



# “L’inganno degli occhi”. Borromini’s Perspectival Niche for the Casa dei Filippini in Rome

Marco Carpiceci and Fabio Colonnese<sup>(✉)</sup>

Sapienza University, Rome, Italy

{marco.carpiceci, fabio.colonnese}@uniroma1.it

**Abstract.** The RCIN 905602 sheet of the Royal Collection, Windsor contains an orthogonal projection presentation drawing made by Francesco Borromini in 1627 and showing one of Gianlorenzo Bernini’s proposals for the Tomb of Urban VIII. The apsidal frame rendered in perspective can be related to the perspective niche that Borromini himself placed above the fictitious entrance in the center of the facade of the Casa dei Filippini in Rome a few years later. The sheet is studied here in the context of the influence that the diffusion of representation methods and practices has had on the forms of architecture as well as their visual perception. After discussing the reason for the construction of such a perspective device, its representation in the design documents and its reception in the images of the square after its construction, the authors present the results of a geometric analysis and reconstruction after photo-modeling of the niche itself, aimed at determining the position of the ideal observer in the square considered in designing the device, and they discuss the relationship between this spatial stratagem and the graphic trick adopted in the tomb design.

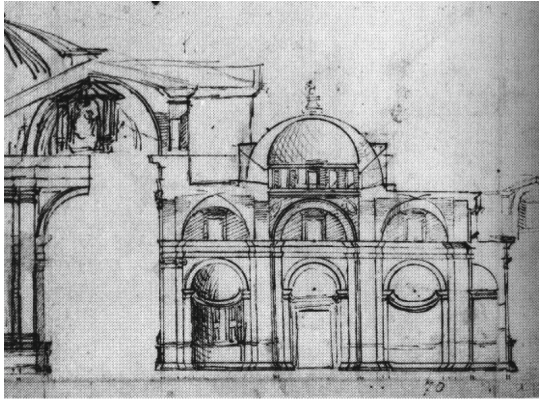
**Keywords:** Francesco Borromini · Solid perspective · Photo-modeling

## 1 Introduction

The heterogeneous, contingent and personalized visual code the architects had inherited from the Middle Ages, still significant in the illustrations of the 15th century treatises by Filarete and Francesco di Giorgio, was gradually replaced in the early 16th century by the projective canon emerging in the Roman context, derived from Vitruvian readings, Bramante’s experiences and, indirectly, Leonardo da Vinci’s studies. This canon is expressed in Raphael’s prescriptions for Roman monuments’ survey (Di Teodoro 1994) through the combination of plan, elevation and section, the “inside view” which ideally replaces the Vitruvian “scenography”, to be left to painters.

Starting from Rome and St. Peter’s construction site, the epicenter of applied research in architecture, this canon quickly established itself first in Italy and then, thanks to treatises and travelers, in Europe. However, important derogations persist, both in the monuments’ survey and the projects’ design, fields in which the semantic efficacy and

the economy of the marks often suggest arbitrary contamination between different views. For example, orthogonal projection drawings show parts in central projection and parts arbitrarily developed in order to maximize the synoptic quality. This is the case of some of Pirro Ligorio's drawings after ancient monuments, but contaminations are visible also in the designs for St Peter's cathedral. In sheet 70r at the Uffizi, Antonio da Sangallo the Younger presents his ideas on the future basilica in an elevation divided by the axis of symmetry between section and elevation (Carpiceci and Colonnese 2018). On the right half, niches are represented both in orthogonal projection and in perspective, with the curved frame and shades to show the visual effect of *chiaroscuro* (Fig. 1).



**Fig. 1.** Antonio da Sangallo il Giovane, Design for St Peter's church, detail. Firenze, Gabinetto Disegni e Stampe degli Uffizi, f. 70r.

