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The constructive techniques of the moorish roofing frameworks: The case of the Mirador of the Reales Alcázares of the Catholic Monarchs in Seville

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In recent times the roofing frameworks which cover the Mirador (observation pavillion or covered area) atop the Reales Alcázares (Royal Palace) in Seville have been restored. Thanks to this restoration it has been possible to examine first-hand and close-up this magnificent example of Moorish architecture, constructed during the reign of the Catholic Monarchs (Ferdinand and Isabella), which transport us from today to a very special epoch, and which speak to us of six long centuries that have left their mark on each of the basic elements.

The Mirador of the Catholic Monarchs is located on the top of the high Palace of Don Pedro above what is today the Hall of King Carlos V. Its construction caused a partial destruction of the upper room of the prince, which today is called Don Pedro's Bedchamber, cutting off the arched entryway to that room, due to the difference in height between the two. It is open on the one side looking over the garden and on the other to the high gallery of the Patio de Las Doncellas, or Maidens' Patio, and it is located between the aforementioned Bedchamber of Don Pedro and the Family Dining Room. According to Ana María Fidalgo, we had no knowledge of it until the year 1977, when the architect Rafael Manzano Martos discovered it during the restoration process being performed on the Palace of Don Pedro.

This same author (Ana María Fidalgo) asserts that during these recent restorations, the ceilings were returned to their original state, since they had undergone multiple remodeling projects up until then. Nevertheless, this is not entirely the case, since in more recent investigation and studies carried out by Inmaculada Ramírez López as the Restorer of the roofing framework, paintings and inscriptions have been discovered that had been unknown of to date, and that could very well belong to the original roofing framework.

The first restoration of which we have information is the one carried out by Juan Fernández and Juan de Simancas, since in a report given by the Masters of the reconstruction, there is an indication that in the new room above the garden, all the deteriorated wood of the roofing had to be repaired, being substituted by new wood and then being re-roofed.[1] Posterior restorations of the roofing framework have been numerous but not much information exists about them. However, they are visible in the multitude of elements that have been added throughout the centuries, with better or worse results.

A brief presentation of the framework

Its form is a square framework made up of four aguas and three roof slopes. Due to the constructive solution of the pares, we are analysing a framework of par and nudillo which uses limas mohamares[2] in the intersection of the different roof slopes. All these have been made using the apeinazado technique, and the final decoration was resolved with a tie-of-eight and mocárabe squares. The four faldones were decorated alternating rows of eight-pointed stars and little ties.

Elements and method of construction

In order to describe the method of construction of the roofing/ceiling, the study was based upon an exhaustive, detailed analysis of each and every basic element and the relation between each element and the others.

In the first place, we present and place each of the elements of the roofing framework, beginning with those elements that have to guarantee its placement above the walls on which it rests. This perhaps is the least known area, because of being hidden from sight, and yet it is also the most important factor in guaranteeing the general stability of the structure. We will see later on how the greatest part of the problems that the framework has, have their origin in the supportive elements.

The hidden structure. The foundation of the framework

A very important fact worth bringing to light in regards to the foundations of this roofing framework, and also a few other roofings analysed (such as the Antecapilla or the Bedchamber of Don Pedro), is the lack of basic elements to guarantee its stability in the place upon which it rests.

The Mirador framework does not have elements such as *nudillos* or *solera*. The *estribos*, which are basic elements of structural stability, rest directly atop the walls of the room, without the minimum presence of some other element in the form of a layer of cement between the estribos and the wall, to somehow ensure the plane level of the receiving element.

We will differentiate between the transversal and longitudinal estribos, since there have been substantial differences detected between them in their geometric, supportive and conservational characteristics. The former are shorter and of greater edge than their perpendicular counterparts, and they are partially embedded into the wall, which makes it impossible to know the geometric characteristic of its total thickness; whereas the longitudinal estribos sit directly atop the crowning of the wall.

The longitudinal estribos are formed by two others, united in a lengthening to approximately the point of junction of the braces (tirantes). The length of the room (14 metres) is too long to support one sole element in the crowning of the wall. If we consult the «Ordenanzas de Sevilla» we see how long the different beams of wood had to be as a general rule, and these oscillate between the 25 feet of the *viga de acarro* (7,5 m.) and the 12 feet of the *medio ponton* (3,60 m.). So the longest beam of the Mirador's framework (9,13 m.) is quite a bit longer than the vigas de acarro specified in the «Ordenanzas»; and the rest, 4,9 and 5,2 metres, are located between the *media viga* (4,2–4,5 m.) and the *terciada* (5,32–5,70 m.) specified in the same text.

