

# Drawing the Reasons of Constructed Space. Eighteenth-Century Neapolitan Open Staircases

Ornella Zerlenga

## Abstract

*Eighteenth-century Neapolitan open staircases are an urban and architectural event of unusual wonder. Created by the architect Ferdinando Sanfelice, they are masterful examples of a new formal and structural experiment. In this article, the origins of the Sanfelician staircases are discussed. They were chosen due to their particular urban, spatial and constructive value and have been the subject of an architectural and environmental survey campaign carried out through a direct method coordinated by the author. The origins of the Sanfelician staircases will be studied, highlighting the geometric-configurative arrays of their two main models, i.e. the 'falcon wings' and the 'cantilevered.' Due to its important architectural function, the staircase of a project is as old as the architecture itself. However, it is in the Baroque period that we experience forms that restore the staircase of a project as a space-time configuration representative of the architecture, along with not only the monumental but also the imaginative dimension. Eighteenth-century Neapolitan open staircases originated in the 1400s and are architectural organisms characterized by particular space-perception relationships. The diagrams compare (for the first time and to the same scale of representation) the staircases designed by Sanfelice in Naples. These issues have been dealt with in an architectural survey campaign of several staircases in Naples (2014-2017), where the spatial layout refers to the Sanfelician models discussed here; the results of the comparative analyses, respectively between the staircases of the Sanfelice, Maciocco, Palmarice and Persico palaces are presented here.*

*Keywords: architectural survey, geometry of the models, Ferdinando Sanfelice.*

## Introduction

Eighteenth-century Neapolitan open staircases are an urban and architectural event of unusual wonder. Created by the architect Ferdinando Sanfelice (1675-1748), they are masterful examples of a new formal and structural experiment. He was one of the most creative architects of the eighteenth century in Naples, best known for his monumental open staircases, including the one in the palace he built for himself and his family. In Sanfelice's architecture, the staircases are somewhat notable, rather than being incidental features set off to the side of a courtyard, he gave them central and prominent positions so that they became important architectural features in their own right. In this article, the origins of the Sanfelician staircases are discussed. They were chosen due to their particular urban, spatial

and constructive value and have been the subject of an architectural and environmental survey campaign carried out through a direct method coordinated by the author. The origins of the Sanfelician staircases will be studied, highlighting the geometric-configurative arrays of their two main models, i.e. the 'falcon wings' and the 'cantilevered.' The main source of information on Sanfelice's life is the biography written and published in 1745 by Bernardo De Dominicis, when the architect was still alive. Roberto Pane was the first scholar of Sanfelice, while the studies by Alfonso Gambardella give the most up-to-date biographical information. The architectural surveys of the Sanfelician stairs by Michele Capobianco are currently the most important. The geometric studies on eighteenth-century Neapolitan

open staircases began with the research group consisting of Anna Sgrosso, Rosa Penta and Mariella Dell'Aquila. These studies were interesting contributions to the typological and configurative reading of the Neapolitan open staircase, while the studies by Lidia Savarese and Adriana Baculo included the cataloguing of the different building types. More recently, studies on Neapolitan open staircases have been carried out by Antonella di Luggo and the author. In the drawing-up of redevelopment programs of built and natural environments, the architectural and environmental survey has assumed an increasingly prominent role of observation and critical reading of contexts and artifacts in order to restore knowledge oriented towards design.

### The Neapolitan open staircase: representative models

Due to its important architectural function, the staircase of a project is as old as the architecture itself. However, it is in the Baroque period that we find forms that restore the staircase of a project as a space-time configuration representative of the architecture, along with not only the monumental but also the imaginative dimension.

Eighteenth-century Neapolitan open staircases originated in the 1400s and are architectural organisms characterized by particular space-perception relationships, to the point that it is possible to 'firmly state that the Neapolitan staircase represents the most original expression of local building and that it cannot be found in any other region' [Pane 2007, p. 86].

The mild climate, the narrow sections of the urban system (and the impossibility to see the design of the façade from the street), the narrowness of the courtyards (and the darkness due to the remarkable height of the buildings)

have all favored the compositional idea of the 'open' staircase. In this sense, the model of a spatial system, consisting of a portal, entrance hall, courtyard and staircase, performed the function of access and representation for the residential building. Among the first examples of Neapolitan open staircases, there is one at Petrucci Palace on the corner between Via Benedetto Croce and Piazza San Domenico Maggiore. Antonello Petrucci (?-1487) bought the building from Bertrando del Balzo, who had built it at the end of the 14th century. The original building had its entrance on Via Benedetto Croce, but following the reorganization of the pre-existing square (now Piazza San Domenico Maggiore), Petrucci understood the future urban value and around 1470 opened a new entrance onto the square. The staircase, which was antecedent and lateral to the previous entrance, was now in line with the new one, and had a white marble architraved portal through which the open staircase was seen in the background, along with the loggia on the courtyard (fig. 1).

This complex spatial system (consisting of a portal, entrance, courtyard and staircase) which characterized both the noble residence as well as popular housing, over time changed into many different types. According to previous research on the cataloguing of the staircases in Neapolitan historical buildings, this sequence identifies differentiated paths in the composition of the space depending on: the number and shape of the courtyards (one, two, straight, curvilinear; regular, irregular); the position of the staircase (in line or decentralized with respect to the portal and entrance hall); where the staircase overlooked the entrance hall or courtyard; the presence of a garden. In addition, the open staircase can: have either an articulated façade or a continuous balcony; be a backdrop or a filter (in the case of a double courtyard); have one or more ramps (straight, mixed line, curvilinear); have a parallel (double) or symmetrical three-lane system; have a double symmetric development (rectilinear, circular, mixed line). The type of open staircase also affects its structure, which can be: spine wall; on pillars; a free well on pillars; a free well that is cantilevered. Another type of open staircase is with the intrados facing the landings (with a horizontal impost) and ramps (with a variable inclined impost), which can have: barrel, ribbed or groin vaults (all-round, depressed or raised); lunette vaults (cylindrical or spheroidal); domes (spherical or ellipsoidal); spherical or elliptical triangles; cloister or domical vaults; Roman vaults. The different combinations of these conditions gave a

Fig. 1. The open staircase of Petrucci Palace: urban context; portal and staircase (photograph by the author).



