

# Historicization of the Signaling Maritime Architecture of Mediterranean Africa, Case of Algeria's Maritime Lighthouses

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## Abstract

The current interest for the heritage issue in Algeria is mainly directed towards the architectural and urban production of the city dating from the French colonial period with an indifference that can sometimes be associated with a lack of knowledge of any other work produced at that time.

This article concerns the historicization of Mediterranean maritime lighthouses, with a flash of lightning on Algeria's maritime lighthouses inherited from the sixteenth to the nineteenth century, it evokes the historical aspect of the architecture of these centenarian buildings who demonstrate durability and resistance to the wear of time. Through a historical study, we aim to understand their genesis and their evolution by tracing their typo-chronology in order to deduce the different models of lighthouses built on the maritime facade of the Mediterranean coast of Algeria and to verify their similarity with the universal models.

This research contributes also to providing knowledge support about the Algerian lighthouses as an architectural legacy testifying of maritime history requiring a patrimonial recording. It represents a reference in the history of architecture that can be used to recognize these particular buildings whose future remains uncertain in the face of the phenomenon of automation of the contemporary era. A contribution to the knowledge of these witnesses of the past that illuminate our coast until today and refuse to bow to oblivion and marginalization.

**Keywords:** Historicization, typo-chronology, architectural identity, maritime lighthouse, heritage, Algeria.

## INTRODUCTION

Since ancient times, man has expressed his maritime need for navigation at sea using a kind of maritime geographical marker strewn with a luminous signal, an object of amphibious character that falls into the category of utilitarian works (GIARDINA, 2010).

Under the action of the violent currents, the fog, and the aggressiveness of the waves, the number of the missing at sea was in increase, especially with the approaching of the coasts, where the dangers of shipwrecks are accentuated by the risks of crushing on the reefs, from where the birth of a discipline of construction at sea was materialized by the lighthouses (FATTA, 2002).

The standardized program of the maritime lighthouse and its implantation in places with different climatic and topographical constraints have made it a construction of the purest formal expression, dressed in a normative and universal character, characterized by an unusual architectural typology. Its permanence on the coasts testifies until today of a long and rich history (RABY et al., 2019).

Maritime lighthouses are designed mainly by the practice of engineers, based on an empirical and deductive approach, based on order, logic, and efficiency. This approach manifests itself in the modeling of forms with a systematization of design and execution methods to optimize the quantities of materials and their costs through calculation (DENARIÉ & FADY, 2019). It is a "timeless architecture" that is ageless and meets the criteria of "convenience, beauty, and solidity" (MAGNANI & PISTOCCHI, 2017). These elements, implanted on particular sites, are realized in the difficulty and human limit with all the risks of failure and drama during the construction while bending to the requirements of the sites of implantation in an uncommon context (DOMÈNECH, 2014).

In this contribution, we will try to highlight these works that are destined to disappear or to be renewed in the era of technological progress (SÁNCHEZ-BEITIA, 2019), in an Algerian context that seems to share a common universal history. We will evoke the link between the two Mediterranean shores at the time of the massive production of maritime lighthouses that coincides with the wave of colonization of the Maghreb, by questioning the degree of similarity of building models dating from the nineteenth century, and constituting until today the buildings of the maritime signaling in Algeria.

The theme of maritime signaling is richly treated in the scientific research evoking the European context, different authors' publications have well studied the history of the evolution of maritime lighthouses from antiquity to modern times. The recent contributions focus on their automation (MURPHY, 2013), the main cause of their dehumanization (GUIGUENO, 2019).

Historical accounts relate that the first building that embodies the maritime lighthouse appeared in Alexandria on the island of "Pharos" in Egypt, whose construction was multiplied in Europe, particularly in England and France, which imported their know-how, overseas during the wave of colonization of North Africa and Africa in the nineteenth century (GIARDINA, 2010).

Despite their large number in Algeria, the maritime lighthouses have been timidly mentioned, however, the thorough reading of historical sources dealing with the Algerian coastline has allowed us to identify clues to their existence in the writings of geographers and historians who have testified that these buildings, thus amply justifying their interest in previous centuries following the various shipwrecks that occurred in the maritime sphere of Mediterranean Africa. These same writings affirm that Algeria was endowed with ancient and medieval lighthouses that reflect its strategic situation in maritime navigation since the Antiquity (KHELIFA, 216).

