The construction of the Al-Mursi Abou al-'Abbas Mosque, Alexandria

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ABSTRACT

The Sidi el-Mursi Abul-Abbas Mosque in Alexandria is one of Mario Rossi's best and most well-known buildings. Careful study of the working drawings made it possible to develop some important considerations concerning the construction methods imported into Egypt by Italian architects, engineers, contractors, and skilled workers, between the nineteenth and the twentieth centuries. Along with the documents in the family archive and some site photographs, it was possible to investigate Rossi's new methods of organizing the building site and the relationships between design decisions, construction, and the dissemination of technologies. The new contribution made by this paper consists primarily of describing how this particular mosque was built, reconstructing the process by direct observation, and by interpreting Rossi's extremely complex working details, as well as surveying the building itself. The new approach imported into Egypt by Mario Rossi did not break with local tradition, whilst his introduction of reinforced concrete into Awqaf building practice exerted considerable influence and made him *chef d'école* and teacher for those who came afterwards. He was Chief Architect for the Egyptian Ministry of Awqaf from 1929 until 1954, and his approach to mosque design was an evident typological and stylistic innovation that left its mark on the architectural vocabulary of the time, establishing a new style that became widely adopted in Egypt and spread as far afield as Washington DC, Saudi Arabia, and Iraq.

In a perspective of international cooperation to which we are urged by various countries around the Mediterranean, the primary aim of this type of research is to promote knowledge of this recent heritage: a prerequisite for developing effective tools for its enhanced appreciation, preservation, and recovery, for which the obligatory starting point must be the creation of specialised archives and atlases of works.

INTRODUCTION

Only three minarets dominate the skyline of Alexandria harbor, unchallenged as the only "Islamic" citations in what is otherwise a highly cosmopolitan Levantine European city. They are the minarets of the three mosques planned by the Italian Chief Architect Mario Rossi, for the Awqaf: Al-Mursi Abou al-'Abbas Mosque (1928-1944) in El-Abbas Square, the Al-Qa'id Ibrahim Mosque (1948-1951) in Saad Zaghloul Square, and the Muhammad Kurayim Mosque (1949-1953) in the northern corner of the Ras el Tin Royal Palace.

In particular, the Sidi Al-Mursi Abou al-'Abbas Mosque is the main congregational mosque in Alexandria, important site of pilgrimage in the Islamic world, built in an impressive scale to accommodate the mausoleum of the most popular Muslim saint there, whose name was given to the monumental building.

This "Muslim cathedral", isolated in a square, is located in the heart of the historic Ottoman Turkish quarter, on the Ras el Tin peninsula. Clearly visible from out to sea, the mosques is a free-standing building, isolated from the discontinuity of the Corniche and overlooking a "green square" also designed by Rossi.

Its construction works cost 140,000 Egyptian Pounds and took sixteen years: from 1929 until its inauguration by King Farouk on 11 May 1945. The works were repeatedly interrupted during World War II, when the Alexandrians used the site as a hiding place from the Nazis. Probably, for this reason, the central double-shell dome of the first project was not built and was replaced by a lantern.

Since the original drawings found in the archives of the Ministry of Awqaf bear Mario Rossi's signature, it is beyond doubt that he was the author of the definitive project and the working drawings, and was also responsible for its construction. But an elevation, a foundation plan, and a column capital dated 1929 have the signature of Rossi's predecessor as Ministry Chief Architect, Eugenio Valziana, with whom Rossi would certainly have collaborated before officially taking up the post himself. Another drawing signed off by Valziana, a north-east elevation, is dated 15 May 1929 and is kept in the private Parmeggiani Archive in Bologna.

