

ARCHITECTURAL MODULATION AS A PROJECTING SYSTEM IN SANTIAGO DE BENICALAF

LA MODULACIÓN ARQUITECTÓNICA COMO SISTEMA DE PROYECTAR EN SANTIAGO DE BENICALAF

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Abstract

The current rules of projecting contemporary architecture are different from other historical periods. There are some rules and laws that composes each different styles. The treaty writers recover classical composition with order and balancing geometric figures, especially for façades and doorways, improving the architectural production at that time. The architects of the 17th century knew the treaties and they applied on their buildings, so we can talk about a culture architecture and by analysing their works, it brings us closer to its process. Such is the case of the façade of the church of Santiago de Benicalaf (Valencia) -Spain- in which by following the most relevant Spanish treaties, many of those rules are reflected. This study allows us to get closer to the architect, in addition to establishing the architectural work as an architectural reference within its heritage context.

Keywords: Valencia; Doorway; Treaties; Fray Lorenzo de San Nicolás; Vignola; Fake ashlar.

Resumen

Bien es sabido que las reglas de proyectar la Arquitectura contemporánea son muy distintas a otros periodos históricos e incluso, entre los distintos estilos existen distintas leyes que las diferencian. Con la aparición de los tratadistas se recuperó la tradición clásica de composición con el orden y figuras geométricas equilibrantes, sobre todo para fachadas y portadas. El usar los conocimientos de los tratados implicaba que los Maestros tenían una formación en Arquitectura y, por lo tanto, se puede hablar de una arquitectura culta y al analizar las obras, nos acerca más a su proceso. Tal es el caso de la fachada de la iglesia de Santiago de Benicalaf (Valencia) -Spain- en el que al seguir los tratados de mayor relevancia, es decir, los conocidos en tierras españolas, se ven reflejadas muchas de esas reglas y que nos permiten acercarnos al artífice, además de asentar la obra arquitectónica como referente arquitectónico dentro de su contexto patrimonial.

Palabras clave: Valencia; Portada; Tratadística; Fray Lorenzo de San Nicolás; Vignola; Fingido.





1. INTRODUCTION

This church is found in an old town called Benicalaf, whose municipal area was located between the municipality of Benavites and Faura, in the province of Valencia (Spain). It was annexed to Benavites in 1856 (Arrando 1992). Currently, its streets have disappeared and its houses are devastated. It is claimed that its walls and foundations were used to divide properties and anchor the land. Today the secluded church appears, in the middle of orange fields, as the only built-up testimony of a town that no longer exists.



Fig. 1. General view of the church of Santiago de Benicalaf, in Benavites, Valencia (Authors 2013).

The church of Santiago de Benicalaf is a church with a single nave with side chapels between buttresses, whose approximate orientation is facing east. Inner dimensions are 17.14×8.75 meters, or approximately 38×75 palmos valencianos - an old local measure known as approximately 23 cm-. These dimensions suppose the succession of two squares in plan. It has four sections: the first, corresponding to the Main Chapel, has a greater depth than the rest that make up the nave (4.30 meters). The two intermediate sections are regular (3.56 meters) while the first, which houses a high choir, has a smaller dimension (3.02 meters). The chevet has an adjacent space on the gospel side, whose access arch, narrow passage and offset from the transverse axis of the main Chapel, suggests an auxiliary use to worship. This space is not repeated on the side of the epistle, although it shows a gap through which it is blocked by a building that is currently missing (perhaps the Abbey house).

2. MAIN FAÇADE

The temple has a single access, at the foot of the nave, facing the Main Chapel, as recommended by Archbishop Aliaga in his famous *Advertencia* (Aliaga 1631). The façade composition is very simple. A plinth stands out and serves as a base. This plinth is interrupted to house the façade:

the bevel of its upper finish turns in the meeting with the jambs of the pilasters that make up the façade, as happens in some nearby churches dating from the seventeenth century (old parish church of San Miguel of Quart de les Valls, parish of Santa Ana of Quartell and parish of Our Lady of the Angels of Benavites).

