



ARCHITECTURAL INFLUENCE OF THE ISLAMIC UNIVERSITY MOSQUE ON NEW MOSQUES IN CONSTANTINE: A COMPARATIVE STUDY

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ARTICLE INFO

Volume: 8

Issue: 1

Page: 152-160

Received: July 25th, 2023

Accepted: October 27th, 2023

Available Online: June 15th, 2024

DOI:

<http://dx.doi.org/10.18860/jia.v8i1.23040>

ABSTRACT

Algeria's post-independence quest for cultural revitalization and architectural identity led to the creation of the Islamic University Mosque of Emir Abdelkader in Constantine. This mosque, a symbol of contemporary architectural heritage, heavily influenced modern mosque designs in the city. This research thoroughly examines this architectural influence through architectural analysis techniques, including on-site evaluations, comparisons, and scrutiny of manuscripts and blueprints. The analysis reveals a significant correlation between the architectural elements of the Islamic University Mosque (such as azure tiles, square-based minarets, and ribbed domes) and the designs of three modern mosques in Constantine: Ibn Al-Arabi, El-Haddad, and Al-Wihda. It demonstrates how these elements seamlessly integrated into the design of these contemporary mosques, emphasizing the profound impact of the Islamic University Mosque on modern religious architecture in Constantine. Through these architectural resemblances, this research underscores the pivotal role played by the Islamic University Mosque of Emir Abdelkader in shaping the contemporary religious architectural landscape of Constantine. The findings contribute to our understanding of the mosque's cultural and architectural significance within the broader context of Algerian heritage. Furthermore, this study not only highlights the influence of the Islamic University Mosque but also provides deep insights into the evolving architectural expressions of religious identity in Algeria. It enriches the fields of architectural history and cultural studies by emphasizing the cultural and historical importance of this architectural masterpiece.

Keywords:

Architectural identity; Islamic University Mosque; Contemporary mosques; Cultural resurgence; Constantine

1. INTRODUCTION

Constantine, a city renowned for its rich cultural and religious heritage, experienced a significant architectural transformation with the advent of Islam. Throughout the Muslim era, the construction of mosques became a continuous process, leaving a profound imprint on the city's architectural landscape. Noteworthy mosques from various historical periods stand as enduring symbols of Constantine's flourishing epochs, highlighting its intellectual prowess and scholarly achievements[1], [2]. Among these iconic structures are the grand Hammadite Mosque (1135), the Souk El-Ghezal Mosque (1730), the Sidi Lakhdar Mosque (1743), and the Sidi El-Kettani Mosque (1776) [3]–[5].

The architectural history of mosques in Algeria is marked by a profound influence from diverse styles prevalent in the Muslim civilization[6]–[9]. The development of this construction domain owes its ingenuity to the assimilation of influences from earlier civilizations, resulting in a continuous production of architectural and architectonic marvels [10]. Unfortunately, this progress faced interruptions due to French colonization, further compounded by post-independence political and economic challenges[11]–[13].

In the post-colonial era, the construction of mosques reflects a quest for an authentic architectural identity despite an abundance of cultural and architectural heritage, including over 70% of historic mosques. As Algeria embraces modernity, contemporary mosques naturally deviate from the architectural styles of the first mosque built by the Prophet in Medina or ancient mosques in the country[14]. Instead, recent mosque designs draw inspiration from references and principles of early contemporary Algerian mosques[15], [16].

The Islamic University Mosque of Emir Abdelkader in Constantine holds immense significance as the first major mosque constructed in the post-colonial period [17], conveying multiple messages to the contemporary world. Its intricate design led the state to engage prominent architects and designers from the Muslim world, aiming to symbolize a renaissance of the national architectural identity[11], [13]. However, opinions among scholars in architectural history vary regarding the mosque's character, particularly its association with the national architectural identity. Only one existing scientific study has evaluated the architectural identity of this place of worship and education, considering the traditional architectural language and indicating positive results regarding its connection to the national religious architecture inherited from the country's diverse dynastic history [18].

Early observations by researchers specializing in contemporary Algerian architecture already reveal the substantial influence of the Constantine Islamic University Mosque on the design of new local mosques. This impact is evident in the architectural environment of Constantine, with certain architectural elements from the mosque-university reinterpreted in the contemporary mosque designs of the city.