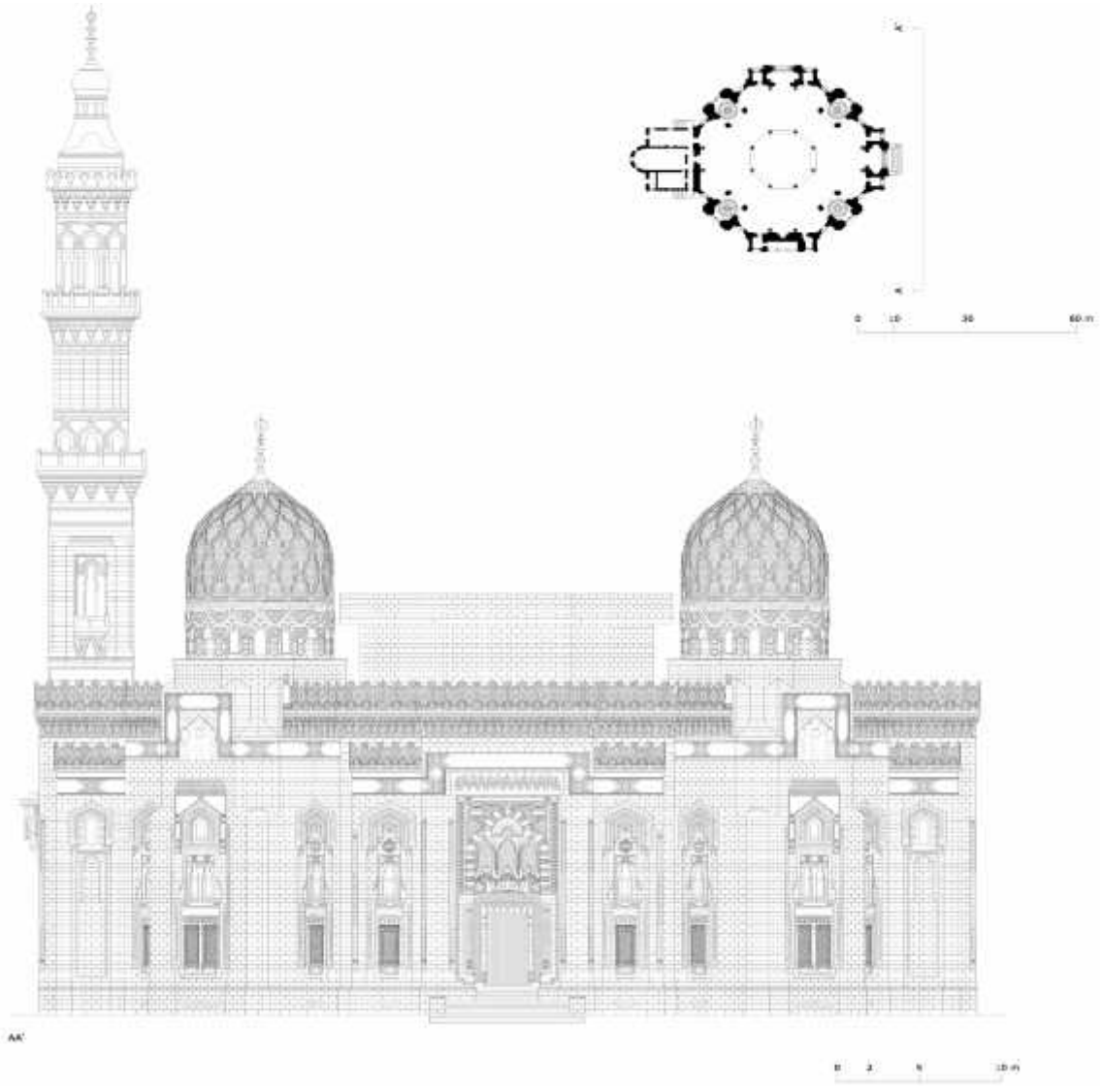


Figure 1 The Al-Mursi Abou al-'Abbas Mosque, Midan al-'Abbas, Alexandria, by E. Valziana and M. Rossi, 1928-1944: main elevation.