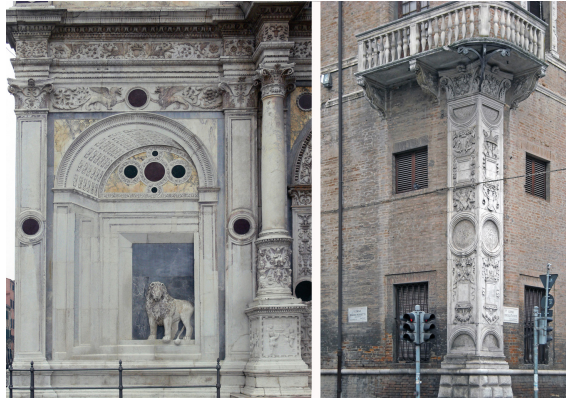
This kind of drawings reveals the need to design the internal and external parts of the building in a coordinated way and, at the same time, the intent to anticipate the visual effect, resorting to occasional projective derogations and graphic treatments in this sense. Over the decades, this practice contributed to shape the relationship between design and construction, and encouraged a mutual inspiration between the two areas: on the one hand, the anthropomorphic and projective conception of architecture, committed to apply the architectural order in increasingly "difficult" conditions, has oriented models and graphic formats of representation; on the other, graphic elaborations and experiments, especially in the field of illustration for printing (Carpo 2001), have constituted an assortment of visual types that influenced the work of the designers themselves.

Press promoted the dissociation of the images from the context of ideation and production, offering them to a wider fruition and interpretation. Think of the decorative theme applied to vertical rectangular fields formed by a circle in the middle and semicircles at the top and bottom. Long before decorating doors and furnishings, this motif had been applied to the pilasters and the reason is quite simple: it clearly derives from the representation of the architectural order as it was codified in the 16th century, with the overturning of the key horizontal sections at the base, in correspondence of the entasis, and at the collar; properly geometrized, this graphic code was translated into a decorative motif applied first to the supports - in particular, the pilasters that have a representative

and non-structural function - and then to any rectangular element. This can already be seen at the end of the 15th century in Mauro Codussi and Jacopo Sansovino’s facade of the Scuola Grande of S. Marco in Venice (1490) and in the corner pilaster of Palazzo Turchi di Bagno in Ferrara by Biagio Rossetti (1492) (Fig. 2).

This dynamic context of communicating vessels between design practice, systems of representation and images of architecture is here assumed as the context to investigate Francesco Borromini’s drawing for the funeral monument of Urban VIII designed by Gian Lorenzo Bernini. In particular, Borromini’s choice to draw explicitly a curved cornice, as if represented in perspective, sounds odd in a period and place in which architectural projective code is shared and consolidated. It raises some questions, especially considering the perspective niche Borromini created later in the upper part of the facade of the Casa dei Filippini in Rome, where the cornice is curved indeed. Is the frame in the tomb design just a graphic expedient or does it allude to a real niche in solid perspective to optimize the visual perception of the statue?

This perspective stratagem is investigated in the representations and in the facade for the Filippini, which has been surveyed and reconstructed through photo-modeling and analyzed to evaluate the relationship between the actual shape of the frame and the shape perceived by the observer in the square designed by Borromini. The results of this analysis are then used to judge whether the perspective niche of the Tomb is only a graphic device or even a spatial one.



**Fig. 2.** M. Codussi e J. Sansovino, Scuola Grande of S. Marco, Venezia, 1490; B. Rossetti, Palazzo Turchi di Bagno, Ferrara, 1492.

## 2 The Perspective Niche: Graphic and Perceptive Stratagem

In 1627, Gian Lorenzo Bernini, who was already involved in the construction of the Baldacchino Vaticano, was commissioned to design the tomb of Pope Urban VIII (Fagiolo Dell’Arco 2007). The tomb, which was designed in 1627 but was not completed until 1647, is located inside a niche of one of the four main pillars of St Peter’s basilica.

The RCIN 905602 sheet of the Windsor Royal Collection, which represents one of the projects, shows the design of the niche flanked by Corinthian columns, in which the statue of Urban VIII stands upon a base flanked by the figures of Charity at left and of Justice at right (Fig. 3). Borromini is supposed to have completed this accurate ink-made presentation drawing in which Bernini himself added the human figures and the winged skeleton (Blunt and Cooke 1960). Although most of the design respects a rigid orthogonal projection, the cornice of the niche appears curved as if it were represented in perspective. This unusual detail seems out of place, even when comparing this design with others produced over the years by Bernini's crowded atelier.



**Fig. 3.** Gian Lorenzo Bernini and Francesco Borromini, Design of a Tomb for Urban VIII, 1627. Windsor, Royal Collection, RCIN 905602.

