A NEW LOOK AT THREE DRAWINGS FOR VILLA MADAMA AND SOME RELATED IMAGES*

by Sabine Eiche

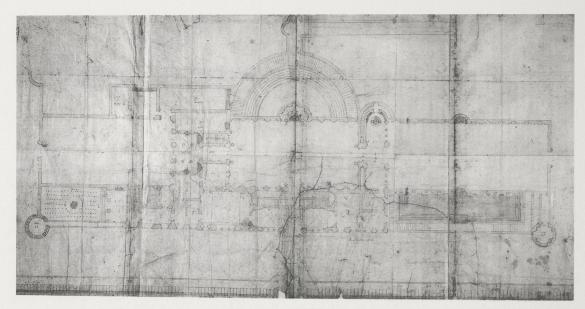
The research of Coffin, Frommel and Shearman over the last twenty-five years has considerably increased our understanding of Villa Madama in Rome. Soon after Coffin's ground-breaking article appeared in 1967, a copy of Raphael's letter on the villa was found and transcribed. This document answered many questions, and stimulated new ones. Nonetheless, despite the attention that Villa Madama has continued to receive, its story is still several chapters short of the end. A few of the well-known drawings, for instance, have more to say than has been heard up to now.

In the present study I shall re-examine three drawings: Uffizi 273 A, 314 A and 1356 A, which record solutions to problems that confronted the architect(s) of Villa Madama in various stages of the design process. In order to accurately define these problems, the basis of any interpretation, it is essential to see the solutions i.e. drawings as clearly as possible, scrutinizing the sheets to detect all traces that relate to the evolution of the ideas. My main concern here will be to clarify what is communicated by the drawings; their interpretation is left for future studies. A brief look at two views by Heemskerck of the triangular stair at Villa Madama, which offer information that has not yet been fully evaluated, will be found in an appendix.

UFFIZI 273 A

The plan on 273 A (Fig. 1) is now generally considered to be the earliest surviving project for Villa Madama. Hofmann, writing at the beginning of the century, was not greatly impressed with the drawing, which he surmised was a clean copy made by an assistant from studies.³ He suggested that, in view of its large scale, its purpose may have been for construction, but not for presentation to the patron. However, the antique names identifying some of the spaces, and the water basins indicated in a darker wash throughout the plan, are likely to have interested the owner rather more than the builder. Frommel is the first to have appreciated the importance of 273 A. He believes that it was drawn for Raphael by Gianfrancesco da Sangallo in the summer of 1518, a little over half a year before Raphael is supposed to have written his letter on the villa. He furthermore proposes that a design similar to 273 A was used to begin work on the foundations in the period between August and the winter of 1518.⁴

Frommel's examination of 273 A is exhaustive regarding its relationship to Raphael's letter, which accords rather neatly with much of the plan. There are, however, certain anomalies in 273 A that have not received sufficient attention. Besides inaccuracies in the drawing of some stairs, which can be ascribed to plain carelessness on the part of the draughtsman⁵, there is a disturbing variance between several of the inscribed and real dimensions, all to be found in the right half of the plan.⁶ The most remarkable difference regards the fish-pond, which is inscribed: canne 11 palmi 2 1/2 x palmi 44; it measures 22.5 canne x 46 palmi, in other words the inscribed measurement is half the real length. Interestingly, in a later project, 314 A, we find that the length of the fish-pond has been reduced considerably to leave space for the dining area (cenatione) described in Raphael's letter. It now measures ca. 12.7 canne, not too

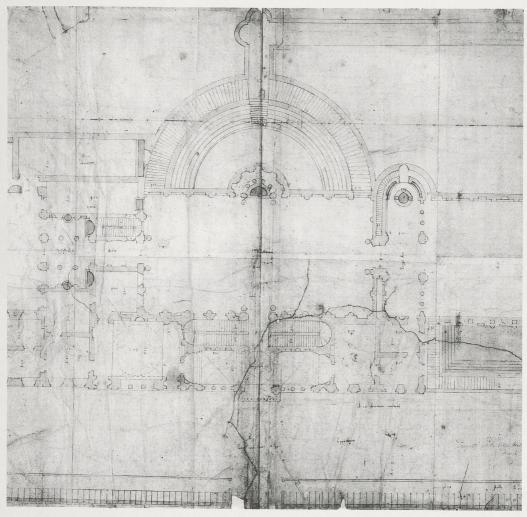


1a Gianfrancesco da Sangallo for Raphael, Project for a plan of Villa Madama. Florence, GDSU, 273 A.

far off the 11.25 canne inscribed on 273 A. This strongly suggests that some of the deviations between the real and inscribed measurements are to be attributed to changes in dimensions that were developed after 273 A was drawn, which were noted on the plan as a pro-memoria for a subsequent design.