LOCATION AND PROJECT

The Abul-Abbas Mosque replaced a smaller mosque dating back to 1189H (1775), also dedicated to this important Muslim saint from Andalusia, a devotee of Sufism. Following the great reform undertaken by King Fouad II, a town planning scheme drawn up by William Hannah McLean provided for a large public square covering 43,200 m^2 on the side of the old mosque, to be named Mosques Square, since it was to be the site not only of the new monumental mosque dedicated to Abu al Abbas, but also for five other smaller mosques surrounding it. The aim of McLean's plan was to liberate the historic centre (the Turkish city) from its state of isolation, opening up a new street and the reorganizing the military parade ground at Ras el Tin, to connect with the area of important buildings further north.

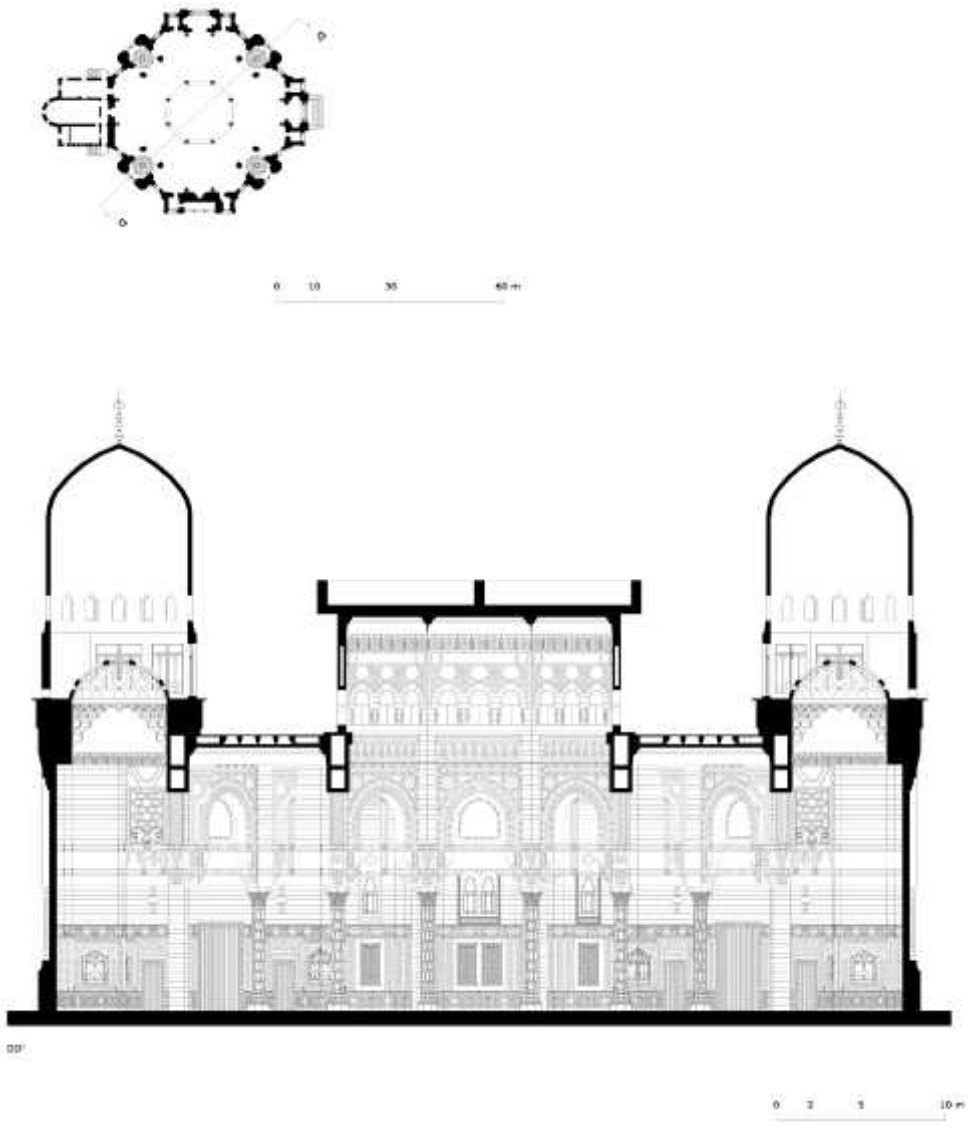


Figure 2 The Al-Mursi Abou al-'Abbas Mosque, Midan al-'Abbas, Alexandria, by E. Valziana and M. Rossi, 1928-1944: section.