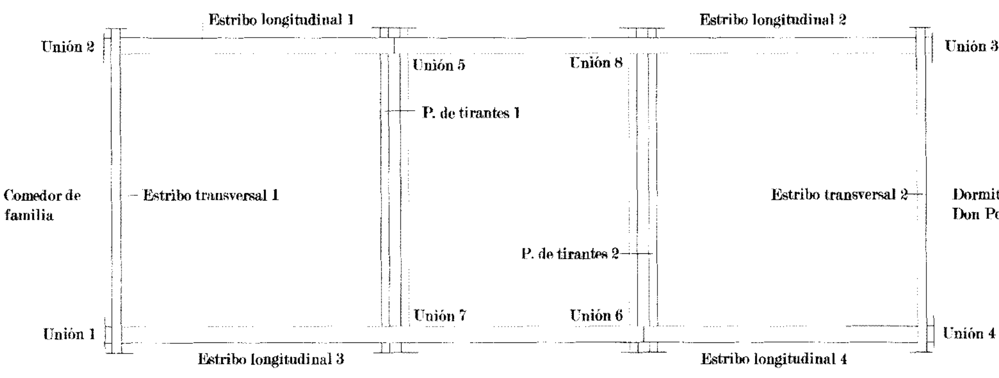

Figure 1
Location of the estribos and the tirantes in the framework

In the corners, the estribos belonging to different roof slopes formalise their union halfway up the wood, having a small notch which enables both pieces to not get displaced by the effect of the traction of the rest of the structures; nevertheless the difference of the section of the estribos makes it not possible for the longitudinal elements to have a cut halfway up the section. The junction of the estribos in their prolongation does not work as such. The elements which come together on them work independently.

Another important element in this section which came into being basically for structural necessity, is the tirante (brace). The size of the room makes these elements absolutely necessary. When the relation between the height and the width of the room is reduced, there is a danger of collapse in the crowning of the walls, since the horizontal pressure upon the estribos is very pronounced. The tirante collaborates in the absorption of part of the pressure and therefore gives equilibrium to the structure. A total of two pairs of tirantes have been provided in the length of the structure upon which the estribos sit.

The perimetral wall of the room, upon which the framework sits, is crowned by the estribo, as we have already described, which rests directly upon it; therefore since there is neither solera nor canes, the tirantes have to be embedded into the walls. The embedding measures about 22 cm.

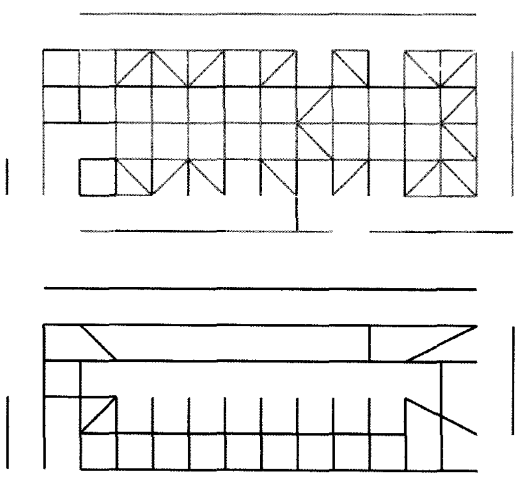

Figure 2
Embedding of the tirante into the wall and the union with the longitudinal estribo

If we stop to observe the junction with the estribo, we see that a 7 cm tall cajeado has been performed in the tirante, leaving a 2 cm tall espiga (see figure 2) to be placed into the estribo. We do not know exactly how much of this union is embedded into the wall; however constructive logic and the load that the tirantes have to absorb lead us to think that it must be as visualised in the representation.

At this time it is necessary to pause and make the observation that this is one of the points which has brought up more questions and doubts in regards to the analysis of the origins of the tirantes, since most of the data analysed lead one to think that the ones we see now do not pertain to the original framework but to the reformations carried out in 1908 in which the need to replace four wooden tirantes, replacing the originals, was noted.

> «To reinforce the wooden bracing, put into place four new wooden braces instead of the defective ones and to zancar their alfardas». (from the «Budget Book»)

The tirantes in a framework of a certain size or importance, have always been ideal elements for carrying out diverse decorative craftings, mainly because of their position, up front in the visual plane of the spectator. And, what is more, there has always been a decorative hypothesis about the use of double tirantes, since they made a good support for the ties of lacework (lacería) which covered the framework. It does not seem logical that in a framework of this kind, the finishing would be so rough and undelicate.

All of this data, together with those derived from the embedding into the wall and the junctions with the rest of the elements, bring one to consider that we are seeing elements that date back to the beginning of the 20th Century, new tirantes without any decoration (unlike the deteriorated originals which possibly had a tied crossover lacing effect, according to the standards of the epoch).

This doubt gathers force when we analyse the pictorial decoration which covers the sides of the tirantes, since according to the criteria of the modern restoration experts, these belong to periods prior to the reformation of 1908; to be exact, they are similar to others located in the frieze of the framework which date back to the 16th century. Let us leave our «doubt» open then to the posterior development of the research being done in this field.

Finally, we will describe the part of the framework setting that is not hidden, which has the assigned job precisely to leave «unseen»behind them, each of the previously mentioned structural elements, and to serve as a pictorial support and visual transition between the wall and the framework of the roofing/ceiling.

THE VISIBLE ELEMENTS

The superficial elements of the *arrocabe* of the Mirador's framework are formed by a double alicer, in which the first plank is nailed into a mold or tocadura, which is also nailed onto a type of wooden bracket which becomes the perimetral zuncho at the sides of the room. This first plank, or lower alicer, is finished at the top with another one which serves as the mold or tocadura for the second one, right in the bottom coat of the brace. Behind this second alicer is hidden the junction between the tirante and the estribos with the wall, as well as the bottom part of the pares where they meet the estribo. The former estribo merely hides the crowning of the perimetral wall.