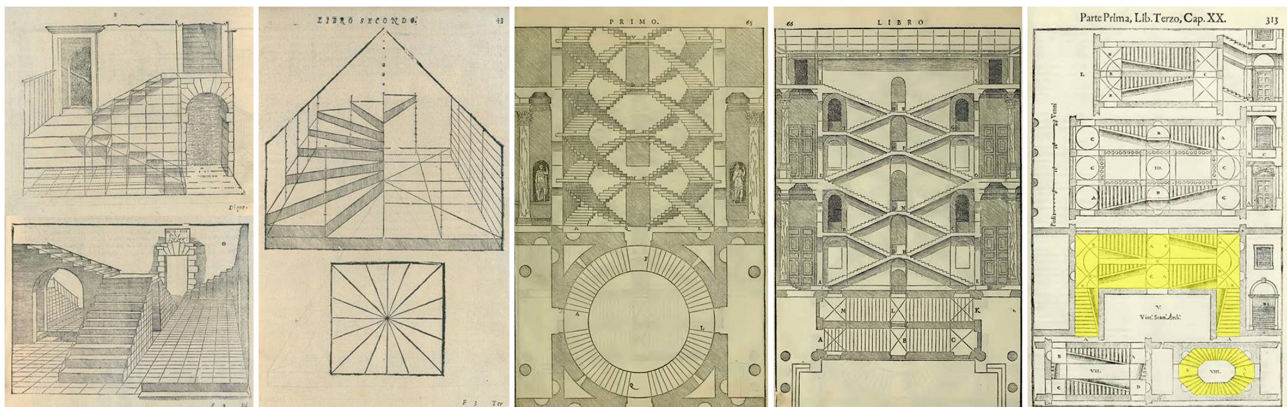
different visual-perceptual impact of the space, both from inside the staircase as well as from the courtyard (with or without a visual filter) and for the alternating of light and shadows. In the redevelopment program for Baroque Naples, this complex system of entrances to the buildings (that in the sculpture of the portals presents the first ring of this spatial dynamism offering a great perspective effect) became the true protagonist of the urban and architectural scene. Along the axis of the 'decumano minore' (the so-called 'Spaccanapoli'), within a few hundred meters, between the end of the 17th and the beginning of the 18th century, there were some of the most majestic and imaginative portals, due to their shape and size, ever conceived, such as those of the noble residences: Carafa di Maddaloni (by Cosimo Fanzago); Pignatelli di Monteleone and Filomarino (by Ferdinando Sanfelice); Carafa della Spina (attributed to Martino Buonocore; according to others by Ferdinando Sanfelice). The greatest creative expression of the early-eighteenth-century Neapolitan open staircase can be attributed to the architect Ferdinando Sanfelice. This complex architectural reality manifests itself through a dynamic flights of stairs covered with vaults and a changing perception of views, with light and shadow created by perforated walls. These are an added value to the design, capable of triggering a space-perceptual continuity between the courtyard (interior space), where there is a staircase, and the street (external space) from which the staircase can be perceived through the archway of the entrance. While

in pursuit of its main architectural function (the vertical connection between the different floors of a building), the Neapolitan open staircase is a reservoir of space, representative of several factors which are produced and manifested in it. This condition finds its main reason in the narrowness of the streets with the consequent inability to see the unique design of every façade from the street. Therefore, in the program for the building's expressive requalification, the portal and staircase assume the function of attracting attention, as a stage scenery where the portal is the proscenium and the staircase the backdrop.

### A survey of the spatial qualities: formal and structural models compared

During the first half of the 18th century and with the arrival of the Bourbon court, Sanfelice was the undisputed protagonist of the modernization plan of Naples. For Sanfelice, the staircase stood out as a representative space of the residence and was an opportunity to propose examples of unprecedented experimentation, formal and structural, according to the unusual 'falcon wings' or 'cantilevered' models. Formal experimentation on the design of the staircase can be found in the Italian treatises starting from the 16th century (fig. 2). Sebastiano Serlio, even if in *Libro VII* he uses several staircases for his architectural projects (rectilinear, circular, oval), does not describe the different types.

Fig. 2. Drawings of staircases in the treatises on architecture by Serlio, Palladio, Scamozzi.