The old mosque was demolished leaving its mausoleum in place, and the site was then enlarged to take the new building which, in the intentions of Fouad II (and thereafter his son, Farouk) would bear comparison with the richest, most ornate mosques elsewhere in the Orient.

Royal Assent was then given to build the new mosque, which has an octagonal plan covering 3,000 m^2. of which each side is 22m long with walls 23m high. The ceiling of the ambulatory is 17.20m high and the 24m-high central lantern is supported on eight 8.35m-high

octagonal columns of monolithic granite, each of diameters 0.75m at the base. The Mihrab and the minaret (which at 73m high is the tallest in Egypt) [1] are on the south side of the building.

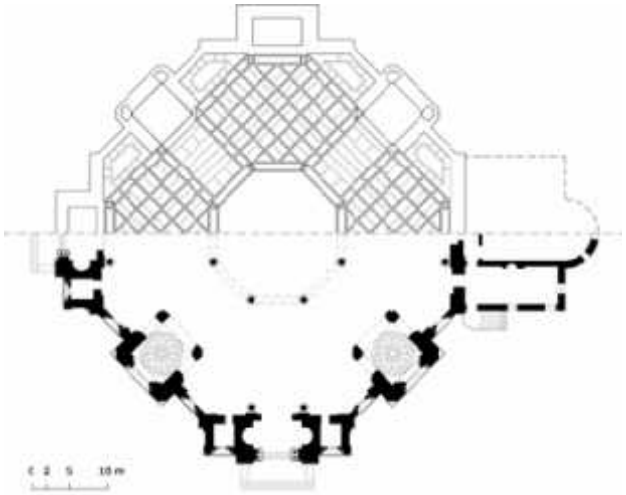
There are two main entrances from the square: one on the east from the harbor, and the other to the north, facing the road leading to the Ras el-Tin Palace. The hammam is on the west side and has an additional secondary entrance. Four mausoleums are placed on the other four sides of the octagon: a mausoleum dedicated to al- 'Arif Billah Abu'l- 'Abbas, and three others dedicated to his students and followers. Surmounting the mausoleums are four double domes of diameter respectively 5m, 7.50m, 11m and 22m high measured from ground level. The walls of the mosque are finished externally and internally in reconstituted stone slabs; the entrance steps are of Egyptian granite and the floor is in white marble. The doors, the minibar, and the windows are made from finely carved teak and walnut. The initial project was revised to give the prayer area for women its own private entrance, whilst the room originally assigned to this function became the mosque library.

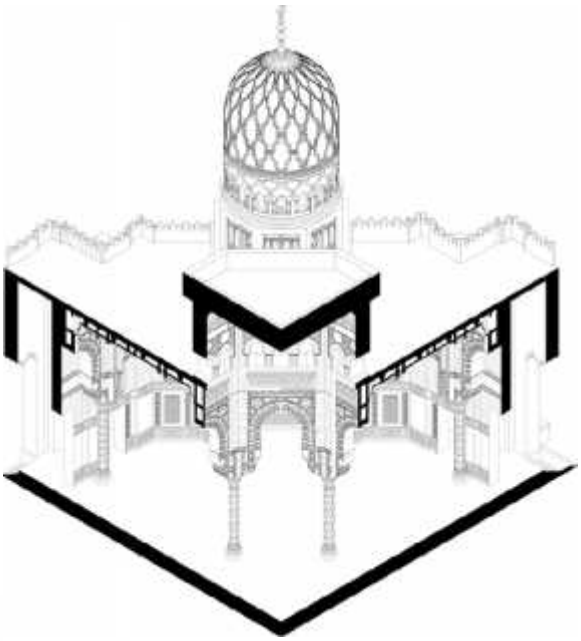
The centrality of the prayer hall corresponds to the centrality of the building as a whole. The basic module Rossi uses to generate this octagonal mosque plan is the square that corresponds to the central bay of the prayer hall, along with its sub-modules. The entrance portico is half the depth of the central bay (i.e. half a module) and is placed on axis with the Mihrab, giving immediate direct access to the prayer hall. The wall containing the Mihrab is shifted away from the central space by a distance of exactly one half- module, and is positioned diametrically opposite the main entrance. The coherence of this arrangement lends a sense of nobility to the sacred area as a whole, whilst the group of servant spaces (the hammam), which is of secondary importance, is handled as an attached component appended to the left of the plan and disconnected from the prayer hall, with which it does not require a functional relationship.