Coffin, as unimpressed with 273 A as was Hofmann, considers it an alternate proposal by Giovanbattista da Sangallo for completing the villa around 1524.7 However, the conceptual differences between 273 A and the final project suggest an early rather than late date. According to Shearman, Pope Leo was motivated to build Villa Madama partly to provide a suitable hospitium for eminent visitors to the Curia on ceremonial occasions.8 From the point of view of function, one of the most important spaces of the hospitium was the courtyard, which served as the arrival and departure hall for dignitaries with their entourage, and ideally was a space allowing for the observance of a prescribed ritual. The large rectangular court in 273 A was eminently appropriate for such a purpose, unlike the circular court finally chosen, in which confusion would have been inevitable, leading to as undignified a situation as that witnessed at Castel Sant'Angelo when Pope Hadrian VI entered Rome in August 1522: "Il modo suo del intrata, cioè dela comittiva non se ne pò ragionar' perché nessuna cosa è andata al ordine suo, furfanti amisticati fra gentilhomini, et molte altre cosette. Infino pareva uno campo rotto: il papa fra gli alabardier', lo Ill.mo S.re Marchese [Mantua] inante quasi cum li alabardiere, in nante a lui lo ambasciator' de lo imperator', il capitano novo de le galee, et il S.or Ascanio Colonna cum uno sayo de veluto roso, et brocato, a cavallo in saio in modo che pareva uno buffone ..."9

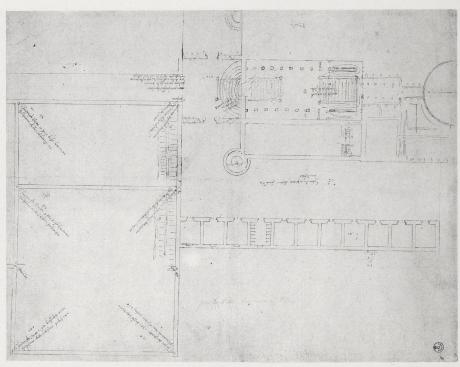
It seems that Pope Leo (or his nephew, Cardinal Giulio) decided, not long after Villa Madama was commissioned, to give priority to other considerations than its potential role as *hospitium*. In any case, the final design, and the documented stages leading to it: Uffizi 179 A, 1518 A, and 314 A (Figs. 2-4), are informed with a spirit different from that of 273 A. Not surprisingly, the parts of the villa that were first constructed: the garden loggia and the adjacent apartment, are all spaces better suited for intimate feasts with select friends than for parades of droves of dignitaries.



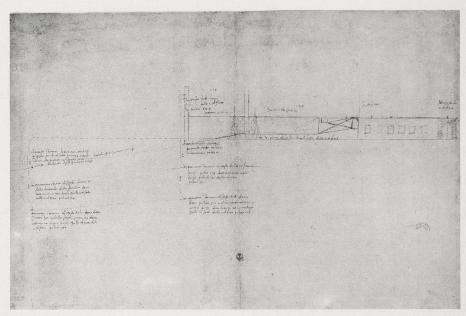
1b Gianfrancesco da Sangallo for Raphael, Project for a plan of Villa Madama. Florence, GDSU, 273 A, detail.

UFFIZI 314 A

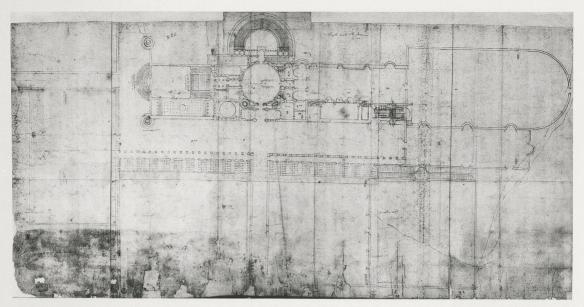
Of all the drawings for Villa Madama, 314 A (Fig. 4) most closely corresponds to the fragment that was built. It incorporates features detailed in Raphael's letter but missing from 273 A, such as the circular court, the theatre designed on Vitruvian principles, the exedrae of the garden loggia, and the *cenatione* to the side of the fish-pond. 314 A demonstrates a rethinking of the internal spatial organization, which Frommel believes was motivated in part by economic and technical considerations. ¹⁰ The disposition of rooms in 314 A produces a more compact plan and a more symmetrical front facade; and the position of the circular court moves the theatre back, and thus higher up the hillside. Some parts of the villa, for instance those buttressing the hillside, are substantially reinforced: in 314 A the retaining walls of the garden and fish-pond are 3 palmi thicker than those in 273 A. ¹¹