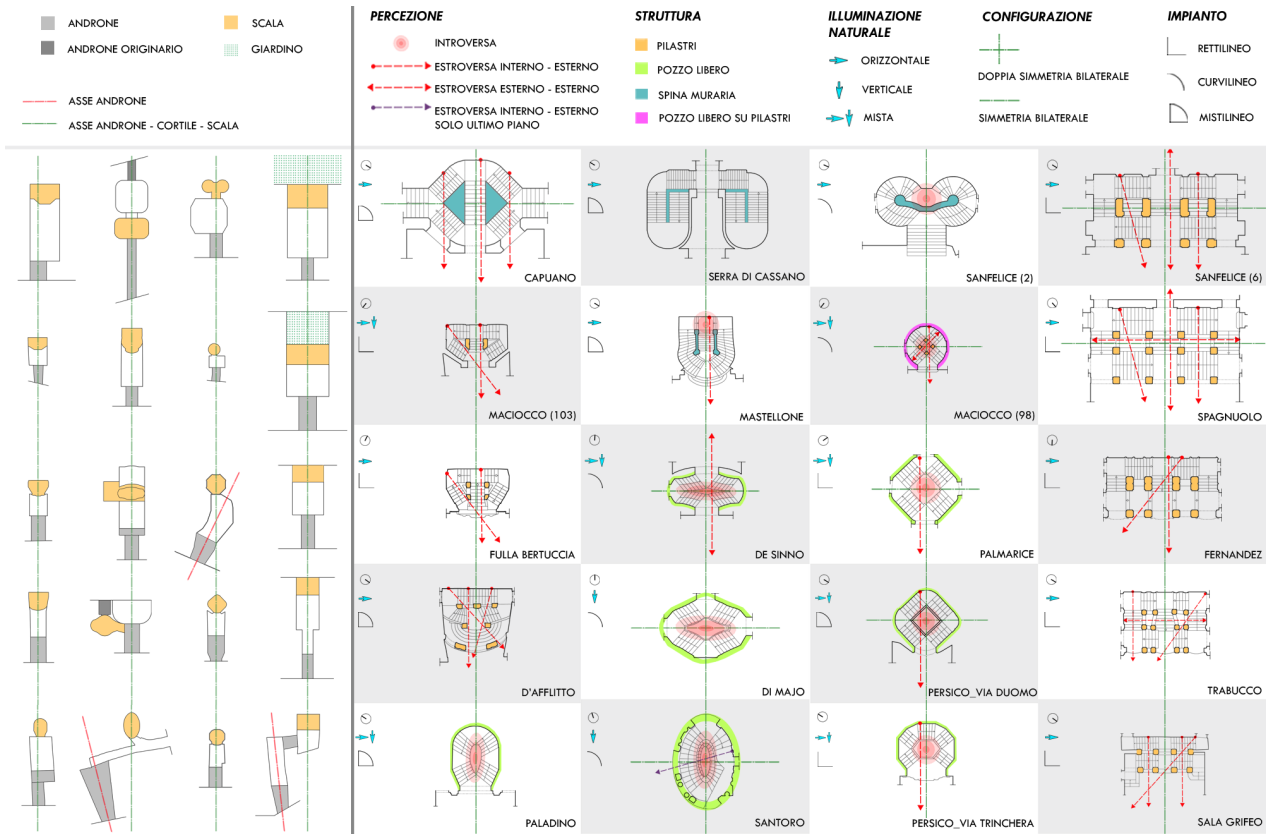


Fig. 3. Drawing of the Sanfelician staircases: comparison of the models (scientific coordination by the author; graphic elaboration by Vincenzo Cirillo).

In *Libro II*, dedicated to perspective, Serlio introduces the staircase as a complex example to design and proposes more simplified and straightforward profiles such as the 'square spiral' staircase rather than the 'round' one [Serlio 1600, pp. 41-43].

A first cataloging of the different typologies was carried out by Andrea Palladio. In Cap. XXVIII of the *Libro Primo*, entitled *Delle scale, e varie maniere di quelle, e del numero, e grandezze de' gradi* (staircases, and various manifestations of them, and the number and size of the steps), Palladio introduces the "spiral," "oval" and "straight" staircases and states that structurally may present "a column in the middle"

or "an inside wall" (with pillars or spine wall), as well as being "empty in the middle" or "without a wall" (cantilever). In particular, he described some models of staircases that had already been realized, drawing in plan and section, the double spiral cantilevered staircase of Chambord Castle, which he defined as a "beautiful and new invention" as well as a straight double staircase [Palladio 1570, pp. 60-66]. Particularly interesting for the analysis of the 'falcon wings' and 'cantilevered' Sanfelician models is the theoretical contribution of Vincenzo Scamozzi (1548-1616) in Capo XX of his treatise, entitled *De' siti, e forme convenevoli a varie maniere di Scale private ad uso de' tempi nostri, & alcune*



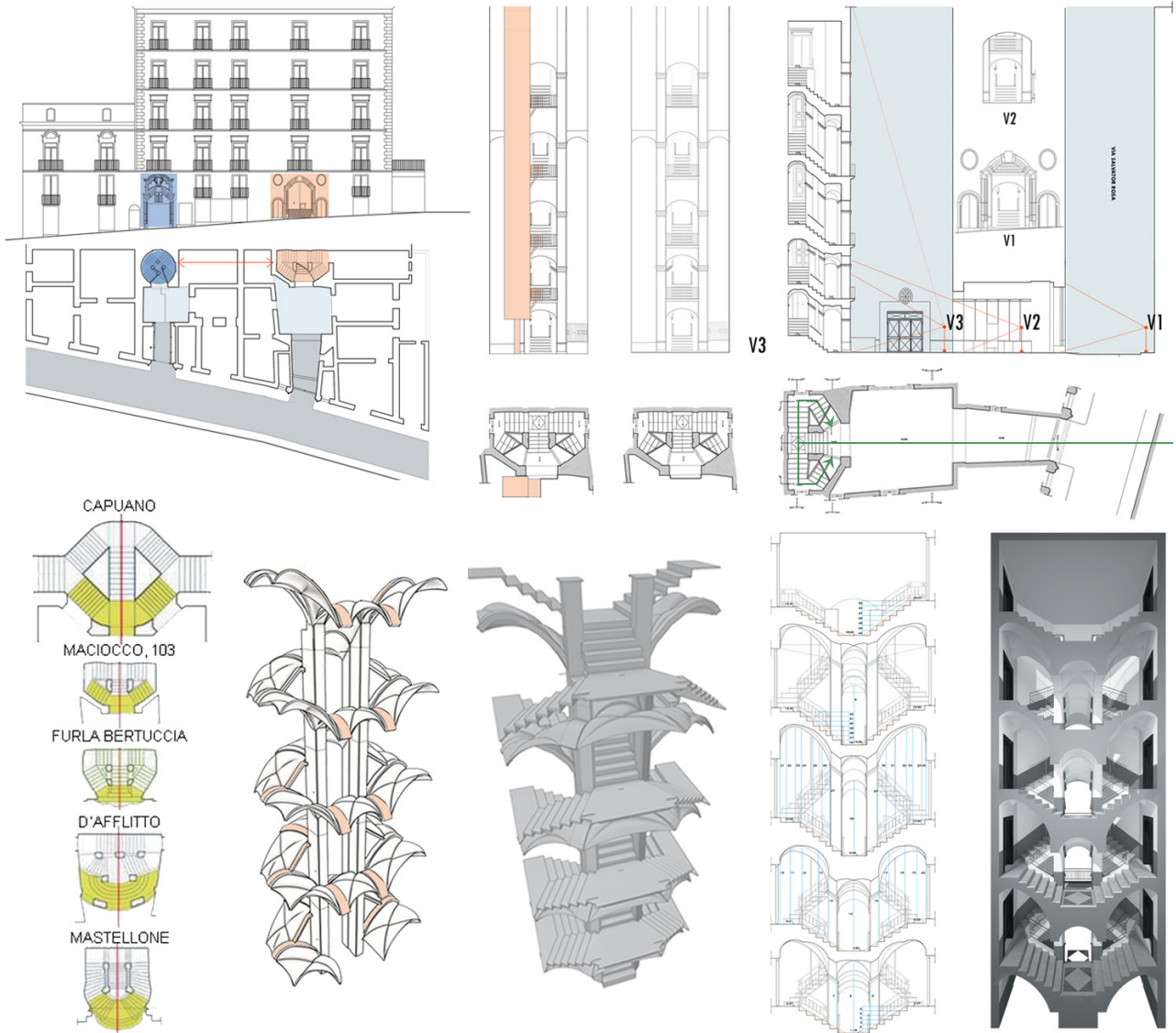
Fig. 4. The staircases of Sanfelice Palace in Via Arena alla Sanità, No. 2 and No. 6 (photograph by Vincenzo Cirillo; aerial photograph by Google Earth).