WORK ON SITE AND THE CONSTRUCTION PROCESS

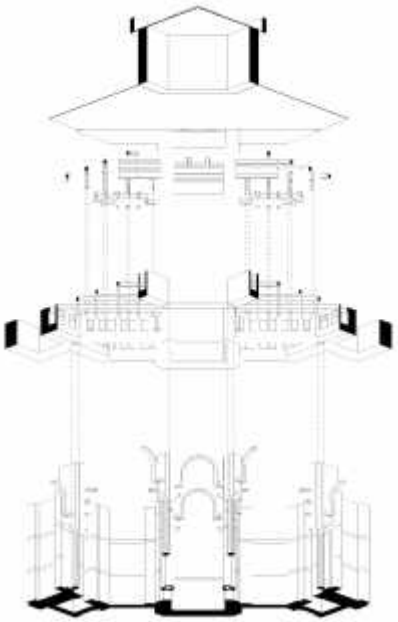
The archive photographs of the construction of the Al-Mursi Abou al-'Abbas Mosque proved fundamentally important for understanding how it was built, and apart from giving information about the technologies and materials used, made it possible to understand in general how the site was organised. They enable us to acquire knowledge, for instance, about where the skilled workers came from and where the materials were sourced. From some annotations on the back of a picture postcard of the columns being transported to the mosque, it was possible to establish that these were 16 monolithic columns made from red Baveno granite, each measuring 8.35m x 0.75m and purchased from the Milan suppliers A. Cirlo & Figlio Graniti. They were embarked from the port of Genoa. Mario Rossi as architect of the building seems to have been the only Italian involved in this project. The Chief Engineer of the Ministry of Wakfs (religious property), was His Excellency Said Bey Mitwalli, and the General Contractor was Abd El Halim & Ibrahim Nosseir; both were Egyptian. One of the critically important aspects of this paper is to understand the relationship of continuity between the local traditions and the typological, construction, and technological updating brought to the work by Mario Rossi; in this regard the site photographs prove highly illuminating. So far as the drawings are concerned, from some sections that are part of the

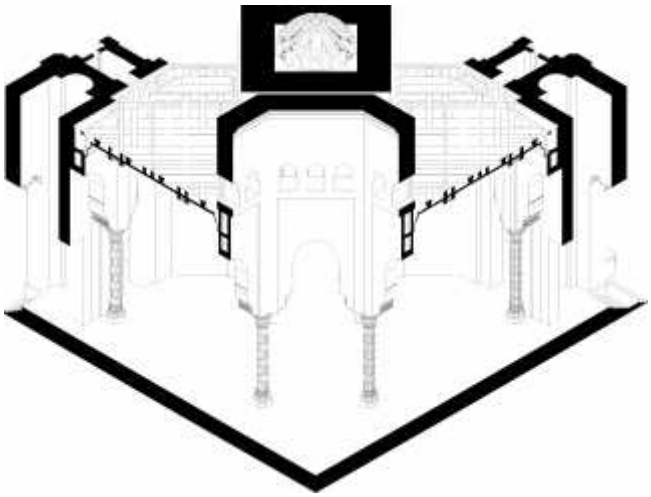
working details it is evident that the building was intended to be constructed from reinforced concrete. In reality, the external perimeter (for which no cross-sections were found) is a massive loadbearing brick enclosure strengthened with reinforced concrete beams that were incorporated at regular intervals as the building rose upwards. The site photographs show this brickwork masonry with its reinforced concrete "strengthening elements". The considerable thickness of





the horizontal section, visible on the construction plans, seems to clearly confirm





that the building was engineered as a box structure.

