

## The Djenné Mosque: Form, Function and Architecture

Rimsha Khalid

*Lecturer, National University of Modern Languages*

Dr. Sabah Naz

*Lecturer, National University of Modern Languages*

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### Abstract

The article offers an in-depth typological study of the iconic mosque located in Djenné, Mali, the heart of West Africa. The study aims to investigate the architectural typology and universal forms used in mosque construction, highlighting its historical evolution, cultural relevance, and lasting architectural traditions. The study traces the evolution of mosque architecture in Djenné over the centuries, its form and functions. It illustrates the innovative adaptation of local materials and construction methods in crafting remarkable edifices. In addition, this study examines the cultural and social dimensions of the Djenné mosque while showcasing its role as a symbol of cultural identity and community cohesion. Qualitative research method has been employed to explore the influence of local culture on mosque architecture. The study utilized document analysis of existing literature along with the theoretical framework provided by Nader Ardalan in his work “*The Visual Language of Symbolic Form: A Preliminary Study of Mosque Architecture*” to uncover the nuances of how regional and cultural factors shape the architectural form and spatial organization. Moreover, the generic forms and principles of spatial organization described by Nader Ardalan have been analyzed in the context of Djenné mosque. The research concludes that the interplay between universal architectural forms and regional cultural

influences is a fascinating aspect of Islamic architecture. While certain essential elements are common across the Muslim world, the ways in which these components are adapted and interpreted can vary significantly based on local contexts. This dynamic is particularly evident in the Djenné Mosque. Despite adhering to the general typology of a trabeated mosque, it exhibits several unique features and improvisations that are reflective of the local Sudano-Sahelian culture such as the building's mud-brick structure, small oculi piercing the flat terraced roof, reliance on daylight as a design strategy, flanking quoins and ostrich eggs at the top of pillars. In conclusion, the typological analysis of West African mosque in Djenné provides valuable insights into the architectural legacy of Mali and West African zone entirely.

**Keywords:** Mali, West Africa, The Djenné Mosque, typological study, Form, Function, Architecture

### **I. Introduction:**

Architects, art historians, curators and scholars have been studying mosque architecture for centuries due to its undisputed significance as a core unit of the Muslim society. The mosque is usually interpreted as a place in the form of a building which is used by Muslims for performing prayers and worship (Supriyanto, 2022, p. 1860). However, along with fulfilling its religious role, it is also deeply woven in to the fabric of a Muslim society as a vital social and cultural institution. The historical development of mosque is evidence of its communal significance as demonstrated by the construction of the Prophet's Mosque. It was built as the first step of establishing an Islamic state in Madina. The Holy Prophet (PBUH) diligently participated in the mosque construction which was then used as a means of activity, consolidation, social cohesion, development and spreading of Islam (Effendi and Arifi, 2023, p. 131). To this day, Mosques have been contributing towards the society in a similar capacity. This disposition causes the mosque to be highly adaptable to the local culture while also maintaining its universal expression.

Hence, this paper explores the typology of the Djenné Mosque in terms of its spatial organization and universal forms while analyzing the architectural adaptations caused due to social, cultural, ecological and regional factors. The study makes use of qualitative research including document analysis along with the theoretical framework provided by Nader Ardalan in his essay “*The Visual Language of Symbolic Form: A Preliminary Study of Mosque Architecture*”, to understand the generic forms in Mosque architecture and the principles of spatial organization. In his essay, Ardalan explains the historical evolution of some of the monumental mosques, such as the Prophet’s Mosque in Medina, Hagia Sophia in Istanbul, the Great Mosque of Damascus in Syria and the Mosque of Cordoba in Spain to conclude that it is possible “to discern a distinct set of generic "Islamic" forms and typologies of spatial organization in mosques all across the world” (1980, p. 18). He has listed eight generic forms or universal forms in Mosque architecture after conducting comparative analysis of 113 mosques. The generic forms are as following: *Mihrab*, minaret, gateway, courtyard, portico, place of ablution, plinth and dome. The inclusion or exclusion of these universal forms in any mosque is subjected to local influences . The study at hand, will make use of Djenné Mosque as a case study to analyse the interplay between universal architectural forms and regional cultural influences while also taking examples of other mosques into consideration. It will also expand upon the role of the mosque in the urban fabric of Djenné as a symbol of cultural and spiritual continuity.