2 Antonio da Sangallo, Project for a plan of the left half of Villa Madama. Florence, GDSU, 179 A.



3 Antonio da Sangallo, Project for an elevation and section of the lower level of the left half of Villa Madama. Florence, GDSU, 1518 A.

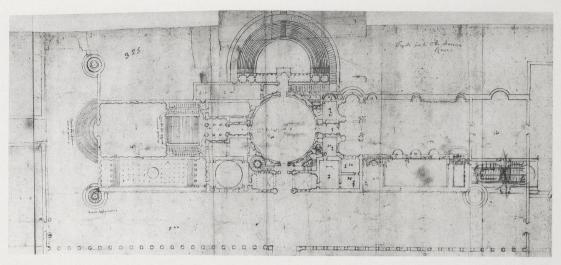


4a Antonio da Sangallo, Project for a plan of Villa Madama. Florence, GDSU, 314 A.

According to Frommel's reconstruction of events, 314 A is the result of Antonio da Sangallo's participation in the planning process. ¹² Once Sangallo began to work out the modifications (as seen in 179 A, 1518 A), Raphael composed his letter on the villa, though the description does not take full account of the consequences of Sangallo's changes. These are finally presented in the project on 314 A.

Frommel dates 314 A to the spring of 1519.¹³ He suggests that in the summer of the following year Sangallo inscribed various measurements in the rooms between the court and the garden loggia, and introduced some changes relating to walls and secondary stairs in the same area (easy to distinguish because they are in a darker ink). Sangallo enlarged the drawing by adding 5 more sheets, composed so that the original sheet is at centre top. On the supplementary sheets he drew the surrounding gardens, also indicating the slope of the hillside at the north and north-west.

It has not been previously noticed that, in addition to the stages described above, 314 A reveals traces of yet another, earlier phase. Incised in the left part of the central courtyard is a circle half as large as the drawn court. Its centre corresponds very nearly to the middle of the original sheet (8 mm to right of centre; that of the larger circular court is 55 mm to right of centre). At the left, the smaller circle connects with the corridor; to the right of it was drawn another corridor of exactly the same size, which was scratched out when the courtyard was enlarged (signs of the erased corridor are easily discernible on the photograph; see Fig. 4). Two sets of three parallel horizontal incised lines are aligned with the erased corridor. That these may have been intended for a three-aisled entranceway like the one drawn at left is suggested by the vertical line incised precisely 32 mm (length of the left entranceway) to the right of the parallel horizontal lines. It is possible to distinguish other incised vertical lines relating to this stage of the lay-out. One runs through the centre of the smaller circle, extending from top to bottom of the sheet. Though it does not correspond to any axis of the plan as it exists now, the line was used to mark the centre of the vault in the left bay of the front



4b Antonio da Sangallo, Project for a plan of Villa Madama. Florence, GDSU, 314 A, detail.

loggia, thereby producing an asymmetrical ceiling. The same occurred in the right bay, where the centre was confused with the incised line marking the end of the erased corridor.

