






The Main Staircase of Palazzo Spinelli di Laurino in Naples. Function, Shape, Geometry

Ornella Zerlenga  and Vincenzo Cirillo  

Department of Architecture and Industrial Design, University of Campania Luigi Vanvitelli,
Aversa, CE, Italy

{ornella.zerlenga,vincenzo.cirillo}@unicampania.it

Abstract. This contribution is part of a large study conducted on the architectural type of the residential staircase and on the staircases of the eighteenth century in Naples (Italy) and is limited to an analysis on the design theme of the noble staircase. Since ancient times, the power buildings have placed many symbolic connotations in the main staircase (or staircase of honor) aimed at attributing magnificence and representativeness to the building through the built architecture. In the Neapolitan eighteenth century, the residential main staircase finds its reference in that of the Royal Palace. The case study of the main staircase of Palazzo Spinelli di Laurino, located in the ancient center of Naples and which has a peculiar ovate-shaped plan as well as the internal courtyard. For the first time in local literature, the survey of the staircase is compared with that of an underlying environment, equally ovate, little known and never detected, to verify a possible and previous spatial configuration of the staircase, and to put it typologically in relation with European experimentation.

Keywords: Main staircase · Graphic analysis · Architectural survey

1 Introduction

This paper is part of a large study conducted on the architectural type of the residential staircase and on the staircases of the Neapolitan eighteenth century (Italy) and is limited to an analysis on the design theme of the noble staircase or a building type that connects two heights: that of the ground floor with that of the first floor, which leads to the noble apartment. Since ancient times, the buildings of power have placed multiple symbolic connotations in the staircase of honor aimed at attributing magnificence and representativeness to the building through the creative design of this element. In the Neapolitan eighteenth century the honor staircases of the main noble palaces find reference in that of the Royal Palace (Naples) (Fig. 1, a), declining in several very different formal responses. Furthermore, the theme of representativeness and noble magnificence of the grand staircase finds further sap in the design articulation of an access system that, from the street, leads to the private space of the building through the succession of environments such as the portal, entrance hall, courtyard, ladder. In this sense, the staircase becomes a scenic element, an attraction of curiosity and wonder for the one

who passes through the street. On these premises and through the cognitive investigation obtained by resorting to the practice of architectural survey and geometric analysis of the results, the case study of the grand staircase of Palazzo Spinelli di Laurino, located in the ancient center of Naples, is proposed here. Starting from the formal reading of the architectural layout of the noble palace, both the access system to the main staircase and the peculiar planimetric layout of the staircase and the assonance of these with the shape of the internal courtyard and of an underlying environment have been described. To the staircase itself, probably used as a stable. In fact, for the first time in local literature, the survey of the grand staircase was compared with that of this underlying environment, little known and never detected, in order to verify a different and previous planimetric configuration of the staircase, such as to return it as ovate (and not semi-ovate as nowadays) and, at the same time, such as to place it typologically in relation to the European experimentation in the design of the staircase and of the stairways of honor (OZ).

1.1 The Staircase of Palazzo Spinelli di Laurino as a Representative Space of Architecture

As part of the Neapolitan residence [1], this research is part of the trend initiated by Anna Sgrosso and Rosa Penta on the architectural survey and spatial analysis of the open staircases of the Neapolitan eighteenth century [2, 3]. Then taken up by the writer about the contribution to the geometric experimentation of new residential types of staircases by the architect Ferdinando Sanfelice (1675–1748), recently specialized in the types of the noble main staircase such as that of the Cassano Ayerbo d' Aragona [4] and Spinelli di Laurino palace, here under study.

As already stated elsewhere [5], the open staircases of the Neapolitan eighteenth century constitute architectural organisms of fifteenth-century derivation, characterized by peculiar spatial-perceptive relationships. This complex architectural reality manifests itself through a dynamic journey of vaulted ramps and a changing perception of points of view, lights and shadows generated by perforated walls. These perforated fronts constitute a plus design value capable of triggering a spatial-perceptual continuity between the courtyard (internal space) on which the staircase overlooks and the road (external space) from which the staircase body can be seen through the archway of the entrance hall. In this sense, even in the fulfillment of its main architectural function (the vertical connection between different floors of a building), the Neapolitan open staircase is, at the same time, a spatial space representative of several factors that are realized in it and they manifest themselves. This condition finds reason in the narrowness of the streets with the consequent impossibility of grasping any facade design from the street; therefore, in the program of expressive qualification of the residence, the portal and the staircase take on an attracting task like a real scenography where the portal acts as a proscenium and the staircase at the bottom. In this system of accesses (consisting of a portal, entrance hall, courtyard, and staircase), the portal imposes itself on the traveler's attention as an attractive element in terms of shape, size, material, and decoration.