## **2. Historical Development of the Djenné Mosque:**

The ancient city of Djenné perched on the plains of Niger and Bani Rivers is situated in Mali, West Africa. The city is a UNESCO World Heritage Site housing the World’s largest Adobe structure known as the Djenné Mosque along with the important archaeological site of Djenné Djénno(Sarin, 2015, p. 173). The construction of the mosque and other buildings of the town was carried out by skilled artisans and craftsmen who passed their wisdom on to the next generations. The rich history of the Mosque dates back to the 13<sup>th</sup>

century with the structure visible today being the third iteration of the mosque. The foundations of the Mosque were laid by Koi Konboro, who was the twenty sixth king of the city and the first ever to accept Islam. Konboro converted his palace into a grand Mosque which soon became a beating heart of Djenné serving not only as a centre for prayer, but also as a hub for social interaction and community bonding. Later on, the Mosque started deteriorating due to negligence and unstable political regime which led to the consequent reconstructions of the Mosque. Burgeoise notes that, “Intense political drama marked the construction of each of its two successors, the second mosque built between 1834/35 and 1835/36, and the third, present one, built in 1906-07” (1987, p. 54). Marchand T.H.J who visited Mali and specifically Djenné, first in 1989, then again in 2000, 2005 and 2012, for the purpose of in depth ethnographic research, notes that the residents have contributed greatly towards the Mosque’s preservation after the 19<sup>th</sup> century. They are fiercely proud and custodial of the adobe mosque and believe it to be pivotal to their collective identity as Djennénké (2015, p. 5).

### 3. History and Significance of Mosque Typology:

To understand the universal forms of Mosque architecture and the architectural adaptations made in the Djenné Mosque, it is essential to first understand the building’s typology. As Moneo notes, “to raise the question of typology in architecture is to raise a question of the nature of the architectural work itself” (1978, p. 8) Typology is basically architecture itself. It provides an imprint on it’s era and it’s classifying architectural movements, including all the philosophical, theoretical and applied ideas (Majid, 2011, p. 34).

Mosque typology evolved from the ‘*Riwaq*’ or trabeated mosque which was the original mosque form with its first prototype built after the great migration to Madina i.e. the Prophet’s Mosque. The *riwaq* mosque is usually characterized by a flat or sloped roof, a prayer hall and an open courtyard bordered by arcaded walls.

As Islam spread rapidly in the era of the four Caliphs followed by the Umayyad and the Abbasid dynasties, mosque architecture and development took centre stage during the formation of Muslim societies. All of the typologies emerged as a result of the development were greatly influenced by local building materials, indigenous traditions and culture, and regionalism of the Muslim inhabitants (Irfan and Sheikh, 2020, p. 6). “In his essay *The Visual Language of Symbolic Form: A Preliminary Study of Mosque Architecture*, Ardalan outlines three primary mosque typologies: the Trabeated (*riwaq* style) Mosque, the Ottoman Central Dome Mosque, and the Four *Iwan* Mosque typology” (Khalid, 2023, p. 22). However, mosque typology is not only limited to the above stated three types. As mentioned earlier, during the years 750 AD-1250 AD, the numerous conquests of Muslims paved way for the spread of Islam to Iberian Peninsula, southern France in the west, and extending as far as China in the east. This period witnessed the construction of many monumental mosques, among the most notable being the Umayyad Mosque in Damascus, the Dome of the Rock in Jerusalem, and the expansion of the Sacred Mosque in Makkah. Also prominent are the Ottoman mosque structures in Turkey, the grand mosques of Marrakesh and Fez in Morocco, the Great Mosque of Córdoba, and the Alhambra palaces in Granada, Spain. Equally significant are the Al-Qayrawan Mosque in Tunisia and the Al-Azhar Mosque in Cairo. (Nauman and Santosa, 2018, p. 3). Moreover, several regional styles including the Mughal style mosque, Sudano-sahelian mosque and many others emerged as a result of social, cultural and regional influences. The pyramidal central roofing style common in Southeast Asia, along with the standalone pavilions set within walled garden enclosures in China, are architectural inheritances from imperial powers that extended their influence across vast regions of the world (O’ Kane, 1987, p. 134). Hence, it can be argued that all the evolution and development in the mosque typology, emerged as a result of local influences.