The existing lighthouses on the coast are the result of a colonial policy from the nineteenth century, more precisely in 1830 date of the French military installation in Algeria (CANDELA & GELOSO, 2019). A confirmation of the colonial act that witnessed its peak during the various programs of public works carried out in the port and maritime field translated directly by the general program of maritime signaling of the southern shore of the Mediterranean (COLE, 1992). A multitude of lighthouses has been produced on the Algerian coastline, some of which have substituted only archaeological traces, mentioned in several accounts and testimonies of ancient travelers and geographers. The architecture of these utilitarian buildings of the nineteenth century was strongly marked by the new modes of production of the industrial revolution in Europe and France.

This research work addresses the question of the "model" of lighthouses that have known the Algerian coastline, we try to deepen this question by studying the identity of each of them through the different periods of Algerian history.

## **MATERIAL AND METHODS**

The study of the question of the models characterizing the existing maritime lighthouses in Algeria before and after the nineteenth century and their comparison with the typologies having marked the history of these buildings is carried out with the help of the historical approach which calls upon a method known as "the typo-chronology".

First, we have compiled a synthesis of the works related to the subject on a universal scale, followed by a state of the art that provides a theoretical basis resulting from documentary research and a bibliographical study. This first phase is sanctioned by a typo-chronological diagram of the maritime lighthouses, which summarizes the classification of the models which marked each phase of their evolution.

Thereafter and to answer the various questions raised on the origins and chronological evolution of the lighthouses of Algeria, we carried out a historical reading based essentially on the expertise of the archives of the Algerian coast in France, first reference documents which allowed the identification of the various models of these maritime works.

For this phase, we referred to the "historical method" to analyze and understand these sources, a method engaged in different stages, namely

- Observation;
- The verification of the supports authenticity;
- The comparison of different manuscripts contents;
- And the interpretation of the meaning of the texts.

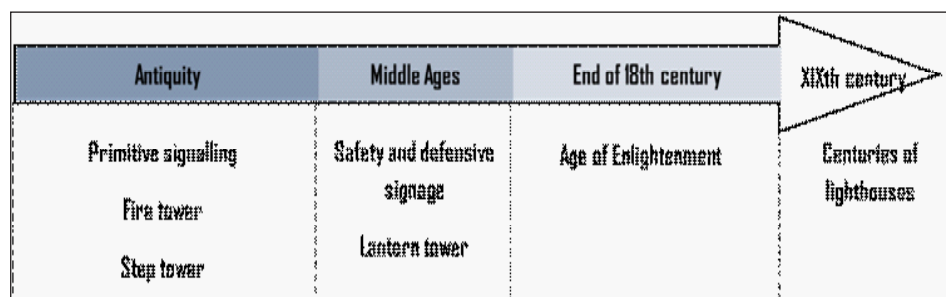
The typo chronological analysis was then mobilized to follow the different traces allowing to chronologically reference the models of the maritime lighthouses of Algeria. A method considered necessary to know their identity and deduce their typological scheme.

The study of the sample represented by the existing lighthouses of Algeria, which date between the sixteenth and nineteenth centuries, aims to deduce the typologies resulting from the interpretation of the correlation of the typo chronological patterns of the various universal models and those of the study corpus. The crossing and the interpretation of the data made it possible to note the influences notified on the «typology» since the modes of imported productions and to seize the local particularities of the «model».

### **Typo Chronology of Maritime Lighthouses: Universal Models**

The historical analysis of the universal lighthouses was carried out through a chronological reading that traces the architectural models that have marked the history of the evolution of these maritime buildings. Two main models can be distinguished: the ancient model from Antiquity to the 18th century and the modern model which appeared at the end of the 18th century and spread until the 19th century.