In the historical Neapolitan building, the portal is the first link in a continuous spatial sequence arranged to mark the passage from a public space (the street) to a private one (the palace). Whether it is a noble or minor building, the portal is a symbolic means of representativeness which, by virtue of size, shape, material, and decorative appearance,

invades the street, drawing the attention of the passer-by. In close relationship with the roadway, the plastic-figurative spatiality of the portal and the light-penumbra-light scan (which connotes the street-hall-courtyard succession) attract the passer-by who, after passing the entrance hall, encounters with the gaze inside an intimate space, the courtyard, an open space where in most of the Neapolitan building types the ‘open staircase’ looks out, often located in front of the access in order to visually seduce the passer-by (ever since he has passed through the street) thanks to the overwhelming force of a spatial dynamism generated by the changing trend of the rampants and a multiplicity of vaulted structures, typologically differentiated and variously articulated. In some cases, there is a garden behind the façade, and the whole becomes a multidimensional perceptive context through which the portal acts as an intermediary and of which the eighteenth-century ‘seagull wing’ staircase of Palazzo Sanfelice is a masterful example of the architect Ferdinando Sanfelice is located in the Sanità district in Naples.

The main staircase of Palazzo Spinelli di Laurino fits well into this theme, both due to the presence of a planimetric system that reflects the creative succession between the street, portal, entrance hall, courtyard, and staircase, and due to the spatial configuration of the staircase designed to represent the noble magnificence of the family. The Spinelli di Laurino palace is currently located along the main Decumanus of Via dei Tribunali, n. 362, and constitutes the head of the insula between the Decumanus Via Nilo and Vico Fico al Purgatorio, and the lower Decumanus Via San Biagio dei Librai. In the cartographic view by Carlo Theti of 1560, *Neapolis urbs ad verissimam effigiem*, an arch appears at the intersection of Via Tribunali and Via Atri and Nilo, whose numerical reference to the legend reads: “Torre d’Arco”. Currently, no trace remains of this arch while the one at the head of Vico Fico al Purgatorio is preserved, however present in the view of the Theti. From this iconographic source it is not possible to recognize the unusual courtyard of Palazzo Spinelli di Laurino which, as already mentioned, has an ovate shape. In fact, both in the view of Lafrery (1566) and in those of Baratta (1629) and the Duke of Noja (1775) we do not recognize this planimetric trend but a rectangular courtyard, access to which in the Map of the Duke of Noja it is marked on via Nilo. The first cartographic source documenting the oval development of the courtyard with access to the building from via Tribunali dates to 1830 from the *Real Ufficio Topografico* [6]. Built in the fifteenth century, the original building was subject to significant transformations between 1766–68 by the Duke of Laurino, Trojano Spinelli (1712–1777). It is conceivable that these changes were not recorded in the Map drawn up by Giovanni Carafa Duca di Noja who, as is known, records a reality dated around 1750 and was published after Carafa’s death. A scholar of mathematics and economics (in his most famous work he applies geometry to economics), Spinelli was the architect of the renovation of the building, and it is probable that he was responsible for the unusual introduction of the ovate shape in the design of the courtyard, of the main staircase and of the family chapel [7]. It is probable that Spinelli drew inspiration not only from his cultured geometric culture but also from the knowledge of ovate architectures such as the Ottaviano Maiorino staircase at the Quirinale palace [8], from the presence in the Kingdom domains of helical staircases [9] as well as in Naples of pre-existing plants with an ovate profile as in the lower cloister of the church of Santa Maria della Sanità [10], in the staircases of the De Liguoro-Santoro palaces at Capodimonte [11] and Di Maio in

Piazza Vittoria (both by the architect Sanfelice), in the churches of Santa Maria Egiziaca in Forcella, Santa Maria di Caravaggio, San Carlo all' Arena and San Sebastiano [12].

