Idea and ideal. Vaults and cupolas in Palladio's Villa Foscari

Joubert José Lancha[1]

Abstract In this paper, we present an analysis of a series of interpretive three-dimensional models developed to discuss the form and the geometric solution of vaults proposed by Andrea Palladio for the Villa Foscari – Malcontenta di Mira (1559). Designed to reveal the solution adopted in the four different vaults used as ceiling in the Villa's rooms, these models evince the relationship between each of the parts and the whole of the building. The relationships between breadth, length, and height in each room, between one room and the other, and between each room and the central room can be seen in the models and reveal the organic compositional structure of the whole volume built. We compare the solution specific to Villa Foscari with the ideal definitions presented in *The Four Books on Architecture*, in which Palladio discusses the six possible vault forms to cover the rooms.

Keywords architecture of the renaissance, representation, domes

1. INTRODUCTION

As a solution to cover rooms in "houses in cities" and "houses on country estates", Andrea Palladio often uses vaults and cupolas of different forms and dimensions. The recurrent use of these elements and the inclination to research spatial alternatives are determinant in the solution of the project of more than forty villas designed by Palladio. At a time in which the construction of a theory on architecture was playing a decisive role and becoming a practice among professional architects, Palladio, too, gathers his practical and theoretical knowledge in his own text. In each one of the books of his treatise – *The Four Books on Architecture* (*I Quattro Libri dell'Architettura*) –, published for the first time in Venice in 1570, Palladio raises extremely relevant questions of different nature, directed not only to artists and architects, but also to his patrons. We identify the specific passages where Palladio discusses the vault in his treatise and compare these texts with the solution given to Villa Foscari (1559) to investigate the use of this element. We analyze the relationship of proportion in the composition of the villa, in which the definition of different vaults to cover the rooms plays a fundamental role in the composition of the whole volume. To this end, we turn to the definitions presented by Palladio and to three-dimensional models to reveal the spatial arrangement of Villa Foscari.

[1] Joubert José Lancha, Associate Professor, Institute of Architecture and Urbanism of São Carlos – University of São Paulo at São Carlos. lanchajl@sc.usp.br; 00 55 16 3373-9311; www.usp.br and http://www.arquitetura.eesc.usp.br/.

2. THE VILLAS AND THE VILLA FOSCARI

Designed over a period of thirty years, from 1537 to 1567, the villas compose a set of about forty buildings, part of which are presented in the second book of Palladio's treatise. Most of the projects develop from quite similar programs, and their variation is a direct function of the proportion and distribution of the parts of a villa. A villa was composed of two different wings: a central body, for the use of the owner and his family, which Palladio called "**casa di villa**" (the main house on a country estate); and two lateral bodies for the use and operation of a farm (*barchesa* and *arcada*). It is this complex that Palladio calls "**villa**".

In the conception of his architecture, Palladio, following on the steps of Alberti, uses an idea of beauty[2] based on mathematical laws, referring to the definition of symmetry already proposed by Vitruvius. More than any other architect of his time, Palladio tried to give form to this definition, using mathematical relations of proportionality to conceive spaces. He made of this definition a feature of his conduct, which he would observe not only in his projects, but also in the conception of his treatise of 1570. This treatise, differently from the model then used, includes Palladio's own projects and, in an even more unusual way, they have been reviewed before being published. Together they constitute a sort of collection[3] to which each villa tends to refer. This collection of villas, then, starts to be widely disseminated and presents itself with the force of Palladio's last, newer, and firmly determined ideal, his own language.

To identify the connection between the idea of beauty and the building, it is necessary to observe both the arrangement of a specific villa and the set of projects and the relationships among them. Therefore, to understand the construction of the relationships between the parts and the whole in Palladio's architecture, we should approach the choices he makes for a certain form, in a certain project, and also throughout his production. Thus, several transformations are revealed, many of them are extreme, others are subtle, but all executed exactly in the "passage" from one work to the other. Palladio designed composing, detaching "parts", and manipulating dimensions he determined hierarchies and association possibilities.

The *loggia*[4] is exemplary of this process, for even with variations it is part of all villas. It is the place of entrance and, as such, plays a strong functional role, with a very flexible use: it acts as a reception for servants and strangers, as a place for walking in, eating in and resting in. The *loggia* is also an important space for circulation within the house and, in many of the villas, between the house than the farming wings (*barchesa* and *arcada*).