Hence, this study aligns with the same research direction, aiming to objectively assess the impact of the Constantine Islamic University Mosque on the architectural landscape of new mosques in the city. The study seeks to confirm or refute the objective influence of this place of worship and cultural significance on the architectural elements in contemporary mosque designs, analyzing selected examples in Constantine.

2. METHODS

In conducting this evaluation, a two-phase approach was employed. During the initial phase, an architectural and architectonic assessment of the Islamic University Mosque of Emir Abdelkader in Constantine was conducted to establish a benchmark for analyzing recent mosques in the same city during the subsequent stage of the research.

For the first phase, extensive field investigations were conducted, and a thorough evaluation of various available documents and plans was undertaken, including the work by T. REDJEL [19].

The second phase focused on identifying recent mosques and their significant architectural elements, drawing inspiration from the Islamic University Mosque of Emir Abdelkader in Constantine. This phase primarily relied on on-site surveys and referenced the research conducted by A. MENHOUR [20].

Combining the results from the initial assessment of the Islamic University Mosque with the data collected through the surveys, the study successfully identified the reinterpreted architectural and architectonic elements that define the architectural landscape of recent mosques in Constantine.

3. RESULT AND DISCUSSION

A. RESULT

a. Contemporary Mosques In Algeria

After Algeria gained independence, there was a notable increase in the construction of modern mosques. The government's objective was to emphasize Islam as the primary religion and meet the growing demand for prayer spaces, resulting in the establishment of numerous mosques across the nation [21]. The mosques were categorized into state-sponsored and community-funded, with their architectural styles varying based on overseeing authorities.

In Constantine, a city in Algeria, mosques played a significant role in shaping the architectural environment. They typically exhibited simple volumetric compositions, often with tall minarets and delicate ornamentations. Contemporary mosques displayed outward-facing openings, reflecting a more extraverted design approach compared to older, introverted designs centered around internal courtyards. This shift in architectural design was influenced by modern societal lifestyles after independence[22] [23].

Some key elements contributing to the architectural environment of mosques in Constantine are [3], [10], [23], [24]:

- **Overall Volume and Architecture:** Mosques in Constantine had simple volumetric compositions, often parallelepiped-based, with prominent minarets and domes [3], [25]. Façade treatments varied, with modern mosques featuring outward-facing openings, including glazed windows with arches inspired by architectural heritage.

- **Entrance Porches:** To accommodate worshippers, mosques had entrance porches protected by roofs extending beyond the main structure. These porches were essential architectural features and were sometimes elevated, supported by pillars or columns, and adorned with simple cornices, sometimes covered in colorful tiles.
- **Minarets:** Minarets were significant urban landmarks in Constantine, serving symbolic purposes despite their diminished functional role. They were square-based and topped with a crescent indicating the direction of the qibla. Different mosques had distinct appearances, heights, and treatments of their minarets.
- **Domes:** Domes were prominent features in both older and contemporary mosques. Traditional mosques featured green-tiled, four-sloped domes, while modern ones displayed a variety of dome styles, including semi-ellipsoidal domes with ribs, which have become a distinctive hallmark of local architecture in Constantine [20].

Overall, the architectural environment of contemporary mosques in Constantine reflects a blend of tradition and modernity, shaped by these various elements, and plays a vital role in the city's overall architectural landscape.

b. THE EMIR ABDELKADER ISLAMIC UNIVERSITY MOSQUE IN CONSTANTINE

The Emir Abdelkader Islamic University Mosque in Constantine (Figure 1) is a significant architectural masterpiece in Algeria, particularly in Constantine. It has become a prominent landmark and symbol of the city, influencing the design of many new mosques in the region [20].

The mosque project was initiated in 1968 to accommodate the growing number of worshippers, with financial aid from the Algerian state. A multidisciplinary team, including Islamic architecture specialist Hossein Bakri and presidential architect Mustapha MOUSSA, conducted architectural and technical studies. The project's first phase, including the Islamic university, was completed in 1984, while the mosque was finalized in 1994 [26].

The mosque covers an area of 12,600 m² and can hold up to 12,000 worshippers. Its architecture is inspired by the Sultan Hassan Mosque-College in Cairo 1356 [27], with a cruciform plan, a central dome, and two twin minarets. The main prayer hall has nine parallel aisles facing the qibla wall and nine perpendicular aisles, with a dome on pendentives and cupolas allowing zenithal lighting.