The main staircase of Spinelli di Laurino palace is accessed through portal on the street (first invitation element), entrance hall and courtyard. Unlike the local tradition, the courtyard today has an unusual ovate shape. However, observing the courtyard from an aerial view of *Google Earth*, it is still possible to recognize the existence of the previous straight course of the courtyard within which the Trojano Spinelli Duke of Laurino, imagined deriving the curvilinear shape of the current courtyard. The main staircase is instead located to the left of the ovate courtyard and, due to its position (obviously constrained by the original access structure to the apartments), it does not constitute a perspective view of the visual axis for those looking from the street. Therefore, to arouse astonishment, the Duke of Laurino introduced two further measures. The first is represented by the facade treatment of the courtyard, which refers to the internal circular courtyard of Palazzo Farnese di Caprarola and, like these, has two orders: in the lower one, the ashlar alternate with arches, niches, and oval medallions; in the upper one, arches and large windows alternate with pillars. To strengthen the perspective telescope, a significant role is played by the clock in majolica tiles (on which the statue of the Immaculate Conception stands) which, located in a central position along the visual axis of access to the building, becomes the fulcrum of the attraction for those who pass through the street and who, through the gates of the portal and the entrance hall, look towards the interior of the building. To arouse even more surprise, the arch to the left of the central one frames the grand staircase for a glimpse, offering a dynamic, unusual, and decidedly unexpected view. In this sense, the main staircase can be accessed both in an axial direction through the extension of the entrance hall, and from this oblique passage opening onto the courtyard, whose visual direction generates in those who stop there a dynamic perception of the staircase since it is captured by foreshortening and not frontally (OZ).

2 The European Context of the Main Staircase and the Architectural Survey of Palazzo Spinelli di Laurino

Typologically, the main staircase (or staircases of honor) represents an architectural organism of vertical connection with the exclusive function to serving a single floor and capable to presenting itself as a conceptual model of a perceptive space, where the narration of which is generated by the multiplicity of points of view that arise offer to the viewer during the crossing. The system of paths inherent to it has meant that over the centuries the 'perception' has become a primary design element and, since ancient times, the staircase of honor has taken on symbolic connotations to attribute representativeness to the building both in terms of size and for formal experiments of the planimetric reservoir. From the study of the Italian treatises of the 16th–18th century [13, 14] the study of various configurative matrices was an opportunity to recognize the design of the staircase, rather than the functionality of vertical connection between different heights, the shaping of vibrant spaces (often overlooking the courtyards) to attribute magnificence to the architecture.

In fact, based on previous studies it was found that in Italy, for the most part, a planimetric system ordered according to a purely orthogonal matrix was favored for the royal staircases, while for the residential (noble) and/or service staircases experiments based on curvilinear matrix implants (circular or ovate), whose eccentricity is a function of the available space are more common. Preserving over the centuries the double attribution, functional and symbolic, in the Renaissance period the staircase of the Cortile del Belvedere (1504–05) by Donato Bramante (1444–1514) is a fundamental example in the history of experimentation with innovative types of the main staircases outdoor while the staircase designed by Jacopo Barozzi da Vignola (1507–73) to overcome the different elevations of Villa Giulia in Rome (1551–53) constitutes a variant to the orthogonal model for the use of curvilinear matrix. In France, experiments manifested themselves in the late Middle Ages with the virtuosity of ‘spiral’ circular staircases in French cathedrals as a re-elaboration of Italian models. An example of French Renaissance fusion is represented by the staircase of the castle of Chambord with a curvilinear matrix and double flight (inside) and in those of the Blois castles (Francis I wing) and of the Palais Ducal de Nevers (exteriors of the facades), perhaps a derivation of the Contarini del Bovolo staircase in Venice [15].

Unlike the Italian and French panorama, the Spanish sixteenth century retains a purely orthogonal matrix for the staircase of honor, deriving from the tradition of the so-called ‘cloistered’ staircase model and placed inside courtyards or nails. Starting from the cloistered model, the Spanish staircase of honor undergoes a configurative modification to order the layout according to bilateral symmetry.