#### **4. Form and Typology of the Djenné Mosque:**

An excellent example of such development is construction of the Djenné Mosque, which became a defining prototype in the 13<sup>th</sup> century. Its architecture is shaped by the local influences, regional climate and indigenous factors along with the vernacular architecture of the Mosque being a living testament to the great legacy of the local masons and skilled craftsmanship.

Djenné's Mosque is a highly refined adaptation of the Dyula Mosques (Khalid, 2023, p. 22). Scholars have offered varying interpretations regarding its architectural influences. Dubios attributed its architectural design to inspiration from Upper Egypt, while Delafosse traces its root to the Maghreb region, particularly Morocco. Charles Montel also agrees with Dubios. Professor Prussin, however, concludes that the external influences on Djenné's architectural style are primarily drawn from Moroccan, Mozabite, and Sudanese traditions. (Snelder, 1984, p. 72).

The great Mosque of Djenné in particular is classified as a prototype for sudano-sahelian architecture. The floor plan of the Mosque (fig. 1), demonstrates the elevation of the adobe structure through the addition of a plinth. Six staircases are connected to the the plinth which facilitate the entrance into the mosque from all directions. The plinth forms a parallelogram. The mosque also contains a terrace which surrounds all the four sides. The eastern facade of the mosque boasts three astonishing flanking pillars (fig. 2) which are constructed with the help of pilaster buttresses in an alternating sequence of four and five. The northern and southern walls allow access to the main prayer hall. The thick mud-brick structure acts as an insulator preventing the outside noise and heat to enter mosque hence providing a quiet space for the worshippers. "The interior space is approximately 50 meters long and 26 meters wide with a height of 12 meters. The prayer hall has 90 pillars neatly set out in 10 rows of nine each that align the qibla wall. It divides the prayer hall into narrow corridors traversing north-south and east-west" (Marchand, 2015, p. 7).