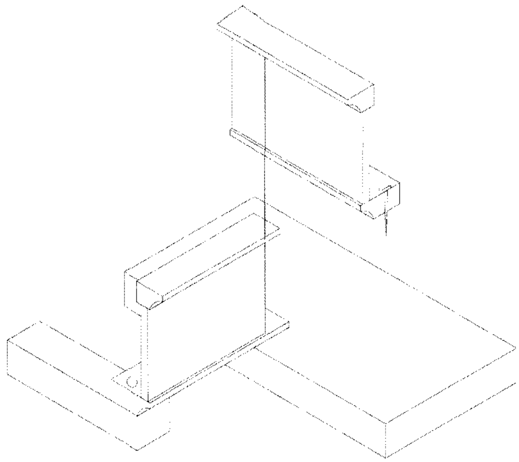

Figure 4
Union at the corner of the bottom parts of the planks (aliceres)

THE INCLINED ROOF SLOPES

Before beginning an analysis of each of the constituting elements of the roof slopes, it is necessary to make mention of the set-square of the framework used (the inclination of the alfardas). Measuring directly upon the alfardas we obtain

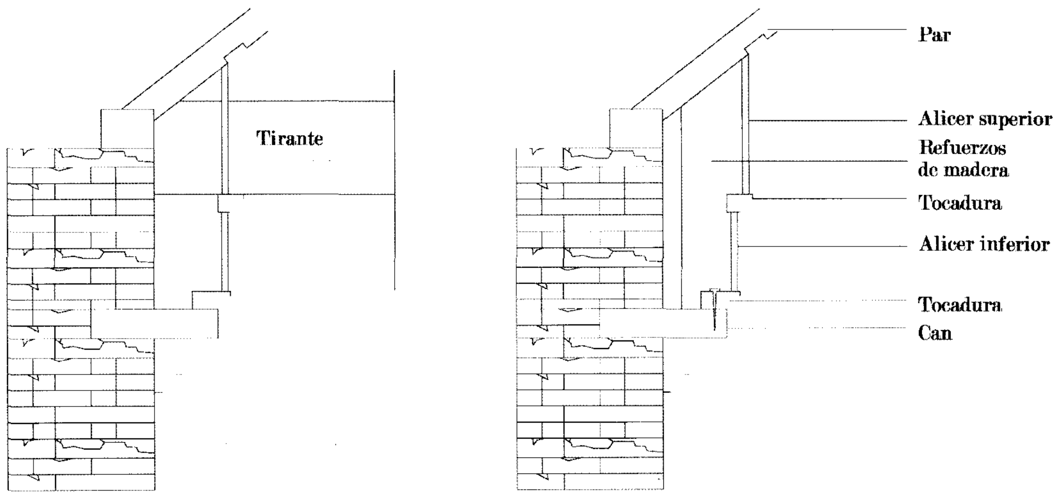

Figure 3
Section of the arrocabe

figures that range from 35,8 to 42.67 degrees. This fact confirms that the deformation of the structure is significant, since the theoretical set-square of the framework is at 37,6 degrees.

Structural composition

In the first place, as definitory elements of the inclined roof slopes, we must analyse the *pares* or *alfardas* and the *péndolas* or *manguetas* which necessarily appear in the frameworks that have limas. There are a total of six pares in the transversal roof slopes and forty-four in the longitudinal ones, plus a total of five manguetas which accede to each of the limas that pertain to the faldones. All of the pares are «live» since they form part of the lacework of the framework.

Since this is a framework of mohamar lima, each of the faldones has two *limas* at its lateral limit, with two from each of the contiguous faldones coming together at the corners.

Let us recall one of the fundamental rules for the procedure of making this type of structures upon which posteriorly tied lacework and stars will be crafted; the rule denominated by López de Arenas the «Law of *calle y cuerda* «(aisle and cord).[3]

In the case of the Mirador, the planning of the ties is precise, nevertheless the thickness of both pares and nudillos is of 7,5 cm, whereas the width of the aisles vary: in the testeros of the aisles they measure from 16 to 16,5 cm, and in the rest of the framework they measure from 14,75 to 17,5 cm (the majority being between 16 to 16,5 cm).

This statistic reveals to us that the differences measured are due to the movement experienced by the framework. It is produced more intensely by the longitudinal faldones, not so in the testeros, obviously the deformation increases in the extent that the length also increases. We can affirm that the real separation is close to 16 centimetres. We are speaking, then, of margins of error of around 0,25 and 0,5 cm, which in wood are not that significant, and even less so given the procedures used in that epoch.

This difference can be due to several different factors : on the one hand, the movements that the structure has had to support in general have been important, whereby the spaces between the alfardas could have grown (as we will later see, many of the pieces have become unjointed) and also, the passage of time can cause minor losses of parts of the wood. All this together with the assumption of possible small errors in the procedures of its construction make us maintain the validity of the aforementioned rule, to a certain extent at least. In any case, we can find no explanation that justifies making the aisle