The ‘pre-imperial’ model [16] is generated, obtained by combining two ‘cloistered’ models with the introduction of a common ramp. Depending on the arrangement of the bilateral axis of symmetry along the vertical or horizontal direction, two different staircase models are obtained. In the first case, the model provides a central access ramp to the staircase, dividing after the first rest landing into two adjacent ramps with opposite directions, which lead to the upper floor. Subsequently, even the pre-imperial staircase undergoes a further modification, transforming itself into the so-called ‘imperial’ model. In particular, the scheme that continues this last type of staircase is characterized by the juxtaposition of three parallel flights of which, the central one, connects the ground floor to the disassembly landing while the two lateral ones, starting from the same landing, lead to the upper floor. Within this rich and varied European experimentation, the city of Naples appears linked in the 18th century, to the models of the Spanish tradition by virtue of cultural influences starting from the early fifteenth century. It will be the geometric manipulation of the pre-imperial rectilinear model that will start a lively design research in Naples. Consider, for example, the main staircase of the Cassano Ayerbo d’Aragona building, whose pseudo-hexagonal shape is attributable to the 45° rotation of the side ramps, which dismount to the noble floor, compared to those of the classic Spanish model. This search for ‘circularity’ will configure pre-imperial installations also according to ovate reservoirs such as the eighteenth-century one of the Palais Royal in Paris on the model proposed by J. Neufforge (1714–1791), to which it would seem to refer the grand staircase of Spinelli di Laurino palace.

According to some, the design of the grand staircase of Palazzo Spinelli di Laurino should be attributed to Ferdinando Sanfelice [17]. In the absence of certain sources,

it is our opinion that the design culture of Ferdinando Sanfelice inspired the entire eighteenth century in Naples and that his project for the grand staircase for Palazzo Serra di Cassano (Fig. 1, b) and his creativity in manipulating elementary geometric shapes, remaining spectacular and unusual spatial configurations, constituted the lifeblood for the modernization of the noble palaces upon the arrival of Charles of Bourbon. In this sense, the monumental double-flight staircase of honor of Palazzo Serra di Cassano must have aroused such a remarkable fascination as to inspire the staircase of honor of Palazzo Cassano Ayerbo d' Aragona (whose works began in the 1748) than that of Spinelli di Laurino. In fact, in both these stairways of honor unusual geometric shapes are recognizable (hexagonal, the first; semi-oval, the second) as well as the similar planimetric system in bilateral symmetry of a central ramp with subsequent development in symmetrical lateral ramp (Fig. 1, c–d).

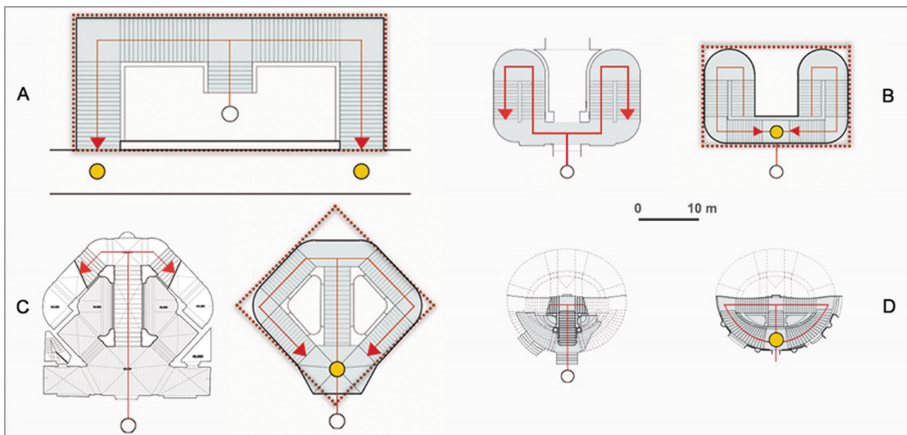


Fig. 1. Neapolitan models of pre-imperial staircase in the palaces: A) Royal; B) Serra di Cassano; C) Cassano Ayerbo d' Aragona; D) Spinelli di Laurino (drawings by Vincenzo Cirillo).

The architectural survey of the main staircase of Palazzo Spinelli di Laurino, made here in 2019–21 with the direct method, returns the current semi-oval space of the grand staircase with a central ramp inside (for the entrance), two lateral ones (leaning against the straight front wall) and two curvilinear ones, which follow the oval shape of the walls up to the noble apartment located on the first floor (Fig. 2 and 3). In continuity with the ovate basin of the staircase and with access from Vico Fico to Purgatory, n. 38, there is a similar ovate structure, now home to the *TIN, Teatro Instabile di Napoli*, which houses the memories and theatrical works of Michele Del Grosso. Based on the architectural survey, made here for the first time, and on the data restitution in the form of plan-altimetric representations at the various levels, this architectural structure has a basement with respect to the street level and is configured as an annular ovate environment. The central part is covered by an ellipsoidal vault, broken by a rampant sail vault as the intrados of the central ramp of the staircase and covering the access to the basement, of which traces remain today of the grips on the wall.



