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The Minaret: Between the Constancy of the Element and the Change of Use

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Abstract: It is widely accepted that the presence of the minaret as an element of the mosque is associated with two initial purposes: vocal and visual. The vocal hosts the call to prayer, and the visual symbolizes the presence of Islam. However, the increasing existence of this tower and the diversification of its forms and sizes are due to its various and different functions and uses. This study goes beyond the two initial purposes of the minaret by considering this mosque tower as a functional entity designed and built around the purpose of function variety, which is determined by practical considerations. Studies related to the uses of the minaret other than the call to prayer and symbolic expression hardly exist and if they do, they deal with the most documented ones and do them separately. This study uses historical and descriptive studies relevant to the minaret to present the many functions of this tower during the three periods of the history of the Islamic world: early, medieval, and late. Derived from various literary interpretations, seventeen uses or functions of the minaret are identified, synthesized, evaluated, and presented. The aim is to emphasize: the status of the minaret as a significant functional entity of the mosque, the functional diversity of the minaret, the constancy of the minaret form as a tower, and the minaret as a necessary symbol of Islam and a tower for the call to prayer. This study considers the multiple uses of the minaret in the form of a constant represented in the symbolic value and the call to prayer, and in the form of a variable that includes many of the functions identified and evaluated during this research.

Keywords: Minaret, Functional Entity, Change of Use, Constancy of Form, History of the Islamic World

1. Introduction

A minaret is a tall, slender tower attached to or adjacent to a mosque, from which the muezzin voices the call to prayer. It is one of the oldest characteristics of Islamic architecture and represents the most significant feature of the mosque. The presence of the minaret as a tower in the mosque throughout history demonstrates the constancy of its symbolism and role in the call to prayer, and the change in its shape, height, style, number, and location indicates the convenience of uses and visual taste. The visual image of the minaret over 1400 years has continually been evolving to suit prevalent taste and aesthetics, as have its uses to meet frequent needs and conditions. Studies related to the minaret are far more interested in its symbolic and heritage value, its role as a tower for the call to prayer, its typological and morphological characteristics, and its aesthetic and visual qualities than in investigating its spatial and functional aspects. There is a significant lack of research addressing the minaret as a functional entity; in the form of usable space and volume that offers convenient solutions to mosque design and societal needs. Through its existence as a tower, the minaret has acquired many functions or uses dictated by several factors: spiritual, architectural, urban, social, military, political and economic. This study is concerned with the minaret functions that appeared, evolved, and still exist or even disappeared throughout history.

Assessing how the function or use of the minaret has changed and evolved through time and place is central to this study. Several uses that have gradually contributed to

maintaining the importance of this element since its inception till modern times have been identified and compiled, totaling seventeen uses. These uses and functions are the product of responding to specific conditions and requirements; they, therefore, present a kind of adequacy to certain places and periods. The many uses of the minaret have rarely been studied; they are generally mentioned as part of studies related to the other aspects of the minaret. The very few researchers who have examined some of the most known uses of the minaret have addressed them separately, meaning that each study has only focused on one or two uses. This study, however, identifies as many uses as possible, evaluating and presenting them to emphasize the status of the minaret as an essential functional entity of the mosque with many and various roles. Even in this study, it is impossible to consider in one swoop all the aspects attributed to the evolution and correlation of the different uses of the minaret over fourteen centuries and from Spain to China because the subject is hardly exciting. In addition, this kind of information is rarely found and must be teased out of the sources with extraordinary difficulty. The 'uses' or the 'functions' of the minaret are used synonymously in this study.

2. Methodology

This research relies on the descriptive analytical method to describe the architectural components and the historical to analyze the historical evolution of functions or uses of the minaret from its creation to modern times. The study mainly uses historical and descriptive studies of the minaret as a background to present a chronological reading of the many functions of the minaret during the three periods of the history of the Islamic world: early, medieval, and late. Due to the considerable geographic and chronological scope of Islam, where dynasties and empires controlled different lands and their reigns spanned these temporal divisions, this reading relates only to particular historical stations linked to the long functional evolution of the minaret. The study refers to written documents and literary sources that are considered primary sources as they constitute a continuous and reliable source of insight and justification for the roles and uses of the minaret. It investigates the history of scholarships on the minaret to find common and recurring functions of this element and obtain consistency by comparing features that are true parallels. The uses of the minaret are, therefore, derived from formal constancies; the repetition in times or places of some uses with sufficient clarity is accepted and included in the study. Derived from various literary interpretations, seventeen uses and functions of the minaret are identified, synthesized, and evaluated following chronological order. Then, in conclusion, they are categorized into the following domains: architecture, urban, spiritual and religious, cultural and social, military, political and economic. These areas are the spheres of requirements to which the minaret had to respond throughout its existence. We are satisfied methodically only with collecting, classifying, and presenting the data.