*introdotte dall'Autore* (Places, and suitable forms for various types of private staircases to use in our times, and some introduced by the Author). Scamozzi used ten models as examples that, although related to the usual circular, oval and straight-line systems, anticipated significant elements of creativity in the Sanfelician models. The fifth 'type' refers to the 'falcon wings' model being configured with lateral ramps, allowing access to the upper floor and leaving a free space below the central ramps as a passage. The eighth 'manner,' instead, introduces a straight cantilevered type with rounded corners [Scamozzi 1615, pp. 312-317]. From the structural point of view, it is in manuals of the late 19th/early 20th century that the design of staircases is differentiated according to the type and the load-bearing system of ramps and landings. In the *Architect's Manual* by the architect-engineer Daniele Donghi (1861-1938), published in ten volumes from 1906 to 1925, staircases are divided into two main groups, called "*a collo*" and "*a volo*." The first, "are the ones that have the stairs supported throughout their length, or by a filling underneath or by vaults, or the stairs resting on the ends of walls, arches, or on stone sides supported by pillars or columns".

The second are stairs "in which the inner side or even the outside one are only supported at the bottom and the top of the staircase, or staircases whose steps are only supported at one end, that is, they are cantilevered." On the "*a volo*" staircases, Donghi states that they "have a much lighter look than the "*a collo*" ones, and the cantilevered staircases, especially when the stairwell is very large, multiply the number of stairs and these are very wide, having a very light aspect, which sometimes even raises the que-

stion of the solidity of the staircase" [Donghi 1925, pp. 637, 638, 657]. The graphical and configurational analysis of the similarities and differences of eighteenth-century Neapolitan open staircases has been the subject of study by a research team led by the author. The diagrams compare –for the first time and to the same scale of representation– the staircases designed by Sanfelice in Naples. These issues have been dealt with in an architectural survey campaign of several staircases in Naples (2014-2017), where the spatial layout refers to the Sanfelician models discussed here, and where the research work and contextualization has been supported by the recent archive studies carried out by Alfonso Gambardella. In the synoptic table, the planimetric systems of the studied staircases are compared as well as the access systems to the buildings (entrance hall, courtyard, staircase) according to the following key elements (fig. 3): shape (straight, curvilinear, mixed line); plan (bilateral symmetry, double bilateral symmetry, coaxial: entrance hall, courtyard, staircase); structure (spine wall, pillars, cantilever); vault system (simple, compound); illumination (from above, front); perception (extroverted, introverted). The models of the staircases realized by Sanfelice in the Sanfelice (No. 2 and No. 6), Serra di Cassano, Capuano, Palmarice, Di Majo and Maciocco (No. 98 and No. 103) palaces were compared to those of the Spagnuolo, Fernandez, Trabucco, Sala Grifeo and Mastellone palaces (attributed by historical criticism to students of Sanfelice or workers close to him) and also to those of the De Sinno, Furla Bertuccia, Persico, D'Afflitto, Santoro and Paladino palaces, which according to the recent archive studies, Alfonso Gambardella attributes to Sanfelice. The staircases

Fig. 5. Elevation and plan of the entrance system of Maciocco Palace, No. 98 and No. 103. Geometric-configurative and visual-perceptual analysis of the staircase of Maciocco Palace, No. 103 (scientific coordination by the author; architectural survey and modeling by Valeria Marzocchella).



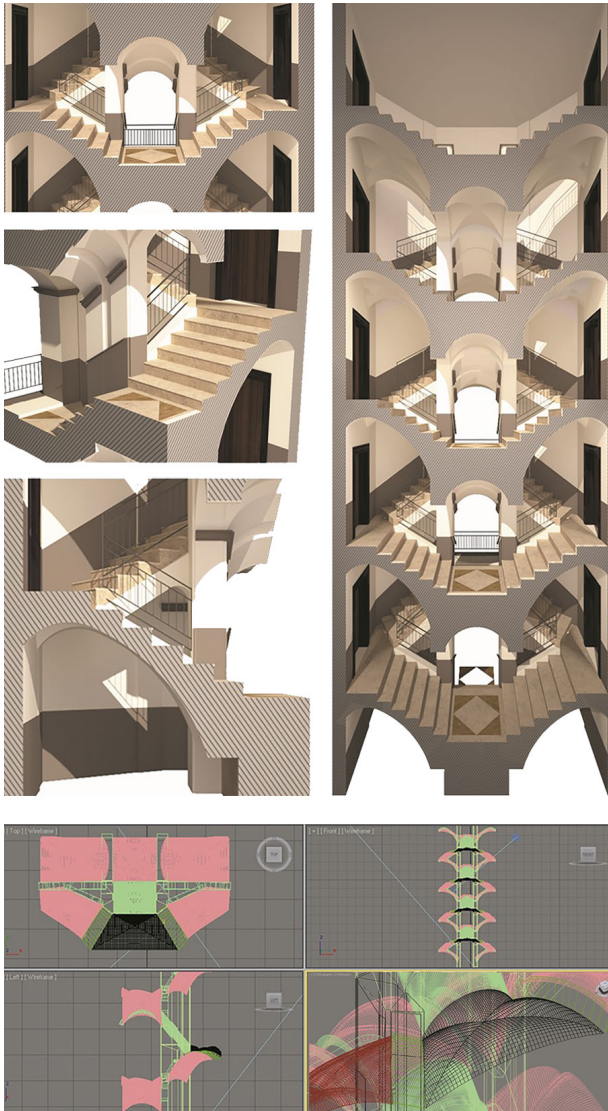
of these buildings (along with that of Sala Grifeo) were the subject of architectural survey, upon the basis of which a critical reading was made on: the geometric matrix of plano-altimetric systems; spatial configuration of the vault and ramp systems; visual-perceptive fruition during the use of these spaces. The results of the comparative analyses, respectively, between the staircases of the Sanfelice, Maciocco, Palmarice and Persico palaces are presented here.

