DEFENSIVE ARCHITECTURE OF THE MEDITERRANEAN
XV to XVIII Centuries

Ángel Benigno GONZÁLEZ AVILÉS (Ed.)
DEFENSIVE ARCHITECTURE OF THE MEDITERRANEAN
XV TO XVIII CENTURIES
Vol. VI

Editor
Ángel Benigno González Avilés
Universidad de Alicante. Spain
FORTMED 2017

Colección Congresos UA

Los contenidos de esta publicación han sido evaluados por el Comité Científico que en ella se relaciona y según el procedimiento de la ¨revisión por pares¨.

© editor
Ángel Benigno González Avilés

© de los textos: los autores

www.publicaciones.ua.es/

Imprime:


Depósito legal: A 494-2017

FORTMED – Modern Age Fortifications of the Mediterranean Coast, Alicante, October 26th, 27th, 28th 2017
Masonry Ceilings at the Dey Palace in the Citadel of Algiers
Samia Chergui

Laboratory ETAP, IAU/U.Blida1, Blida, Algeria, samiachergui@gmail.com

Abstract
At the top of Ottoman Algiers, stands out the essential defensive device of the city, the Qasaba. This military complex, built during the sixteenth century, was endowed with the Dey’s residence in 1817, during the start of a construction campaign, initiated by Ali Bâshâ and finalised by Hussayn Bâshâ. Despite the fact that this part of the citadel was the residence of the last two deys, our knowledge about its construction systems remains fragmented. However, we can argue that the Dey Palace, originally built according to ancient techniques, is a most important building. It encompasses four wings surrounding a large inner courtyard; domes of different dimensions cover them. The Northern and Eastern wings are integrated to the ramparts. This paper proposes to identify the different types of vaults and cupolas used as a model for crossing or covering found in this fortified palace. At the same time, we will try to discuss their constructive system as well as the evaluation of their state of conservation bearing in mind that they are subordinated to the different spaces they are supposed to cover.

Keywords: Algiers, Ottoman citadel, fortified palace, constructive system, domes.

1. Introduction
With the dawn of the nineteenth century, nothing could predict that the Qasaba of Algiers would become the principal seat of power that would see the end of Ottoman rule and divide the destiny of the city. Before the Ottomans fell into the grip of French colonial rule, their power stretched beyond the Mediterranean Sea and fed distant imagination.

The construction of the Dey Palace, in 1817, represents, therefore, a decisive moment in the transformation of the Qasaba from a casern-citadel to a palace-fortress. The study of masonry ceilings, mostly identified with spacious, palatial buildings, and found above, or in the proximity of the northern and eastern ramparts, leads us to question both the choice of such roof coverings and their role in reinforcing the defense of the site, despite their new administrative purpose. Such a study allows for a better understanding of the impact of the destruction of the town’s northern rampart had, especially the part built against the eastern facade of the palace, on the state of conservation of the masonry ceilings identified there (G. Accardo, G. Vigliano, 1989 and C. Gattuso, 2001).

There is very little documentation about the citadel, which finally became the seat of the governing power of the two last deys, Ali Bâshâ [1233/1817-1818] and Husayn Bâshâ [1233/1818-1245/1830]. Several writers evoke their new palace but only in very brief passages, giving very little detail and rare illustrations. Instead, all their attention focuses on the military role of the Qasaba while failing to mention its reconversion into Dâr al-Sultân. Due to the scarcity of textual and graphic documents, on site investigations were, therefore, necessary1.
2. The Military status of the Qasaba

The first accessible information concerning the citadel in Algiers dates back to the end of the sixteenth century. It comes from Haëdo, who described it as being, originally, the biggest casern of the town (F.D. (de) Haëdo, 1871, p. 382). About 1622, Father Dan gave a similar description of this high military defense which he called Alcassave. The author was impressed not only by the scale of the space, used, among other things, to store weapons and ammunition, but also by the perfect integration of its wall with the town (P. Dan, 1649, p. 91).

According to Devoulx, the date when the new Ottoman citadel was built is not exactly known. In order to provide a date which is more or less exact, the archivist refers to the oldest habûs record, which describes the citadel as qadîma (old) and dates back to the year 980/1572-1573 (BN Alger, Ms 3213, F69). It was not until then that the presence of a new citadel was definitely confirmed because all the waqfiyya-s, established between 1552 and 1572 indicate the Qasaba as a topographical landmark but fail to mention whether it was new or old. S. Messikh implies, in his research on the Ottoman fortifications in Algiers, that the construction of new ramparts, at the beginning of the Ottoman period, didn’t exclude the presence of this new citadel, which was considered, up until 1572, as a simple place of residence and surveillance (S. Messikh, 2014, p. 176).