### 2.1 The Perspective Niche for the Casa dei Filippini

In the late 1630s, Borromini transformed the curved cornice from a simple graphic stratagem to an architectural solution in the niche located above the central doorway of the Casa dei Filippini in Rome (Fig. 4). This perspective device is rather difficult to decipher from below: even a representation expert would be persuaded that the cornice

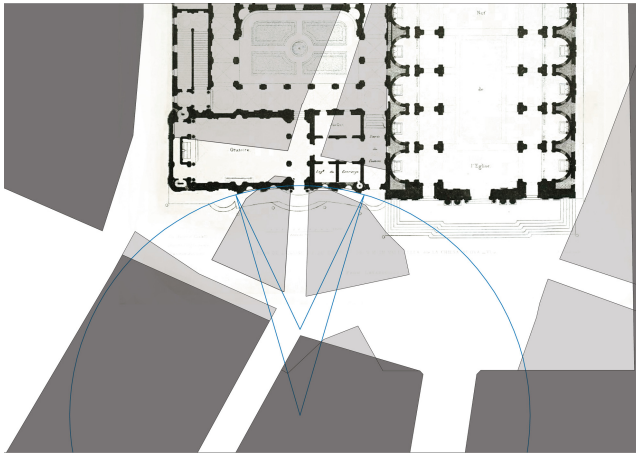
is horizontal. It was to be seen from the square designed by Borromini himself, which has been reshaped by the opening of Corso Vittorio Emanuele in the early 20th century. Borromini applied it to accentuate the apparent depth of the niche while remaining within the wall thickness and contributing to the virtual aestheticism of the innovative concave facade. This device is connected to studies on complex geometries, on solid perspective (Sinisgalli 1998; Colonnese 2016; Colonnese 2018) and on the so-called “oblique architecture” celebrated by Juan Caramuel Lobkowitz (Iurilli 2017). However, it seems to be closely related to the practice of architectural drawing and to the sense of a theatrical representation of architecture itself (Camerota 2006). As Connors commented (quoted in Thelen 1959, p. 53), “The central niche and the illusion of depth it entails can be traced back to Borromini’s extraordinary ability to manipulate the conventions of architectural drawing”.



**Fig. 4.** Roma, Filippini’s facade with the perspective niche, 2019 (foto di M. Carpi ceci).

Two stories about the Filippini’s façade intertwine: the story of the project and construction, revealed by Connors (1989) and Downes (2014), and the story of the reception and reproduction of its image (Chiavoni 1996). According to Connors (1989), “The facade of the oratory had developed [...] with changes made during the construction [...] as a living organism” and years after the end of building of his assignment, Borromini was still trying to control the way his work was perceived: he did it both physically, by reshaping the square (Bonadonna Russo 1965) to ensure a better view of the building (Fig. 5), and mediatically, through idealized pictures conceived for his *Opus Architectonicum*, which were to influence the work of artists and engravers.

In 1650, Fioravante Martinelli's (1650) *Roma ricercata* offers a description of the Casa dei Filippini with three pictures designed and engraved by Dominique Barrière. In one of these, the facade appears isolated from both the church of S. Maria in Vallicella on the right and the left corner. According to Connors (1989, p. 373), "the degree of idealization present in the print supports the hypothesis that this, like other engravings in the series, was based on a drawing provided by Borromini himself: the print in fact preludes to the project revisions, which go in the direction of greater drama, shown in a drawing of 1660 [...] and in a number of prints that derive from it". Connors refers here to the semi-perspective (RC 5595) at the Royal Collection of Windsor which can be placed not so much in the design process as in the years following the construction site, between 1550 and 1560.