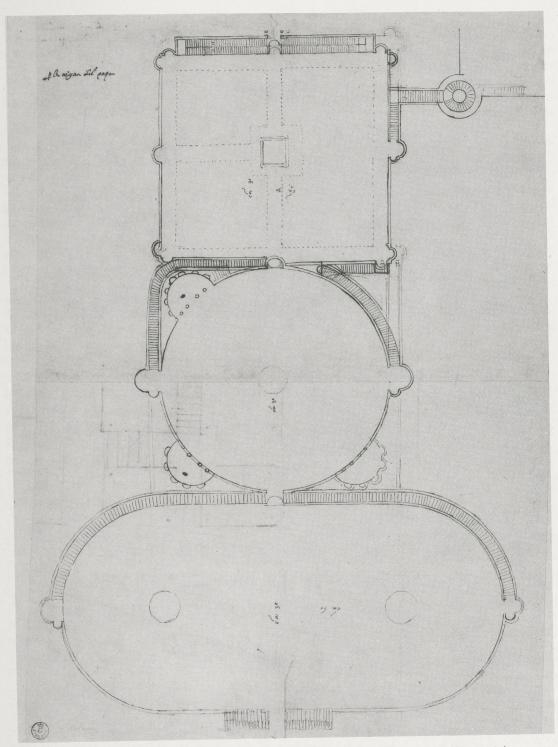
To judge by the remaining horizontal and vertical incised lines, there were no significant changes regarding the position and size of the spaces to the left of the central court, or of the loggia and garden to the right. A minor change was made in the rear garden wall, which was incised and partly drawn 3 mm (ca. 5 palmi) further down. This line, and the niches at the middle and right, were subsequently erased.

What prompted the design of a circular space so much smaller than the court described in Raphael's letter? How many stages were there in the design process involving major changes of scale? We probably have proof of another one in the example of the fish-pond, reduced to about half its length in the interval between 273 A and 314 A; there could have been still others of which we have no record. It may not be without significance that the proportional relationship of the diameter of the circular court to the length of the three-aisled entranceway plus corridor is closer between 179 A and the first (incised) version of 314 A (ca. 1 canna difference) than between 179 A and the final version of 314 A (ca. 6 canne difference). 14

UFFIZI 1356 A

1356 A (Fig. 5), a plan of three adjacent, differently-shaped terraces, is the most famous drawing for the gardens at Villa Madama. It has been frequently discussed, nearly always regarding the location of the terraces with respect to the villa. While Geymüller placed them in front, running horizontally across the site, Bafile correctly interpreted them as terraces running down the hill towards the Tiber, though he ignored the position of the tower and situated them on axis with the centre of the villa. ¹⁵ Coffin's theory is the most convincing. ¹⁶ He proposes that they were to be located in the eastern part of the site, connecting with the tower at the left corner of the villa. Frommel, following Coffin's argument, calculated the different levels of terrain of the terraces. ¹⁷

No one has yet considered how this drawing was generated, analysis of which serves to shed light on the intentions of the artist. The design was produced in at least two steps, amply



5 Raphael, Project for a plan of gardens for Villa Madama. Florence, GDSU, 1356 A.

documented by the pentimenti in the upper half of the drawing. The draughtsman began by calculating the width of the square garden (30 canne), and incising lines vertically from top to bottom of the paper. Then he incised lines horizontally, every 30 canne, to separate the terraces, with the result that all three are tangential. At this stage, the middle garden was contained by straight sides; the circle, although part of the original concept, was laid out later. In the lowest garden the draughtsman incised semicircles with a radius of 15 canne to right and left of the lines brought down from the upper garden, increasing the width to 60 canne.

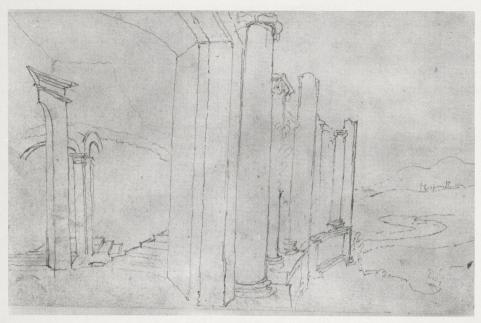
The draughtsman proceeded by going over the principal outlines in ink. Beginning in the square garden, he drew the top wall with double niches around the corners, the niches in the middle of the right and left walls, and single niches in the bottom corners. Next he drew the right wall as far down as the middle niche, and stairs that run from the tower along the side wall, between the middle and upper corner niches. (Note that he refrained from drawing the left incised garden wall.) He furthermore drew walls for two straight flights of stairs relating to the middle garden: one runs from the bottom right niche of the square garden down towards the side niche of the middle garden; the other flight, in which he also drew the first five steps, is situated along the bottom right wall of the square garden, and is entered from the same corner niche. Having drawn as much as described above, the draughtsman seems to have stopped to reconsider the layout.