A multitude of lighthouse types derive from each model, we cite for the ancient model: the typologies of “fire tower”, “stepped tower” or so-called “superimposed dice” known during Antiquity and the typology of “fanal tower” or “medieval dungeon” that appeared in the Middle Ages. As for the modern model, we cite the typology of the “modern lighthouse” which refers to the column followed by several typologies developed after the Second World War during the reconstruction movement.



**Figure 1.** Typo chronology of the universal maritime lighthouses. Source: Author 2021

### **From the Fire Tower to the Modern Lighthouse**

The first forms of lighthouses were rudimentary, the Greeks knew how to build simple lighthouses, first with fire lights, then with a more complex system in the Hellenistic period were high towers with large spans, supported the pyre so that the light could be seen from farther away (DOONAN, 2011).

The first tower mentioned in the history of Greek antiquity is located at the promontory of Sicea at the south-western entrance to the Dardanelles in the eighth century BC, it was represented in the Iliac table, at the entrance to the port built by Claudius from 45 AD. J-C.



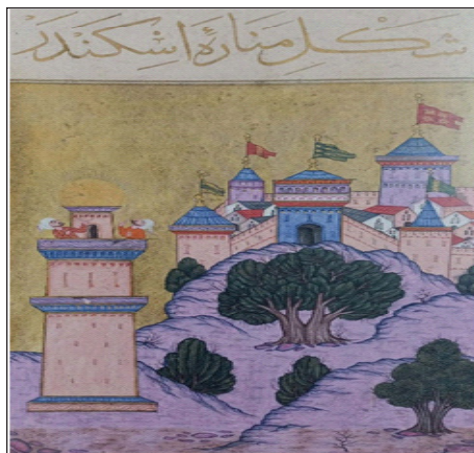
**Figure 2.** The Iliac table in the Piazza dei Corporati in Ostia, Italy. (REDDÉ, 1979)

The first building embodying the typical model of a lighthouse is that of Alexandria, which was a reference for all constructions of the same type, researchers who have studied ancient lighthouses have evoked descriptions on models representing the lighthouse of antiquity.



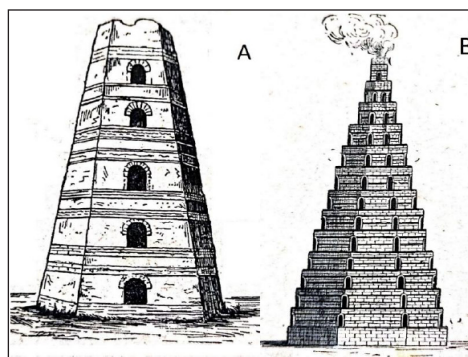
**Figure 3.** A representation of the lighthouse of Alexandria found in the Basilica of St. Mark (RAES, 1993)

We retain the Alexandrian model embodied by the lighthouse of Alexandria where two types can be derived from this model: the type of the “degree tower”, a high and solid tower with steps that develop in height. A second type represented by the lighthouses of Ravenna and the Coruña where the technical solution of the steps was not adopted, it is about more modest buildings constituting a part of a floor of the stepped lighthouse, source of inspiration of ancient lighthouses referring to the Ziggurat.



**Figure 4.** Representation of Seyyid Muhammed bin Emir el-Saoudî of the lighthouse of Alexandria in an Ottoman manuscript 1582. (GUIGUENO, 2019)

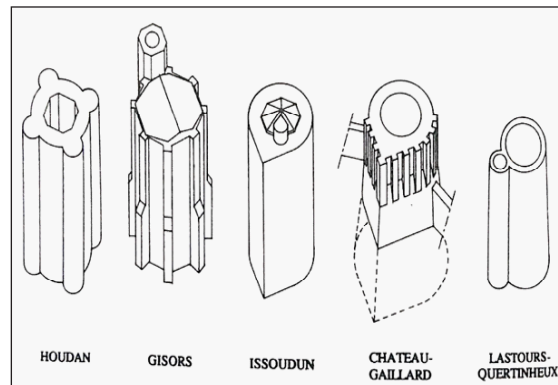
Michel Reddé's iconographic study of lighthouses in Roman times evokes the ancient model by attributing it to a typology known as “Dèssuperposés”.