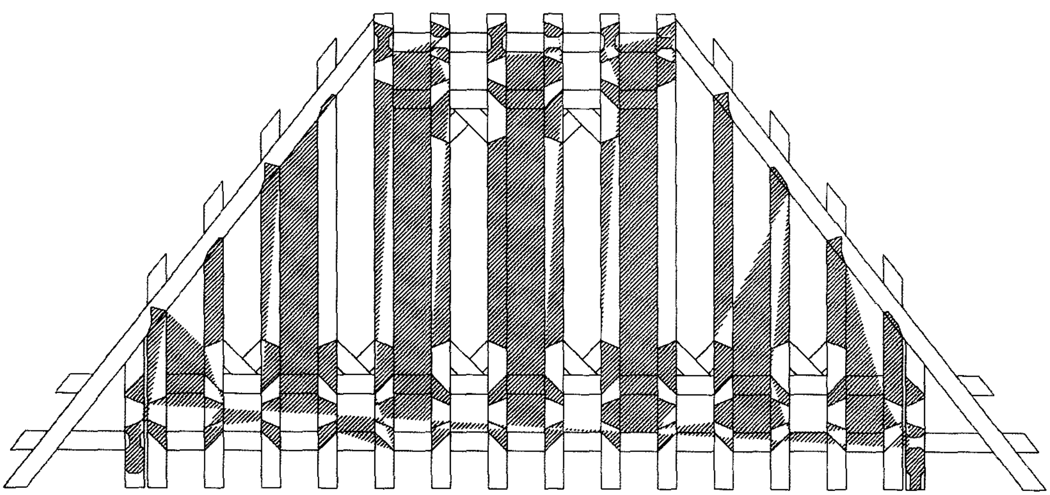

Figure 5
Location and cut of the pares and the manguetas

(calle) 0,5 to 1,0 cm wider, measurements that are insignificant. After having made this important clarification, we now will discuss how the different junctions between the aforementioned elements are formalised.

The junctions in the estribos of the pares and manguetas are formalised from the patillas to the barbillas, with the perpendicular cut done on the horizontal plane. Usually in order to fix the element securely onto the estribo this type of union was reinforced by nails, however in this case, no reinforcement has been has been detected whatsoever. The patilla measures 3,5 cm and the barbilla 10 cm. The cut of the barbilla is done at approximately 1/3 of the height of the par, conforming to what was the standard of carpentry. The limas have the same kind of union, however their state of conservation does not permit us to precise their geometrical characteristics.

It is also usual to find in this kind of structure that the pares culminate in the hilera which closes or culminates the framework at the top. The original roofing of the Mirador did not have an hilera and the pares were united by means of ensemble of garganta and quijera. This type of ensemble diminishes the resistent section of the pares at this point, therefore it is usually reinforced by means of some metallic element. But the junctions analysed lack any type of reinforcement, thereby they are in a very weakened condition.

On the other hand, the manguetas reach the limas at a cut perfectly parallel to the contact surface,and are joined by nails to the main structure. The limas are joined to the pares by the same means.

The rest of the structural elements pertaining to the faldones are the *peinazos* and the *arrocabas*,[4] located in respect to the pares and limas as seen in figure 6.

We will differentiate between the orthogonal peinazos and the inclined ones. The former are the ones that are located perpindicular to the pares. The junction with the pares is produced almost certainly by means of «*a romo y agudo*» with an espiga or wooden nail. Although this method has not been officially confirmed, in some of the pares the boxed space formed for the insertion of the espiga from its corresponding peinazo has been observed. The inclined peinazos are fixed both to the pares and to each other by nails. The junction of the arrocabas and limas is also done this way.

Non-structural Elements

In Figure 7 each and every element pertaining to the inclined roof slopes is shown, both structural and non-structural, which has the job of conforming definitvely the decorative layout of the framework.