Only two commemorative inscriptions allow for certainty on the subject: one found above the outer gate of the citadel commemorating the official date of its inauguration, in 1597, while the other, placed above one of the interior doors, celebrates, in 1599, the alterations of a space where the Odjak were to hold their meetings (G. Colin, 1901, p. 26-28 et p. 30-32).

If the written sources are sketchy on the military status of the Qasaba, the illustrations are even more so. A drawing of the town, which we owe to an anonymous Spanish prisoner, dated 1563, shows the citadel totally separated from the town. Drawn in the style, fashionable in the Europe of the Middle Ages, we can see, from its location, a castle with double towers. In fact, the Dey Palace was not erected until three centuries later, where it was built on the same spot as the left tower. The palace of the Djanîna, visible lower down in the 1563 drawing, is flanked by two pointed towers with an embattled curtain wall. In spite of such an appearance, however, the castle is anything but a defensive structure. In the middle of the sixteenth century, then, it could be assumed that the citadel was used as a casern.

Fig. 1- Drawing of the city and port of Algiers in 1563 (Archives de Simancas)

The plan, published more than a decade later by Braun and Hogenberg, shows the citadel in the same isolated position in relation to the old Algiers as in the drawing. In the middle of this enclosure, trapezoidal in form, stretches a large open space which houses several buildings, having the appearance of dwellings. The wall which separates the Qasaba from the town has two protruding bastions while there are seven small towers, built at regular intervals, along the rampart overlooking the countryside. This illustration confirms the observations made by the ecclesiastic Haëdo, who saw the citadel as not really being a fortress. It was, in reality, a long high wall which surrounded dwellings, occupied by old janissaries and their families or a casern, sheltering a few members of the Odjak, rather than a real citadel built for its defensive strategy. Haëdo also confirms the presence, in the lower part, of two flanking towers, which he considered to be the barracks. With small, open-air platforms, they had, in all, eight small caliber cannons (F.D. Haëdo, 1870, RA, 14, p. 422).
At the beginning of the nineteenth century, the Dey Palace had just been built in the right angle formed by the northern and eastern ramparts of the citadel. As identified by A. Khelassi, its construction coincided with the final step of the citadel’s transformation. In fact, these archaeological explorations attest to at least three major steps in its evolution: the first, from 1516 to 1600, when the citadel’s primary function was residential; the second, from 1600 to 1817, marked by the exclusive presence of the Odjak who made of it a place of military grouping; and finally, the third, from 1817 to 1830, which saw the Qasaba change its function through a series of different extensions, alterations and reinforcements (A. Khelassi, 1988, p. 25). An habûs record, dating from 1233/1817-1818, mentions the start of the operations which it attributes to Alî Bâshâ. In extending the wall of the citadel, the pasha encroached on a nearby dwelling, leaving a part of it in ruins (BN Alger, Section Manuscripts, Ms n°3213, f°183).

These few lines evoking the military status of the Qasaba constitute an indispensable background to any discussion of the construction of the new palace within its grounds.

3. Construction of the Dey Palace

Although the citadel of Algiers kept its military status until 1817, not only by housing former Tagarinos (Moriscos of Aragon) or old janissaries, but by providing the military with rooms, above the stables, in which they could hold meetings, with a gunpowder store, with weapons and ammunition stores, with a modest mosque and a traditional Andalousian bath, it became something totally different after this date.

Al-Zahâr states that Husayn Bâshâ, the last dey of Algiers, spared no effort in continuously improving this new Turkish place of government (A.S. al-Zahâr, 1974, p. 144) However, to attribute to Husayn Bâshâ alone, the conversion of this fortress into a new Dâr al-Imâra (royal palace), is perhaps only partly true. In fact, in reality, he was only continuing what his predecessor had started. Indeed, Ali Bâshâ, after fleeing the unexpected insecurity in the Djanîna and settling in the citadel, at the end of 1817, enthusiastically embarked, during the four months of his reign, on embellishing and extending this military establishment (A.S. al-Zahâr, 1974, p. 132-134; E. Mercier, 1891, p. 502).²

The newly inaugurated dey undertook an ambitious conversion project, transforming this defensive complex into a palatial residence; he invested as much effort in the spatial and architectural alterations as in the reinforcement of its defenses (A.S.al-Zahâr, 1974, p. 136). Several habûs records, briefly translated by Devoulx, condemn, nevertheless, the arbitrary nature of this appropriation work because of the demolition of pre-existing buildings belonging to both the Moriscos community, who had come
from the far reaches of Andalusia (known as Tagarinos in Castellan or Thaghri in Arabic), and to old janissaries. These different administrative documents go as far as qualifying their initiator as a despoiler (BN Alger, Section Manuscripts, Ms n°3213, f°182).