The doorway is located in the center of the composition, and follows a widely used traditional scheme that is organized in two bodies. In the lower one is the door, while in the upper one a window that illuminates the temple. Usually, in this second body there was a niche that housed an image of the titular saint, so that the window that illuminated the foot of the church was located at a higher level. In Benicalaf, the niche is replaced by a window and the saint by an inscription, also observed in the church of Quartell (S. ANNA). The portal has a Tuscan vignolesque order; Their moldings and parts coincide, although their proportions and measures do not conform the Vignola canon, but a hodgepodge of regulatory lines, proportions of Fray Lorenzo de San Nicolás and Vignola himself, as well as, surely, their adaptation derived from the use of local metric standards.

Regulator paths are based on the circle and govern the front design. In its low body, a circle defines the height of the door and the width -measured on its outer flanks- between pilasters. Another circle, arranged superiorly, defines the architrave, frieze

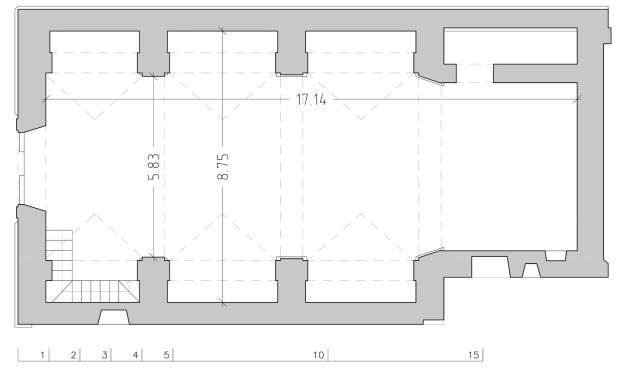


Fig. 2. Plan of the church of Santiago de Benicalaf, with expression of its main measures (Authors 2013).



Fig. 3. West façade. Status as of July 2017. (Authors 2017).



Fig. 4. Façades of the parish churches of Quartell (Santa Ana, 1669), Benavites (Our Lady of the Angels, 1661) and Quart de les Valls (San Miguel, deconsecrated and current House of Culture, 17th century). Note that the plinths rotate in the interruption of the front, as in Benicalaf (Authors 2013).

and cornice with its semi-diameter; the remaining semi-diameter provides the window and the start of the auction (the ball and its pedestal that culminate the cover are outside this regulation).

On the other hand, the stylization of the Tuscan pilaster stands out, which according to Vignola must have 12 modules and which in Benicalaf exceeds 16; showing a very disproportionate capital, whose height far exceeds –more than double– the canonically stipulated by Vignola; It is also worth noting the small proportion of the architrave –theoretical module (12 parts) for 8 real parts–, which generously compensates the frieze –1module and two parts for 2 modules in the built model–. The cornice, on the other hand, adjusts sensibly to the proportions of the great Italian treaty.

As the author who drew the front and his sources of consultation are unknown, it seems likely that among the treatises he handled was the Art and Use of Architecture, by Fray Lorenzo de san Nicolás, in accordance with what has already been said. The use of the Brother Baptist order in Benavites, the choice of the Tuscan order of Vignola in Benicalaf (normally reserved for barefoot convent architecture), suggests the presence of initiated architects who surely had knowledge of this valuable and influential treatise. The parts and their moldings, defined by Fray Lorenzo, as well as their proportions, are very similar to those

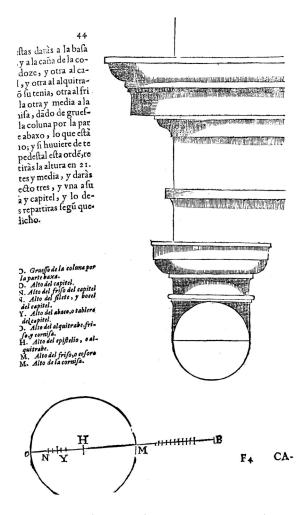


Fig. 5. Tuscan order according to Fray Lorenzo de san Nicolás (Fray Lorenzo de San Nicolás 1633)