Fig. 2. From left to right: *TIN* (*Teatro Instabile Napoli*): the underground of the staircase of palazzo Spinelli di Laurino; ovate courtyard; staircase.

In conclusion, the architectural survey results allow us to formulate several reflections: 1) the ovate shape of courtyard, staircase and stable tends to a circumference; 2) the architectural survey does not allow defining with certainty whether it is a polycentric oval or an ellipse; 3) if it were a polycentric oval, the shape would have been traced according to the first rule of Serlio (1475–1554) [10]; 4) if it were an ellipse, the eccentricity of the curve (which it measures how much it is flattened with respect to its axes) would tend to 0 since the eccentricity being a number between 0 and 1, if it is equal to 0, the ellipse is reduced to a circumference; if it is equal to 1, it is reduced to a segment coinciding with the major axis; as it approaches 1, it is increasingly squeezed along its major axis. The last reflection identifies possible future research directions and relates the planimetric space of the staircase to that of the stable to identify a possible ovate cylinder within which could be hypothesized a different trend of the main staircase of Palazzo Spinelli di Laurino. This hypothesis would find confirmation in the current oral testimony of Cav. Ettore Araimo, who lives in the noble apartment of the building as a descendant of the family.

Observing the building through a *Google Earth* zenith view the roof of the staircase follows the ovate profile of the stable. In this sense, it would be possible to hypothesize an ovate cylinder within which the original staircase of honor would have had four ramps leaning against the ovate perimeter and one in central position (VC).