The key to 1356 A lies in the geometrical forms of the gardens. As terraces, they could not connect directly by way of gates, but required stairs to negotiate the transition of levels. A few years earlier, at the Cortile del Belvedere, Bramante had been faced with the problem of connecting three terraces, which he solved by installing great ramps that emphasize the central axis and focal point of the site. Why was this bold and successful design, which moreover could claim a classical pedigree, rejected here? One of the explanations must be that the concept underlying the gardens in 1356 A is a totally different one, privileging not the perspectival axis, but the primacy of the geometrical configurations. For this reason, the stairs had to be outside the perimeters of the terraces. Since they are tangential, there is no space for stairs in between, and they had to be placed elsewhere. It is likely to have been after first confronting

the stair problem that the draughtsman interrupted work.

How did he proceed in phase two? Pentimenti around the upper entrance gate reveal that originally the central axis of the square garden was slightly to the right of where it is now. It was changed when the side walls were shifted to the left. The wall on the right was drawn inside the first wall, to correspond with the original internal wall of the side stair. This stair, the upper flight of which was cancelled, is now outside the wall, which explains the greater depth of the niche on the right. The left wall, never drawn during the first phase, was moved outside the incised wall, and the drawn niches were cancelled and relocated. The main entrance gate, with columns, was shifted to the left, in line with the new central axis, and the original columns and gate were cancelled. The double niches around the top corners were cancelled and redrawn further down; the pair at the right was drawn around the original internal wall of the side stair, which was never cancelled and thus in effect blocks one of the niches. The double ramped stairs at the top originated in phase two. They appear to be outside the area of the square since the corner niches were redrawn in line with the bottom rather than the top of the stairs. The central basin and the paths were drawn only after the walls at the sides and top had been altered.

The circular garden was not drawn until the second stage, for it is laid out with respect to the new axis. There are many pentimenti relating to the stairs between the square and circular gardens, and the sequence of ideas is difficult to recreate. The draughtsman may have proceeded as follows. Once the circle was drawn, he experimented with curved stairs, the lines for which are incised outside the circumference in the upper half to both right and left, as



6 Martin van Heemskerck, View of the triangular stair from the circular court at Villa Madama. Berlin, Kupferstichkabinett, 79 D 2, I, f. 9 v.

well as between the left middle niche and lower exedra. He drew the curved stairs at the right, bringing the outer wall up as far as the bottom wall of the square garden. The straight flight of stairs, the walls of which together with five steps were drawn in phase one, was now continued until it encountered the wall of the curved flight. Steps were drawn over those of the curved stair and a part of its outer wall in order to effect the sharp turn and fuse the two flights. The place where the stair changes direction is marked by a short straight wall with a semicircular niche. In the meantime, the new right wall of the square garden had been given a pair of semicircular niches around the bottom corner (the left side was redrawn the same way), with the result that one of the niches now juts into the first steps of the straight flight of stairs. That niche was then drawn over as square, most likely to provide a platform from which to reach the stairs. However, the first five steps were never cancelled, and remain inside the niche.

A different solution to the stair problem was tried on the left. For this the lower left wall of the square garden was moved up, and the double niches around the left corner redrawn for the third time. The stairs, reached from the middle of bottom wall of the square garden, were composed of two straight flights linked by a gentle curve circumscribing the exedra. The niche at the top of the circular garden is below the stairs.

The passage between the second and third gardens is in line with the new central axis, and thus slightly off-centre with respect to the axis of the lowest garden. Given that there are no pentimenti around this passage, we can be sure that the stairs of the lowest garden were not drawn until phase two. The 30 x 60 canne dimensions of the lowest garden are measured along the external perimeter, that is including the space in which the stairs are located. It was proposed above that the walls of the upper terrace were shifted in order to eliminate the stairs from the garden area. Why this was no longer an issue in the lowest garden is puzzling, until we notice that now this garden area is in effect circumscribed by the perimeter corresponding



7 Martin van Heemskerck, Interior view of the triangular stair at Villa Madama. Berlin, Kupferstichkabinett, 79 D 2, I, f. 16, detail.

to the internal wall of the stairs, rather than by the original outer perimeter, which in its lower half remains as an incised line only. Thus the geometric form is unaltered, and the stairs do in fact remain outside, although the size of the garden area is reduced.