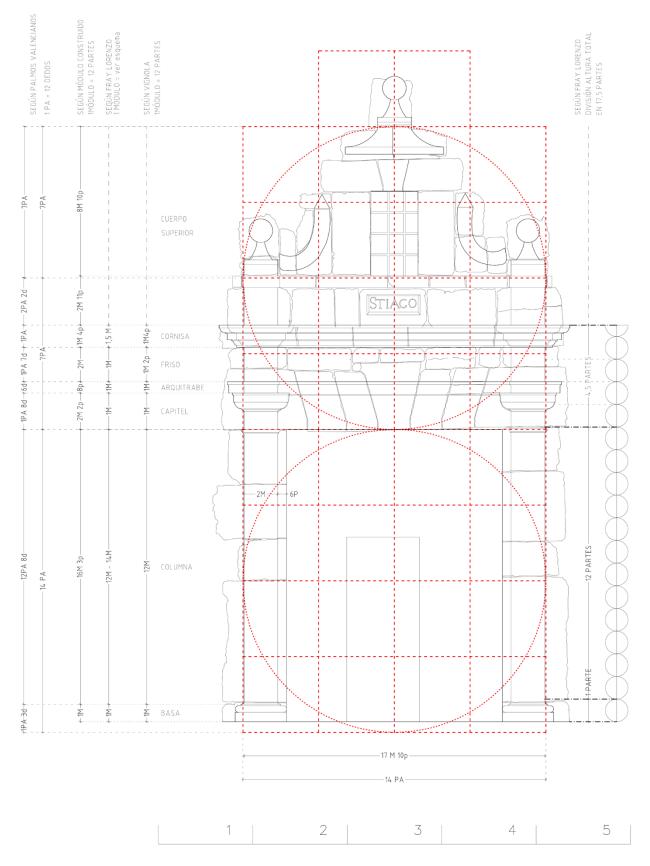


Fig.6 Main front, of the Tuscan Vignolesque order. Its dimensions are delimited in the Valencian metric pattern and in the module that corresponds to the semi-diameter of the column –pilastra-, according to Vignola and according to Fray Lorenzo de San Nicolás (Authors 2013).

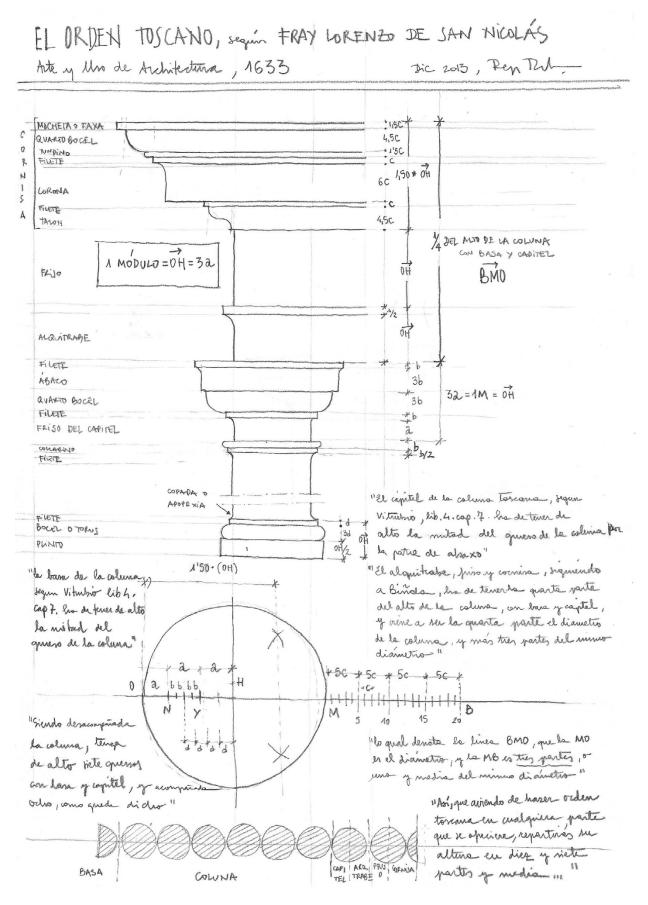


Fig. 7. Tuscan order according to Fray Lorenzo de san Nicolás, which has served to analyze the architecture of the doorway of the church of Benicalaf. Drawn by Pep Pardo 2013.

marked by Vignola. The maladjustment to the canon of the doorway conforms, consequently, to what has been said regarding the comparison with the Tuscan order defined by the Italian. In another vein, between Vignola and Fray Lorenzo there is a subtle difference in the approach of the parts into which the module is divided. The Augustinian Recollect recognizes that it was Vitruvius who established the module as the semi-diameter of the column: "… the other half of the diameter that Vitruvius called the module" (Vitruvius 1997). Now, while Vignola divides the module into twelve parts, our architect devises a system of more varied module partitions, ranging from dividing by 2, 3, 4 and 6 to 20 parts.