**Figure 5.** The types of the ancient model (A/ Tower of Dover, B/ Tower of Order of Boulogne. (BERTHAUT, 1920)



The Middle Ages were marked in the first place by a continuity of the ancient model attested by the construction of towers with ancient fires which recall the typology of the “towers with degrees”. In the second place and following an economic concern, the first type was abandoned in favor of the model of the “fanal-tower”, inspired by the “medieval keep”.



**Figure 6.** The different typologies of the medieval keep. (RAES, 1993)

What is important to note in this study is that the typologies cited above are derived from a synthesis of works evoking the Western context in the image of the prestigious lighthouses marking this period, such as Cordoba (figuier), Messina, Genoa, and Pisa.



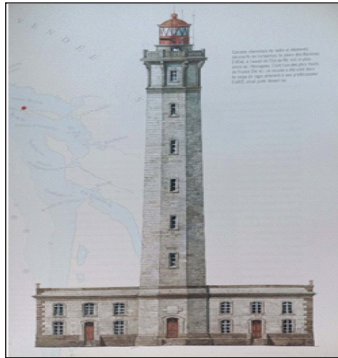
**Figure 7.** The Cordouan lighthouse. (Héron, 2015)

As for the East, we note the absence of research specific to lighthouses during this period, on the other hand, we have been able to note the typology developed in Muslim territories from readings dealing with Muslim military architecture (Djelloul, 1995). In this context, the works using lighthouses are mentioned under different nomenclatures grouped in the oriental typology of lighthouses called “Manàr” or “Nadùr”. We will find them in the Muslim civilization where the signaling devices were part of the maritime defensive fortifications such as Ribats, which had as the main role to link the different works between them and to alert the danger with the help of fire signals lit at the top of these imposing constructions, called “Burj al Nàr”.



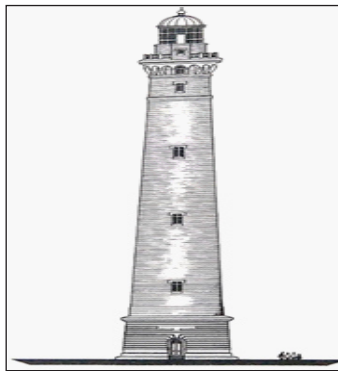
**Figure 8.** Ribat of El Monastir in Tunisia. (LÉZINE, 1956)

The movement of the industrial revolution announces the modern period of the lighthouse, notified by a change in the design of these works as a result of different parameters that have revolutionized the modes of lighting and constructive techniques of modern lighthouses. It is a model that refers to the ancient column, to which new design methods were adopted following the technical evolution of the signaling equipment.



**Figure 9.** Modern masonry lighthouse des Baleines en France (1854)(HERON,2015)

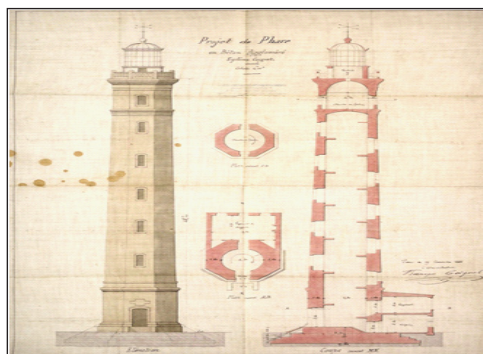
The modern lighthouse was built on a standard model, developed in the West by the great maritime powers that produced a considerable number of lighthouses spread overseas and oceans (JONES, 2013).



**Figure 10.** Large lighthouse of the Virgin Island II (RAES, 1993)

The period of the Second World War represents the most damaging period for lighthouses, architects were called upon by the Lighthouse Service to contribute their architectural creations to the great reconstruction sites of late 1944. This was marked by a chronological break in the construction of maritime lighthouses where many of them were destroyed or damaged, it was necessary to wait for the post-war reconstruction movement to see a new revival in the production of lighthouses under different typologies. Several lighthouses were replaced by higher towers to provide better signaling and some of them were rebuilt due to site instability constraints (SMITH, 2010). The construction of a series of new lighthouses announced the new generation of modern lighthouses of the 1950s with refined architecture.