For its construction, the Dey Palace was given, for its location, the part of the casern which probably served as a meeting place for the janissary council members. In a similar way, the palace of the Beys was built on the site of the gunpowder store, the Janissaries’ new living quarters, and the Dakhil al-Qasaba Mosque (S. Chergui, 2011, p.119). Following this new organisation, the citadel became one of the most complex military constructions of the town of Algiers, being, at the same time, casern, fortress and royal residence.

In spite of its status as an official seat of the Regency, the Dey Palace is object of very few descriptions. Those that exist are mostly the work of the French military, who occupied the citadel in the wake of the surrender of Dey Husayn. Merle as well as Bavoux give only a brief appraisal. Only the sqifa, the square courtyard and its fountain, the dey’s apartments and his kiosk, the harem (the women’s pavilion) and the Treasury rooms are at the centre of their attention (J.T. Merle, 1841; E. Bavoux, 1841).

According to Berteuil, the palace, which occupies the north east corner of the citadel, is the most ornate building and forms a rectangle with the large patio and sqifa on the south-east corner (A. Berteuil, 1856). The whole palatine structure remains, however, heterogeneous due to its gradual construction and its successive alterations. Its north and east wings, functionally, the most important, and, structurally, the biggest, were progressively built up to four storeys while the opposite wings, formed by relatively smaller structures, were given two extra storeys. In addition to their vertical extension, these four wings were extended outwards by the construction of new galleries, encroaching on the interior courtyard of the palace. With the exception of the old northern gallery which was divided in half, the three others were walled up to become reception rooms or storehouses.

4. The masonry roofs at the Palace in relation to the northern and eastern ramparts.

An almost perfect imbrication of the Dey Palace with the military structures of the citadel has been noted to date. The choice of building system is responsible for this and allows for an adequate organisation between the existing structures and those which were added after 1817. Several newly converted spaces in the palace, such as the sqifa, Treasury rooms, the diwân, the dahlîz (bunker for the dey’s personal body guard ), the dey’s private apartments, the harem, the baths and the music room make up a spatial unit so perfectly integrated with the north and east ramparts that they form one structure and spatial body. They have all been built with various compound masonry ceilings including barrel vaults, cross vaults and domes. The rest, here, as well as in the south and west wings, are covered with beamed or vaulted ceilings depending on whether or not they were later modified. The unit on the first floor of the west wing, thought to have been converted into the kitchens, is, however, covered with a cross vault. In this article, only the spatial units which have masonry ceilings, and are in direct relation to the north and east ramparts, have been analysed and described.

2.1. The Sqifa

The bastion entrance, otherwise called battery 7, protrudes from the middle of the east rampart, in the south east angle of the Dey Palace. An entrance, with an area of about 150m², protrudes from the centre of this space. In addition, the defense system and the bend leading to the palace can still be seen. This battery 7, which functions as a triumph gate, was originally only one storey high, with a terrace accessible from a crenellated ring road. The conversion of the citadel into the dey residence saw the conversion of a watch tower on the platform of the said battery and the suppression of the five embrasures of its parapet. The contrast between the moulded and vaulted masonry structures on
the ground floor and the frailty of the brick walls and beamed ceilings on the upper storey can be immediately seen.

Access to the palace from this fortified sqifa comes from a first vestibule covered with a barrel vault, whose longitudinal row fixtures are mounted in continuity with the moulded walls of the battery. It is followed by a larger square vestibule, covered by a spherical dome mounted on pendentives. On the left, in a corridor covered by both a barrel and a cross vault, a staircase leading to the dahlîz can be seen on the right hand side. The sqifa is divided on its west side by a second passageway, covered by a cross vault (driba), which leads to both the palatial and military wings by means of a second large door.

All the lower surfaces of the masonry ceilings of the sqifa are decorated with polychromic frescoes bearing floral and geometrical motifs. Despite being covered by a mass of earth, the state of their conservation is considered to be satisfactory.