Although the independent analysis of the parts carried out offer scattered results that raise many doubts, since the divergences exceed the coinciding measures and proportions, there is a final indication from Fray Lorenzo of great importance, which is reproduced below:

"So, coming to make Tuscan order in whatever part that is offered, you will divide its height into seventeen and a half parts (...)". Clarifying summary that avoids the detailed explanation that our esteemed friar has previously related and that is condensed below in the form of a summary, which for ease here is embodies into a table:

Part	N° modules	
Base	1	1
Column	12	12
Chapital	1	4,5
Architrave	1	
Frieze	1	
Cornice	1,5	
TOTAL	17,5	17,5

Fig. 8. Interpretation of the modules of toscan order by Fray Lorenzo de San Nicolás.

Thus, to draw a Tuscan order, knowing the height, it is enough to divide it by 17.5 parts. In our case, according to an admissible hypothesis, if the façade is made up of the arrangement of two 14-span circles on the façade plane and these were determined in advance, this would offer a known height of 28 spans. Its division into 17.5 parts gives us, with a tolerance that we can accept, values that coincide with the fundamental lines of our portal: the pilasters have 12 parts or modules and the set of capital, architrave, frieze and cornice, add up to 4, 5 modules. This coincides in its general proportions with what is established in a summarized way in the Art and Use of Architecture.

If these proportions are fulfilled, it seems reasonable to think that the tracing process could follow the guidelines, once the height was defined by means of two circles, indicated in the summary by Fray Lorenzo. Now, why does the width of the pilaster, which defines the module that informs everything, appear so diminished? This width, 18 cm, should be, according to the height determined by the regulatory layout, 24 cm, as it approximates the Valencian span. There is no answer, yet, for this fact, that explains the anomalous stylization of the order. On the other hand, the capital and the architrave differ in their proportions from the canonical ones, but their sum coincide with the proportion in height indicated by Fray Lorenzo. Finally, why do the capital and the frieze increase in dimensions to the detriment of those corresponding to the architrave and cornice? The measurements of the cornice are adapted to those established in particular by Vignola and Fray Lorenzo, while in both the capital and the frieze -disproportionate- a circle can be inscribed, since their width and height practically coincide (2 modules). These disjointed data may not be accidental. As it has already been observed in the regulatory layouts, the cover is made of two bodies, an issue that is not addressed in the aforementioned treatises and whose resolution requires a creative and metric effort that controls the proportion between both bodies and between the different parts. It corresponds to 7 spans, the semi-diameter of the regulating circle, the sum of the heights of the capital, architrave, frieze, cornice and attic of the façade that serve as the base for the lateral finishing balls and the window sill. The proportion of the attic is perhaps more harmonious in the executed front than in other with canonical proportions.

Regarding the flights, the impairment of the architrave and the cornices gives the portal a verticality that reinforces that given by the stylization of the pilaster. The fact of limiting the flight of the bodies can also respond to a precise construction period in which certain fashions prevailed; Remember that in the order of the Baptist Brother, employed in several Jesuit royal foundations, the cornices fly little, as explained by Tormo in his invaluable study (Tormo 1949).

Another possible explanation for the little overhang of cornices may lie in the possible reuse of ashlars, an event that already seems to point to some corner blocks, some with a certain Roman appearance. Adapt to given measurements could condition the design, adjusted in its fundamental proportions to what the Augustinian builder proposed.

The upper part is of greater simplicity. A flat attic topped with a strip defines the lower plane of the window and serves as support for the two lateral balls that culminate the axes linked to the pilasters. Two volutes finished in a pyramidal shape establish the transition to the top, formed by a central ball that rests on an articulating element of the window lintel and its associated axis.