Another type was developed with a style called "historicist or pastiche" (RAES, 1993), it is a conservation of the old model, nostalgia to the Ziggurat with a confirmation of the concept of the column. This type recalls the continuity in the models with an evolution of the mechanism by electrification and automation (THOMAS, 2008).



**Figure 11.** Project for a lighthouse in agglomerated concrete. Source : Archives nationales du monde du travail.1995.

## **The Typo Chronology of Algeria's Lighthouses**

The Algerian coast has been endowed with different maritime signaling devices throughout history, for those dating from before colonization we have not found any trace of testimony on their description, except for some clues on certain fire towers of Antiquity, as for the lighthouses of the colonization period (POLÓNIA, 2010), they have a character in common with those of France.

During the nineteenth century in Algeria, maritime signal buildings and their architecture were built according to the same logic as those constructed in metropolitan France, which underscores the link that these lighthouses have with the colonial presence in Algeria.

We schematize the typo chronology of lighthouses in Algeria in two chronological markers, before and during the 19th century.

### **The Models Before the 19th Century**

Based on the results of the chronological reading, the Algerian coast has been home to constructions using maritime signaling towers since antiquity, whose typology is difficult to determine due to the lack of historical writings on these artifacts of the sea. The ancient lighthouse of Cherchell represents an example, the latter, adopted the Alexandrian model with degrees. As for the other towers of the same period, they reproduced the ancient model of Hellenistic architecture.

Several centuries later, we will witness the birth of the medieval model, represented essentially by semaphores, watchtowers with a fixed fire lit at the top. Some writings of the Muslim civilization, describe the lighthouse as part of the system of fortresses and "Ribats" fulfilling a dual role of security and guidance. In most of the descriptions, the existence of watchtowers and guardhouses with a signaling system that can sometimes serve as a means of communication is mentioned (DJALLOUL, 1995).

At the time of the Ottoman presence in Algeria, after a redevelopment of the Spanish fortress located on the gable of the city of El Djazair, a tower was built to make use of a lighthouse named "Burj el Fenar". This one shares the characteristics of the second ancient model with an octagonal section and a high height, associated with the medieval typology by its security and defensive role. This Ottoman "lighthouse tower" was equipped with soldiers and artillery.



**Figure 12.** Borj el Fnaïr, current lighthouse of the Admiralty. Algiers. Source: (ANSS Patrimoine Algérie, 2013)

### **The Models of Maritime Lighthouses of the 19th Century**

The first lighthouses built under the colonial regime by the French military engineering service (LEVITT, 2014), representing the typology known as "lighthouse-lantern", symbolize the French presence by their function of signaling light, taken up for the specific account of military interests, where the concern for safety takes precedence over the technical aspect (DE LA ROSA, 2022).

At first, the production of lighthouses was in response to strategic criteria of war and emergency, the first lighthouses dating between 1830 and 1845 adopted the model of the fanal-tower, with lighting equipment, short-range and low cost (ZAEYTYDT, 2005). In the beginning, these structures in the form of 6th order lanterns were essentially military

landmarks, responding to an emergency lighting of the occupation with low technical potential not serving to illuminate the distance, but above all to participate in the defense and security of troop movements at sea.



**Figure 13.** The lighthouses according to the fanal-tower model (Mers El Kbir, Oran and the entrance to the Port of Bône) (ZAEYTYDT, 2005)

The second phase of construction of maritime signaling works during the colonial period was marked by a change in the policy of creating lighthouses (1846-1890). The latter was part of a process of securing the coastline materialized by a maritime lighting program which conceived a network of about 14

twenty large lighthouses placed on high capes, on islands bordering the coastline, and points connecting the ports with an efficient optical system according to implantation criteria submitted by a nautical commission strongly influenced by the metropolitan model (MATVEJEVIC & MATVEJEVIĆ, 1999).

The light belt of this period gave birth to large Algerian lighthouses identical to the French lighthouses marking the Mediterranean coast, a similarity that can be justified by the similar division of the coasts, relatively healthy that require only limited signaling.