**Fig. 5.** Plan of the square designed by Borromini. In light gray, the arrangement of the insula at the time of the project; in blue, the 200 palms radius of curvature of the facade of and the actual point of view aligned with the fictitious entrance (drawing by F. Colonnese)

In the same collection there is also an original elevation (RC 5594), dating back to 1638, which was also used as a model by various artists who reproduced the facade, and which shows the curved frame. However, this curvature is generally ignored by those who have dealt with illustrating the square. For example, Giovan Battista Falda's view of 1665, which frames the facade in the square, shows a straight cornice. Quite the same can be said of Giovanni Giacomo de' Rossi's (1684) *Insignum Romae Templorum Prospectus*. In 1684 he created an idealized facade of the oratory based on the pictures owned by Bernardo Borromini, the artist's grandson, made by Dominique Barrière on behalf of Borromini. In addition to the general stiffening of the decorative elements reported by Connors (1989, p. 399), De Rossi's elevation, although enriched with chiaroscuro treatments aimed at revealing the curved surfaces, prefers to ignore the stratagem of the curved cornice (Fig. 6). For decades, the artifice was reserved to a direct experience of the building. Only in the 18th century did the stratagem begin to be revealed. Sebastiano Giannini, who published Borromini's *Opus Architectonicum* in 1725 (Borromini and

Giannini 1725), creates four views of the facade, also inserting a perspective of how Borromini intended it, “with more ornaments not carried out” (Martinez Mindeguia 2004, p. 21). Its orthogonal projection facade, always idealized, is based on the engraving by Borromini and Barrière, too, but the curvature of the cornice is explicit, as in Borromini’s original drawing of 1638. Almost a century had passed since the project and, over time, the *inganno* had been accepted, understood, explained and reproduced.

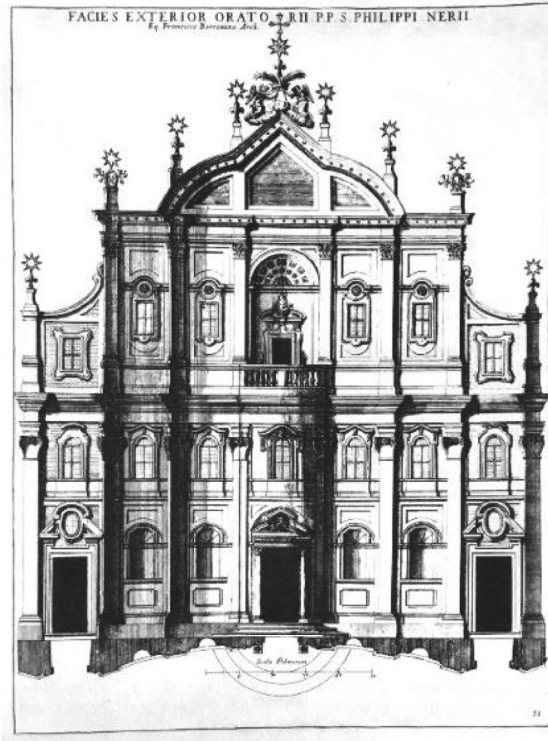


Fig. 6. Giovanni Giacomo de’ Rossi, *Insignum Romae Templorum Prospectus*, 1684, pl. 31.

### 3 Rilievo e Analisi Della Nicchia Prospettica

The upper niche of the facade of the Filippini, with its perspective gapped basin, has been subjected to a photographic survey, from both below and the windows of a building nearby. A first result, invisible from below but evident from the pictures taken at the balcony height, is the evidence of the deformations affecting the upper part of the portal (Fig. 7). The complex design of the portal top appears to be further manipulated according to an inverted arch curvature, at least up to the door lintel, whose key height is 4 cm lower than the shutters’. This deformation, which in some parts is almost unperceivable but still present, documents the care the artist took in his deception game. In the end, the portal top is the main reference an observer, more or less unwittingly, adopts to evaluate the

shape of the upper niche: if this had been straight, it would have compromised the artifice even from below. By comparing this data with the graphic documents, this deformation turns out to be visible in the detail made by Borromini (Connors 1989, pp. 304–305) but is instead censored in the Table XX of the *Opus* edited by Giannini.

To evaluate the degree of deformation applied to the elements of the niche, the authors applied a photo-modeling procedure to get a questionable model, the key sections (Fig. 8) and other general considerations. The model shows, for example, that the overall curvature of the facade at the height of the second order refers to a center about 45 m away, indirectly confirming the radius of 200 palms (1 Roman palm = 22.34 cm) Borromini also refers to in his drawings and which roughly corresponds to the size of the facade itself.



Fig. 7. Rome, Oratorio dei Filippini, niche detail, 2019 (photo by M. Carpiceci).