3. Discussion

3.1. The Use of the Minaret in the Early Period (640-900 C. E.)

In the history of the Islamic world, the early period extended from the middle of the Rashidun Caliphate to the end of the Aghlabid dynasty. This prosperous period saw the expansion of the Islamic empire, which reached the borders of China and India in the east and the Atlantic Ocean and the Bernese mountains in the west. During this period, the construction and urbanization culture carried by the conquerors was mixed with rich regional models and styles that left rich technical and aesthetic characteristics on Islamic buildings, particularly on the mosque and its components like the minaret. In the early period, apart from the call to prayer and symbolism, the minaret was used for various purposes, the most important of which are:

3.1.1. The Minaret as a Sign of the Islamization of the Place

The old urban centers taken over by the early Muslims had two patterns of mosques; the first pattern was where the Muslims took for themselves an available unused space that had been left willfully abandoned and erected a mosque on it; the second pattern consisted of transforming abandoned or used sanctuaries of ancient faiths into mosques. The latter case probably was not frequent because Muslim conquerors were instead eager to preserve local traditions and respect other beliefs in most places. Only a small number of early Muslims tried to give or add an Islamic character to existing buildings, and they did so as an expression of religious tolerance. They used the minaret as one of the elements to visually express the Islamization of the place and to announce the presence of a Muslim society, Paul Poupard points out "The minaret represented the visible sign of the presence of Islam and the existence of an Islamic society" [1] (p. 276). To achieve this, it was necessary to transform some of the elements of the existing buildings as was done at the towers of the Umayyad Mosque of Damascus during the 7th century CE. The mosque was partially a converted church; its distinctive minarets were raised using the existing church steeples [2, 3]. Thus, in Damascus, the towers of Roman buildings were used as the first minarets for the call to prayer, and they were chosen for their heights to convey the call to prayer as far as possible without being impeded. However, Jonathan Bloom argues that Umayyad mosques did not have minarets in the form of towers and that the first known minarets built as towers appeared under Abbasid rule [4]. Later on, the Umayyad Mosque was renovated and extended to a large area of a ruined Roman temple to become a congregational mosque with towers for the call to prayer, Badat states that looking at this mosque today, one could be excused for mistaking it for a late-antiquity church [3].

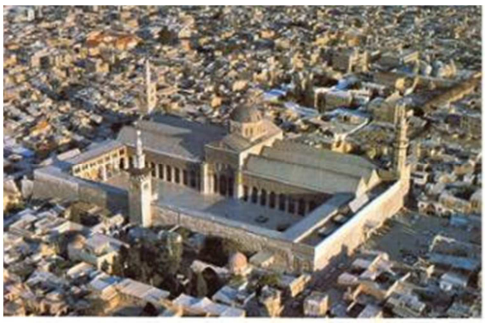


Figure 1. *The Umayyad Mosque of Damascus.*

3.1.2. The Minaret as a Sign of Wealth and Prestige

Starting from the Abbasid reign, the minaret acquired a doctrinal role, as it became a symbol of wealth and prestige. Changes made by Abbasids to the minaret included its square shape, which was turned into a circular to signify the defeat of the Umayyads and the predominance of Bani al-Abbas. They also increased its height significantly more than its function deserved and skillfully crafted its shape to insist on the wealth and prestige of their reign and the value of their faith. Bloom insists that early Abbasid minarets were not built to host the call to prayer but were instead adopted as symbols of Islam suited to congregational mosques; their association with the muezzin and the call to prayer developed only later [4]. Hattstein and Delius also point out that "the majestic shape of the Abbasid minarets and their height of more than fifty meters highlights the value of mosques and the role assigned to them during their reign as heirs of the caliphate, and indicates the supremacy of the new doctrine or sect" [5] (p. 54). Hence, during the Abbasid era, minarets were not only towers for the call to prayer but also preferred monuments. Caliph Al-Mutawakkil built the Great Mosque of Samarra in Iraq and devoted special attention to its minaret, urging engineers and builders to give it a majestic appearance with clear indications of the state's power and wealth. The minaret, known as the 'Malwiya Tower' or the twisted tower in English, features a unique spiral design derived from the architecture of the Mesopotamian ziggurats. It was built between 848 and 852 CE, and its twisting cone of sandstone is 52m high and 33m wide at the base alongside a spiral ramp leading to the top. The minaret is visible from a considerable distance in the area around Samarra since it was designed as a strong visual statement of the presence of Islam and a call to the attention of the wealth and prestige of Abbasid Mesopotamia.

Figure 2. *Minaret of the Great Mosque of Samarra.*

3.1.3. The Minaret as a Maker of the Mosque's Identity

A mosque as a house of worship should always be visible and recognizable to give the sense of being easy to find and reach by visitors and worshipers. Through its height, shape, number, and location, the minaret has been used to meet this requirement of enhancing the visual character of the mosque and thus making it identifiable. Although its minaret was added afterwards, the Mosque of Sidi Okba in the province of Biskra in Algeria exemplifies this case. This mosque was built in 686 CE in the Umayyad period; it is one of the oldest mosques in the Maghreb, and it illustrates the early architectural style of mosques in the holy city of Medina [6]. Old photographs show that the mosque's architecture was not different from its surrounding housings therefore, it was difficult to identify as a mosque. However, two elements make the mosque recognizable, the dome and the minaret. The dome, which adjoins the minaret and crowns the burial chamber of the Arab general Okba Ibn Nafi, distinguishes the mosque from a near distance thus, has a moderate effect on its identity. The minaret, which towers over the southwest corner of the prayer hall, consists of a square base, a shaft with two tries, and an upper part in the form of a battlement. The first tier is decorated with curvilinear geometric patterns on its eastern and southern sides, while the second has arched windows on its four sides. With these features and its height, the minaret marks the mosque as a point of reference and landmark, and without it, both worshipers and visitors cannot find their way to the mosque.