4.2. The Dahlîz

The dahlîz, a very long, solid vaulted room joining the eastern rampart, takes the form of a bunker. It is accessible, today, from the sqifa, by a narrow staircase replacing the open-air ramp which formerly led to a platform, 13m wide and 17m long, situated in the north-east corner of the citadel. It covers the whole of the floor, a surface area of 102m², and seems to have been built between 1600 and 1817, at the bottom of the eastern rampart. This latter has eight embrasures directed towards the town and communicates, thanks to a small sqifa hidden from view, with the courtyard of the former janissary casern, which was later converted into the palace. After 1817, it was used by the personal bodyguard of the dey.

The masonry ceiling that can be seen above the flight of stairs, leading to this first bunker room, corresponds to a rampant vault which stretches from one side of the eastern rampart to the other and rests on a wall thought to have been the start of the ramp. It follows the inclination of the staircase and is mounted on longitudinal courses with, on average, a single brick thickness. Given the traces of framework that can be seen on the lower surface, the idea that this masonry ceiling was built over an empty space should be rejected. This rampant, barrel vault presents no specific pathology.

The dahlîz was given a whole extra storey, with access to splayed windows, where pieces of artillery were, undoubtedly, placed for use in the defense of the dey. This third floor, which must have previously overlooked the ring road of the citadel, was punctuated with loopholes and covered over, to serve, also, as a bunker.
third floor. Their heights are noticeably different and vary from 2.21m and 3.28m. This is the result of the need to fix them almost parallel to the incline of the former ramp. They were ultimately mounted, on the right, in continuity with the wall. On the opposite side, they are supported by walls of reinforced brick. On the first of these walls, two intersecting rows of logs, made from *thuya*, can be seen, separated by a bed of bricks. This concords with the observation that, after cleaning, the last of the crossed vaults revealed an arrangement of rows, parallel to the surface and interposed with successive layers of brick.

These crossed vaults, which were covered with filler and lime distemper, have cracks all along their length: these were probably due to the weight of the three upper floors, two of which held heavy artillery, or even to the force of the blast caused by the destruction of the northern rampart of the town.

4.3. The Treasury rooms

It is not easy to define the initial purpose of most of the vaulted rooms, with strange dimensions, found in proximity to the northern rampart, just behind the double gallery of the *diwân*. The three large oblong spaces, covered with barrel vaults, are thought to have been storehouses while the three smaller ones, which look out on to a long barrel vaulted passage, were probably strongrooms. Also covered by barrel vaults, they were used to store the treasure of the *dey*. According to Klein, the main door leading to the Treasury rooms had huge locks and a strong iron window (H. Klein, 1914, p. 53). Covering an area of 290m², they can be found on the ground floor where they take the strain of the triple storied *harem*, built above.

The barrel vaults covering the first three oblong rooms, protected on the eastern side by the platform, are precisely mounted to match the shear walls, which are 40 cm thick, and alternate baked bricks with blue stone. They are the only rooms at the palace to show a mixed structure that reflects those of the circumference walls. They are quite smooth because two out of four layers of brick are connected by a chaining of small blue stones.

![Fig. 2- 3D Model of the Treasury rooms (Serir, 2006)](image)

At the back of these three storehouses, there is a marked change in the building technique as far as the roofs are concerned. Here, sections of barrel vault are mounted, uniquely, on a double round of bricks; since they bear against the supporting walls of the northern rampart, their initial function, as reinforcement arches, is confirmed. With the installation of the *Odjak* council, during the second phase of the citadel’s evolution, these structures served as end arches for the imposing barrel vaults. The conversion of the Dey Palace, after 1817, saw the construction of a wall, separating these vaulted rooms from the double gallery which served as a meeting room (*diwân*) for the *dey* and his advisors. There are no cracks in the masonry ceilings of the treasury rooms which makes their state of conservation particularly satisfactory.

4.4. The Music room

To the north east of the citadel, the platform serves as the foundations of an ancient tower which, two centuries later, housed the music room. This fourth unit, of remarkable architectural interest, is situated on the third floor of the palace and is composed of a large room covered with a huge, octagonal-based dome, and two smaller side domes in the same style. On its south side, this masonry ceiling, completely detached from the exterior, is preceded by a crossed vault. From a structural point of view, the crossed vault, which comes before the music room, is not built on the circumference walls but on the four brick walls
that reinforce their angles. It is at this precise spot that the ramp, which formerly led to the land mass, bearing the defense tower, appears to have been fixed. The crossed vault is built to a thickness of one and a half bricks, in an arrangement of rows parallel to the surface. Here, too, the light weight brick and the rapidly setting mortar exclude the use of round arches for with every brick laid, the setting would have been instantaneous. Its lower surface, which was plastered, then, whitewashed, is decorated in a unique way. At its centre point, for example, diamond patterns composed of square, ceramic tiles can be clearly seen.