The *loggia* is an element of strong formal presence, in most villas its dimension corresponds to the breadth of the central room and divides the main facade of the house into three parts. From one building to the other, this element shows alterations in its form. In the first villas, a triple arch or a *serliana* is applied to the *loggia*'s facade; later, an order of columns, as that in Villa Foscari, takes over this role of closing the *loggia*. This element can also be duplicated in two orders of columns, as in Villa Cornaro, or even be elongated, in a giant order of columns, as in Villa Barbaro a Maser. These variations take place in the floor plan as well; in the beginning, there is a single *loggia* within the house block; later, it is an external element applied to the block, and acts as a true pronaos, as in Villa

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[2] "Beauty will derive from a graceful shape and the relationship of the whole to the parts, and of the parts among themselves and to the whole" (Andrea Palladio. *The four books on architecture*. Book I, chap. I. Translated by Robert Tavernor and Richard Schofield; in this paper, all translations from Palladio's *I Quattro Libri dell'architettura* into English are from Tavernor and Schofield's work).

[3] Here, we will dedicate to this collection of twenty-two villas shown in the treatise.

[4] Regarding the use of the *loggia* in the house of the villa, Palladio says in the treatise: *"Loggias* are usually built on the front and the back of the house and, if they are built in the middle, then there is only one, or, if at the sides, two. These *loggias* have many uses, such as for walking in, eating in, and other pastimes, and they are made larger or smaller depending on the size and function of the building; but for the most part they are not made less than ten nor more than twenty feet broad" (Andrea Palladio. *The four books on architecture*. Book I, chap. XXII. Translated by Robert Tavernor and Richard Schofield).

Chiericatti[5]. In the solution for Villa Badoer, the *loggia* is duplicated, belongs to two facades, and is both internal and external to the compact block of the house. Finally, as in Villa Rotonda and Villa Trissino, built in the 1560s, this element is present in the four faces of the volume, determining the solution of a circular central room for the villa.

This process of constant refinement of parts and their elements, project after project, as we exemplified above for the *loggia*, will echo in the preparation of drawings for the treatise as well, and building designs will be again adjusted and presented in its last version. The set of buildings, organized in a compendium, acquires an organic character, becoming ideal and able to be conveyed. Thus written, Palladio's treatise would lead other architects and scholars to find "stimulus" in the past, as he did, for their new productions.

Figure 1. Vila Foscari, *I Quattro Libri*. Book II, chapter XIV.

The Villa Foscari is a project of the late 1550s, designed when Palladio had already developed several buildings and made three study trips to Rome, the last one in 1554, with Daniele Barbaro[6]. This villa develops as an isolated block on the edge of the lagoon in Venice, without the demands of a farm-villa and without the lateral wings that characterize the villas linked to agriculture production. The villa Palladio designed in his mature years for the brothers Nicolò and Alvise Foscari has a spatial arrangement that corresponds in a more effective way to the features of a suburban residence, more used for entertaining and ostentation, easily reached by boat from the center of Venice. The patrons' family was one of the most powerful in the city, and their residence has a majestic character to which the splendid interior decoration by Battista Franco and Gian Battista Zelotti contributes significantly.

Some formal features, together, determine a particularity of this building within the big picture of Palladian villas. The Villa Foscari has a high basement that separates the noble floor from the damp terrain and confers magnificence on the building, which rises up on a podium as an ancient temple. Palladio explains these features in the foreword[7] of the presentation on Villa Foscari, published in the treatise, after revealing the place where the villa is located and writing about his patrons. Palladio, as in all forewords for the presentation of his projects, begins his description of Villa Malcontenta determining the measurement of its elevation in relation to the ground level and stating that it is "a vaulted construction, both the upper and the lower parts". Next, he lists the three types of vault employed in the several rooms.

The horizontal division of the block of the house is usually developed in three different stories: half-buried, main floor, and barn. In this villa, the barn is replaced by a second noble floor. This division into stories mirrors exactly the tripartite division of the pronaos (stairway/column order/pediment), which is dramatic in the Villa Foscari, especially because of the high basement, which marks all four sides of the house and places the noble floor on a majestic podium in the manner of ancient Roman

[5] It is in the Villa Chiericatti that, for the first time, Palladio places the *loggia* outside the compact block of the house.