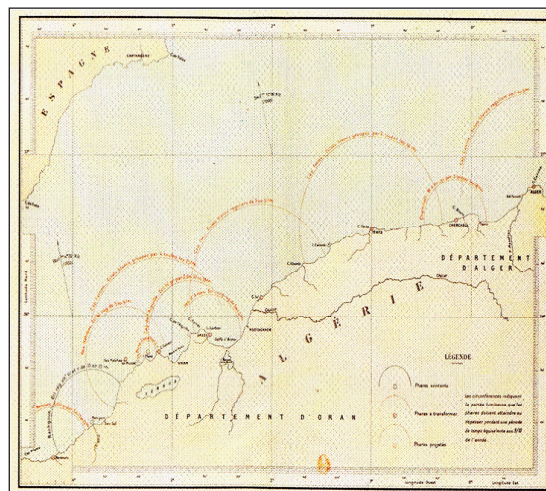
This provision is specific to Algeria, contrary to the other French colonies where the nautical commission is limited to an advisory role. A connection symbolizes the growing interest in the conquest of Algeria.



**Figure 14.** The lighthouse of the Cape Sigli XIX century. (BEKHTI, 2014)

The lighthouses of this period were endowed with architectural, constructive, and optical characteristics as prescribed by the 'Lighthouse and Beacon Service'... The lighthouses thus changed at this date in function and attribution, from being punctual light signals of a coastal occupation of the primitive military network established before 1845 to a specific program of maritime lighting to a linear network uniting henceforth all the lighthouses by the lighting of the intermediate capes (KAKAROUCHA, 2021). "The districts of Cherchell and Algiers alone comprise a unique set of first-order lighthouses, concentrated on a reduced portion of 250 kilometers. This distribution is indicative of the interest of ensuring the landing on Algiers, with a lighting device superior even to the metropolitan coasts... Indeed, no portion of the coastline is thus equipped with a succession of first-order lighthouses... This proximity leads to an alternation of fixed and eclipsed characters, in order to avoid identification confusions." (ZAEYTYDT, 2005)





**Figure 15.** Improvement of the lighting of the coasts of AlgeriaXIXe century. Source:(Archives of the BNF, 1902)

After independence in 1962, Algeria had a network of lighthouses of equal quality to those spread across the Mediterranean Sea. The latter were inherited in full of the colonization period, sufficiently meeting its need in the field of maritime signaling. Nevertheless, after an earthquake in 2002 that weakened the lighthouse of Cape Bengut (in Boumerdes city), a new lighthouse was built adjacent to the old one and took over the optical lantern of the latter, according to a refined style recalling the model of the post-war lighthouse in Europe.

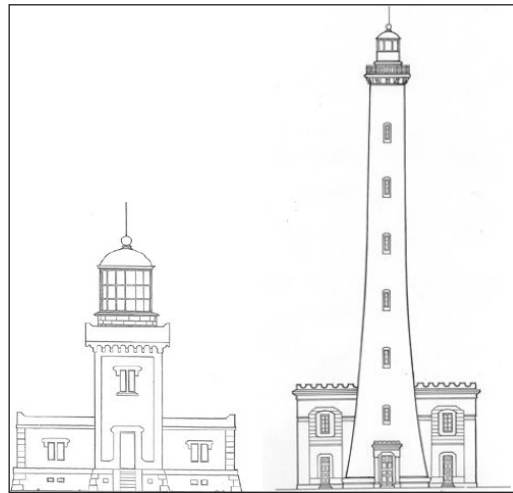


**Figure 16.** The new lighthouse of Bengut precedes the old one. (ZEBBAR, 2016)

### **Lighthouse Architecture At The Service Of Politics**

The design of the lighthouses in the French colonies was elaborated by the architect Reynaud, director of the Lighthouse Service of Metropolitan France (LEVITT, 2014) but the final product was discussed with the engineers in place who had more knowledge of the sites where the lighthouses were to be built. Exchanges of sketches and modifications to the first plans have been noted in archival documents.