Figure 3. *Minaret of The Mosque of Sidi Okba.*

3.1.4. The Minaret as a Watchtower

Since ancient times, people have used towers to take advantage of their height. First Muslim conquerors borrowed this practice and used it in minarets. They first used lighthouses placed on high sites or seas coasts as watchtowers, then built military-fortified buildings called Ribats with proper watchtowers to provide a high and safe place for guards. The minaret, a non-military and religious tower, was also used as a watchtower from where guards used to observe the surrounding area, whereas, in times of war, warriors would use it to survey the approaching armies from a distance and shout warnings from atop. This overlap between military and civil towers was usual; for instance, during the 10th century CE, residents of the Almeria region of Andalusia obtained a permit to set up a military guard watch at the top of a minaret [7] (p. 72). One of the best examples of a minaret that served as a watchtower and for

the call to prayer is the minaret of the Great Mosque of Kairouan in Tunisia [8, 9]. The minaret was built in 836 CE, is 31.5m tall and is located inside an enclosure; it does not have direct access from the outside, a characteristic of all watchtowers. It also consists of three tapering levels; the first and second are surmounted by rounded merlons pierced by arrow slits, which are another watchtower character. In this regard, Papon Maldonado states: "The minaret of the Great Mosque of Kairouan looks more like a tower of war vanguard than a tower for the call to prayer" [10] (p. 88).

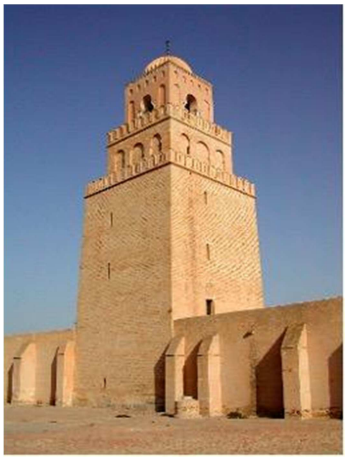


Figure 4. *Minaret of the Great Mosque of Kairouan.*

3.1.5. The Minaret as a Lighthouse

Lighthouses were of considerable antiquity in the Mediterranean world and were situated at the entrances to the various harbors along its coast. This idea was soon taken up by the Arab conquerors, for whom the towers on the coastal ribats served as equal lighthouses and fire beacons [11]. The idea of having a light burning in a high place to guide caravans at night is an old one in Arabia [12] (p. 20). As a tower, the minaret was used by early Muslims as both a lighthouse and a fire beacon; hence, the Arabic word ‘manarat’ from which the English word minaret is ultimately derived, means either ‘place of fire’ (nar) or ‘place of light’ (nur). As a ‘place of fire’, the minaret was usually part of a defensive signal system in the form of a fire beacon to warn the local people of approaching enemies. Hattstein and Delius point out "Minarets were used in the Maghreb and Andalusia to give warning and alert signals using the flames emanating from their tops" [5] (p. 69). The minaret as a fireplace was also used to help citizens report fire incidents, funerals and ceremonies. Some scholars argue that the idea of the minaret as a fire tower originated from the conversion of fire temples into minarets in Syria in early Islam; Yakut stated that the minaret on which Al-Walid, the sixth Umayyad caliph, climbed in Damascus was a fire temple and that a flame rose from it into the air [13] (p. 596). As a ‘place of light’, the minaret was a lighthouse that illuminated the sky at night and guided the movement of both ships and caravans; its lanterns signaled the arrival of fasting and iftar times in the month of Ramadan. Schwally suggested that the application of the word ‘manarat’ to the tower of a mosque is due to the light held by the muezzin as he recites the call to prayer at night, for the people who were unable to hear him, the appearance of his light at the top of the minaret would indicate the time for prayer [14] (p. 145).

3.2. The Use of the Minaret in the Medieval Period (900-1517 C. E.)

This era was characterized by instability, unrest, and strife within Islamic society. In arts and architecture, on the contrary, this stage of Islamic history was distinguished by the spread of aesthetic techniques and geometric shapes borrowed from territories that came under the Islamic empire. This development increased the richness of Arab-Islamic culture, which was extended to the minaret as a component of the mosque's architecture. In general, the so-called medieval period saw new uses for the minaret, which included the following:

3.2.1. The Minaret as a Sign of Authority and Strength

The Umayyads, the dynasty that created the minaret in Syria, were also the first to introduce the tradition of constructing buildings in the process of conquest to provide the new religion with a visual language capable of expressing its beliefs and values. The Neo-Umayyads, who continued to rule in Iberia until 1031, sustained this attitude. They built elegant mosques and introduced minarets to call the faithful to prayer, and to signal from afar the presence of Islam. The minaret also acquired a political role to denote the authority and status of the Umayyad rule in al-Andalus and North Africa. Abd al-Rahman III built the distinctive minaret of the Great Mosque of Córdoba in Spain in 952 CE to show the authority and power of the Caliphate of Córdoba and to repulse and oppose the Fatimids who viewed the minaret as a symbol that had nothing to do with religion [15] (p. 217). The minaret is a masterpiece of al-Andalus architecture that became inside the present Christian tower dating back to the 17th century, of which a height of 22m remains. According to Ibn Adhari, the minaret is unique; its square plan had an area of 8.48 by 8.48m and a double staircase, which is separated by a wall in the middle, thus creating two staircases instead of one, each independent of the other and do not meet except at the top [10] (p. 82). Al-Idrisi determined the height of the minaret to be 47.14m in total, 30.80m for the main shaft, 11.04m for the smaller, and 5.30m for the metal rod on the top [10] (p. 81).