In its lines follows the architecture established by the disciples of Juan de Herrera, although these volutes, detached from any other element of stonework in setoff, show a certain improvisation, as much as it is anomalous, compared to the architecture exposed in the treatises, the hanging of the stones from the lintel of the access door below the architrave. This fact reduces the expressive force of the capitals, since it seems to support the lintel and architrave on the collars of the pilaster. Also noteworthy is the lack of care in the stonework joints, which points out the possibility that the cover was, at least, partially covered, as we will indicate below.

The general composition of the façade is completed with a smooth masonry body, which shows the slopes of the roofs of the side chapels and hides those of the main nave. The masonry is crowned by a belfry with two sections and three openings, made of brick. Despite its poor state of preservation, a good part of the lime coating that covered the façade and belfry remains and which reproduced a fake polychrome blocks in ash blue and red oatmeal. The composition of the façade suggests that the belfry may be an addition, which escapes from the general proportion and distribution of bodies. A hypothesis of finishing the façade has been drawn by means of a pediment, adjusted to the general composition by means of a regulatory layout based on the circle - whose adjustment avoids the imperfections inherent to the physical reality of the building.

This consideration abounds in the fact that the belfry does not cover the entire width of the cornice of the central body and that it must be adapted

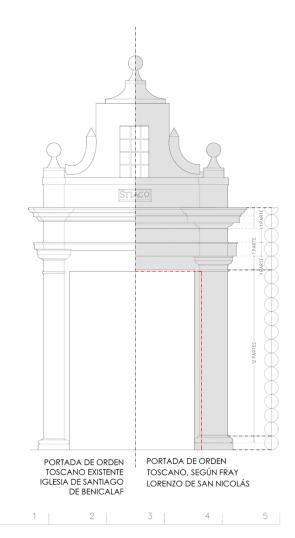


Fig. 9. Comparative drawing between the real cover –left– and the one that, observing the proportions of Fray Lorenzo de san Nicolás, would have been –right–. The similarity in the height of the column shaft and in the coincidence of lines in the upper part of the architrave and cornice stands out. In red strokes, on the right cover, the current doorway is hinted at. (Authors 2013).

by two flanges of laid tracing, which discreetly avoid the significant difference in base and flight. There are also doubts about the change in the construction system –brick– and the weakness of his work, which, although punished, does not have the solidity of the rest, which raises the question of whether it is the work of the careful builders of the rest of the church. Fray Lorenzo de san Nicolás, in his Chapter LX, which deals with the façades and frontispieces, their decoration and arrangement, in the first part of his Art and Use of Architecture, 1633, indicates how the façades should be finished off, after discussing padded ornaments, which will be discussed below. Fray Lorenzo says:



Fig. 10. Two doorways designed by Fray Lorenzo de San Nicolás.

After having accomplished what concerns the columns and pilasters, not having to carry another body, it is finished off with a frontispiece. These are of four differences: one is pointed, and this same broken or open is another, and the third, round, and also square, which comes to be the fourth; and all of them will be demonstrated by the design at the end of the chapter (...) There are other places where the frontispiece is placed, the given rule of the height of the tympanum can be kept, as is where the frontispiece is placed, not only by auction, but also to cover some armor, which usually happens in Temples. In this case you will be careful to lift what the armor, the tympanum remains high or low, that in that part there is no inconvenience (...) The finishes that are commonly thrown on the frontispieces are pyramids, balls, jugs, and others extremes.

Of the named frontispieces, only trims with pediments are reproduced in the Treaty, whether straight, curved or split. This suggestion seems to agree with the hypothesis that has been established from the observation and drawing of the belfry and the pediment. The possibility of the pediment also helps to hide the layout of the roof slopes, as cleverly indicated in the treatise. The permission to introduce licenses at the top of the tympanum of the pediment, which Fray Lorenzo indicates to be adapted to the construction of the roof, shows the preeminence that construction grants in this matter over the composition of the façade. Finally, the ball-shaped finishes are recommended and built on our cover.