Figure 3 The construction system of the Al-Mursi Abou al-'Abbas Mosque, Alexandria.

The first project had a central double-shell dome but it was not built and was replaced by a lantern (as was in use in the Madrasa mosques of the Mamluk period). It is clear from the working drawings that the floors, the raised pointed arches, and the double-shell hemispherical domes were constructed in reinforced concrete; this is confirmed by the site photographs.

The reinforced concrete double-shell cupola system adopted for the mosque consists of a hemispherical internal shell and an ogival external shell. The external part is actually a pierced

shell and could be seen as an updated version of the ribbed domes of Persian tradition. It uses intersecting arches that leave the centre free as an oculus or a lantern. This tradition must also have been in the mind of Sinan himself [2], to whom Mario Rossi refers in his work, particularly in his use of an octagonal plan for some mosques. The four domes that cover the four mausoleums of the Al-Mursi Abou al-'Abbas Mosque, which have an internal diameter of 5m and an external diameter of 7.50m and rise 11m and 22m above ground, seem to be loadbearing openwork frames consisting of arches only, which generate the shape of a twelve-pointed star. This embryonic form comes to complete fulfillment in the Muhammad Kurayim palatine mosque, also designed by Rossi, within the naval base on the Ras el Tin peninsula and annexed to the Royal Palace. In the palatine mosque it is implemented at a larger scale, with the central space covered by the first internal pierced shell, which is square on plan and measures 8.80m along each side. At the level of the drum, enormous beams are thrown across to form a star, which in this case is eight-pointed. Compressed as it is underneath the dome, in engineering terms this star performs as a couple that counters the centrifugal forces in the dome structure. In both mosques the external shell, which is ogival, is pierced by a series of windows at the height of the drum. Daylight penetrates through the first shell and filters into the mosque, passing between the concrete ribs of the star. The final effect, exactly as Dickie says, is comparable to baroque illusionism, although in Rossi's mosques the structure itself, and the paths taken by the structural forces, are shown in a completely truthful way. [3]