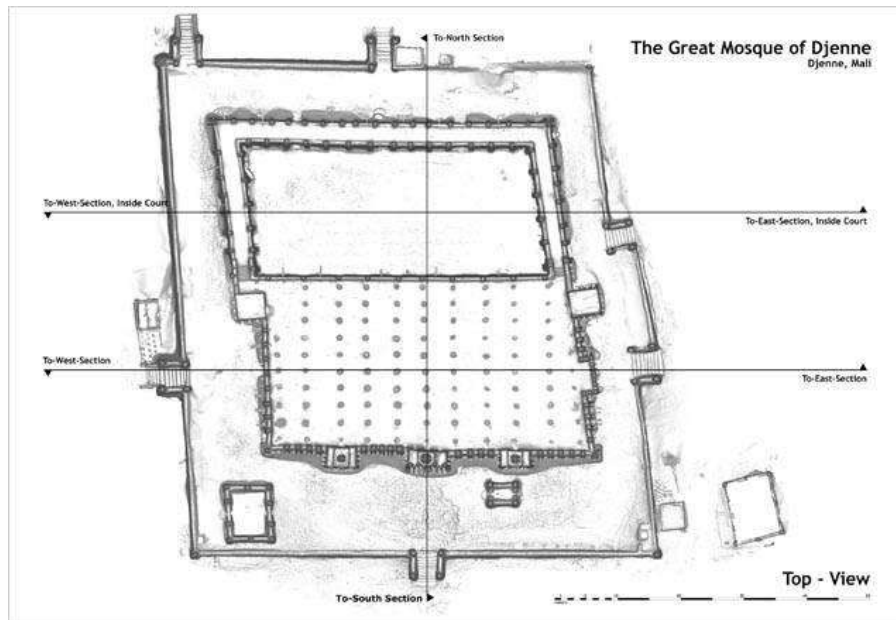


Fig. I: Floor plan- Top view (Source: [Djenné Mosque \(zamaniproject.org\)](http://zamaniproject.org))