[6] Daniele Barbaro was also Palladio's great supporter and patron. His Villa a Maser is one of the richest and most beautiful examples of the architecture of Palladian villas. In 1556, Daniele Barbaro publishes an edition of Vitruvius' treatise illustrated by Palladio. According to Wittkower (*Principi architettonici nell'età dell'Umanesimo*. Turin: Einaudi, 1964 , pg. 72), the architecture conceived as a function of applied mathematics had "hardly ever before Barbaro being submitted to such closely-knit logical analysis".

[7] "Not far from the Gambarare on the Brenta is the following building belonging to the magnificent Signori Niccolò and Luigi de Foscari. This building is raised eleven feet from the ground, with kitchens, small dining rooms [*tinello*], and similar places below, and it is vaulted above and below. The larger rooms have vaults the height of which was established using the first method of fixing vault heights. The square ones [*quadra*] have vaults with cupolas [*volto a cupola*]; there are mezzanines [*mezato*] above the small rooms; the vault of the hall is a semicircular cross vault and its impost is as high above the ground as the hall is broad, it has been decorated with wonderful paintings by Master Battista Veneziano. Master Battista Franco, one of the greatest artists of our time, had also begun to paint one of the great rooms, but overtaken by death, he left the work unfinished. The *loggia* is Ionic and the cornice goes all round the house and forms the tympanum above the *loggia* and the opposite side of the house. Under the gutter there is another cornice that runs above the tympanums. The upper rooms [*camera*] are like mezzanines because of their lack of height, which is only eight feet" (Book II, chap. XIV, p. 128 [50]).

temples. The external stairways also contribute to this strong presence of the horizontal division of the block. They give indirect access to the *loggia*, clearing the pronaos, which raises up isolated and detached from the cubic volume of the house, and receives a pediment supported by columns, which confers more importance on the central part of the house.

Each part of the villa corresponds formally to the others, there is a relationship of proportion among the parts that compose the building, as Palladio describes in his treatise. In the floor plan, the measurements of each room in feet[8] are a progression in which the smallest room measures 12 feet by 16, the adjacent square measures 16 by 16, and the next 16 by 24. This progression culminates exactly in the social and noblest space of the villa, the cruciform central room, with 32 feet by 46½. In fact, this central room should be 48 feet in length, so that all dimensions would be multiples of four. The dimensions of the rooms, as mentioned above, are in the ratios[9] of 3:4, 1:1, 2:3, and 2:3.

The relationships of proportion defined in the floor plan are extended to the definition of each room height, together with the definition of vaults. Palladio refers first to the "larger rooms" (16 x 24), which receive high cove vaults, according to the first mode of determining vault height[10], 20 feet. In the square rooms, of 16 by 16 feet, the vault is circular and its height is equal to the breadth plus 1/3, that is, 16 + 16/3 = 21,328 feet. The smallest room (12 x 16) is 14 feet high, according to the indication in the floor plan and to the mode of determining vaults. The most important room of the main block of the villa, the central room, is consequently the highest, and its form in cross extends along the whole block of the house, receiving light through a single thermal window placed on the facade opposite to the *loggia*. Its semi-circular cross vault is 24 feet high.

Figure 2. Villa Foscari, back and front facades.

Alberti[11], speaking of the house, describes that which for him is its most important part: "that which, even being possible to call it *cortile* or atrium, we will call it the *heart of the house*". Further in the same chapter, he explains: "the so-called heart of the house will, then, be the fundamental part **around which** will be **gravitating all smaller parts**, as around a public square within the building, on which are placed, besides the convenient *entrate* (corridors), convenient openings for the light". This description can be transferred both to palaces and villas designed by Palladio. Alberti also writes about the importance of the central room. In at least two topics this statement made by Alberti echoes in Palladio's projects, and will be essential to define his project principles. On the one hand, he explains the open and public significance that this space should have. In this sense, the courtyard is the center of the composition, as a space around which all others will be organized. From this statement by Alberti, we extract the idea of a composition that develops from the largest part and nucleus of a house, from its "heart", to the periphery of the building. This is also a compositional procedure that will be adopted by Palladio in his projects for villas: the relationships seen in the open courtyard are those that organize the whole complex of a villa. Moreover, we can compare this procedure with the central room of the house itself. Palladio calls it *sala*, the largest and most important room, either for what it represents in the functional organization of the house or for what it determines regarding to the form and composition of the whole complex. In his several villas, he adopted four different forms for central rooms: rectangular, square, circular, and in cross, changing proportions and ceilings.