### The survey of the staircases of the double-entrance Sanfelice and Maciocco palaces

In the 1720s, Sanfelice designed his family home, built in Via Arena alla Sanità, consisting of two buildings facing the street with a joint façade characterized by two identical portals. The staircases, with different spatial layouts, each face a differently-shaped courtyard (fig. 4). One of the two staircases (No. 6), taking up and reinterpreting the tradition of the monumental double staircase, introduces in the panorama of the building, an unusual theatrical model called 'falcon wings'. The spatial configuration of the 'falcon wings' comes from a particular plan design of the staircase. This refers to the double monumental staircase with four flights of stairs that wrap around an empty space sharing a central flight. In this diagram, the direction of the stairs is set along the transverse direction, freeing the central bay on the ground floor, so that it is not filled by any flight. This solution allows the connection of the front courtyard with the free space behind to be used as a garden. By virtue of the presence of a completely perforated body of the staircase, this solution allows the passerby to see through the entrance hall, beyond the staircase and into the garden at the rear. The 'falcon wings' staircase in Sanfelice Palace occupies the entire width of the transversal façade of the courtyard opposite the entrance and it is made up by a body that has the same height of the building. The structural system includes sixteen pillars whose plan rhythm is regulated by a double bilateral symmetry and in which there are different flights of stairs, landings and wells, and upon which the whole system of vaults and arches rests, whether horizontal or rampant. Both sides of this staircase, of considerable size, are perforated; the one facing the courtyard shows the oblique course of the ramps in an upward direction thus giving an image of the wings of a hawk during flight. The open Sanfelician 'falcon wings' staircase generates an 'extroverted' staircase. It innovates

with imagination and boldness the design of the residential staircase, making itself the central place of the representative space of architecture. The objectives of Sanfelice such as scenic and structural wonder give a new type of staircase that makes the multiple perceptions as well as contrasts of light the main elements of an original design. The reinterpretation of the double monumental staircase and its spatial reconfiguration in multiple vertical levels (made possible thanks to a daring experimentation of walls, pillars, arches and vaults) formulates a new circulation space. The perceptual experience is dynamic and full of multiple views, it is presented both by the continuous visual crossings, that along with the openings of the arches and wells allow the gaze to go in all directions, by the change of the tonal value of the light. In this architecture of visibility and multiple experiences, the prevailing feeling is that of being in an 'explosive,' 'centrifugal' space, where nothing must or can remain immobile. As soon as it was realized, the biographer De Dominicis commented, astonished by this staircase, saying that 'it is the most beautiful, vague and magnificent, never seen before in the world and continually it is copied by Professors of Architecture in many buildings that will be built in this city of Naples' [De Dominicis 1742, p. 651]. This model was widely replicated in a Naples that had fallen in love with spectacular Baroque scenery, with the staircases of the Spagnuolo, Fernandez and Trabucco noble palaces as outstanding examples, while the staircase in the Sala Grifeo Palace represents a derogation to this model, showing descending, not ascending ramps. Like Sanfelice Palace, Maciocco Palace is also constituted by two buildings facing the street with a joint façade characterized by two identical portals with the concave-convex profile of the architrave typical of Sanfelice (fig. 5). The staircases, with different spatial layouts, each face a courtyard of a different shape and size. Number 103 refers to the spectacular 'falcon wings' model, while Number 98, with central pillars, refers to the 'spiral' (circular) one. As De Dominicis wrote, for the building of 'Councilor D. Antonio Maggiocco,' Sanfelice had conceived, according to a 'new invention of two different staircases, and which both serve the same building'; however, the project was not realized and 'two separate Sanfelician staircases were made in different locations.' The building was 'redesigned, enlarged, and reduced to the modern [...] such as the entrance doorway, as well as the first-floor staircase, such a magnificent and beautiful invention' [De Dominicis 1742, p. 650]. However, at present both stairs are very compromised. In the early

Fig. 6. Geometric-configurative and visual-perceptual analysis of the staircase of Maciocco Palace, No. 103 (scientific coordination by the author; modeling by Valeria Marzocchella).



1960s, the staircases in Maciocco Palace were surveyed by Michele Capobianco [Capobianco 1962b, pp. 554-557]. The surveys and photographs attached contribute to the data, making it possible to carry out a comparison with the significant changes that subsequently occurred. Comparing the surveys of 2014 with those of 1962, today the visual perception of the two staircases has been greatly modified due to the insertion into the façade, at Number 103, of an elevator that annuls the scenic cantilevered effect of the staircase on the courtyard and, at Number 98, due to a remarkable transformation of the entrance hall and courtyard for commercial and residential uses that has significantly reduced the view of the staircase from the street.