Abd al-Rahman III raised the minaret to 47.14m; this was unprecedented at the time, and he was pleased with the exaggeration of its height as an expression of the power and strength of the Caliphate of Cordoba more than his need for it as an element for the call to prayer. Bloom has suggested that “Abd al-Rahman III's construction of the minaret, along with his sponsoring of other minarets around the same time in Andalusia and Morocco, was partially intended as a visual symbol of his growing authority as caliph, and may have been aimed at defying the rival Fatimid Caliphate to the east which eschewed such structures” [16] (pp. 106-109). Undoubtedly, since its construction in Cordoba, the minaret represented the best element of propaganda, announcing the

strength of the Umayyad dynasty, the victory of the Sunnis over the Shiite sect of the Fatimids, and also insisting on the superiority of Islam, which was subjected to the ringing of church bells; as H. Pierce stated that during that era, the air in Spanish Islamic cities carried both the sounds of muezzins and the sounds of ringing bells [7] (p. 69).

Figure 5. *Minaret of the Great Mosque of Córdoba.*

3.2.2. The Minaret as a Determinant of the Qibla Direction

Since the beginning, there was no prior rule related to the minaret location in the mosque plan, but the area of the courtyard was the best. In Andalusia and the Maghreb since the 8th century, the usual position of the minaret was on the courtyard's north wall, facing the opposite direction to the Qibla [7] (p. 65). At that time, the Qibla direction in this region was to the south, so the south wall of the mosque was called the Qibla wall. The minaret was not originally designed to indicate the Qibla direction; however, with its repeated and commonplace in the middle of the courtyard's northern wall, this tower, in one way or another, became an indicator of the Qibla. There were minarets with an abnormal position compared to this common one, where it was customary for two sides of the mosque to face the Qibla. The relation of the minaret to the Qibla direction was increased in time and place. For instance, at the beginning of the Seljuk period, builders were keen to put the minaret in a location that helped to determine the direction of the Qibla. Thus, the tower acquired a new role in guiding the design of mosques. It is evident from the analyses of mosques of this period that the so-called hypostyle hall was composed of four iwans; one has minarets and is called a Qibla iwan, meaning that it determines the direction of the Qibla. The Friday Mosque of Isfahan is considered one of the most important of these mosques. Given the similarity of the Qibla iwan on the south side of the courtyard to its three counterparts, it is the only one flanked by two pairs of slim and cylindrical minarets at its big entrance. The conical shafts of these two minarets end in roofed balconies and are entirely covered in brilliant blue tiles. These designs highlight the presence of an exaggeration about this direction by using the height, shape, and decorations of the minarets and by increasing their numbers; Azoug states that "The mosque had two very high and symmetrical minarets located in the direction of the Qibla and they defined it" [17] (p. 63). In modern times and in some cases, the minaret is still a determinant of the direction of the Qibla through the use of technology; the Hassan II Mosque in Casablanca, for example, has a 210m high minaret that can project a green laser beam towards Mecca.

Figure 6. *The Friday Mosque of Isfahan.*

3.2.3. The Minaret as a Wind Tower

As a gathering space, the mosque needs adequate ventilation, which brings in fresh air and helps lower the air temperature inside. Since the early periods of Islam and in the hot desert regions, minarets helped to ventilate mosques, acting as air shafts to suck hot air out and to promote air circulation. David King notes that: "In medieval Cairo, people knew about these iconic devices, the wind-catchers, on the roofs for cooling living quarters in houses and mosques- because they featured on most buildings in the city" [18] (vol. 1: p. 25). In the M'zab valley in the Algerian desert, minarets were built with the idea of wind catchers to enhance ventilation inside mosques. The minaret of the Ghardaia Mosque, built in the 10th century CE, is an example of the Mozabite minaret. It is a simple tower with a height of 22m and a base width of 6m that decreases as the minaret rises until it reaches 2m at the top. The minaret is punctuated by a large portal at the top of the shaft that lets the day heat of the day escape, creating an airflow that draws in the sweet smell of date palms from the valley below. These towers are also often latticed with elements such as Mushrabiyas to enhance cross ventilation and passive cooling to improve thermal comfort inside the mosque [19].

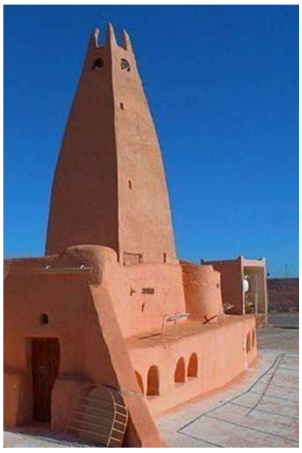


Figure 7. *A Mozabite minaret.*

3.2.4. The Minaret as an Identity Card

The minaret, by its shape, height, and distinctive aspects, is not only a depiction of the prevailing architectural style of its time and place or the dynasty who built it, but it is also an identity card of the mosque. With its inscriptions and decoration, such a minaret can depict valuable events from the past and give information on the history of its mosque and the city. The minaret of the Umayyad Mosque of Aleppo in Syria, which had stood for over 900 years and was destroyed in 2013 during the Syrian civil war, is a good example. The construction of the minaret was ordered by a qadi (judge) of Aleppo during the reign of the Seljuks; it is claimed that it replaced that of the Umayyads. The minaret was divided into four levels separated by friezes with highly ornate Kufic inscriptions. The beginning of its construction was indicated in the writings at the base, and the completion date was found at the top, 1090 and 1096 CE [20]. At the bottom is the signature of its designer Hasan ibn Mufrih al-Sarmani [20]. Once more, the inscription at the base of the minaret shows two names, one of the local Aleppine judge Mohammad Ibn al-Khachchab, and the second of the Seljuk qasim ud-dawla (governor) Aq-sonqor. The story behind their names being mentioned together is that the judge used stones from a fire temple to build the minaret; since the fire temple was the property of the Seljuk governor, the judge engraved the governor's name on the minaret as compensation and reward. So, the governor, in his turn, requested that the reward be for him and the judge [21]. The upper inscriptions indicate the names of the then-ruling Seljuk sultans Malikshah I and Tutush, and Barakat ibn Faris, commander of the urban militia [20].