Notwithstanding what has been said, the belfry could be built in a first stage, since there is no news of the existence of a previous one or of a bell tower, which in this type of churches its independent composition of the façade was usual. This point must be verified in the preserved documentation and in the archaeological surveys carried out in the future. Likewise, the intervention in the building should study the different types of bricks used in the masonry, in order to identify if those used in the belfry are different and could be ascribed to a later constructive impulse, or if on the contrary they are metrically similar (and therefore the belfry could have a contemporary character to the rest of the façade).

Outstands in the composition the off-centering of the door and belfry, compared to the theoretical axis of symmetry; For the moment, the cause of this fact is unknown, which could be due to multiple

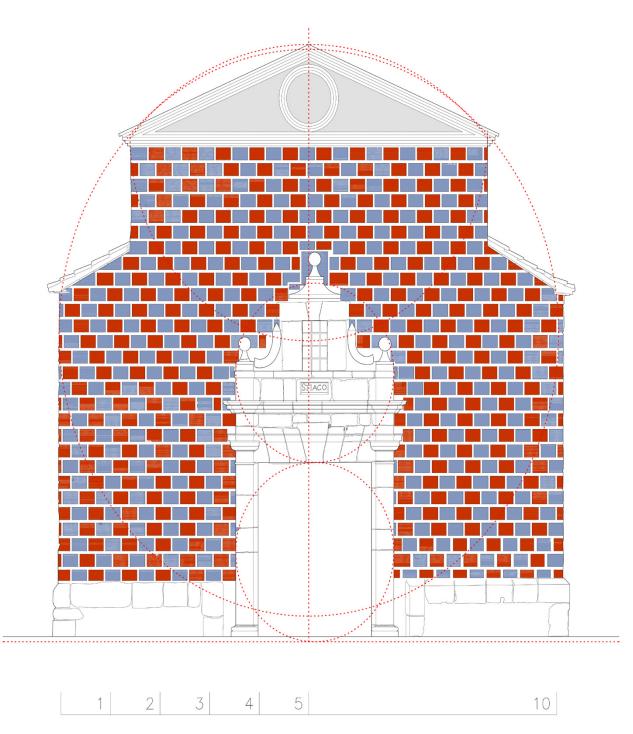


Fig. 11. A hypothesis of finishing the façade has been drawn by means of a pediment, adjusted to the general composition by means of a regulatory layout based on the circle - whose adjustment avoids the imperfections inherent to the physical reality of the building (Authors 2013).

factors and which suggests consequences of an evolutionary process, since a serious rethinking error is ruled out *a priori*.

The image topped by a gable, has inescapable links with the religious architecture of the seventeenth century. The presence of the Order of Brother Baptist in the parish church of Nuestra Señora in Benavites (and perhaps in Benicalaf) points to the idea of the presence in the area of a teacher perhaps trained in Castile and perhaps linked to the Company. The Herrerian motifs and the gable finish were common in the company's churches, developed during the 17th century. Its initial reference was the church of the Novitiate of Villargarcía de Campos, a design



Fig. 12. View of one of the balls and the pyramidal-topped volute, used in the transition between the first body and the second body of the façade (Authors 2013).

by Rodrigo Gil transformed and built by Pedro de Tolosa –one of the first surveyors in the works of the Escorial–, whose influence is notorious and prolific in Castile (Rodríguez G. de Ceballos 2002). Finally, it is possible to conclude that these notes do not intend to affirm, with a decisive and resounding character, the origin or kinship of this façade, but rather to point out possible links in its architecture, which is so little studied and scarcely understood.

3. THE CLADDING OF THE WEST FAÇADE

Finally, it is worth describing the pictorial decoration that ornate the main façade, which consists of a mock padding, decorated with alternate colors of red ochre and ash blue. Its observation raises several questions:

The padding is incised in the lime mortar

The pattern is sunk into the finish layer of the mortar; the colors are applied with a brush and not in the mass of the finishing layer –at least in the lower parts–.

3.1. THE ALTERNATION OF COLORS IS INTENDED TO IMITATE A ROPE RIG

The colours red and blue are normally interlocked, so that the façade displays a vibrant interplay of colours. This lock offers an alternating rhythm in the lower courses up to the cornice of the cover; between this and the line that defines the ridge of the roof of the side chapels, this rhythm is broken and the lock moves visually towards the end of the gospel, ascending, in a rhythm that induces the idea of movement; finally, the alternating rhythm from the ridge of the side chapels to the cornice of the central nave is restored.