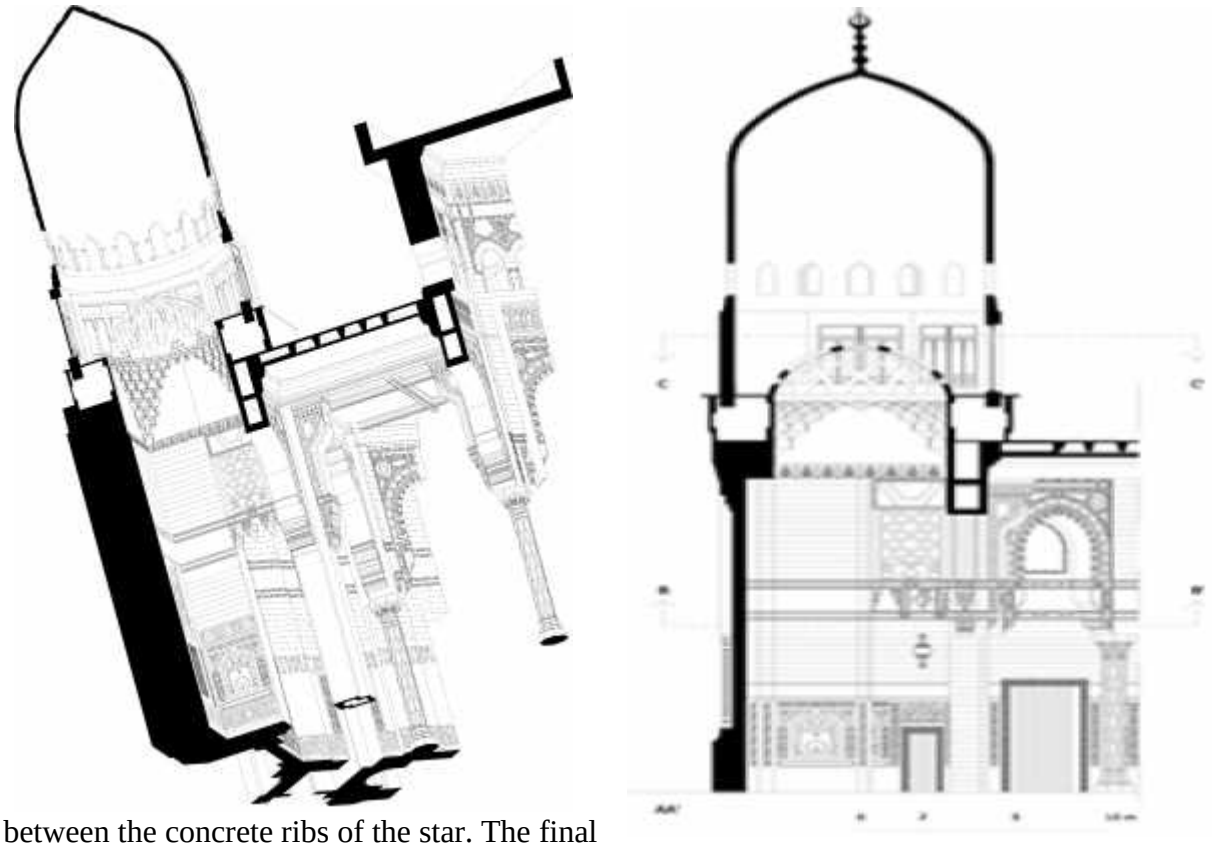


Figure 4 The Abou al-'Abbas Mosque, Alexandria: cutaway axonometric. The hemispherical double-shell dome and the Hennebique slab with air cavity and Viereendel beams.

The roof construction above the wooden ceiling of the Al-Mursi Abou al-'Abbas Mosque incorporates a cavity and is of Hennebique construction with Viereendel beams. The piled foundations use the Simplex system and were designed for an effective load of 35 tons on each pile; each pile is 8m long. The tie beams between the pile caps suggest an earthquake-proof solution, and we know that Alexandria has been struck several times by earthquakes of significant intensity; the geological make-up of the ground is largely clay.

One critical fixed point requiring our attention, this time theoretical in nature, is that whilst the Italian architect Rossi imported techniques and materials from his home country, his skilled workers were indigenous. The new construction technologies and materials were imported into Egypt by Italian entrepreneurs [4]: Nicola Marciano, a Neapolitan who settled in Egypt from 1863 onwards, was the first to use reinforced concrete in the construction of factories and began selling the Hennebique system in 1895. The building contractors Ernesto di Farro, founded in 1900, and which had offices in London, imported the system of piled foundations that made it possible to build on unstable ground, as was often necessary in Egypt; the Italian engineer Siacci invented a construction system (based on the use of reinforced concrete) that took his name and became widely used from 1900 onwards 18. Italians also held a monopoly in importing marble and working it; by 1930 the highly successful Sornaga factory was employing 1400 workers and was specialising in marble and ceramics, but was famous above all for manufacturing bricks as a construction and a finishing material. Mario Rossi worked with Sornaga, cultivating his passion for decorated ceramics, and still today the word sornaga in Egyptian dialect is the name given to the fired brick finish that Rossi used at various times, both for mosques and houses.