Palladio thus describes the *sala*: "Besides these, all well-designed houses have places in the middle and in the most beautiful parts which all the others correspond to and can be reached from. These

[8] A Venetian foot equals to 0.357 m. It is divided into twelve ounces of four minutes. In the treatise (Book II, chap. III), before presenting his projects, Palladio inserts the drawing of a line that represents half of a Venetian foot, thus indicating the unit of measurement to which the dimension lines in his drawings refer.

[9] To individualize the proportion between breadth, length and height, Palladio lists three alternatives, traditionally attributed to Pythagoras, without which it is not possible to establish a rational theory of proportion. The three methods to determine the height, so that it is proportional to the breadth and the length, are the arithmetic, the geometric, and the harmonic. In all of them, the height is the mean between the two ends of the residence. In the arithmetic method: (b - a = c - b), 2:3:4; in the geometric: (a/b = b/c), 4:6:9; and in the harmonic: (b - a/a = c - b/c), 6:8:12 (Wittkower 1968, p. 108-114).

[10] A. Palladio. *I Quatro Libri*. Book I; chap. XXIII.

[11] L. B. Alberti. *De Re Aedificatoria*. Book V, chap. XVII, p. 416.

places in the lower story are popularly called entrances and those in the upper story, halls. The entrances are, as it were, public spaces and serve as a place where those waiting for the master to come out of his lodgings [*casa*] can stand to greet him and do business with him, and they are the first part (beyond the *loggias*) which anyone entering the house is presented with. Halls are designed for parties, banquets, as the sets for acting out comedies, weddings, and similar entertainments, and so these spaces must be much larger than the others and must have a shape that will be as capacious as possible so that many people can gather in them comfortably and observe what is going on. Usually I do not make halls longer then two squares [*quadro*], which are derived from the breadth, but the closer they are to being square [*quadrato*], the more praiseworthy and practical they will be"[12].

Palladio's description is very close to that of Alberti[13], who notices the importance of the *sala* for the organization of the whole complex of a villa, a compositional and functional importance. From the hall "derive all other" lateral rooms, composing a rigorous hierarchy of proportions. In most villa projects, circulation in the hall periphery is made across the rooms, allowing for an independent use of the central room. This independence is important for the flexibility of the place, which maintains its character of "public space", situated at the center of the house.

The arrangement of each room according to a proportion results in a composition established in a circular way that increases from the smallest to the largest. The computerized model of the Villa Foscari reveals the sequence of the three side rooms, with their specific vaults, until the composition closes in the large central room.

3. THE VAULT IN PALLADIO'S TREATISE

The writing of art treatises was not born in the fifteenth century. As early as the Middle Ages, there was a production of texts for artists. What differentiates Renaissance treatises from their preceding counterparts is the strongest emphasis on the theoretical aspects: the treatise is no longer a recipe of practical processes and procedures, it becomes a space for reflection on the creative activity. With the new ideas of the Renaissance, architecture also constitutes itself as a science and, to this end, fluency in several disciplines was mandatory: first, drawing and perspective, followed by geometry and mathematics and by the foundations of classic language. The architects, conscious of their attributions, also desire to reflect on them and disseminate their ideas, for which books are useful.

As it is widely known, in the case of architecture, the most complete theoretical work, from which it was possible to learn the principles of ancient architecture, transmitted over the centuries since antiquity, is Vitruvius' *De architectura lidri decem*. The beginning of the treatise as a literary genre is attributed to its rediscovery and to the need of updating it as well. It was Leon Battista Alberti (1404-1472), with his *De re aedificatoria*, who revitalized and updated Vitruvius' treatise around 1443, completing it in 1452, and publishing it in Florence in 1485. As *De architectura*, Alberti's work is composed of ten books, where he tries to deal with technical, professional, and aesthetic ideas according to the Vitruvian principles of durability, utility, and beauty (*solidità*, *utilità* e *bellezza*).

However, although there are approximations between them, it is also true that there are profound differences. In his text, Alberti does not offer mere descriptions of architectonic matter, he tries to investigate its principles and the new attributions of the architects/intellectuals who now become established, and ideation based on drawing is his premise. Most of the subsequent architecture treatises will follow the same path: the theory of architecture derives from Vitruvius to Alberti, its first interpreter. In the sixteenth century, the first editions, translated, illustrated and commented, are released: Sulpicio da Verolli, in 1486; Fra Giocondo, 1511-23; Cesare Cesarino, 1521; and Daniele Barbaro, in 1556, illustrated by Palladio. These are followed by Sebastiano Serlio's *Sette Libri dell'Architettura*, 1537-75; Vignola's *La Regola delli cinque ordini d'architettura*, 1562; and Palladio's *I Quattro Libri dell'Architettura*.