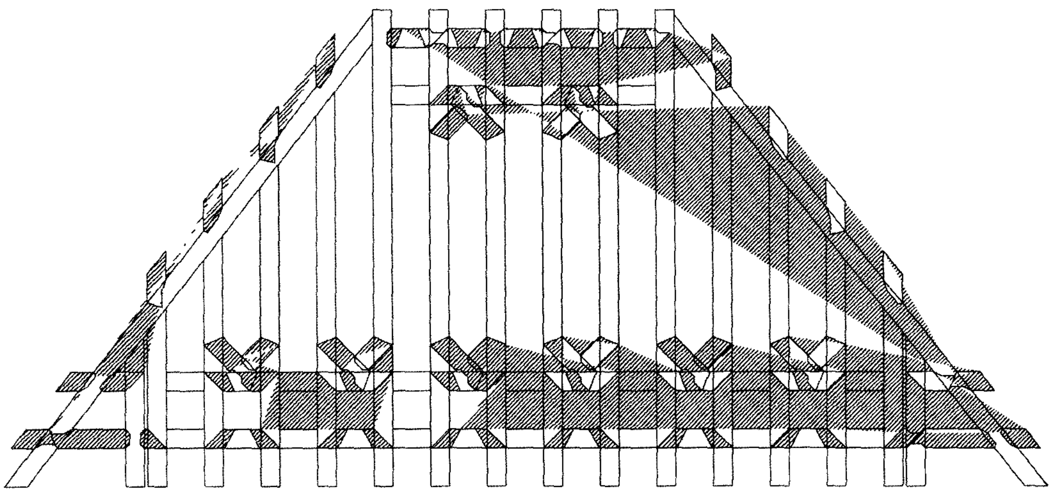

Figure 6
Situation and cut of the peinazos and arrocabas

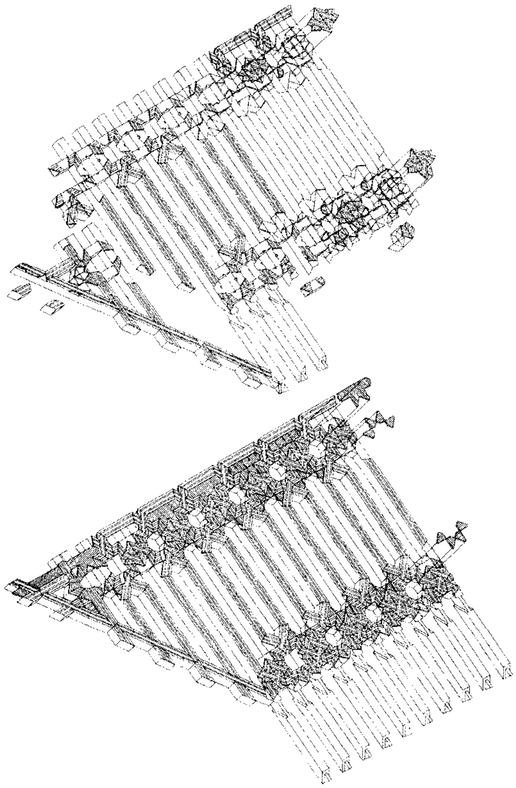

Figure 7
In the upper part the resistent structure and its respective unions are indicated, as well as the **taujeles** and the bases where the supports, wedges, and surface boards all appear. In the lower part of the figure, the inclined roof slope is shown with all of its elements in position, including the «tablazón de relleno»

The taujeles form part of the decorative layout of the lacework ties of the framework, without belonging to the structural plot. They are panels of 1,5 cm thickness which complete the layout, usually nailed to a *tablazón superficial*, which appear at each of the aisles contiguous to the eight-pointed stars. We must mention the union of these panels into the structure as a special characteristic. The panel has the same thickness as the rebaje (diminishing) done on the pares and the peinazos, coinciding with four protrusiones carried out upon the panel, so that they coincide and fit together perfectly. In the pares the protrusions are trapezoidal in shape, thereby increasing the supportive base.

There are also three distinct types of wedges that are nailed to the structural elements to fulfill basically a decorative mission. A first group forms part of the layout of the eight-pointed stars of the framework. Those of a second group serve as a base to support some of the taujeles, and a third group of wedges are placed in the upper part of the roof slopes, nailed to the peinazos, making the visual bypass from the inclined roof slopes and the almizate, in such a way that the eight-pointed stars located in these points, and the other decorative elements that are necessarily broken, all have their faces parallel. Instead of making the angle by doing a direct cut into the corresponding peinazos, this type of wedge is just added on.

There is another type of panel that directly forms part of the decorative figures of the framework called the *tablazón de relleno* (filler panel). There are areas on the faldones that require the location of these panels, which hide behind them part of the structure, which otherwise would be seen. These panels are an important part of the decoration of the framework since they are situated in the plane that is nearest in sight (on the same plane as the main pieces), and sometimes occupy a great part of the surface serving as a base for perfected pictorial decoration.

And lastly, we have the *tablazón del trasdós*. It is part of the fianl covering of the framework and its presence is taken advantage of to give a pictorial background to the framework. The panels are nailed to the resistent structure of the framework, pares and limas, and cover practically the entire exterior surface of it.

THE PLANS OF THE NUDILLOS. THE ALMIZATE

Structural composition

In the first place, we shall locate the definitive elements of these plans, which are the *nudillos*. We must mark a distinction between two different types: the long nudillos, which are devloped along the almizate (types A,B,D and F), and the short nudillos, which are interrupted by different peinazos, which are necessary for the configuration of crossing and tieing of the lacing (types C and G). All of these are situated below the terciary.

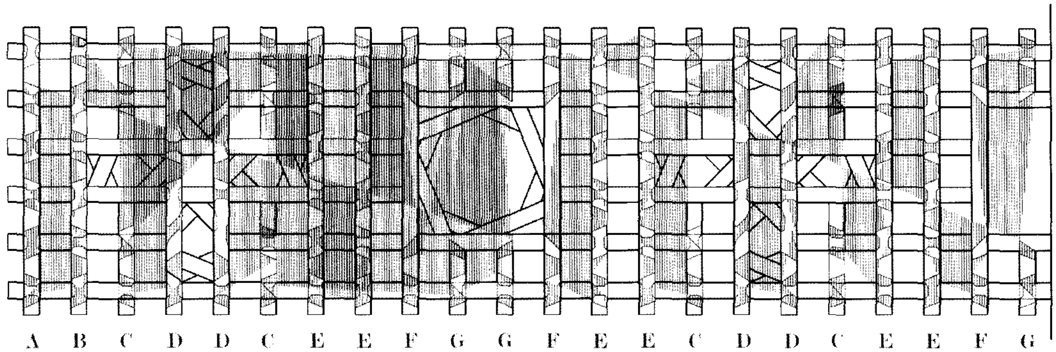

Figure 8
Types of nudillos of the Mirador

The nudillos are joined to the pares by «a garganta y quijada», following the standards and rules of carpentry. «Echando cabeza de armadura» in the alfarda we make the corresponding cut in the garganta. The cornezuelos of the nudillos are of approximately one-fourth the thickness of this element.

The type of junction between the longitudinal nudillos and peinazos is unknown, although we would dare to say that the most probable resolution is the one that traditionally has been used to unite peinazos and nudillos; that is, the joining «a romo y agudo» with the wooden nail, or espiga.

Next we will analyse the *peinazos*, which usually are located and joined perpendicular to the nudillos, thereby contributing in an important way to the stability of the almizate. he peinazos and the nudillos together transmit the pressure to the alfardas.