3.2. CLADDING OF ASHLARS

The ashlars at the corners, currently bare, were covered by the covering of fake ashlars. The carelessness and little care in their meetings and unions already predict it; the mortar and pigment samples detected corroborate this.



Fig. 13. Left: alternate rhythm of colours, arrangement that occurs in the lower part of the façade, up to the cornice of the portal, and in the upper part of the façade from the ridge line of the chapels, to the cornice of the façade. Right: "ascending" rhythm, which breaks the alternating and locking character of the previous arrangement (Authors 2013).



Fig. 14. Remains of the cladding on one of the corner ashlars, on the north flank. The incisions in the final layer that delimit the colour planes and the remains of reddish pigments and ashes can be clearly seen. It is not the only sample that remains on the battered façade. On the other hand, this corner ashlar seems reused, perhaps from a Roman construction. (Authors 2013).

3.3. FLANKS COATING OF THE COVER AND THE POSSIBILITY OF ITS COMPLETE COATING

The boundaries of the façade were coated, especially the outer sides of the pilaster and the junctions of the entablature and the upper ends of balls and volutes. It also seems that the doorway could have been completely coated, due to the remains that seem to suggest it and the imprecise stonework encounters that could hardly be accepted in a doorway of such cultured and refined architecture. In the lower image, corresponding to the frieze and cornice on the front, two samples of what appears to be an ash blue colored cladding can be seen. The rough joints of the stonework suggest that it was designed coated, the usual procedure at the time for stonework covers. The appreciation for the exposed stone and for the imperfection in its cutting only responds to modern aesthetic wishes.

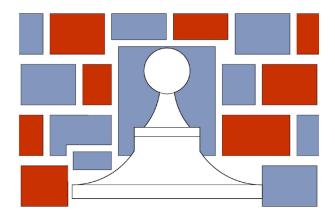


Fig. 15. The different resolution criteria of the encounter with the finishing ball on the cover can be seen when the fake attacks on each of its flanks (Authors 2013).



Fig. 16. The different resolution criteria of the encounter with the finishing ball on the cover (Authors 2013).

3.4. DIVERSITY OF CRITERIA IN THE STAKING OUT AND IN THE RESOLUTION OF ENCOUNTERS

The setting out, in terms of coloration, raises some doubts derived from its asymmetry and divergence of criteria at one end of the façade and the other, as well as in the encounter with the doorway.

Related to the one discussed here is the question that not all pretended pieces are equal in size; there are numerous licenses and manifest deviations in some specific cases, such as the one shown in the figure above.

3.5. HYPOTHESIS ABOUT SETTING OUT OF THE FAKE STAKING

According to the drawing, it seems that the staking of the courses begins at the end of the epistle and runs towards the Gospel side. In the extreme south, of the epistle, the hypothetical theoretical drawing starts - the real one is here lost - with a whole piece in the blue course, as shown in the figure. This regularity does not occur on the north flank.

3.6. THE LINING OF THE BULRUSH

The belfry has remains of the fake ashlars and of the polychrome that decorates the façade. The meticulous observation of the details of the photograph corroborates this. It will be necessary to analyze mortars of this coating, to check if its execution is contemporary to the rest of the façade or if, on the contrary, they demonstrate the added character that the composition of the façade points out.

3.7. BLUE PIGMENT RESERVE IN ENCOUNTERS WITH THE COVER

In general, the encounter with curved or curvilinear elements was solved with special pieces decorated with blue pigment. Also the remains that seem to belong to a hypothetical covering of the portal have the same coloration, which matches or at least approximates the color of the stone.