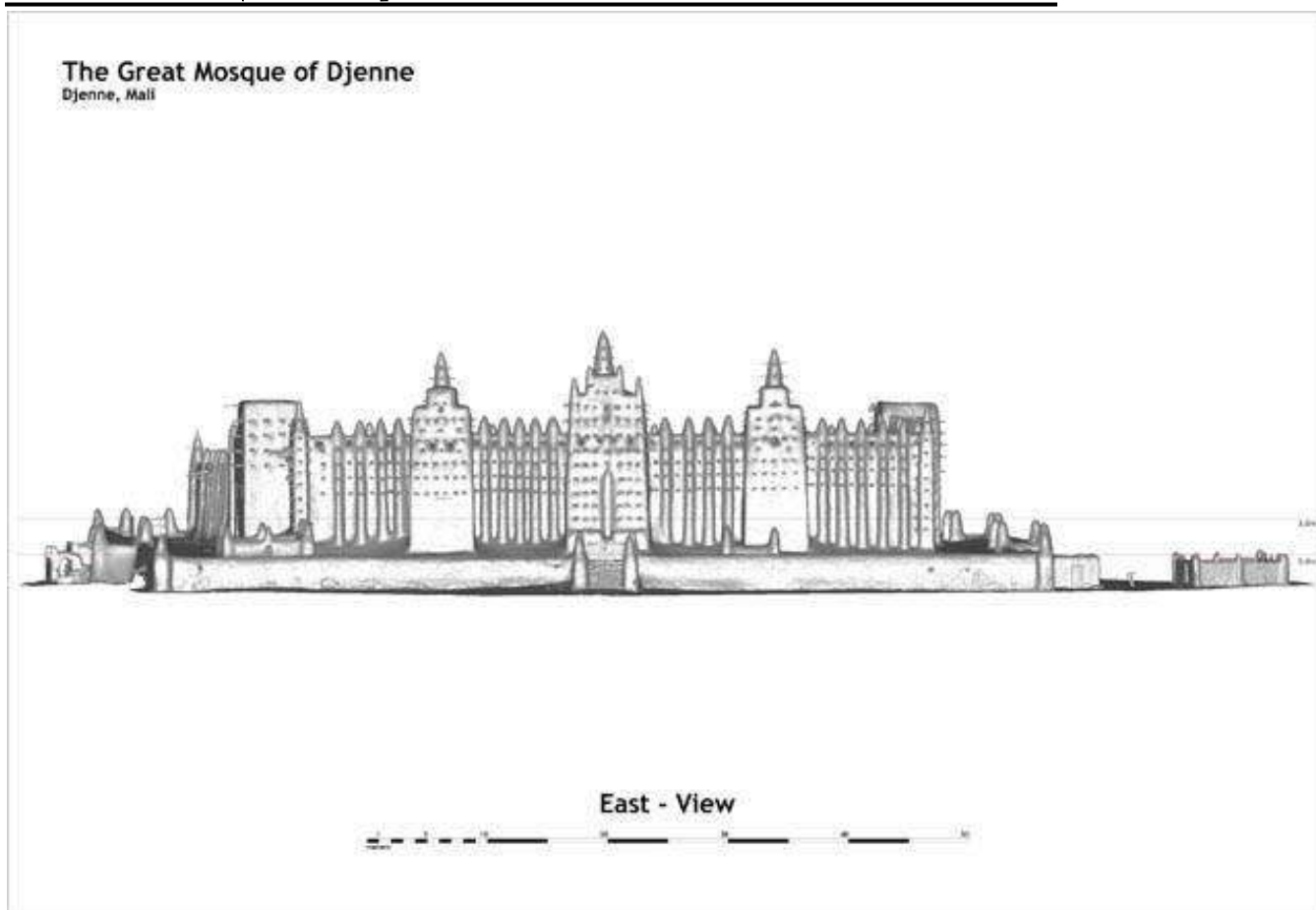


Fig. 2: The Great Mosque of Djenné

é: East view ([Source: Djenné Mosque \(zamaniproject.org\)](http://zamaniproject.org))

### 5. Principles of Spatial Organization and Universal Forms employed in the Djenné Mosque:

“Mosques are the homes of God on earth, and the mosque in its simplest form is nothing but a clean area of land on which the Qiblah is located” (Aziz and Mostafa, 2020, p. 1553). All the other elements of the mosque including the minaret, courtyard, ablution fountain, plinth, dome etc. are not essential for the constitution of the Mosque however these elements are included to create awe inspiring monumental structures mostly influenced by the local and regional customs. Ziad Aazam, in his study “*The Social Logic of the Mosque: A Study in Building Typology*” also presents the same

argument. The sample for his study consists of 12 historical congregation mosques including: The Great Mosque of Damascus, Great Mosque of San'aa, The Jame' Mosque in Isfahan, the Djenné Mosque and eight others. "These cases represent a particular prominence characterized by historical continuity and cultural diversity. The study concludes that these diverse 'living traditions' demonstrate little deviation from their original intent, and that this continuity is in itself an evidence of the society's continual investment in space" (2007, p. 58).

Similarly, Ardalan also presents a systematic study of 113 mosques around the different regions of the world. He deduces that all the mosques have *Qibla* in common as it is the fundamental element which turns a building into a mosque. He then compiles a list of recurring generic or universal forms along with some principles of spatial organization. He deduces that the presence or absence of these principles and universal forms in any mosque is highly dependant on the local, cultural and regional factors. Following are the different principles of spatial organization in mosque architecture and their employment in the Djenné mosque through the use of universal architectural elements.

### **5.1: Orientation towards Makkah:**

The first and foremost principle of spatial organization is the orientation of the Mosque towards Makkah which is known as *Qibla*. This is mostly achieved through the addition of a niche called *mihrab* into the *qibla* wall of the mosque. The great mosque of Djenné features three niches in the *qibla* wall corresponding to the three flanking minarets. The central niche serves as the main *mihrab* facilitating the worshippers.

### **5.2: Introversion:**

The second principle is introversion which is achieved through the universal forms of a central courtyard. (Ardalan, p. 21). The Djenné mosque exhibits a central courtyard which serves as a connection between the man made structure and nature allowing the sunlight to enter the mosque. Sayyed

Hossein Nasr explains the same principle by demonstrating the importance of harmony and unity of all elements in Islamic architecture. He argues that the Islamic architecture and planning greatly value the natural surroundings and always aim to merge the built form with the natural rather than separating the two. It maximizes the use of these natural elements, particularly light, wind, and shade, and allows it in all spaces. Traditional Islamic cities would use mud to build houses, making architecture an extension of the land and not something imposed on it. Nasr claims these methods would allow the towns to survive "without bringing about the ecological catastrophes" that the world faces today (Nasr, 1994, p. 246). This relationship between nature and Islamic architecture is also highlighted by Ismail Faruqi in his article Islam and Architecture, which claims that western architecture imposes itself on its surroundings while Islamic architecture respects it. He further stresses the importance Islamic architecture places on light and how it is utilized to unify spaces (Faruqi, 2016, p.6).