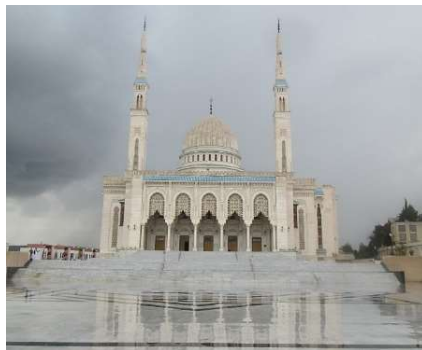


Figure 1. The Emir Abdelkader Islamic University Mosque in Constantine

- The mosque's cruciform plan also includes additional prayer halls to the south and a courtyard with administrative areas to the north. A prayer hall reserved for women, currently used as a library, is situated to the west, and to the east is the area housing the mihrab, featuring five decorative arches [18], [26].
- The mosque has three entrances with intricate architectural details. The main entrance, supported by cylindrical columns and raised arches adorned with blue tiles, leads to the men's prayer hall. The secondary entrances, located to the south and west, provide access to other mosque areas [19].
- Two twin minarets, each 110 meters high, stand at the corners separating the main prayer hall and the university section. The minarets are adorned with decorative elements and elaborate finials [17].
- The mosque's central feature is the gigantic dome on pendentives, inspired by the Kairouan Mosque in Tunisia. The dome is constructed with reinforced concrete and adorned with blue tiles, creating a visually stunning appearance [26].

Overall, the Emir Abdelkader Islamic University Mosque stands as a remarkable architectural achievement, combining Islamic design elements with modern construction techniques to create a significant cultural and religious landmark in Constantine.

c. ANALYSIS OF THE STUDIED MOSQUES

The study focuses on analyzing recent mosques in Constantine, with particular emphasis on the influence of the Emir Abdelkader Islamic University Mosque. Three specific mosques, namely Ibn Al-Arabi Mosque in Ain El-Bey, El-Haddad Mosque in Belle Vue, and Al-Wihda Mosque in the Boussof neighborhood, have been selected as case studies. The purpose is to compare these mosques with the university mosque, identifying architectural elements and principles that draw inspiration from it. The analysis aims to assess the extent of the Emir Abdelkader Mosque's impact on the architectural environment of Constantine. The investigation primarily involves on-site visits to the selected mosques for a comprehensive evaluation.

d. THE IBN AL-ARABI MOSQUE IN AIN EL-BEY

The Ibn Al-Arabi Mosque (Figure 2) is situated in the highlands of Constantine, Algeria, specifically in the City of Palms, near the national road connecting Mohammed Boudiaf Airport and the city center. It was funded mainly by a local benefactor and was inaugurated on July 31, 2011, by the Minister of Religious Affairs and Wakfs during a visit to Constantine. Covering an area of about 2000 square meters, the mosque's main prayer space is a 30-meter square. Its architecture strongly resembles the Emir Abdelkader Mosque and is heavily influenced by it, earning the nickname "the little Emir" among the locals.



Figure 2. The Ibn Al-Arabi Mosque in Constantine

- The Ibn Al-Arabi Mosque features a global architecture with a main square configuration forming a cruciform with the courtyard and mihrab. The mosque's exterior is described as extraverted and modern, characterized by large blind arched windows framed by blue rectangular shapes with a tile cornice of the same color. The facade has a symmetrical layout with twenty such window units repeated throughout, along with six small arched windows providing lighting and ventilation to the mezzanine level. The dominant color of the mosque's exterior is white.
- The entrance porch leads directly to the prayer hall and has four arched overpasses, two on the main facade and one on each side of the courtyard. The upper part is adorned with a projecting cornice covered with blue tiles, and access to the interior is through two wooden doors surmounted by rectangular glass windows.
- The mosque has two white minarets at the corners of the prayer hall facing the qibla wall. Each minaret has a square base and consists of a parallelepiped main tower topped with a lantern featuring four sloping sides covered in blue tiles. At the top, there is an ellipsoidal volume carrying a metallic rod with three balls of different sizes and a crescent indicating the direction of the qibla. The first tower of each minaret is treated with large lattice frames on all four sides, ending in an arched overpass, with simple merlons surrounding the balconies.
- The mosque's dome is positioned on the central axis above the first rows of the prayer hall. It has an ovoid shape on a drum, culminating in a lancet peak supporting a metallic rod similar to those on the minarets. The transition from the drum to the dome body is marked by a raised blue cornice. The drum of the dome has eighteen small arched overpass openings, and the external surface of the dome is treated with vertical ribs converging towards the top. The color of the dome, like the rest of the building, is white.