[12] A. Palladio. *I Quattro Libri dell'architettura*. Book I, chap. XXI.

[13] L. B. Alberti. *op.cit*. Book V, chap. XVII: "La parte più importante dell'edificio è quella che, benchè si possa pensare di chiamarla cortile o atrio, noi a chiameremo 'cuore della casa'.

The *Quattro Libri*, the richest theoretical work by Andrea Palladio, is organized to address specific themes in each book. In Book I, he lists and discusses the foundations of architecture since the choice of a site until the covering of a building, with a brief treatise of the five orders as well. Book II concentrates on the private house, proposing examples that, for the most part, are projects of his own, addressing the "houses in the cities" and the "houses in the villa", giving examples, and commenting on the house of ancient Romans and Greeks. Book III examines public and urban architecture and engineering, showing several of his projects for bridges and also squares. Finally, Book IV presents the architecture of the ancient temples still existing in Rome and in other cities, both in Italy and abroad. Palladio has visited and drawn many of these buildings in his travels. The reflection and influence of Palladio's architecture on Europe and, later, on the United States was, above all, a result of the communicative power of his treatise. Concisely written and clear in the explanation of concepts, the treatise presents an objective, uniform and "economical" diagrammatic proposition, addressing with equal rigor the page layout, the architectural drawings, and the written text to compose a recognizable dialogue with them.

With this concession to the use of image, as a crucially important element to convey his ideas, Palladio gets much closer to the model employed by Serlio in his *Regole generali di architettura...*, published in Venice by Francesco Marcolino da Forli in 1537, and intends a relevant question, on which Alberti has not given up in his *De Re Aedificatoria*, published in 1486. Alberti feared for the use of images after the publication of an illustrated book, aware of the fact that they would be copied little by little and, in this process, the book messages could lose their accuracy, something that would not happen to the written words. We should bear in mind that, in the fifteenth century, the art of print had barely been born. The beginning of the printing process with movable types takes place in the same century, but about twenty years after the publication of Alberti's treatise.

We should also emphasize that, differently from the then-current model, Palladio chose to present in his treatise some of his own projects as examples of architecture. Alberti, in his treatise, mentions some of his own works as well, but presenting them as models is a new initiative, typical of Palladio. The projects chosen for his treatise are preceded by a brief description, in which Palladio locates the work, introduces its owners, explains his guiding principles, highlights dimensions not expressed in the drawings, determines the type of vault adopted, and lists the artists (painters and sculptors) who worked with him in that building. However, Palladio does not publish his projects as they were first conceived or built: they are redesigned, modified in some of their aspects. In thus updating them, he tried to establish a clear correlation among them. This process of improving his projects illustrates clearly a process of conception and work, an attempt to review theoretically what, in practice, often had not been possible to consider. Thus the artist's understanding about his own work is revealed, and Palladio was aware of the need of this rereading, since his main and declared intention was to publish it.

It is based on these two interpretive keys that also the theme of the vault is emphasized in the Books I and II of the treatise. In the first book, he formulates a theoretical definition for vaults, determining their six possible shapes (see figure below). In Book II, he defines specifically each of the projects presented, pointing to their values and determinants of projective and proportional nature.

Figure 3. On the types of vaults. *I Quattro Libri,* Book I, chapter XXIV.

In the first book, there are two main chapters dedicated to the definition of rooms and vaults, XXIII e XXIV. In chapter XXIII ("On the heights of rooms"), Palladio determines how rooms should be made and indicates three modes to determine height: arithmetic, geometric, and harmonic. Thus he shows how to establish proportionality between length, breadth, and height. At the beginning of the chapter, Palladio warns that the rooms must be built with either a ceiling or a vault, and stresses that "the ground floor is customarily vaulted". He justifies this determination referring to the definition of symmetry, since vaults "turn out to be more beautiful and less susceptible to fire".