There are two fundamental groups of peinazos in the almizate. On the one hand, those that are situated in an orthogonal way to the nudillos (types a, b, c, d, e, f and g), and those that are placed in an oblique way, which contribute to giving a greater stability to the entire set, while at the same time serve as a base for the layout of the design of the lacework ties (types i, j, and k).

In figure 9 all the peinazos that make up the almizate are determined.

We have mentioned basically two groups of peinazos, and of these we only know for surre about

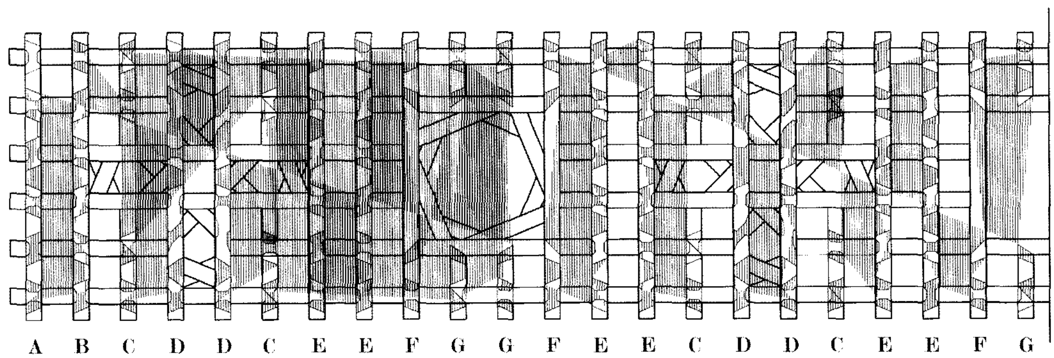

Figure 9
Types of peinazos that form part of the almizate

the unions of the types «i» and «j» to the nudillos. These materialise by means of clavazón to the resistent structure. The rest of the unions are done through different types of junctions, of which none has been accurately confirmed.

The types «a, b, c» and «f» are almost certain to be the junction of «a romo y agudo con espiga», whereas the types «d» and «h» would have this type of union at one end, while the opposite would have a «caja y espiga», with a boxed area made in the panel of the nudillo.

The junctions between the type «k» peinazos and the masters (which will be either peinazos or nudillos, depending on the position that they occupy in the almizate), have not been discovered, neither do we dare to suggest a possible form of this union. The oblique placement of the wooden pieces and the great number of elements that all come together in the same area make any supposition about the junction vain. In any case, we can affirm that for the union of the main elements that make up this pair of peinazos, a boxed area would have been hollowed out in the panel of the peinazo or nudillo and in it would have been inserted some kind of wooden peg (espiga), that will have to remain unspecified since it is hidden inside the boxed area. This peg could adopt any of many forms within the boxed area, so we will leave this matter open to the further developments of this investigation.

Finally remains to be discussed the solution adopted in the union between the peinazos. Except for the union of one of the components of the pair of peinazos of type «k» that rests on the resistent masters to open the mocárabe cube, by means of chiseling the peinazo, the rest make their unions by means of clavazón.

In figure 10 all the structural elements of the almizate are shown and the respective unions between them. Except for the junctions that are nailed and those of the entire element with the pares, the rest are all theoretical, due to the impossibility of confirming these facts, save disassembling the structure. The junctions between the peinazos that form the central octogon and the masters are the only ones that have not been defined.

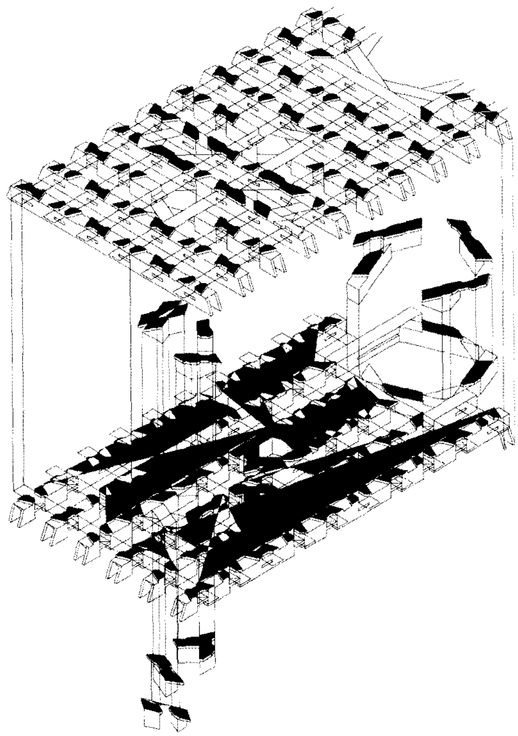

Figure 10
The structural composition of the almizate and the relation between each of its elements to the others

Non-structural elements

It is logical that in the almizate the same elements that made up the inclined roof slopes are repeated, so we will not go into this part more profoundly than we need to. Again three types of wedges appear, and the different types of tablazones, of trasdós, of relleno, and superficial. In this case we will indicate the exact situation of each of the taujeles that make up part of the almizate in relation to the general structure.

The same procedure is used to make the taujeles as to make the tie is the nudillos and peinazos, with the difference that in this case the little panels are cut to 1,5 cm thickness and in the former , diminishment of the same measurement has been made where part of these pieces have to fit in.