In the evolution of the design of Villa Madama, 1356 A is usually connected with 273 A. Although there is no indication of the garden site on 273 A, the position of the tower at the corner of the villa is similar in both drawings, in so far as the angle coincides with the centre of the tower, producing a convex corner inside the villa. In 179 A and 314 A, the tower is moved down, and the corner becomes a right-angle. However, the diameter of the interior of the tower in 1356 A is ca. 4 canne, that is 1 canna larger than that in 273 A. The interior of the tower in 179 A and 314 A also measures ca. for 4 canne. It is likely, then, that 1356 A was drawn after it had been decided to enlarge the tower, though before the relative position of gardens to villa had been definitely established, since the gardens in 1356 A are somewhat closer to the villa block than those in 179 A and 314 A. 18 Worth noting is that neither 179 A nor 314 A shows the terraces as drawn on 1356 A, but simply as juxtaposed rectangular areas, the widths of which do however correspond to those inscribed on 1356 A.

Related to the above issue is that of authorship. Coffin ascribes the drawing to Antonio da Sangallo, and regards it contemporaneous with 179 A.¹⁹ But in view of the altered position of the tower, and the increased distance between the building and gardens, it is unlikely that the drawings originated at the same time. Frommel, following Geymüller, argues for an attribution to Raphael, based above all on the calligraphy of the inscribed dimensions.²⁰

Greater insight into the place of 1356 A in the overall scheme can be found, I think, by comparing 1356 A and 273 A, for the projects are related by more than just the position of the tower with respect to the villa. They share an attitude towards the perception of space that is thoroughly re-worked in the projects culminating in 314 A. The feature that most directly exemplifies this is the stair between the garden and fish-pond in 273 A. The way in which it links the two levels by responding to the shape of the lower pond recalls the way in which

the stairs in 1356 A delineate the shapes of the garden terraces.²¹ As the design of Villa Madama evolved, the concept of stairs and passages changed from one that encouraged undisturbed and open circulation, to one that deliberately interrupted the flow through dramatic manipulation of spaces and levels. If 273 A is to be associated with Raphael, then his, too, is the mind that created 1356 A. By the time Sangallo intervened with the project on 314 A, considerations of both concept and cost will have decided the elimination of the three great garden terraces from the design of Villa Madama.

APPENDIX: HEEMSKERCK'S DRAWINGS OF THE TRIANGULAR STAIR AT VILLA MADAMA (Berlin, Staatliche Museen, Kupferstichkabinett, 79 D 2, I, ff. 9v, 16)

Heemskerck saw Villa Madama ca. 1534, where he drew, among other things, a couple of views of the triangular stair that was located between the front loggia and the circular courtyard. For the view on f. 9v (Fig. 6), Heemskerck must have been perched on the ledge of the aedicula of the second bay in the right segment of the circular courtyard. He was looking northwards onto the second landing of the stair, the ramp at the right being the third side of the triangle leading to the upper level, while the two ramps visible at the left are the other two sides of the triangle leading up from the main landing south-west of the front loggia. It is clear from Heemskerck's sketch that the second landing was on a level with the ledge of the aedicula, which gives us visual evidence for calculating the slope of the stair. The relationship of the stair to the aedicula is confirmed by another of Heemskerck's views on f. 16 (Fig. 7). Here, Heemskerck stood on the main landing, looking in a north-west direction. In the lower half of the drawing we see three ramps descending into the basement, and above, three ramps ascending. The figures on the middle ramp, which are approaching the second landing, are bathed in light entering through the same aedicula from where Heemskerck drew the view on f. 9v.

NOTES

^{*} My thanks go to Claudia Lazzaro and Andrew Morrogh for their encouragement, and to Tracy Cooper for thoughtful suggestions regarding style.

¹ D.R. Coffin, The Plans of Villa Madama, in: Art Bull., XLIX, 1967, p. 111-122; C.L. Frommel, Die architektonische Planung der Villa Madama, in: Röm. Jb., XV, 1975, p. 61-87; idem, Villa Madama, in: Raffaello Architetto, exh. cat., Rome 1984, p. 311-356; idem, Raffael und Antonio da Sangallo der Jüngere, in: Raffaello a Roma. Il convegno del 1983, Rome 1986, p. 261-304; idem, Le opere romane di Giulio, in: Giulio Romano, exh. cat., Mantua 1989, p. 97-133, 290-291; J. Shearman, A Functional Interpretation of Villa Madama, in: Röm. Jb., XX, 1983, p. 313-327.