The architectural survey of the staircase of Maciocco Palace, located in Via Salvator Rosa, No. 103, carried out by Valeria Marzocchella, documents the renovation work realized by Sanfelice to decorate the building (figs. 5, 6). The pre-existence of the courtyard and the entrance hall led the architect to conceive a coaxial system of entrance hall, courtyard and staircase despite the oblique course of the street. The stairwell gives an irregular but symmetrical hexagonal shape with respect to the longitudinal axis. This gives a five-ramps system, with the central one being singular, and the other four are symmetrical, two-by-two, with respect to the axis. This system gives two symmetric wells of triangular shape between the ramps, two landings leading to the apartments (in the transverse direction) and two resting landings (in the longitudinal direction), of which the isosceles trapezium has the largest base on the courtyard, creating a wide opening that illuminates the staircase. The ramps are supported along the transverse directions by flying buttresses, supported by central pillars and perimeter masonry. The rampant arches discharge a system of vaults consisting of several spheroidal triangles, while the central ramp is covered with barrel vaults. The presence of wells and flying buttresses allows us to enjoy a multitude of views onto the ramps and courtyards. While these geometric-configurational analogies make the spatial plan of the staircase of Maciocco Palace, No. 103, appear like the 'falcon wings' model, the cantilevering of the hexagonal plan on the courtyard recalls the staircase of Capuano Palace. In the latter, the regular octagonal profile of the plan is touched on three sides by the courtyard, creating a vibrant and clear movement of light, recalling Borromini's concave-convex views. This solution will be replicated with less intensity in the plans of the staircase of Furla Bertuccia Palace (surveyed by the author for the first

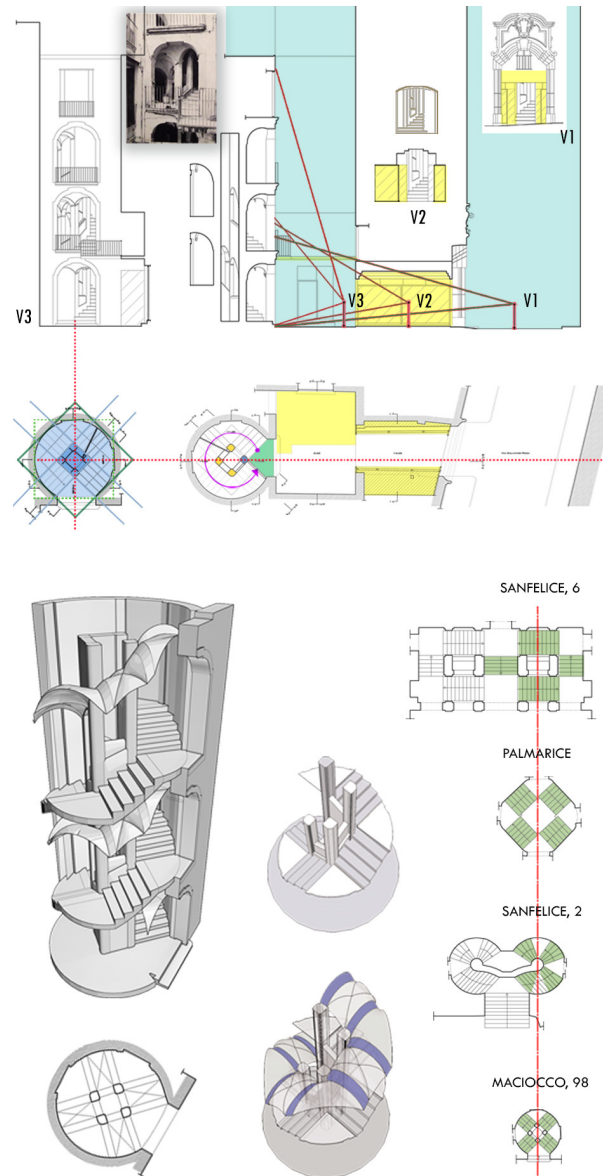


time with Raffaella Monaco), which has a plano-altimetric pattern similar to that of Maciocco Palace; D’Afflitto Palace [Cirillo 2016, pp. 209-216]; Mastellone Palace, where the cantilevering onto the courtyard relates only to the ground floor:

The architectural survey of Maciocco Palace in Via Salvator Rosa, No. 98, by Salvatore Volpicelli, documents the analogous restoration work to modernize the building, but in this case the mastery is even more exemplary (figs. 7, 8).

The physical space in which Sanfelice operates is small, with this staircase having the smallest planimetric layout among those compared in the synoptic table. Even in this case, the courtyard and entrance hall are already present but not coaxial. In order to make the staircase visible from the street, Sanfelice conceived a stairwell with a circular profile and central square well on pillars, which the architect rotated 45° with respect to the front of the courtyard. Along the sides of the well, Sanfelice places four ramps to determine the interlock and, at the same time, he designs a façade open onto the courtyard. The landings are a quarter of circle, of which only one leads to a room, while the other three are for resting. Among them, on the one that overlooks the courtyard, there is a large opening, which shows three floors of the staircase to the outside. This simple solution, exclusively geometric, generates a dynamism of remarkable visual-perceptual attraction. In fact, from the street, though not perfectly in line, the view is attracted by the eccentricity of the pillars rotated at 45°, whose sloping sides invite our gaze to follow the ramps going up. Structurally, the staircase is “a collo” and, towards the well, the steps rest one end on rampant arches supported by the pillars of the well. The ramps, on the other hand, are supported by ribbed vaults, while the landings by cloister vaults. The slope of the ramps towards the stairwell refers to the theoretical model of the cylindrical helix, the curved line of a right circular cylinder generated by a point flowing uniformly along the generatrix of the cylinder itself while it rotates evenly around the axis, following the law of the directrix. This geometric pattern invokes the “snail-shaped” staircase realized by Sanfelice in his own residence in Via Arena alla Sanità, No. 2. The spatial configuration of a spiral staircase arises from a planimetric circular or oval shape where the steps dwindle in size towards the center, or the inside, rest on a central pivot (“core” or “column”). The solution designed by Sanfelice is ‘double’ in the sense that there are two separate spiral staircases that run parallel but in opposite directions and they are accessed by a single straight flight located in the middle.

Fig. 7. Geometrical-configurative and visual-perceptual analysis of the staircase of Maciocco Palace, No. 98 (scientific coordination by the author; survey and modeling by Salvatore Volpicelli).