The curvature of the facade, with its 45 m-long radius, does not refer to a real point of view in the square, from which the effect of the curvature would have been somewhat impalpable, but only to a geometric center. Along the axis of the niche, an observer walking in the square designed by Borromini could place himself or herself about 25 m-away from the façade, surely perceiving the general curvature, which was a peculiar intent of Borromini. Martinez Mindeguia (2004) demonstrated how the client did not accept the curvature proposed by Borromini who had to reduce it and straighten the frames of the first order, only to propose it again in all its drama in the semi-perspective of 1660, reducing the radius from 200 to 150 palms (Connors 1989, p. 376).





Fig. 8. Horizontal and vertical section on the perspective niche (model by M. Carpiceci)

### 3.1 Looking for the Point of View

The perspective niche is almost four-meters wide and about 50 cm-depth by the axis. Its vertical profile reveals all the expertise necessary for the construction of the lacunaries in a solid, *stiacciata* perspective, aimed at arranging an illusory image. Its horizontal profile can be assimilated to a semi-oval construction with five centers, resulting almost flat in the central part.

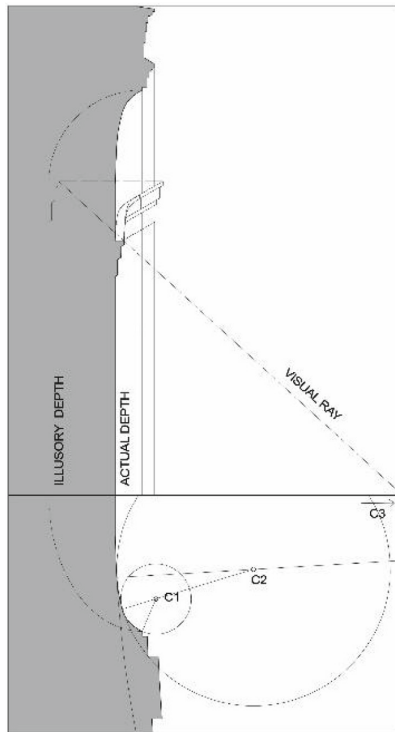


Fig. 9. Section and plan of the niche. The section highlights the relationship between the actual shape and the perceived one; the plan shows the centers of the oval (drawing by F. Colonnese).

With respect to the horizontal plane, the capitals supporting the arch are inclined by about  $30^\circ$  and the cornice itself drops about 70 cm by the bottom of the niche. The cornice of the niche is located about 25 m above the ground and could therefore be viewed from the front from about 25 m away.

Unlike other coeval solid perspective devices, which have the task of virtually expanding a room by taking up and deforming in the foreshortening elements perceivable in their true form - think of Bernini's perspective sacellum designed to house the statue of Filippo IV of Spain (Colonnese 2018) or the famous perspective gallery of Palazzo Spada by father Bitonto and Borromini - here it is difficult to state how deep the niche is expected to appear. The authors conjecture that the niche basin, a portion of an ovoid surface, has an axial section close to a circular arc. Consequently, the point of view necessary to carry out this perspective artifact has been carried out. After building a simplified section starting from the data collected in the digital model, the position of the point of view on the ground has been verified. It is useful to remind that the optical deception is activated when an observer standing considers, more or less consciously, that the edges of the cornice on the side capitals are as high as those on the bottom are at the same height, both of them belonging to a horizontal plane. Given this premise, the line that connects the upper drip of the frame actually on the bottom of the niche with its virtual position on the horizontal plane passing through the same drip on the capitals, identifies the inclination of the visual ray useful for stating the position of the point of view (Fig. 9). The identified visual radius, whose inclination is about  $45^\circ$ , identifies, along the axis of the building entrance, a point that is located on the opposite limit of the square designed by Borromini. Based on this hypothesis, the perspective niche, which looks more than 120 cm deep, would have been conceived for an observer who walks in the square from the alley and sees in all its extension the facade right on the axis of the fake entrance and of the upper niche - a view prevented today by the large plane tree that partially shades the facade itself.

