenation through visits to *zawiya*s and shrines. Sufi tours are popular as they include visits to Sufi holy places, meetings with *shaykhs* at Sufi schools, witnessing talks and lectures on Sufism, participating in *zikr* (meditation) and even living in a Sufi *zawiya*. Some tourists want to learn more about Sufism and are able to do so in the various festivals that are held annually. Also they are able to stay in a traditional Moroccan home within the walled Medina.

### Discussions

The Ajmer *dargah* complex has been excessively commercialized for monetary gains and it struggles to maintain its sacredness. But helped by its courtyard planning, the visitors still experience the silence and solemnity of the inner sanctum while the outer courtyards are bustling with people. The various traditions including the daily *langar* remain in practice. The shrine witnesses an unfailing yearly exodus of tourist and pilgrim arrivals. It lacks in visitor facilities and needs improvements in basic infrastructure.





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Mawlana Jalaluddin Rumi's shrine is one of most significant Sufi monuments in the world. Yet by converting the lodge and shrine into a museum Konya has lost out on the multitudes of religious tourists that usually throng a Sufi shrine of such importance. The traditions that revolved around the *khanqah* are absent today. Most tourists are attracted by the cultural feast during the *Mawlana* festival rather than the spirituality of the shrine.

Fes has been able to use tourism to maintain its rich Sufi heritage that is still alive today. By developing festivals centered on the spiritual aspect of Sufism, the city has aimed to control the amount of commercialization of the holy places within the *medina*. Abeddour (2011) reports an interview with a young Sufi in Fez who believes that Sufi tourism in Fes is still just an idea that requires major infrastructural and legal inputs such as restoration of the historical structures. By restricting commercial development, Fes is losing out on the secularized religious tourists.

## CONCLUSIONS

Sufism offers many significant concepts and practices that are indispensable in an age of globalization and religious plurality, such as the mirror concept and the universal human dignity, divine love emerging as a love of fellow humans, non-violence, and the service mentality (Aslandogan, (2007)). Researchers agree that these inclusive and egalitarian concepts have made this religious sect increasing popular among the youth today.

Pradeep Kumar (2015) notes that Sufi *khanqahs* played a pivotal role in promoting tourism in medieval India. Sufism impelled people to travel; to visit holy places and shrines, to spread the message of their *tariqahs* or in search of knowledge. The Sufi institutions provided safe havens for travelers and were positioned strategically on most important roads. Music and dance and religious festivities brought regular visitors. Commercial activity was also allowed within the premises.

These merits have made Sufi structures especially *dargahs* great assets for the tourism industry. The three case studies of Ajmer Sharif, Mevlana Museum and Mausoleum of al-Tijani divulge how they have been used to advantage when planning for large tourist arrivals. All three have witnessed tremendous increase in tourist arrivals between 2000 and 2015.

The traditional rituals such as *semas* and *mehfilis* (poetry recitation) also allow for mass participation. Importantly academic studies concur that it is the tolerant face of Sufism that draws the multitudes of people from all religions, sects and creed. Commercialization and secularization of the holy sites has had a negative effect on the tourist experience since



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some visitors find that the spiritual energy and sanctity have been violated. But majority of the studies reveal that pilgrims are still able to experience the sacred because of the inherent spirituality of the *dargahs*.

This paper reveals that Sufism and tourism have a symbiotic relationship in which each helps to maintain the other. The sacredness of the Sufi holy place appeals to religious tourists. At the same time, tourist visitations helps establish the importance of the site in the Sufi tradition and helps maintain its architectural character.

**Table 2:** Comparison of the Three Sufi Dargahs

Characteristics	AJMER Dargah of Khwaja Moinuddin Chisti	KONYA Dargah of Mevlana Jalaluddin Rumi	FES Zawiya of Shaykh Ahmad al-Tejani
Built in	13 <sup>th</sup> century C.E.	13 <sup>th</sup> century C.E.	19 <sup>th</sup> century C.E.
Historical Character	It is part of the oldest walled city area of Ajmer, which has a dense settlement fabric and high concentration of historic structures	It is a central attraction of the Seljuk era circular city of Konya	It is a part of the old medina of Fes, listed as a World Heritage Site by UNESCO
Architectural Character	Mughal architecture, damaged by commercial development	Seljuk Armenian architecture, well preserved	Arabo-Andalouse architecture, well preserved
Number of Tourists visiting in 2015	2.14 million	1.9 million	1.8 million
Season	Year long. Peak- June & for Urs	December during Urs	Year long
Travel Connectivity	Important rail junction but no airport	Well connected by air, road and rail	Connected by air, road and rail
Accommodation rooms available	4,397 beds + 180 rooms in guest house	10,940 beds	7,224 beds + 63 guest houses + 16 furnished rentals + 26 <i>zkyarat</i> houses





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Characteristics	AJMER Dargah of Khwaja Moinuddin Chisti	KONYA Dargah of Mevlana Jalaluddin Rumi	FES Zawiya of Shaykh Ahmad al-Tejani
Infrastructure Development	Included under the HRIDAY scheme (2015) to improve city infrastructure, restore historic urban character and develop tourist facilities	Ministry of Culture and Tourism (2007) aims to develop Konya as center for conferences and expos by improving transport connectivity	Morocco's Department of Tourism Vision 2020 (Roudes, 2010) recommends a sustained growth for Fes so that impact on city is minimized and the authenticity of tourism experience is intact.
Religious expectation	Majority of tourists drawn by commercialisation of <i>dargah</i>	Devout pilgrims are restrained from praying at the <i>dargah</i> .	Tourists come for spiritual rejuvenation
Opportunities for education and participation	People can fully participate in various Sufi rituals like <i>dhikr</i> and <i>mehfils</i> with religious fervor	Secularization of the <i>dargah</i> and related rituals have decreased participation opportunities for pilgrims but religious tourists have benefited from the various festivals	Tourists can participate in annual Sufi festivals or stay at working Sufi schools, <i>zawiyas</i> or family homes in the old city.
Religious authenticity	Diluted by over commercialization	Lost due to conversion into museum	Maintained by developing tourism around the holy city

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