To make the different cuts, a series of set-squares is needed, used as the only plotting instrument by the carpenters «de lo blanco». These set-squares are defined by the wheel of ties or crossover lacing that they are going to plot as the design of decoration for the framework. In this case, the wheels are of eight,

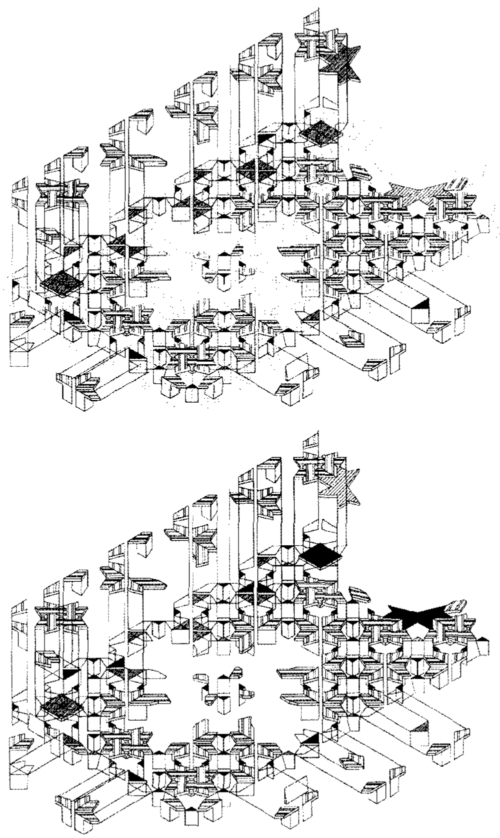

Figure 11
Non-structural elements of the almizate. The first figure shows all of the elements in relation to the rest of the structure, while in the lower part each has been isolated for a better identification

so the corresponding set-squares are therefore of eight (nominally of the tie), of a square (nominally of the theoretical wheel of a half of the arms) and of blanquillo (ataperfiles).

And finally we must make reference to the three *mocárabe* cubes that alternate with the rest of the decoration of the almizate.

Constructive development:

The first step that has to be taken is to place on top of the peinazos that make up the structural part of the octogon a panel that is in the same shape and size as the cube. The unions between the different toothing would be hidden by the peinazos of the almizate; however,it is logical to think that each tooth must be nailed upon another surface than that of its own structure. These panels are known in the theory books as albernica or alberneca. The experience of having assisted at the recent restoration of the framework confirms this fact, since the whole of the ensemble works as one sole piece supported by the structure.

Next, sixteen atacias rest upon eight eighths of the octogon and between them are fitted eight half-squares open at the widest part.

Between one atacia and the next one, eight dumbaques grullillos are fit in. (All of these elements need to have their corresponding cuts in the ends so that the «live» awns are not seen: . . . » and later upon the front of the mast itself are fit in another eight dumbaques grullillos. On these, on the high edge a lomillo is left to give it grace» . . . Fray Andrés de San Miguel, who does not specify in his theoretical paper

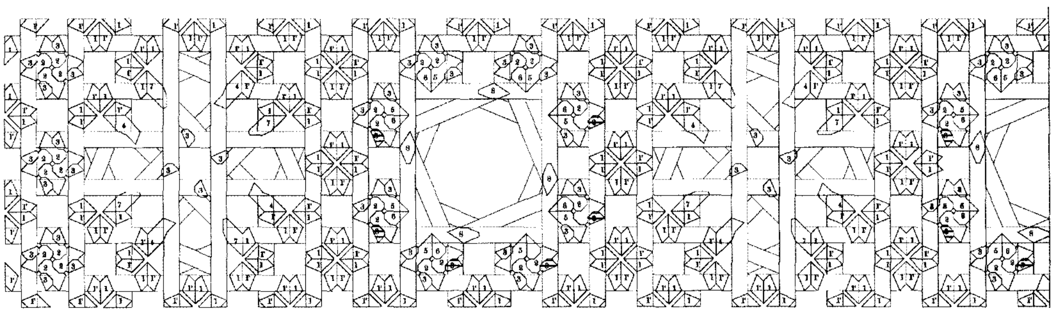

Figure 12
Types of taujeles

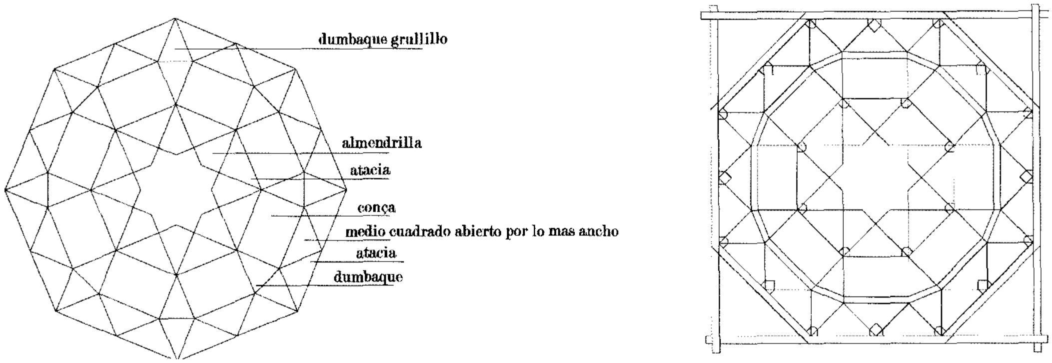

Figure 13
Geometric layout of the mocárabe cube and the final grouping, including the support structure that stays in the middle resting upon the peinazos

the precise location where the cut is to be done; supposedly these operations were sufficiently checked and done so that he could avoid giving more explanations about it).