Figure 8. *Minaret of the Umayyad Mosque of Aleppo.*

3.2.5. The Minaret as a Representation of the Dynasty and its Faith

Minarets of the Almohad dynasty were among the artistic elements that achieved a great deal in their aesthetics, and they were imbued with significant political and religious symbolism by being closely associated with the ruling dynasty. Almohad buildings were depicted by renewal compared to the previous dynasties, as they became free from extravagant styles, and their designs were created with artistic austerity and simplicity, resulting in magnificent and unique decoration. This decoration carried a new religious message whose features were partially shown in the minaret. In the book Al-Musnad by Ibn Marzuq, we read that during the reign of the Almohads, the minaret began to stand out and spread throughout their territories [7] (p. 68). The famous minaret of the Great Mosque of Seville, which was converted into a bell tower of a cathedral, is a landmark whose architecture indicates that it belongs to the Almohad dynasty and is a symbol of its existence [15] (p. 228). The minaret known as the Giralda was completed in 1198 CE and is still an icon of Seville with a height of 104m. Samuel Scott states: "The Giralda, which towered over the mosque of Seville, is the principal ornament of its cathedral today and is the greatest monument to its fame" [22] (vol. 2: p. 316).

The height of the Almohad minaret reached almost six times the sides of its base, as in the Giralda, which had a height of 82m and a base with a side length of 13.61m. Perhaps this enormous height is intended to convey the call of the muezzin to all people, but it may also enter within the framework of the maximum prosperity of Islamic monuments that includes a sizable dose of religious feelings and a sense of greatness [7] (p. 70). The Giralda is built with bricks instead of stones, and its walls are almost covered with blind arches and interlacing texture in terracotta, all arranged into three ribbons of facades, beautifying the tower gracefully and increasing its verticality towards the sky visually. In this regard, Papon Maldonado states: "With all these external decorations, we are in fact, in front of real pillars that announce the concept of the Almohads and their faith" [7] (p. 79). The pious and imperial character of the minaret is a kind of symbolic creativity that represents a combination of Islam and the Almohads. Hence, the Giralda, with its chic and slender shape veiled in an elegant sebka that resembles a rich damask, is one of the magnificent masterpieces of the Almohad dynasty and its faith.

Figure 9. *Minaret of the Great Mosque of Seville.*

3.2.6. The Minaret as a Multi-Roomed Tower

The minaret of Almohad style has a precedent in the lighthouse in terms that it is a tower whose central core was not solid but made up of superimposed rooms that give the impression of the presence of two towers in one. These superposed middle chambers are surrounded by a staircase or an ascending ramp leading to the tower's top [23]. The

famous minaret of Koutoubia Mosque in Marrakech, which was built around 1195 CE and has a square base with a length of 12.8m and a height of 77m, illustrates this case. Its outer wall is 2m thick, while its central core is 1.40m thick; this middle space includes seven superimposed chambers. The entire tower can be ascended via a wide internal ramp that allows the muezzin to ride a horse to the top, and each room is also accessed through this ascending path. The chambers have varying degrees of decoration, with the second and seventh chambers being especially notable for their vaulted ceilings decorated with geometric patterns [24]. The openings and decoration of the facades are arranged to correspond to different points along the ascending ramp and to increase the light inside the chambers [25].

In the old lighthouses, the rooms of the central core were storages of wood used in fuel at the top at night. The reason behind the existence of clustered rooms in the middle space of the Almohad minaret is various. In this regard, Alfonso Jimenez refers to the central core as it can be linked to defensive needs [15] (p. 244). However, Lézine argues that these rooms may have been built as storage places for the tools and purposes of the mosque [23]. Ibn Idhari stated that the chambers were worship spaces for the muezzins and clerics who might stay there awaiting the next call to prayer [7] (p. 75). Hieronymus Munzer stated in his description of the Great Mosque in Granada in 1494 CE that muezzins used to climb to the top of the minarets at prayer times and pronounce the call to prayer; sometimes, they would continue to perform their prayers inside the minarets for hours [7] (p. 75). The most remarkable feature of this tower, says Lucien Golvin, was its sacred character since it was a shelter for Sufis, those ascetics took refuge in such chambers as a means of a retreat or hermitage [7] (p. 65, p. 70, p. 74). These rooms were also used mainly by Al-Muwaqqit, who was an astronomer working in the mosque, hence the name of the place Dar Al-Muwaqqit (House of the Al-Muwaqqit in English).