Fig. 2- the Music room built on rampart’s platform (Archive of OGEBC)

The principle dome – the biggest in the whole palace – and the two smaller domes rest on a double structure: the first is composed of both ramparts – north and east – and the two shear walls, perpendicular to them. The second supporting structure built up against it, is made up of four head arches, supported by four marble columns which are embedded in the old alcove walls. Three other arches, partly supporting the two smaller side domes, are built, themselves, on four columns made of tuff; three of them are also embedded in the old alcove parapets while the fourth, entirely detached, rests on the compact block of the platform. For all three pairs, the connection between their square planes and their octagonal bases is made by means of pendentives, arranged on cone-shaped courses. On the central dome, every second panel is punctuated by arch- shaped windows, projecting outwards.

There are important cracks throughout the music room. They run across the three domes, the circumference walls, the arches and the floor. It is a disruption of major structural importance caused by the destruction of the part of the northern rampart that abutted the platform on which the music room is built. This platform was considered as a buffer which took the full force of the blast suffered by the domes and cupolas. The damage to these three domes, in their fixed state, was lessened, in the east and the west, by the enclosure walls as well as the harem building, three storeys high, on the western side.

4.5 The Hammâm

The dey bath, situated on the second floor, in the south east corner of the palace, was built parallel to the northern rampart. This bath, composed of two baths, stretching from one side of a restroom to the other, is preceded by a small courtyard which opens to the exterior by means of three bays. Both the principle and secondary steam baths are covered with octagonal-based domes. They are different from the other spaces – warm room and restroom – which are covered by crossed arches. Since 1830, the private baths of the Dey were converted into a prison but they kept the arrangement of the rooms and their doorways.

The main hot room is square in shape and is covered by an octagonal-based dome. This masonry ceiling, perfectly visible from the outside, is divided, at regular intervals, by ribs separating the eight panels which are pierced with splayed windows, projecting outwards, and mdâwi (small glass openings allowing light to filter in). This dome is built in continuity with the circumference walls on all four of its sides. Four squinches connect the square plane with the octagonal base of the dome. The eight ribs, which make up the structure of the dome, are formed by bricks laid in the header. The intermediary panels are built from brick and flattened by cone-shaped courses, which slope outwardly in different directions. The upper and
lower surfaces of the dome are plastered with lime sealant and, then, whitewashed.

The barrel vaults that cover the 3.50 m space of the Treasury rooms, attest to this fact. The thirty four spaces which are covered with crossed vaults can be found both on the ground floor and the two upper storeys. They are evenly divided between the three floors so that each of them counts for a third of the number. As a general rule, the average surface covered by a crossed vault is between 6m² and 10m² but at the Dey Palace, this type of structure covers surfaces of up to 16.77m². They extend from 1m to 3.80m across and have a maximum thickness of 40cm. Two types of dome can be seen at the palace: one singularly hemispheric, the other, more outstretched, with an octagonal base. Only the sqifa, the baths and the music room are covered with masonry ceilings. The hemispheric dome built over the enclosed space, formerly battery 7, which was converted into the main entrance of the citadel and of the palace. The octagonal-based domes can be found on the terrace and mark the north east and north west angles of the palace.

The use of masonry ceilings to cover gateways and other spaces at the palace brought greater stability to a place allocated for both defense and government. If a good grasp of the building history of the palace was deemed necessary to define the role masonry ceilings played in reinforcing the north and east wings of the citadel, in proximity to the ramparts, then, finite element modelling would certainly allow for a better understanding of their importance in the creation of an ideal, stable structure. The course of the cracking throughout the palatial structure will, in this sense confirms that resistance at the ramparts was increased by the judicious placement of this vaulted masonry.

3. Conclusion

The masonry ceilings at the Dey Palace are often complex in form. They can be found mostly on the north and east wings, in proximity to the ramparts. At least twenty nine places, all of them situated on the ground floor of the palace, are covered with straight or slightly rampant barrel vaults. When the space to be covered was no more than 2 m, baked brick was the base material but when the space to be covered was of bigger dimensions, then, blue stone was used.

Notes

1Special thanks to F. Serir-Mulhim who elaborated, under my supervision, the inventory of the vaults and domes at the Dey Palace.
2Ali Bâshâ found refuge in the Qasaba a short time after his rise to power, which he was only able to keep for four months. He died of the plague during the first days of March 1818.
References