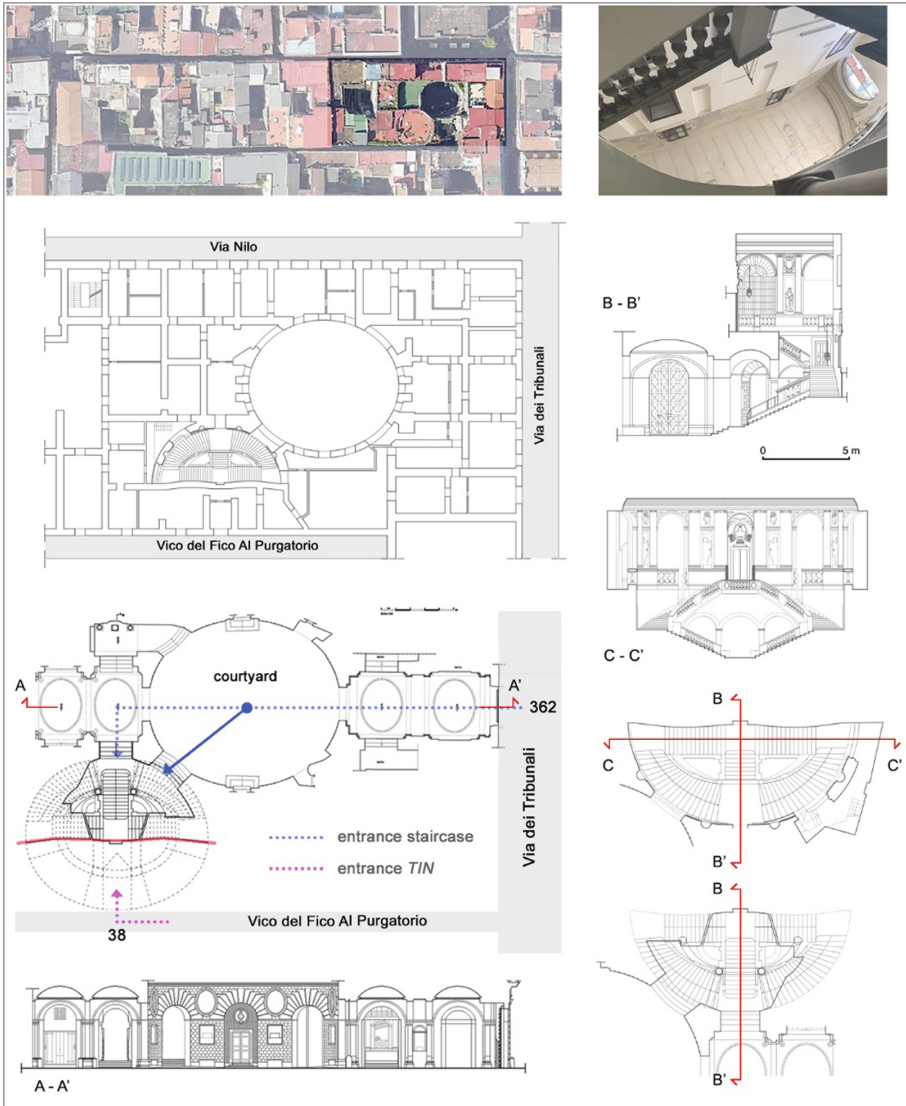


Fig. 3. Architectural survey of the staircase of Palazzo Spinelli di Laurino (survey by Amoroso, S., Dell’Aquila, T., Ferrara, A., Amore, A.; graphic elaboration by Vincenzo Cirillo).

3 Conclusions

Through the graphic drawings taken from the architectural survey of the portal, entrance hall, courtyard and grand staircase of the Spinelli di Laurino palace and the subsequent phase of interpretation of the results for the purposes of a cognitive analysis [18], it was possible to read not only the transformations that took place over the centuries (such as the transition from a rectangular courtyard to an ovate one) but to investigate the spatial

configuration of the main staircase, generated by the use of the planimetric application of ovate shape, to evaluate for the first time in the history of local literature the possible relationships existing between the staircase and the unusual underlying environment (stable), which has a similar ovate space (Fig. 4).

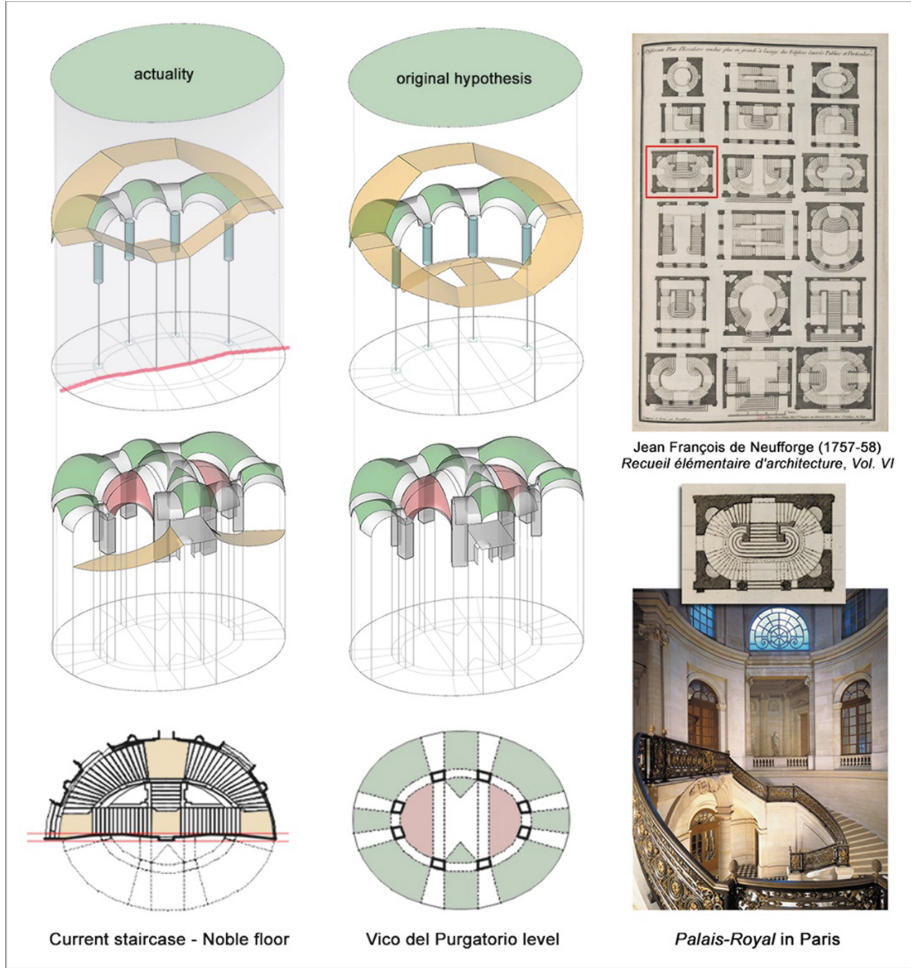


Fig. 4. The staircase of Palazzo Spinelli di Laurino: comparison between actuality and original hypothesis (drawings by Vincenzo Cirillo).