Figure 10. *Minaret of the Koutoubia Mosque.*

3.2.7. The Minaret as a Historical Script and Decorative Pillar

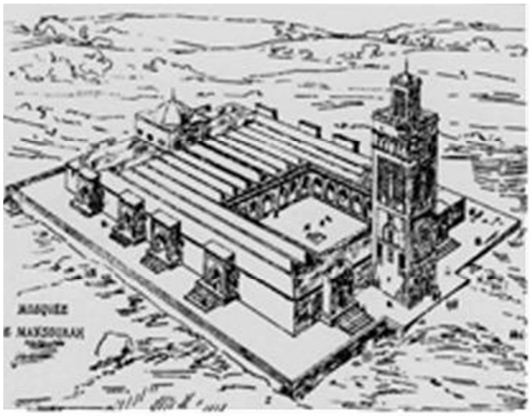
Inscriptions and ornamental patterning on a minaret are available sources of information historically, spiritually, and intellectually. This Islamic ornamentation is integrated within the shape of the minaret and its construction materials to expose a language that provides a range of symbolic, mystical, and sacred meanings [26]. Inscriptions like Koranic citations are not merely decorative texts in a calligraphic manner but are expressive; they are like historical inscriptions, which can shed light on a building and interpret the social, political and cultural environment in which it was built [27]. The evolutionary process of decorating minarets through different types of calligraphy, such as the Kufi with arabesque patterns, has led to great artistic results. The motifs and textures of the bricks on the minarets are also developed to a high quality. The minaret of Jameh of Saveh Mosque in Iran, which was built during the Seljuks in the 12th century CE, exemplifies this case. It was built with red brick, stucco and lime mortar and originally was 30m high; it has decayed and is currently 14m. The cylindric body is divided into thirteen bands with three categories of motifs: geometries, inscriptions and lines. The decoration of the minaret consists of shapes from most versions of small and large octagons, squares, stars, circles, and ovals combined with a variety of kufi scripts. These patterns of interlacing bricks are repeating motifs with a mixture of forms laid in symmetrical and asymmetrical modes that follow various movements, creating outstanding artwork. The inscription at the bottom is composed of two blank letters; above, the word Mohamed the messenger is cited and repeated around the shaft, creating a lattice array. The two upper inscriptions are designed with an interlacing pattern of text containing mainly the word of Allah (God) as an interpretation of God's oneness. This Islamic ornamentation is a kind of spiritual creativity that presents a combination of stories and patterns of some events [26].

Figure 11. *Minaret of Jameh of Saveh Mosque.*

3.2.8. The Minaret as a Marker of the Main Entrance

The history of the minaret as a mark of Qibla has been closely related to the mosque gate, which in the early Islamic periods, was located in the opposite direction to the Qibla. Consequently, this adds the function of the minaret as a mark of the mosque entrance. As already mentioned, the minaret was mainly located at the northern wall of the courtyard, as it was placed in the corner; or at some distance from the central axis and adjacent to it, was positioned a door called the gate of sawmaa, which could be a second or third gate to the mosque.

Otherwise, the minaret was placed at the central axis of the northern wall [7] (p. 65). The latter case was more common and is found in the early great mosques such as the Great Mosque of Damascus and the Great Mosque of Cordoba. The location of a minaret in the middle of the courtyard's northern wall maintained the principal axis of the building, and with it, its entrance often became the main gate to the mosque. The minaret of the Mansoura Mosque in Algeria was built in 1302 CE and had a height of 38m with a square side of 10m illustrates the case. The mosque was distinct from its counterparts by its main entrance, which was at the base of its minaret. The latter was centred on the courtyard's north wall, and the monumental doorway 2.5m tall, which is still standing, provided entry to both the minaret and the mosque [7] (p. 70). Crossing through the minaret base, one enters a square courtyard flanked by three naves on each side and at the opposite end of it, there is a 13-aisle prayer hall [28]. The splendid door that opens into the minaret base has a frame with four successive recesses. The first recess at a high of 7.30m is rectangular, and the rest of the three are arches. The first is decorated with trefoils, the second with an interlocking pattern, and the third rests on pilasters. As a marker of the main entrance to the mosque, the minaret was not only confined to the Maghreb region but was also known on the other side of the Islamic empire, mainly in Iran. Iranian builders also understood that minarets could be used effectively in pairs to decorate portals and arches of mosques. Indeed, pairs of minarets flanking a mosque entrance became standard in 14th-century Iranian architecture and remained so throughout the following centuries.



Figures 12. *Minaret of the Mansoura Mosque.*

3.3. The Use of the Minaret in the Later Period (1517-1924 C. E.)

This period of Islamic history mainly included the rule of the Ottomans, the Timurids in Eurasia, the Safavids in Persia, and the Mughals in India. Given these famous dynasties, this period was marked by great diversity in urbanization, architecture, and the arts. All this was reflected in the minaret since, at this stage and in addition to its principal functions, the minaret gained new uses brought about by developments that took place during these empires, among which we mention the following:

3.3.1. A Minaret as a Place of Astronomical Experiments

In this era of Islamic history, prayer time was regulated by an Al-Muwaqqit, an astronomer responsible for communicating prayer times to the muezzin, who would lead the call to prayer. The minaret, with its high and projecting balconies, was the best place for Al-Muwaqqit to conduct his astronomical calculations and experiments [29]. Samuel Scott notes that "above the lofty station of the muezzin, as he called the devout to prayer, were projected against the sky the implements of science to whose uses, religion did not refuse the shelter of its temples -the gnomon, the astrolabe, the pendulum clock, and the armillary sphere" [22] (vol. 3: p. 468). Another statement from David King is that Ibn “al-shatir invented the first astrolabe clock called ‘al-basseet’ to determine prayer time, thereby confusing his magnificent sundial on the minaret of the Umayyad Mosque with the astronomical clock he had erected at his home” [29] (p. 133). Another piece of evidence that the minaret was a place for astronomical experiments is the famous oil painting in the Orientalist Style of Jean-Léon Gérôme (1880), ‘The Call to Prayer’. The oil painting shows a muezzin issuing a call to prayer from the top platform of the minaret, which rises above the dusty horizon and is surrounded by a picturesque cityscape of Cairo. Behind the muezzin appears a small dome topped by a decorative metal finial combined with some unusual wooden frames of which King says: “And what is the purpose of the wooden frame on top of the pinnacle of the minaret in Gérôme’s painting ‘Call to Prayer’? Notice also the weight hanging from the frame. I have considered the possibility that the ensemble might serve as some kind of unusual sundial” [18] (vol. 2: p. 166).