### **5.3: Centrality and Symmetry:**

The third principle of centrality and symmetry is usually achieved through central domes which are not present in the Djenné mosque. It's absence is characterized by a flat roof due to regional and ecological influences. The earthen flat roof is filled with small oculi openings that are covered by terracotta lids (Marchand, 2015, p. 8). The removable lids are a far more practical feature than the dome, as they permit the flow of light and fresh air even on the hottest days. The construction of flat roof in Djenné served as a prototype for sudano-sahelian architecture which was later on followed by other mosques built in Mali, Ghana and northern Nigeria. Similarly, In Southeast Asia and other forest ecologies, the dome is often replaced with a pyramidal roof with wooden rafters, again reinforcing our argument that architectural adaptations are made in all the mosques while balancing the universal forms. Ardalan states that, Regardless of the particular shape of roofs and absence or presence of dome, the idea of centrality remains constant (p. 21). Ardalan also talks about the addition of two other universal

froms i.e. minaret and ablution place due to the congregational nature of the mosque.

In conclusion, out of the eight generic architectural elements outlined by Ardalan in the article: The *mihrab*, courtyard, minaret, gateway, plinth, ablution place, portico and dome, the Great Mosque of Djenné exhibits only six. The *mihrab*, courtyard, minaret are prominently featured, while the gateway, plinth, and ablution area receive moderate emphasis (Ardalan, p. 32).

#### **6. Vernacular Architecture of Djenné Mosque:**

The word 'vernacular' has been a subject of debate in the field of art and architecture due to its diverse meaning and interpretation. There is no agreement on the exact definition of the word however "the conventional understanding of this term is equivalent to the word 'native' meaning one's belonging to the land in which he/she was born" (Asadpour, 2020, p. 242). In literal terms, vernacular is synonymous with popular, indigenous, primitive, spontaneous, etc. Architects have defined vernacular according to their own understanding and research. Paul Oliver (1996) was one of the first architectural historian who researched extensively on vernacular architecture and deduced that vernacular architecture means a building of people, made by the people and does not refer to buildings designed and built by professionals.( p. 12). Dell Upton further simplifies the definition by stating that 'Vernacular buildings are ordinary buildings(Groth, 1999, p.444).

The definitions stated above stand correct but a more detailed explanation of the term was provided by Judith Roberts in 1996 in which he advocates the the "vernacular architecture means building with local materials based on local traditions through shapes and forms of construction of shelters and buildings that have become a document of economic and social processes. It is through the layout of form, materials, patterns, and details that we are now able to 'read' these buildings and understand them in our place"(Asadpour, 2020, p. 243.)

According to all the above stated narratives, the Great Mosque of Djenné constructed through the efforts and craftsmanship of local masons is an exemplary prototype for Vernacular Sudano-Sahelian architecture. It encompasses the cultural practices and social rituals of the locals thus asserting that “the cultural impact upon a building is the totality of human values, activities and artefacts which affect the formation of the building and which give meaning and direction to the lives that occupy it” (Brown and Maudlin, 2012, p. 341).

### 7. Architectural Adaptations in the Djenné Mosque:

The architecture of Djenne mosque is strongly influenced by local customs and traditions. These cultural matrices manifest materially through distinctive elements, such as the flanking quoins known locally as *sara fa hars*, integrated into the mosque’s façade (Figure 3).



**Figure 3.** Façade of the Great Mosque. Source: Djenné Mosque (zamaniproject.org).

The flanking quoins are not only used as a decorative element but also hold great cultural significance. In West African culture, entrances hold great significance. Rites of passage, including naming ceremonies and other transitional rituals, are typically performed at the entrances of domestic compounds, underscoring the entrance as a transition space. (Prussin, 1974, p. 199).