The maritime lighthouses of the colonial domain were the medium of expression for the builders of the Metropolis to transcribe the colonial power and to show the pride of scientific development through these so-called civilizing works (WORTH, 2014). The analysis of the excerpts on the Cap Caxine project in Algiers supports this political dimension involved in the architecture of overseas maritime lighthouses. According to the French archival documents and the writings of Vincent Guiegueno (Reynaud), the director of the lighthouses and beacons “Léonce Reynaud”, the designer of the Caxine lighthouse, wanted to symbolize the colonial act through a project that bears the French architectural stamp attached to the local tradition.



**Figure 17.** The lighthouses model of the colonial presence. (FICHOU, 2010)

The site of the Caxine lighthouse was defined for its “demonstrative” value in order to signal one of the most prominent positions in Algeria. As for its architecture, it follows the model of contemporary metropolitan lighthouses, characterized by a tower anchored in the center of a rectangular building of classical construction. Housing is distributed on both sides of the tower; the ornamentation is careful, in stone angles, consoles, pilasters, and window frames, not to mention its central alley and garden. A lighthouse that has considered the factor of frequentation (Guiegueno) of the place that has influenced the design of the building where the architectural effect has taken into account the potential visits, a character of elegance signed by the architect.



**Figure 18.** Elevation of Cape Caxine National Archive of France. Source: (Exposition, Phared'Algérie, 2014)

### **The Social and Human Dimension of Maritime Lighthouses**

The task is not limited to the maintenance of lights and lanterns, but also to save lives, the rescue of shipwrecked has inspired poets and literary to transmit the history of these human societies (PIKE et al., 2010), even going to describe the guardians of human heroes:

“Empty towers can signal the coast, but not spot a boat in peril.». It is a family affair, the keepers lived alone or in the company, later they were housed with their families, their children grew up at the foot of the lighthouse and did not have a life similar to other children of their age.

The living conditions were far from easy, they were sometimes painful and of dramatic proportions (JECU, 2019): “The men here are like their lighthouse: rough, tenacious, resistant” Louis Le Cunff, Feux de Mer.

These men inform us about the autonomy of the watchmen of the sea, soup is reserved near the lighthouses to provide for their food and make up for the mediocrity of their salary (BYRNE, 2015). We note this aspect in the classification of

the lighthouses established based on the appreciation of the guards (SÁNCHEZ-BEITIA & LUENGAS-CARREÑO, 2020), we distinguish three categories of lighthouses according to the working and living conditions:

-“Paradise”: lighthouses on land, family life in better conditions.

-Purgatory”: less difficult.

-The “hells”: difficult, as in the case of the Ar Men and La Jument lighthouses.

## **CONCLUSION**

The historicization of the architecture of the maritime lighthouses allowed us to know the models having marked the history of the lighthouses of the Algerian coast, research sanctioned by the synthesis in the present article. The typo chronology as an approach of historical analysis has led to the schematization of a chronology of the typologies of the maritime lighthouses of Algeria, projected on the typological scheme of the universal lighthouses.

The history of the maritime signaling of Algeria and its common character with the different countries of the Mediterranean since the ancient times and with that of France in the modern times of colonization underlined the universality of the models of the lighthouses implanted on its littoral. The main question of this study finds its answer in the hypothesis which states that the architectural identity of the maritime lighthouses of Algeria strongly inspired by those of the metropolis adopts the universal model spread in Europe characterized by a stylistic aspect of the building which is of neoclassical invoice with an adaptation to the site and its constraints which impose the integration of local particularities materialized by the patio, the roof terrace and the interior galleries which represent a specificity of the model of the Algerian lighthouse. (ZAEYTYDT, 2005)

This link with the universal history was translated in the architectural expression through the object of the maritime lighthouses as a product imported from the metropolis. The current network of these sea works transmits an image of a network shared by both Mediterranean shores, which informs us about their conformity to the model of the modern lighthouse developed and generalized in the Mediterranean. From these observations emerges the idea that the maritime lighthouses are features of the union of the Mediterranean, they are the elements that best allow appreciating Algeria at a particular moment of its history by testifying of its integration to the metropolis (THOBIE, 2021).

This study can constitute support of knowledge and a contribution in the revalorization of an architectural legacy of the local history of the nineteenth century, this attempt can perhaps open the field to research on these works marginalized by the scientific production in Algeria.

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