As stated earlier, the superimposed rooms that formed the central core of some of the early minarets were workplaces for the Al-Muwaqqits, who used the chambers to store their tools and perform their experiments and calculations from different heights of the openings of those minarets as windows and balconies. During the Marinid period, in the 14th century, it was added to the minaret of the Al-Qarawiyyin Mosque in Fez, which dates back to the 9th century, a small room to house instruments that measure time and direction, such as astrolabes and water clocks [30] (pp. 19-31). One of the most remarkable water clocks in the Maghrib was made in 1286-1287 CE by Ibn al-Habbak al-Tilimsani and was placed in this room. We read in the Musnad of Ibn Marzuq that it was common to have sundials

installed and fixed to minaret panels accompanied by Kufic inscriptions reminding worshipers of prayer times during the day [7] (p. 68). There is an example of these clocks dating back to the 13th century in the Maghreb and Andalusia, mainly in Córdoba, where the primary sundial is installed into the body of the minaret. Ibn al-Khatib also mentioned that sundials were placed close to the minaret of the Great Mosque in the Granada Plain, with which the muezzin would check the times of the call to prayer [7] (p. 69).

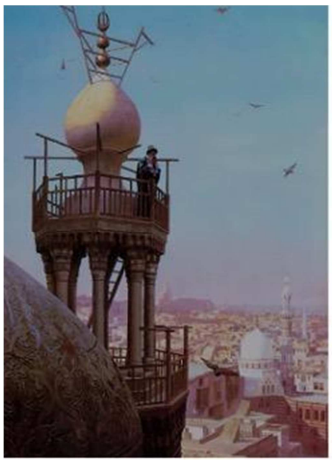


Figure 13. *Gérôme's painting 'The Call to Prayer'.*

3.3.2. The Minaret as an Indicator of the Marketplace

In addition to designating the location of public spaces within cities, the minaret was also used to indicate the place of commercial activities. Since the Umayyads, the marketplace or the souk has become a central feature of the city and is located near the mosque. A souk traditionally consists of many small shops arranged in interconnecting narrow streets close to or leading to a mosque or many mosques. Analyses of medieval Islamic cities show that commercial activities are organized in the city according to a precise spatial hierarchy, with the minaret playing a role in indicating the places of these commercial activities [31]. Assigning this role to the minaret depends on the beauty of its shape, height, location, and distinction from its surroundings. The famous Souk of Fez, located in the old city of Fez, Morocco, is an example of this case. The souk consists of many streets that are historically the main commercial axes in the city, with several important historical monuments built along, such as the Zawiya of Moulay Idris II, Al Attarine Madrasa, Chrabliyine Mosque, Bou Inania Mosque and Madrasa, and Sidi Lazzaz Mosque. As in many medieval Islamic cities, these main market streets usually run from the main city gates towards the place of the principal mosque, in this case, the Qarawiyyin Mosque [32]. The sky of various narrow and windy streets of the Souk of Fez is pierced by different minarets of the surrounding mosques. These minarets are like landmarks indicating the presence of the market and guiding the inhabitants and tourists in this large and complex labyrinth of the souk. Each minaret is seen from different angles, representing different streets or parts of a path leading to or near that minaret's mosque. The same applies to other Islamic places like Central Asia. Yusupova notes that "minarets were of great importance in city planning; they enlivened the urban landscape and provided reliable landmarks in built-up areas, indicating where the public center of the town with its Friday Mosque, souks, madrassas, was" [33] (p. 56).

Figure 14. *Minaret of Bou Inania Mosque.*

3.3.3. The Minaret as an Indicator of the Public Garden

Participation in social, intellectual and cultural activities and gatherings was a vital aspect of urban life for many early Muslim societies. Outdoor leisure practices such as excursions and picnics were held in various natural landscapes and public gardens called recreational parks or gardens [34]. The latter was in the form of a modern park or garden, a natural landscape located in an urban area. Muslim authorities established recreational gardens in cities to promote social interaction; as Andre Raymond points out: "Over time, these gardens of Islamic cities have become centers of exchange, strengthening Islamic ties on the one hand and places for meeting and dialogue on the other" [35] (p. 232). Given the importance of these urban outdoor spaces, it became crucial for designers to find the best way to designate their place within the city. The minaret was used for this purpose; to indicate the presence of a public recreational garden. Designers were keen to choose the location of public gardens next to distinguished minarets in terms of shape and height so that the minaret would be a visual reference for finding and reaching the adjacent outdoor space. The minaret has a visual importance and identity that govern the visual relationship between the mosque and its spatial surroundings. With time, the recreational garden was mainly associated with the mosque in the form of a green landscape surrounding it, a garden directly adjacent to or located within the mosque; Ihn Kannan referred to it as the Mutanazzahat Al-jawami (mosque's recreational park or garden in English) [36]. The Sultanahmet Park, which is integrated within the three famous mosques in Istanbul, the Blue Mosque, Hagia Sophia mosque and Firuzağa Mosque, is an example of Mutanazzahat Al-jawami. The park was established in 1854 and has been expanded and renovated several times. It is divided into many gardens, promenade

areas, and a long boulevard containing obelisks, fountains, and statues. The gardens have lawns, flower beds, various types of trees, water ponds, fountains, benches, pergolas and many other elements. The reciprocal relationship between the three mosques' volumes and the void of the park is remarkable. The position of the historical mosques against the vast green background of the park enhances their majestic outlook, and the piercing of the sky above the park by eleven historic minarets provides strong and beautiful references and calling points for the park.