On the half squares are placed eight conças between which another eight dumbaques are fit in, and all the pieces with their corresponding lomillos; and finally, on the conças, eight new atacias are placed and between each, to complete the composition, their corresponding almendrillas are fit in.

1) Marín Fidalgo, Ana. *El Alcázar de Sevilla bajo los Austrias*, Ediciones Guadalquivir S.L., Seville 1992
2) When the meeting between the roof slopes is resolved by two pieces, each pertaining to each of the planes of the faldones, then we are speaking about a mohamar or folded lima. This type of lima favoured the prefabrication of the faldones on the ground.
3) This consists in the creation of an orthogonal woof or plot module of the same thickness as the alfarda, calling the space occupied by the par (or the peinazo in the orthogonal direction)a cord (cuerda), and calling the space between two consecutive alfardas an aisle (calle). To follow the rule, the latter space (that is, the aisle) must be the same width as two cords. In this way the carpenter would be able to work the design of the set of precise cuts so that the wooden pieces can be placed one atop the other, producing the effect of a lacework star.
4) Peinazo: a piece of wood that is assembled with another in order to make a determined pattern, be it a door or a window, or the framework of a roofing, with or without lacing ties. Arrocaba: in the wooden framework of mohamar limas, they are the pieces that give a visual continuity to the péndolas in the aisle of limas, of the same square and rhomboid shape.

Glossary

agua. the slope of a roof
albernica. (alberneca) panel on which a toothing is nailed
alfarda. the same as «par», each of the two pieces of wood that in the roof truss of a roofing framework give the sloping to the roof
alicer. a thin strip of wood that serves as a transition between a wall and the roofing /ceiling
almendrilla. almond-shaped piece of wood used for decorative purposes
almizate. central point of the sloping of the roof in wooden roofs that are decoratively made with timbers and planks or beams that are visible
apeinazado. similar to or using the «peinazo» in construction
arrocabe. timbers situated at the top of the walls of a building to unite them with the roofing framework that they will be supporting
«a romo y agudo». a means of uniting pieces of wood, «romo» means blunt and «agudo» sharp

atacia. a particular way of making the cut in wood
ataperfiles. the same as «blanquillo»
barbilla. an oblique cut made in the front of a timber in order to make it fit into a shallow hollowed place of another piece of wood
blanquillo. a particular acute angle
cajeado. emptied or hollowed out part of a piece of wood made for another piece to be inserted in it
canes. corbels, the head of an interior roof beam that rests on the wall and extends to the outside, supporting the crown of the cornice
clavazón. group of nails put into something or prepared to be used in something
cornezuelos. little hornlike parts of wood
dumabaques grullillos. a particular type of wooden pieces used in the old roofing frameworks
«echando cabeza de armadura». when making the roofing framework, making the angle that forms the inclination or sloping of it
espiga. a type of cut imitating lines at the end of a piece of wood made so that it will be assembled and fitted with others similar, in a peg-like way
estribo. abutment; solid piece of wood made to support the weight of the roof in those parts of the wall where there would otherwise not be any support, such as the tops of doors, windows, or arches
faldón. triangular sloping of a wall
garganta. the narrowest and thinnest part of columns, balusters and other similar pieces
hilera. timber upon which the «pares» of the framework sit and which make up its ridge
lima. piece of wood located in the dihedral angle that is made by the two inclined planes of a roof, and upon which the two shorter «pares» of the framework rest
lima mohamar. a style of roofing that has two «limas» for each «faldón» or triangular slope
lomillo. decorative edging or back part or something that protrudes
mangueta. the same as a «par», except that this sits on the «lima»
media viga. a beam of 4.2 – 4.5 metres (old term)
medio ponton. a beam of 3.60 metres
mocárabe. a decorative work made of the geomatric combination of matched prisms, and that has the bottom edge cut into a concave surface
nudillo. a piece of wood that forms part of the «almizate» or central part of the roofing framework, and which joinsthe «pares»
paño. inclined surface
par. each of the two beams that in the top of the roofing framework give the inclination to the roof
patilla. the protruding part of a piece of wood destined to be fit into another piece of wood
péndola. see «mangueta»
quijera. each of the two branches of the u-shape formed at the end of a timber when the hollowed-out part has been made in order to have the «garganta» or narrowed part of another piece od wood fit into it
rebaje. a diminishing of thickness, by means of shaving or sanding or whittling, especially for fitting together different parts of wood
solera. a planed piece of wood upon which sit or are assembled other horizontal, inclined or vertical timbers
tablazón de relleno. a group of wooden planks or timbers whose job is basically decorative and to hide other more unsightly «inner workings»
tablazón superficial. panels that are placed in each of the aisles next to the eight-pointed stars
tablazón trasdós. part of the final covering of the framework, these boards are used to give a pictorial background. They are nailed to the resistent parts of the framework, the «pares» and «limas» and cover practically all of it
taujel. a slat; a long thin narrow piece of wood
terciada. a beam of 5.32 – 5.70 metres
testeros. the shorter, more secondary triangular parts of the inclination or slope of the roof
tirante. brace that can be either wooden or metallic (in this framework they are wooden)
tocadura. moulding, part of the of the «arrocabe»
viga de acarro. beam of 7.5 metres
zancar. to fix or stabilize by wedging pieces of wood or other material between two movable parts, so that they do not move any more

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