Based on the correspondence of the planimetric profiles between the oval profile of the underground, staircase, and roof, it was possible to imagine other spatial configurations of the main staircase such as to put it in relation with similar European models, displaying the data through three-dimensional models in clear geometric-configurative to highlight the peculiarities [19, 20]. In this sense, the current results of the research

open to a subsequent double operation of typological comparison and future developments: the first, between the main staircase of Laurino, imagined in its complete ovate form, and that of the Palais Royal Paris; the second, between the vaults of the annular crown of the underground palace below the main staircase with those of the ovate cloister of the church of Santa Maria della Sanità (VC).

References

1. Rago, G.: *La residenza nel centro storico di Napoli. Dal XV al XVI secolo*. Carocci Editore, Roma (2012)
2. Sgrosso, A.: *Lo spazio rappresentativo dell'architettura*. Massimo, Napoli (1979)
3. Sgrosso, A., Penta, R., Muro, M., Dell'Aquila, M.: *Architettura: disegno e geometria*. Massimo, Napoli (1977)
4. Zerlenga, O. (ed.): *M'illumino d'immenso. La scala del palazzo Cassano Ayerbo d'Aragona*. La Scuola di Pitagora, Napoli (2018)
5. Zerlenga, O.: *Staircases as a representative space of architecture*. In: Gambardella, C. (ed.) *Le vie dei Mercanti. Best practices in Heritage Conservation Management from the world to Pompeii*, pp. 1632–1642. La scuola di Pitagora editrice, Napoli (2014)
6. Ferraro, I.: *Napoli. Atlante della città storica. Centro antico*. Clean, Napoli, p. 300 (2002)
7. Rizzo, V.: *Un architetto di gusto Palladiano a Napoli: Trojano Spinelli Duca di Laurino il rifacimento settecentesco del suo palazzo*. Tipografia F.lli Macchione, Aversa (1988)
8. Paris, L., Ricci, M. De Amicis, A.R.: *Con più difficoltà. La scala ovale di Ottaviano Mascarino nel palazzo del Quirinale*. Campisano Editore, Roma (2016)
9. Bares, M.: *Le scale elicoidali con vuoto centrale: tradizioni costruttive nel val di Noto del Settecento*. In: Antista, G., Bares, M. (eds.) *Le scale in pietra a vista nel Mediterraneo*. Edizioni Caracol, Palermo (2013)
10. Zerlenga, O.: *La forma ovata in architettura. Rappresentazione geometrica*. CUEN, Napoli (1997)
11. Cirillo, V., Zerlenga, O.: *Entre arquitectura y geometría. Un ejemplo de escalera oval en la toba napolitana*. EGA **25**(39), 196–207 (2020)
12. Zerlenga, O., Cirillo, V.: *Curves and surfaces in the churches with ovate plant in Naples. Geometric analogies and differences*. In: Cocchiarella, L. (ed.) *ICGG 2018. AISC*, vol. 809, pp. 514–525. Springer, Cham (2019). https://doi.org/10.1007/978-3-319-95588-9_42
13. Cirillo, V.: *The representation of staircases in italian treatises from the sixteenth to eighteenth centuries*. *Disegno* **3**, 177–188 (2018)
14. Cirillo, V.: *Riflessioni e suggestioni fra geometria e forma. Le scale del '700 napoletano*. La Scuola di Pitagora, Napoli (2019)
15. *L'Escalier dans l'architecture de la Renaissance: actes du colloque tenu à Tours du 22 au 26 mai 1979*. Picard, Ungheria (1985)
16. Wilkinson, C.: *The Escorial and the invention of the imperial staircase*. *Art Bull.* **57**(1), 65–90 (1975)
17. Pane, R.: *Architettura barocca napolitana. Architettura e Arti Decorative*, dicembre 1927, fasc. III-IV, pp. 97–112 (1927)
18. Docci, M.: *Manuale di rilevamento architettonico e urbano*. Laterza, Bari (1994)
19. Migliari, R.: *Geometria dei modelli. Rappresentazione grafica e informatica per l'architettura e il design*. Kappa, Roma (2003)
20. Clini, P., El Mehtedi, M., Nespeca, R., Ruggeri, L., Raffaelli, E.: *A digital reconstruction procedure from laser scanner survey to 3D printings: the theoretical model of the arch of Trajan (Ancona)*. *SCIRES-IT* **7**(2), 1–12 (2017)