This staircase is full of an intense 'introverted' spatiality, internal and confined. While going up the steps, the staircase gradually reveals itself, surprising the observer; and stopping its ascent at the window overlooking the courtyard and then leading to the first and only floor. The presence of only two light sources contribute to the gradual unfolding of the reservoir of space particularly thanks to the significant tonal variation of the natural light that can be appreciated during the ascent. In conclusion, the staircase of Maciocco Palace, No. 98, recalls both staircases of Sanfelice Palace: to No. 2, due to the circular plan; to No. 6, due the well on pillars. At the same time, it also refers to the cantilevered staircase of Palmarice Palace (illustrated below) due to the grafting of the ramps on the sides of a square rotated 45° with respect to the front of the courtyard. These multiple aspects make this staircase a highly suggestive architectural event where the narrative of the visual-perceptive, 'extroverted' and 'introverted' qualities of the space are combined.

### The survey of the cantilevered staircases of Palmarice and Persico palaces

Sanfelice designed two staircases in Naples which, just like the double circular one of Sanfelice Palace, are character-

ized by the analogous design of an attractive and intense internal space that is not manifested by anything outside: these are in the noble residences of Palmarice (Piazza Teodoro Monticelli, 1) and Di Majo (Discesa della Sanità, 68). The projects of these staircases revisit the ring staircase where the steps are cantilevered and joined to the side walls, leaving a central space known as a well. This staircase is full of an intense 'introverted' spatiality, internal and confined. While going up the steps, the staircase gradually reveals itself, with surprise, stopping its ascent at small windows overlooking the courtyard. The architectural survey of the staircase of Persico Palace in Via Duomo, No. 220, by Giuseppe Celiento, revealed numerous similarities with those of Palmarice Palace (figs. 9, 10). The staircase of Persico Palace can be accessed through an arch that is almost in line with the courtyard and entrance hall. The plan of the staircase is a square rotated 45° with: the vertices blunted according to a quarter of a circle; the flights along the directions of the sides; the triangular landings and a central square well also rotated 45°. This condition is not insignificant, since it is on the courtyard, the staircase creates an unusual perceivable dynamism of the ramps perceived from both the entrance on the ground floor as well as the openings at the different levels. The intrados of the flights is solved with Roman vaults and the landings are covered

Fig. 8. The staircase of Maciocco Palace, No. 98 (photographic survey by Gino Spera).



with very depressed spheroidal vaults, different from those in the Palmarice and Di Majo staircases. The staircase of Persico Palace has a basic geometric layout but the result is spectacular, not only due to the dynamism of the 45° rotation (as with the circular staircase of Maciocco Palace), but also for the natural light that penetrates through the arches opening onto the courtyard, including, at the top floor, a circular window). There are seven steps as in the Palmarice, Di Majo and De Sinno staircases. The elevation overlooking the courtyard is different. In Palmarice Palace, it is straight and not in line with the courtyard and entrance hall. In Persico Palace, the elevation follows the convexity of the landing, assuming a cylindrical and non-flat spatial

configuration as in the already mentioned D’Afflitto Palace. The curvilinear layout joins the sides of the courtyard and refers to the spatial solution introduced by Sanfelice for Capuano Palace. As a result, the arches that open onto the courtyard of Persico Palace are oblique just like the arches of the cloister vault, which are set on the curvilinear walls of the corners of the stairwell.

### Conclusions

The architectural surveys carried out on these eighteenth-century Neapolitan open staircases has highlighted

Fig. 9. Geometric-configurative and visual-perceptual analysis of the Persico Palace staircase (scientific coordination by the author; architectural survey and modeling by Giuseppe Celiento).

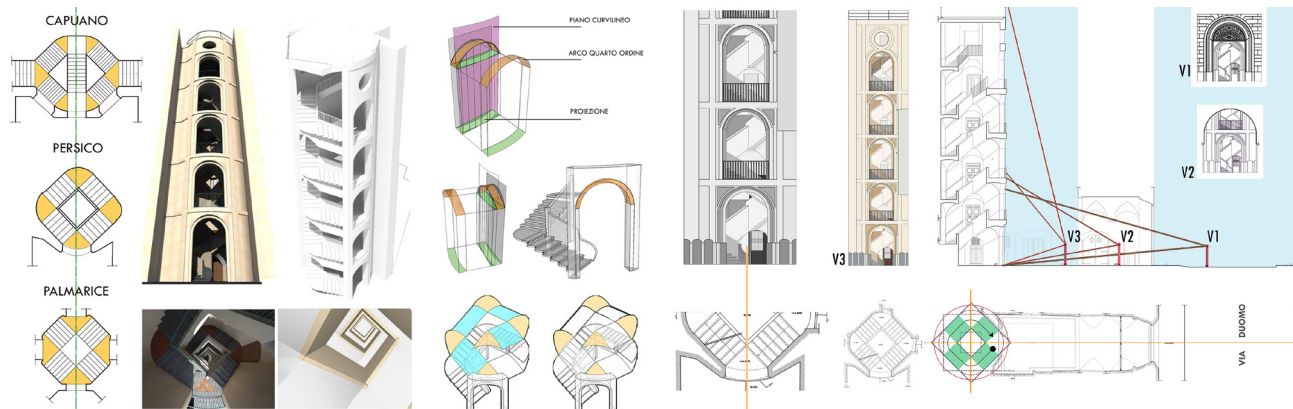
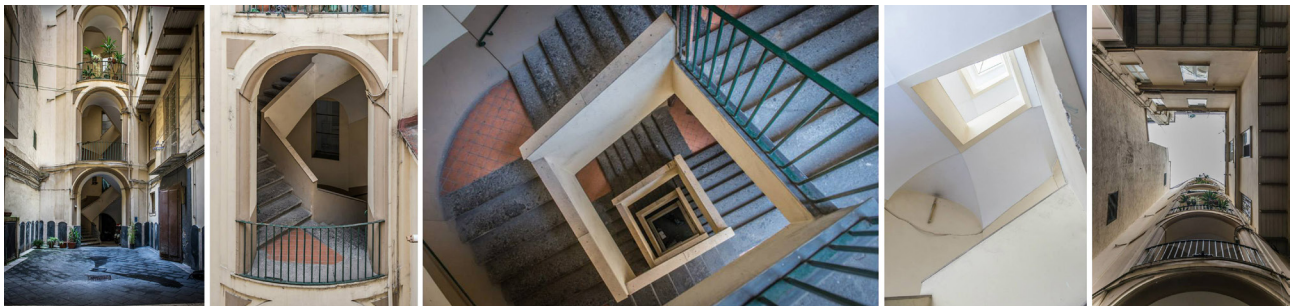


Fig. 10. The staircase of Persico Palace (photographic survey by Gino Spera).



the formal similarities and differences through a critical geometric-configurational reading, but not only. The results of the surveys show Ferdinando Sanfelice's inclination to create marvelous, bold and new spatial images of architecture, such as his staircases, generated by the skillful manipulation of

elementary geometric patterns carefully contextualized in the places, for both new and restoration projects. In this sense, for Sanfelice, the geometric awareness of the configuration of space allows integrating the shape to the structure in a mutual reference that makes nothing superfluous.