e. THE EL-HADDAD MOSQUE IN BELLE VUE

The El-Haddad Mosque (Figure 3-a), located in the Belle Vue region on Pasteur Street, was constructed in 1979 by a benefactor named Cheikh Mahmoud Haddad. The mosque was named after him and is said to be a tribute to Cheikh El-Haddad, a former fighter against French colonialism. The first prayer was held in 1981 during Ramadan. The mosque can accommodate up to 1500 worshippers and includes separate areas for men and women, a Quranic school, and ablution spaces. The interior features a richly decorated dome with colorful sculptures and an impressive crystal chandelier brought from former Czechoslovakia. The mihrab and minbar are made of high-quality wood with intricate carvings, efficiently utilizing space. Egyptian workers and skilled local craftsmen contributed to the mosque's artistic beauty. The exterior facade boasts colorful sculptures, Arabic calligraphy texts, and mosaic compositions inspired by Islamic decoration. The minaret, main dome, and entrance porch are intricately sculpted and decorated.



A



B

Figure 3. (a) The El-Haddad Mosque (b) Minaret and dome of the El-Haddad Mosque

- The El-Haddad Mosque has a parallelepiped volume with a square base minaret, a central dome, and an entrance porch with a small ribbed dome. The architecture adopts an extraverted principle with full and depressed arches on the facade, ornamentation, and decorative cornices. The main facade is characterized by a mix of colors, predominantly yellow, and displays slightly unbalanced symmetry due to the significance of the minaret.
- The entrance porch, set back from the main facade, has an "L" configuration and is raised on eleven steps. It features three wooden doors leading to the prayer hall and is adorned with red tiles on the projecting awning and cornice.
- The single minaret combines traditional and contemporary elements (Figure 3-b) with a square base and a relatively short height. The minaret has a cubic volume covered with red tiles, a lantern with a ribbed conical dome, and a metallic rod with spheres and a crescent.
- The mosque has four domes, including a central dome and three smaller ones at the corners. All domes have semi-ellipsoidal lancet shapes with ribs converging towards the top and are adorned with colorful geometric motifs. The main dome has rectangular openings for zenithal lighting, and all domes have metallic rods with spheres and crescents.

f. THE AL-WIHDA MOSQUE IN THE BOUSSOUF NEIGHBORHOOD

The Al-Wihda Mosque (Figure 4), located in the Boussouf neighborhood of Constantine, is a recent mosque completed in 2012. It was constructed mainly through donations from benefactors. The mosque occupies a rectangular plot of land surrounded by green spaces. The building features a classic structure with concrete posts and beams spanning three levels. The ground floor and first floor are dedicated to prayer spaces, while a mezzanine level houses a Quranic school, ablution spaces, and additional rooms. Notably, the mosque is distinguished by its central dome, similar to the Emir Abdelkader Islamic University Mosque, along with three small ribbed domes at the corners and a square-based minaret.

- The Al-Wihda Mosque features a parallelepiped core with a rectangular base, with some parts of the building brought forward for functional and aesthetic reasons. The mosque follows an extraverted architectural principle, with various full and depressed arch openings framed by ceramic bands on the

exterior. Doors and windows are made of wood with colored glass. The facade is adorned with blue ceramic and red tiles, and some parts of the terrace have triangular merlons.