In the next chapter of Book I, entitled "On the types of vaults", Palladio presents the six possible shapes for vaults, associating the room shape in the floor plan with its corresponding vaulted covering. The six possibilities described in the treatise are: cross vaults, barrel vaults, segmental vaults (vaults that comprise a segment of a circle that is less than a semi-circle), circular vaults, lunette vaults, and

cove vaults. The list of forms recommended by Palladio is not much different from the suggestions of his predecessors; both Alberti[14] and Serlio[15] have made similar lists of possible forms for the interior. Palladio recommends three forms for rooms: circular, square, and rectangular, with five variations in proportion. Their connections with the vaults follow the description below:

1. circular; **circular** vaults (*ritondo* or *cupola*);
2. square; **segmental** vaults (*volto a remenato*);
3. diagonal line of the square as room length; **cross** vaults (*volto a crociera*);
4. a square and a third 3:4; **cove** vaults (*volto a conca*);
5. one square and a half 2:3; **cove** vaults (*volto a conca*);
6. one square and two thirds 3:5; **lunette** vaults (*volto a lunette*);
7. two squares 1:2.; **barrel** vaults, (*volto a fascia*).

In most villas, Palladio explores the rectangular central room, as in the villas Godi, Saraceno, Poiana, Zeno, Badoer, Angarano, Ragona, Valmarana, and Sarego. The change for a square room with four columns occurs in villas organized with a double order of columns, such as the villas Pisani Montagnana, Cornaro, Thiene Cicogna, and Mocenigo, where the demands of agriculture production are lower, except for Villa Emo, which has a square room and all the equipment of a farm. The cruciform room was first used in Villa Pisani in Bagnolo (1542), and later in the villas Barbaro (1554) and Foscari (1558). Palladio's last two villas, built in the 1560s, Paolo Almerico (*La Rotonda)* and Trissino, were designed with a circular central room, resulting in a composition totally different from the whole volume of the villa, in which Palladio attached four temple facades to each of the sides.

In the second book of the treatise, the definitions of room height and vault form are adopted and described when each of the buildings Palladio designed is presented, especially in the cases of houses in the city (chapter III) and houses on the estates (chapters XIV, XV, XVI, and XVII). The projects for villas show in their presentation texts indications that are not possible to include in the drawings, such as the height of each room and the type of vault chosen for each room. Palladio also describes the way to determine the height of a room he used in the project, referring to chapters XXIII and XXIV of the first book.

4. FINAL REMARKS

The work of architecture has its own materiality and formality, but, at the same time, it is a ciphered and substantially hermetic object. A critical analysis of this object should make use of research methods that allow for breaching this hermeticism. In our work, we tried to establish with both the drawing and the three-dimensional object a field of experimental analysis of the form, considering the building and the drawings fundamental parts of architecture, extracting from them the main arguments, since they are always more complex than the theoretical statements.

Figure 4. Three-dimensional models showing the relationship between vaults (1 to 5) in Villa Foscari (drawing by D. Moita).

Certainly, it is possible to observe the villas designed by Andrea Palladio from several points of view. We have always been fascinated by investigations on the project that approach the drawing and its making, its form and its world. For instance, the notes Inigo Jones wrote in the sixteenth century, when he had a copy of Palladio's treatise in his hands, compare the drawings published there with his personal impressions when visiting the buildings, as Palladio himself did about the ruins of Roman baths. Since Jones, there were many investigations on the architecture of Palladio's villas, with many different focuses. The main reference text is "Palladio's geometry: The villas", by Rudolf Wittkower, published in 1949 in his *Architectural Principles in the Age of Humanism.* In that essay, Wittkower shows that, analyzing the houses of the villas, it is possible to investigate the Palladian interpretation of the "universal rules", and this study produced the well-known geometric pattern of the floor plans of Palladio's villas.

[14] L. B. Alberti. *op.cit*. BookV, chap. XVII.
[15] In the possibilities listed by Serlio, there is still the proportion of a square and a quarter 4:5.

Reflecting on Wittkover's work, we thought of an analysis that could highlight the three-dimensionality of a building. However, as mentioned above, these three-dimensional elements in Palladio's buildings are not directly expressed in his drawings (floor plan and elevation). The elevations show few height measurements, always external to the building volume. These measurements follow rules written in the treatise. Thus, the floor plan and elevation drawings of each villa, and the short introduction texts for each work, which function as captions in the project, can be understood if read together with the first book of the treatise. Therefore, the treatise acts as an informer of Palladio's whole process, and little by little our investigation extracted from the text these three-dimensional elements, valid for each one of the villas, and with them composed drawings and three-dimensional models that work, taking off the external volume of a house and revealing its spatial arrangement.

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