#### Author

Ornella Zerlenga, Department of Architecture and Industrial Design, University of Campania 'Luigi Vanvitelli', ornella.zerlenga@unicampania.it

#### References

- Baculo Giusti, A. et al. (1995). *Napoli città in vista: la catalogazione dei Beni Ambientali e Architettonici, dalla documentazione cartacea all'archiviazione multimediale, esperienze e prospettive di ricerca*. Napoli: Electa Napoli.
- Capobianco, M. (1962a). Scale settecentesche a Napoli - 1. In *L'architettura. Cronache e storia*, 84, VIII, No. 6, pp. 401-417.
- Capobianco, M. (1962b). Scale settecentesche a Napoli - 2. In *L'architettura. Cronache e storia*, 86, VIII, No. 8, pp. 549-560.
- Capobianco, M. (1963). Scale settecentesche a Napoli - 3. In *L'architettura. Cronache e storia*, 88, VIII, No. 10, pp. 694-706.
- Cirillo, V. (2016). The D'Afflitto Palace staircase scenographic drawing. In Bertocci, S., Bini, M. (eds.). *Le ragioni del Disegno/The reason of Drawing*. Proceedings of the 38° Convegno internazionale dei docenti delle discipline della Rappresentazione, Vol. 38, pp. 209-216. Florence, 2016, September 15-17. Roma: Gangemi editore.
- De Dominicis, B. (1742). *Vite de' pittori, scultori ed architetti napoletani*. Napoli: Francesco e Cristofaro Ricciardo.
- Di Luggo, A. (2011). Struttura e forma: le superfici voltate nelle scale aperte napoletane. In Mandelli, E., Lavoratti, G. (eds.). *Disegnare il tempo e l'Armonia*. Proceedings. Vol. 1, pp. 394-399. Florence, 2009, September 17-19. Firenze: Alinea.
- Di Luggo, A., Catuogno, R., Paolillo, A. (2011). *Palazzi napoletani. Itinerari grafici e percorsi interpretativi nel rilievo dell'architettura*. Napoli: Giannini.
- Donghi, D. (1925). *Manuale dell'architetto*. Torino: Unione Tipografico-Editrice.
- Gambardella, A. (1968). *Note su Ferdinando Sanfelice architetto napoletano*. Napoli: Istituto Editoriale del Mezzogiorno.
- Gambardella, A. (2004). *Ferdinando Sanfelice. Napoli e l'Europa*. Napoli: Edizioni Scientifiche Italiane.
- Migliari, R. (2003). *Geometria dei modelli*. Roma: Edizioni Kappa.
- Migliari, R., Fallavollita, F. (2009). Gli archi e le volte. In Migliari, R. *Geometria descrittiva*. Vol. II - Tecniche e Applicazioni, pp. 423-461. Novara: De Agostini.
- Palladio, A. (1570). *I quattro libri dell'architettura*. Venetia: Domenico de' Franceschi.
- Pane, R. (2007). *Napoli imprevista*. Napoli: Grimaldi.
- Paris, L. (2016). The helicoidal staircase at Caprarola by Jacopo Barozzi da Vignola. Formal innovation between theory and practise. In Bertocci, S., Bini, M. (eds.). *Le ragioni del Disegno/The reason of Drawing*. Proceedings of the 38° Convegno internazionale dei docenti delle discipline della Rappresentazione, Vol. 38, pp. 523-530. Florence, 2017 September 15-17. Roma: Gangemi editore.
- Penta, R. (1977). La Scala del Palazzo Sanfelice alla Sanità. In Sgrosso, A., et al. (eds.). *Architettura: disegno e geometria*, pp. 32-36. Napoli: Massimo.
- Penta, R. (1993). Il Disegno dello spazio, o spazio del disegno. In *Bollettino informativo del Dipartimento di Configurazione e attuazione dell'architettura*, VI, No. 12, pp. 1-10.
- Savarese, L. (1991). *Il centro antico di Napoli: analisi delle trasformazioni urbane*. Napoli: Electa Napoli.
- Scamozzi, V. (1615). *L'idea della architettura universale*. Venetia: Giorgio Valentino.
- Serlio, S. (1600). *Tutte l'opere di architettura et prospettiva di Sebastiano Serlio bolognese*. Vinegia: eredi Francesco de' Franceschi.
- Sgrosso, A. (1979). *Lo spazio rappresentativo dell'architettura*. Napoli: Massimo.
- Sgrosso, A. (1996). *La rappresentazione geometrica dell'architettura*. Torino: UTET.
- Thoenes, C. (1983). A Special Feel for Stairs. Eighteenth Century Staircase in Naples. In *Daidalos*, No. 9, pp. 77-85.
- Zerlenga, O. (2000). Criteri e metodi per rilevare, conoscere e rappresentare livelli differenziati di complessità. Il sistema degli accessi al costruito storico residenziale napoletano. In Martone, M. (ed.). *La normazione nella rappresentazione dell'edilizia*. Proceeding of the Convegno, pp. 307-310. Rome, 1994, September 22-24. Roma: Edizioni Kappa.
- Zerlenga, O. (2014). Staircases as a representative practice of architecture. In Gambardella, C. (ed.). *Le vie dei Mercanti. Best practices in Heritage Conservation Management from the world to Pompeii*. XII International Forum, Aversa-Capri, 2014, June 12-14, pp. 1632-1642. Napoli: La scuola di Pitagora editrice.