- The entrance porch is a simple recess with an "L" configuration, raised on eleven steps and covered with brown ceramic on the base, while the walls are painted white. The projecting awning and upper cornice of the porch are covered with red tiles.
- The mosque has a single minaret with a square base and a cubic volume covered in red tiles. The lantern of the minaret supports a small ribbed conical dome with a metallic rod bearing three spheres and a crescent indicating the qibla direction. The minaret tower has rectangular openings with lattice works and is treated with blue ceramic



Figure 4. The Al-Wihda Mosque in Constantine

- The mosque is characterized by a main central dome and three smaller domes at the corners. All domes have semi-ellipsoidal lancet shapes with ribs converging towards the top, adorned with metallic rods bearing spheres and crescents. The main dome has rectangular openings for zenithal lighting and is decorated with colorful geometric motifs in relief. The dome above the entrance porch is hexagonal, with a ribbed appearance, and features a finial with spheres and a crescent, symbolizing Muslim worship.

B. DISCUSSION

Towards the end of the previous century, with the completion of the Emir Abdelkader Mosque-University, Algeria, particularly Constantine, witnessed a revival in mosque architecture characterized by a modern Islamic architectural style, according to several representative researchers. This new form of architectural expression combines the authenticity of historical mosques with the demands of contemporary functionality and modern construction techniques. Consequently, the local population in Constantine developed a strong attachment to this iconic place of worship and learning, considering it a reliable source of inspiration for the construction of the region's most recent mosques.

Our study on the impact of the Emir Abdelkader Mosque-University on the architectural environment of the recent mosques in Constantine, focusing on the exterior aspect of the three previously mentioned case studies, enabled us to identify certain elements and principles inspired by this grand mosque that were reused in the architectural expressions of these new structures. These elements and principles can be summarized as follows:

Global Architecture: The three recent mosques are characterized by a simple volumetric design, typically parallelepiped-based, with a strong emphasis on the minarets' heights and the domes' mass. All the studied mosques follow the extraverted architectural principle, with their facades featuring openings that directly connect to the external surroundings, often incorporating large arched windows, as seen in the case of the Ibn Al-Arabi Mosque, which was heavily influenced by the Emir Abdelkader Mosque-University. The mosque's openings are either full, lowered, or over-passing arches. The terraces' boundaries are typically adorned with triangular merlons.

Entrance Porches: The three recent mosques have entrance porches, each with a unique design and treatment. Ibn Al-Arabi and El-Haddad mosques feature porticos set forward from the main entrance doors and elevated by a few steps, supported by pillars or columns. In contrast, the Al-Wihda Mosque's porch is set back within the building. The upper edges of the porches are enriched with cornices, often covered with red or blue tiles. All windows and main entrance doors in the three case studies are made of wood, with colored glass used in the windows of the El-Haddad and Al-Wihda mosques.

Twin Minarets: The trend of having twin minarets, inspired by the Emir Abdelkader Mosque-University, quickly became prominent in the construction of new mosques in Algeria, especially in Constantine, as seen in the Ibn Al-Arabi Mosque. Although the minarets have lost much of their functional role, they still hold symbolic

value. Additionally, all the minarets analyzed have a square base, and each minaret's body starts with a parallelepiped volume. They all culminate in lanterns with metal rods carrying spheres of different sizes and a crescent, symbolizing the direction of the qibla. In treating the various surfaces of the towers, the builders used long openings protected by Arabesque-style lattices, similar to those in the Emir Abdelkader Mosque-University.

Domes: The most representative element of the Emir Abdelkader Mosque-University, the domes, significantly define the architectural environment of recent mosques in Constantine. The domes observed in our study are all semi-ellipsoidal in shape, supported by circular drums perforated with small openings for zenithal lighting and ventilation. The external texture of the domes is greatly influenced by the dome of the Mosque-University, evident in the converging ribs extending to the top of each dome. Each dome carries metal rods similar to those found on the minaret lanterns.

Construction Materials: Similar to the Emir Abdelkader Mosque-University, concrete was identified as the primary material used in all the structures, later covered with cement and plaster-based wall coatings. We also noticed the use of ceramic and marble cladding, as well as blue tiles inspired by the Mosque-University, which can be found in the Ibn Al-Arabi Mosque. The color palette of the studied mosques predominantly features white and yellow hues, just like the Islamic University Mosque.