The most important public building project in Alexandria in the 19th century was the Corniche (the seafront) designed by the Italian Pietro Avoscani and constructed (1899) first by the Italian firm of Almagià, and later (in 1927) by another Italian firm, Cartareggia e Dentamaro. It is likely that in a situation in which half of the European technical staff working in the Municipality of Alexandria consisted of Italians, it would have been normal practice for an Italian architect to use an Italian contractor [5]. Angelo Sammarco wrote *"as for many other foreign countries, so it can be also be said for Egypt that there is no important construction on which Italian ingenuity and Italian labour have not worked, and that the artistic decoration of the main urban centres is an Italian creation."* [6] But by the time he wrote this, the companies working with Rossi were already Egyptian; he adds *"as for the trades, it would not be an exaggeration to say that the Egyptians served their apprenticeships at the school of the Italian workers. From those workers the Egyptians learned their methods, secrets, their innovations, and their taste for art in the use of wood, metal, stone, or concrete."* [7]

CONCLUSION

Generally speaking, in Rossi's buildings the local Egyptian identity manifests itself more in their stylistic development rather in their typologies or in the methods used to construct them; this archaeological and historicist continuity with tradition is their most immediately obvious aspect, but it can certainly not be ascribed to some romantic personal desire on his part to re-evoke that tradition: on the one hand, the aristocracy of the Egyptian court wanted mansions in the classical

style because this was thought to be more truly representative of the last generation of the Ottoman Empire, which had been brought up in the European tradition whilst on the other hand, the construction or renovation of mosques commissioned by the Ministry of Awqaf had to fully respect Islamic tradition. The proportions and form of his minarets, for example, often take the Circassian tradition as their reference, as in the minaret of the Al-Mursi Abou al-'Abbas Mosque; the geometric profiles of his domes are reminiscent of Mamluk pointed arches; and the decorative motifs on his extradosses often take Mamluk geometric floral patterns as their reference; the recesses framed by muqarnas, or the trilobite profiles of portals, evoke the Qaybay period. As the highest point reached by Islamic art in Egypt, Mamluk architecture is its consolidated historic substratum of reference and because it re-lives in the modern age through architecture, this architecture is known as "Neo-Mamluk". The Awqaf administration itself then began to promote this revivalism. Rossi's creative process was based primarily on understanding traditional building types by direct observation, surveys, and studies of Egypt's heritage, but it is obvious that his "imitation" of them was not mere copying of this tradition *sic et simpliciter*; he was also bringing original input of his own which had the effect of "updating" it. His mosques are emblematic buildings in which the European and the indigenous necessarily confront each other; so rather than seeing the orientalism in his architecture as merely an "eclectic collage" of parts borrowed from Mamluk or Ottoman buildings, they invite us to think less simplistically and not see *arabisance* as something Rossi would have had to reject for the sake of orthodoxy: an orthodoxy that in any case could not have been reconciled with the (inescapable) introduction of European construction techniques. Bringing these two approaches into confrontation is not, therefore, an attempt to resolve a clash of civilisations, but the physical expression of a cultural, typological, technological, and stylistic reconciliation between the Orient and the West, a specific "moment" in a process of development in which modernity and tradition encounter each other. [8]

REFERENCES

[1] Araujo, J.C. and Chaudhry, F.H. (1996) Experimental evaluation of 2-D entropy model for open channel flow. J. Hydraulic Engrg., ASCE, 124(10), 1064-1067.

[2] Batoli L., Zangheri L. et al. (1992), *Mimar Sinān. Architettura tra Oriente e Occidente*, Florence, Alinea Editrice.

[3] Dickie, J. (1992), The works of Mario Rossi at Alexandria, in «Environmental Design: Journal of the Islamic Environmental Design Research Centre », Carucci Editore, Rome, p. 99.

[4] Volait M. (2005), *Architectes & Architectures de l'Egypte moderne. 1830-1950 Genèse et essor d'une expertise locale*, Paris, Maisonneuve et Larose, p. 143.

[5] Awad M. (1992), Italian Influence on Alexandria's Architecture (1834-1985), in «Environmental Design: Journal of the Islamic Environmental Design Research Centre », Carucci Editore, Roma p. 83.

[6] Sammarco A. (1937), *Gli italiani in Egitto. Il contributo italiano nella formazione dell'Egitto moderno*, Edizioni del Fascio, Alessandria, p. 167.

[7] *Ibidem*, p. 173.

[8] Turchiarulo M. (2012), *Building in "a style". Italian architecture in Alexandria, Egypt. The work of Mario Rossi*, Roma, Gangemi Editore.