Figure 15. *The Sultanahmet Park.*

3.3.4. The Minaret as a Clock Tower

Given the strict correlation and dependence on time, ritual worship devotion was a motivational source for Islamic inventors to develop sundials, astrolabes, shadow tables, and water clocks. Sundials were widely used throughout Islamic lands and were often built into the southern outer walls of mosques to face the sun movement [36]. Although clock towers have been present in Europe since the 14th century CE, the existence of these towers in Muslim lands was found to have commenced in Anatolia in the second half of the 19th century. Uğur Tanyeli suggests that the absence of clock towers could be related to their association with church bell towers and the priority of the minaret [37]. Other scholars, however, believe that clock minarets date back to the Umayyad period; in his article 'The Origin and History of the Minaret' Gottheil declared: "What these towers had been used for is not certain; the variations in Mohammedan traditions seem to evidence this uncertainty. The one upon which the six Umayyad khalifs Al-Walid mounted is said to have been called 'al-Sa'ah' (a clock in English), which would suggest a clock tower" [3] (p. 138). Since sundials were known to the Egyptians and Babylonians, it is likely that clock towers existed there in much earlier periods. During the Ottoman Empire, builders imitated the clock towers of Europe and used minarets located in distinctive places as clock towers. Large clocks were raised on these minarets to display time to passers-by and to add an aesthetic quality to the urban landscape. An example of a clock minaret is Ujamaa el Djedid of Algiers, built-in 1660 CE during the Ottoman administration in Algeria. The mosque has a Turkish style of architecture, and its minaret of 29.5m high, is a square-based tower of the Maghreb style. The minaret consists of a base, two tries, and an upper part as a battlement. The first tier is decorated with ovals inscribed in rectangular recesses on its four sides, with marble friezes extending above. The second tier has a circular shape clock also integrated into rectangular alcoves. The minaret displays the time with this clock, which was incorporated into it by the French architect Bournichon in the 19th century.

Figure 16. *Minaret of Djamaa el Djedid of Algiers.*

4. Conclusion

This study demonstrates that the minaret, as a tower charged with symbolic expression and used for the call to prayer, is simply a functional entity with different practical uses and multiple roles, which have been used for fourteen hundred years. Since its creation, the minaret's presence has increased, and its forms and dimensions have diversified due to its symbolic, aesthetic and functional values that have been essential to Muslim society. The continuous development of the function qualities of this tower made its presence central and necessary in the architecture of the mosque and the urban landscape. This research also shows that the general belief that the minaret is only a tower for the call to prayer and a symbol element added to the mosque as a reminder of Islamic identity, a sign of a specific culture, or an image of the great history of a nation is inaccurate. The minaret has not only evolved spiritually, vocally, and visually but also functionally. It is not added to the mosque as an illustrative figure but is designed and built around the purpose of functionality determined by practical considerations. Although the various uses of the minaret have occurred in different places and at irregular intervals throughout Islamic history, the evolution of these uses is documented, discerned, and explained in this study, and they can be recapitulated as follows:

In the architectural domain: in the past, the minaret was used as an inscription board where information relating to the mosque and the city was written. It was also used to mark the mosque's entrance, store its provisions and necessities, and serve as a place for scientific and astronomical experiments. The minaret is still used to exhibit architectural styles of some periods and places, to mark and identify the mosque, to enrich its architectural composition, and to be used as a wind tower.

In the urban domain: the minaret, a landmark during daytime and an illuminated reference point at night, was used for orientation, wayfinding, and communication. It also designated the locations of public places within the city, structured the city layout, and improved accessibility and urban circulation. The minaret still adds aesthetic quality to the town, displays the time to passers-by, and is a point of orientation at night.

In the spiritual and religious domain: the minaret has always been a powerful symbol of Islam; in the past, it was used to express the Islamization of the place, and its lanterns signaled the arrival of fasting and iftar times in the month of Ramadan. It was also employed to indicate the direction of the Qibla and is still used for the call to prayer even via loudspeakers.

In the cultural and social domain: the minaret was used to indicate the presence of a Muslim population in the conquered lands and to help citizens report fire incidents, funerals and ceremonies. It also played a role in showing marketplaces and public squares within the city. The minaret still strongly presents the cultural identity of a society or nation.

In the military domain: the minaret was used as a place for guarding and surveillance and as a means of early notification in the event of war.

In the political and economic domains: politically, the minaret served as an indicator of the authority, strength, and predominance of dynasties and rulers; it also allowed caliphs to announce victories of the Islamic armies and to acclaim their conquests. Economically, the minaret was used to show the wealth and prestige of different dynasties and regions throughout the Islamic empire. In modern times, the minaret is still used to signify political power and status and represent a nation's economic success and development.

It is concluded that the minaret is a constant element of the mosque that takes the form of a tower and is used for multiple purposes, which have changed according to the specificity of time and place. These uses are available as a constant, represented in the symbolic value and the call to prayer, and as a variable that includes the other functions identified and evaluated during this research.

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