Table 1. Summary table of the study results on the influence of the Emir Abdelkader University Mosque on the recent mosques of Constantine: Ibn Al-Arabi, El-Haddad, and Al-Wihda. [author, 2023]

	Mosque-University	Ibn Al-Arabi Mosque	El-Haddad Mosque	Al-Wihda Mosque
				
	Cruciform Plan	X		Rectangular Plan
	Parallelepiped Base Volume	X	x	x
	Extraverted Architectural Principle	X	x	x
Openings	Bays	X	-	-
	Windows	X	x	x
	Frames	X	x	x
	Doors	X	x	x
Arch	Semicircular	-	x	x
	Pointed	X	-	-
	Segmental	-	x	x
	Other	-	-	-
Entrance	Protruding position	X	x	Recessed Entrance
	Structure: Pillars/ Columns	X	x	x
	Decorated	X	x	-
Minaret	Number: 02	02	01	01
	Square Base	X	x	x
	Body Parallelepiped	X	x	x
	With Balcony	X	x	x
	with wooden lattice screens	X	x	x
Dome	Number: 01	X	x	x
	Shape Ovoid	X	x	x
	Base on a drum	X	x	x
	Texture Ribbed	X	x	x
Facade	Decorative cornices	X	x	x
	Mosaic	-	x	-
	Crenellations	X	x	x
	Corbels	-	x	-
	Calligraphy	-	x	-
Materials	Concrete	X	x	x
	Marble	X	x	x
	Wood	X	x	x
	Ceramic	X	x	x
	Plaster	X	x	x
	Glass	X	x	x
	Blue tile	X	-	Red tile
	Artificial stone	-	x	-
	Other	-	-	-
Dominant colors: White/Yellowish	X	x	x	

In summary, the three mosques, Ibn Al-Arabi, El-Haddad, and Al-Wihda, were selected as case studies for their architectural similarities to the Emir Abdelkader Islamic University Mosque. They showcase different architectural elements, styles, and materials, providing valuable insights into the influence of the university mosque's architecture on the contemporary mosques in Constantine. Through a comparative analysis of these mosques, it is hoped to identify the elements and principles inspired by the architecture of the university mosque and assess its level of influence on the architectural environment of Constantine.

The table (Table 1) summarizes the results of our study on the impact of the Emir Abdelkader Mosque-University's architecture on the architectural environment of the three mosques that are the subject of our research: The Ibn Al-Arabi Mosque in Ain El-Bey, the El-Haddad Mosque in Belle Vue, and the Al-Wihda Mosque in the Boussof neighborhood.

4. CONCLUSION

In this study, we have meticulously explored the symbiotic relationship between the Emir Abdelkader Mosque-University and the contemporary mosque architecture of Constantine, Algeria. Our investigation has illuminated a profound architectural interplay that has left an indelible mark on the city's religious architectural landscape.

The architectural environment of recent mosques in Constantine bears unmistakable imprints of the external architectural expressions, ornamental motifs, and material choices derived from the iconic Mosque-University. We have observed the incorporation of specific architectural elements, most notably the semi-ellipsoidal ribbed dome and the circular drum punctuated by elegantly designed openings. Furthermore, the principle of extraverted architecture, characterized by its emphasis on transparency between interior and exterior spaces through the strategic integration of windows and glass openings, has been thoughtfully adopted in contemporary mosque designs. This adaptation often draws inspiration from the aesthetical treatments displayed within the Mosque-University.

Beyond the mere assimilation of architectural elements, our study has unveiled a profound layer of meaning in reinterpreting these elements within new constructions. This reinterpretation signifies the local community's collective embrace and emotional attachment to the Mosque-University—a cherished locus of worship and learning. It offers tangible affirmation of their cultural identity and underscores their profound sense of belonging to their heritage.

While this research has contributed a significant foundation for understanding external architectural influences, it is important to acknowledge that this study represents only the inception of a more comprehensive inquiry. Future research endeavors should undertake an in-depth analysis of interior architectural influences on contemporary mosque designs, thereby offering a holistic perspective on this architectural evolution. Additionally, expanding the scope of the study to encompass a broader spectrum of case studies and investigating the influence of the Emir Abdelkader Mosque-University on the architectural fabric of mosques nationwide will lend greater depth and breadth to our findings.

As we draw the curtain on this study, we stand at the threshold of an intriguing journey into the intricate tapestry of architectural heritage and identity. By adopting a multidimensional approach to studying our architectural legacy, we not only pay homage to the past but also chart a course for the future. In doing so, we preserve the rich cultural heritage woven into the architectural fabric of our society, perpetuating a legacy that transcends time and place.

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