## 4 Conclusion

The perspective niche Borromini elaborates for the Filippini is based on perceptive expectations of an audience educated in the canon of the Renaissance architecture. It finds its reason in saving the space behind the wall and works particularly well for a number of reasons. First of all, it is very high, and the size of the square did not allow people to go too far and to take advantage of a more "orthographic" vision to discover the *inganno*. Moreover, the curved cornice is in continuity with that above the neighboring windows and the deformations of the portal reinforce its illusory depth. Conversely, the conditions under St Peter's dome, where the tomb of Urban VIII is located, are radically different. Here the observers would have been too close to the curved cornice and, unlike the square, their visual field would not have been limited. Eventually, there seems to be no need to optically expand the depth of the concavity intended to house the statue. In that case, Borromini's design must therefore be still considered as a mere visual stratagem, capable however of inspiring, over time, an innovative architectural solution.

## References

- Blunt, A., Cooke, H.L.: *The Roman Drawings of the Seventeenth and Eighteenth Centuries in the Collection of Her Majesty the Queen at Windsor Castle*. Phaidon, London (1960)
- Bonadonna Russo, M.T.: Il contributo della Congregazione dell’Oratorio alla topografia romana: Piazza della Chiesa Nuova. *Studi romani* **13**, 21–43 (1965)
- Borromini, F., Giannini, S.: *Opus architectonicum*, Roma (1725)
- Camerota, F.: *La prospettiva del Rinascimento*. Arte, architettura, scienza. Electa, Milano (2006)
- Carpiceci, M., Colonnese, F.: Between antinomy and symmetry. Architectural drawings of presentation and comparison in the XVI century. In: Marcos, C. (ed.) *Graphic Imprints. The Influence of Representation and Ideation Tools in Architecture*, pp. 66–78. Springer, Cham (2018)
- Carpo, M.: *Architecture in the Age of Printing: Orality, Writing, Typography, and Printed Images in the History of Architectural Theory*. The MIT Press, Cambridge (2001)
- Chiavoni, E.: Il disegno nell’analisi degli organismi architettonici: l’oratorio dei Filippini in Roma. *Disegnare* **12**, 33–42 (1996)
- Colonnese, F.: Perspective, illusion and devotion. The chapel of S. Agnese in Sant’Agnese in Agone. In: Zirpolo, L.H. (ed.) *The Most Noble of the Senses: Anamorphosis, Trompe-L’Oeil, and Other Optical Illusions in Early Modern Art*, pp. 87–110. Zephyrus Scholarly Publications LLC, Ramsey (2016)
- Colonnese, F.: Reconstructing the illusion: virtual heritage on Bernini’s solid-perspective for Felipe IV. In: Ippoliti, A., Inglese, C. (eds.) *Analysis, Conservation, and Restoration of Tangible and Intangible Cultural Heritage*, pp. 286–320. IGI Global, Hershey (2018)
- Connors, J.: *Borromini e l’Oratorio romano*. Stile e società. Einaudi, Torino (1989)
- De’ Rossi, G.G.: *Insignum Romae Templorum Prospectus*, Roma (1684)
- Di Teodoro, F.P.: Raffaello, Baldassar Castiglione e la Lettera a Leone X. Nuova Alfa Editoriale, Bologna (1994)
- Downes, K.: Averlo formato perfettamente: Borromini’s first two years at the Roman Oratory. *Agric. Hist.* **57**, 109–139 (2014)
- Fagiolo Dell’Arco, M.: *Il gran teatro del barocco*. De Luca Editori d’Arte, Roma (2007)
- Iurilli, S.: *Trasformazioni geometriche e figure dell’architettura. L’«Architettura Obliqua» di Juan Caramuel de Lobkowitz*. Firenze University Press, Firenze (2017)
- Martinelli, F.: *Roma ricercata nel suo sito*, Tani, Roma (1650)
- Martinez Mindeguia, F.: La visione frontale dell’Oratorio di San Filippo Neri. *Disegnare* **29**, 10–24 (2004)
- Sinisgalli, R.: *Una storia della scena prospettica dal Rinascimento al Barocco*. Borromini a quattro dimensioni. Cadmo, Firenze (1998)
- Thelen, H. (ed.): *70 disegni di Francesco Borromini dalle collezioni dell’Albertina di Vienna*. Gabinetto nazionale delle stampe Farnesina, Roma (1959)