Another important architectural adaptation is the placement of ostrich eggs at the top of conical pinnacles. These eggs indicate themes of fertility and purity according to the Sudano-Sahelian culture. (Figure 4).



**Fig. 4: Ostrich egg circled in red at the top of pillar** (Source: [Great Mosque of Djenné \(article\) | Khan Academy](#))

The cultural influence is also observed in the mosque's construction materials. Some modernists hold the opinion that a Mosque of such size and scale should have been built using long-lasting materials including cement, glass, and steel. The choice of mud bricks, timber beams, and the consequent need for annual replastering is often questioned in terms of sustainability. The answer to such queries is that the mosque's materiality reflects environmental responsiveness and a deep continuity with local domestic architecture (Royal Anthropological Institute, 2013, p. 2). The use of mud in both sacred and secular constructions attests to culturally sensitive architecture, one that prefers coherence with the region's broader architectural and cultural landscape over the adoption of imported or modernist forms. (Figure 5).

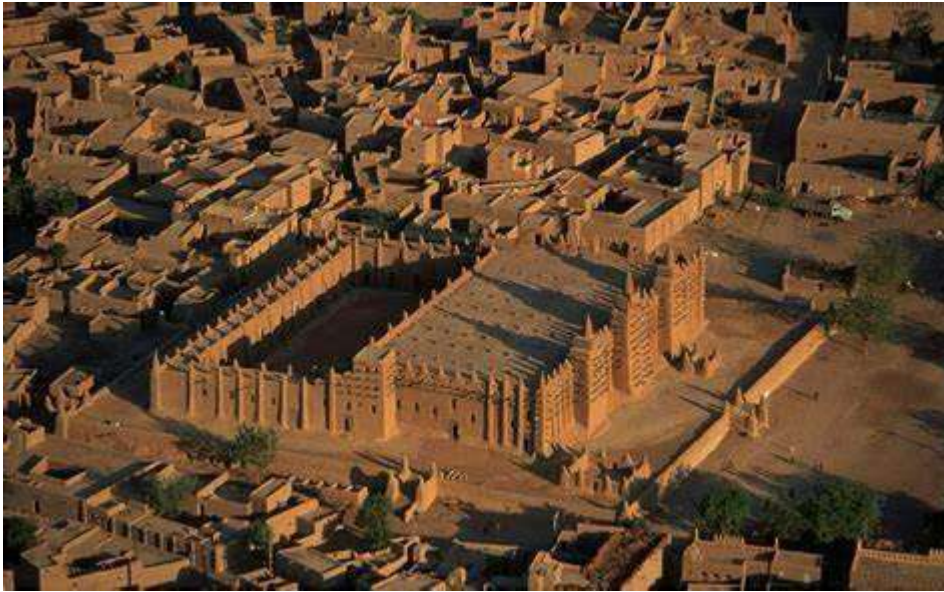


Fig. 5: The Great Mosque surrounded by mud houses (Source: [Great Mosque of Djenné- Mali — SteemKR](#))

### Conclusion:

In conclusion, the Great Mosque of Djenné stands as a powerful example of how Islamic architecture can adapt and thrive in diverse environments. Although it does not follow the typical dome structure often associated with mosques, it still embodies the essential elements that define a sacred Islamic space, particularly the *mihrab*. This mosque features six of the eight architectural elements outlined by Ardalan, with a notable emphasis on the *mihrab*, courtyard, and minaret. The absence of domes and porticoes is not a shortcoming; rather, it reflects a thoughtful adaptation to the local climate and available materials. Its flat earthen roof, with terracotta-covered openings, allows natural light and ventilation, ensuring comfort even during the hottest seasons. Far from being an exception, the Great Mosque of Djenné has become a defining symbol of Sudano-Sahelian architecture, intricately connected to its cultural, environmental, and historical context. Its influence extends well beyond its walls, shaping the design of mosques across West Africa and exemplifying the ingenuity of mud architecture at its finest.

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