3.8. SOME EXAMPLES OF SIMILAR FAKES

The origin and references of this coating and its polychromy are unknown, although some data can be noted. A first comparison corresponds to the tower of the church of Santa María de Requena, then in the province of Cuenca, whose polychrome cladding shows a fragment of fake ashlars in its corners that alternate red and blue colors. To this ancient tower, a house that was overthrown during the restoration work carried out in recent years is estimated to be attached in the 18th century. The remains of the coating appeared inside the house, in relatively good condition, which led to its recovery. This type of decoration is also presented in the Ducal Palace of Gandía, in the bell tower of the church of Piles, the tower of the church of Estivella, or the façade of the Chapel of the Holy Christ of the

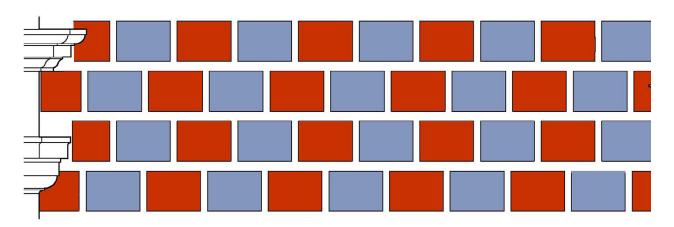


Fig. 17. View of the beginning of the stakeout of the fake ashlars, from the south flank to the left of the facing (Authors 2013).



Fig. 18. Santa María de Requena (Authors 2013).



Fig. 19. Right. Palau Ducal, Gandía (Authors 2013).

church of San Roque de Oliva, among others, in the region of Valencia.

Another example of padding, this time in a diamond point, is offered by the façade of San Pío V, built by Pérez Castiel between 1683-1695 (Roca Traver 1969), also the author of the bell tower of the Chelva tower, where he chose to highlight the padding of the plan of façade and paint them with red ochre and vegetal black.

However, in our case, the irregularities in the choice of colors and in their encounters with the elements of the cover and of the cover may point to the idea that the polychromy is after the fake ashlar. The fact that the coating does not contain the pigments in bulk, as in other examples intervened by this team, may reinforce this hypothesis. It should be remembered that the feigning of ashlars and regular cuts is a very common practice that has been carried out since medieval times and that lasts for many centuries.

3.9. SOME GUESSES ABOUT THE ORIGIN OF THIS FAKE

Another source of information is provided by historical treatises. In Serlio's treatise, translated by Villalpando (Villalpando 1552), the rustic ornament linked to the Tuscan order is shown, which includes the sham cutting of ashlars, and affirms that "all these things have come from age to age, changing in many ways, in some of them increasing and others decreasing. Our theorist thus recognizes the diversity of forms and techniques that this ornament, always coupled with the Tuscan order, has acquired contemporaneously with his treatise.

DEL ORNAMENTO RVSTICO.

Las primeras obras rufticas fueron hechas de esta manera de pieças o fellares de piedra gruessamente defboçado, como a punta de pico que aca llamamos: mas avnque lo hazian gruessamente labrado: para q las juntas fuessen substitues y delicadas, auía muy gran auifo y diligencia.

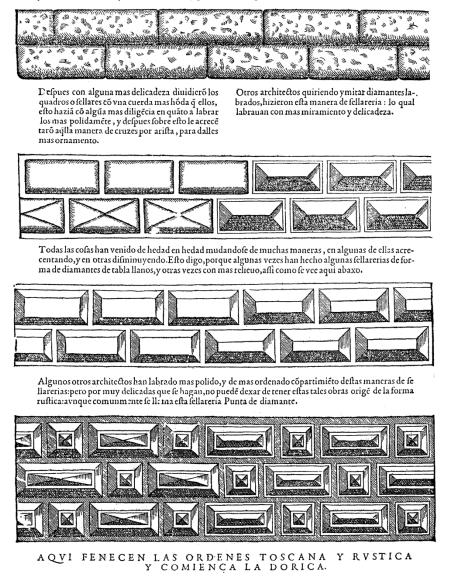


Fig. 20. Plate of Serlio's treatise, translated into Spanish by Francisco Villalpando in 1552.

On the other hand, Fray Lorenzo in his Chapter LX, which deals with the façades and frontispieces, their decoration and arrangement, in the first part of his Art and Use of Architecture, 1633, tells us:

In addition to this, the façades are adorned with padding, which are relieved fields, a moderate

thing, making the work more lucid from its backgrounds.

That the architects of this façade could know the Treaty of Fray Lorenzo de San Nicolás, according to everything already exposed, seems more than probable.

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