² P. Foster, Raphael on the Villa Madama: the text of a lost letter, in: Röm. Jb., XI, 1967-68, p. 308-312. Foster mistranscribed one word, ven i.e. 'viene', which he read as non; thus line 5 of the second column on p. 309 should read: "ven nella costa del monte piu alta ch(e) quella de ponte molle."

³ T. Ĥofmann, Raffael in seiner Bedeutung als Architekt. I. Die Villa Madama, 2nd ed., Zittau 1908, col. 80.

⁴ Frommel 1984 (n. 1), p. 311-312, 326-329; idem 1986 (n. 1), p. 289.

⁵ The left branch of the front stair juts 1 1/2 palmi into the sala; the stair between the atrio and tinello is inaccessible; the left entrance to the theatre stairs is drawn as though part of the courtyard wall.

⁶ If the inscription in the hippodrome: *lunga tuta la via ch(anne)* 99, refers to that space, which the position of the writing suggests, then the real length (1565 mm = 104.3 canne) supercedes it by more than 5 canne (11 metres); another possibility, for which the inscription should have been turned 90 degrees, is the straight path between the villa and the road coming from Ponte Molle (see the sketch in *Hofmann* [n. 3], col. 35). Below the apartment to the right of the front loggia is recorded: *ch(anne)* 28 datorione atorione, presumably denoting the distance between the two towers, which are in fact separated by 86.6 canne. This inscription

is so irrational, that it might well be the result of a mistranscription (or inversion? 82 instead of 28?). The right half of the stables below the hippodrome is inscribed as having a length of *ch(anne)* 44 *p(almi)* 8, whereas it measures 49.6 *canne*. Noted along the right side wall is: *chane* 27 *dal monte alle stalle*, which accounts for the distance between the stables and a seemingly insignificant point 1.8 *canne* short of the upper corner of the side wall.

⁷ Coffin (n. 1), p. 113, 116. ⁸ Shearman (n. 1), p. 322-324.

⁹ ASF, Ducato di Urbino, Cl. I, Div. G, Fa. 132, c. 60 v, letter from Gabriel de Guidolottis to the Duke of Urbino, Rome, 30 August 1522.

¹⁰ Frommel 1984 (n. 1), p. 311-312; idem 1986 (n. 1), p. 291.

¹¹ This improved design is specifically recommended by Serlio as a solution to one of the *accidenti* that can befall architects when constructing on a hilly site: *Sebastiano Serlio*, *Regole generali di Architettura*, Venice 1540, p. VIII.

¹² Frommel 1984 (n. 1), p. 337; idem 1986 (n. 1), p. 290-295; idem 1989 (n. 1), p. 98.

¹³ Idem 1984 (n. 1), p. 311-312; idem 1986 (n. 1), p. 289-290.

¹⁴ In 179 A the circular court measures ca. 12.3 canne, the three-aisled entranceway plus corridor ca. 11.5 canne. In 314 A the smaller circle measures ca. 7.3 canne, the entranceway plus corridor ca. 8.25 canne; the larger circular courtyard in 314 A measures ca. 14.8 canne.

15 E. Geymüller, Raffaello Sanzio studiato come architetto, Milan 1884, p. 66-67, Pl. VIII; M. Bafile, Il Giardino di Villa Madama, Rome 1942, p. 13-17, Pls. VIII, IX.

16 Coffin (n. 1), p. 113-115.

¹⁷ Frommel 1975 (n. 1), p. 68-70; idem 1984 (n. 1), p. 330.

¹⁸ In 314 A, the distance between the corner of the villa and the garden wall measures ca. 11.1 canne; in 179 A, ca. 11.2 canne; in 1356 A, the distance amounts to ca. 9 canne.

19 Coffin (n. 1), p. 114.

²⁰ Frommel 1975 (n. 1), p. 69 n. 50; Geymüller (n. 15), p. 64-67.

²¹ See also in 273 A the double-lobed niche inserted at the point where the upper road turns 90 degrees to enter the theatre, which is the same type of niche used throughout 1356 A wherever there is a change of direction.

RIASSUNTO

A partire dalla pubblicazione, nel 1967, dell'importante articolo di Coffin sui progetti per Villa Madama, si è avuta una proliferazione di studi sull'edificio, in particolare di Shearman e Frommel; e tuttavia, nonostante quanto si è acquisito in conoscenza negli ultimi 25 anni, l'informazione su Villa Madama è lontana dall'essere esaustiva e molte domande attendono ancora una risposta.

In questo articolo l'autrice esamina nuovamente tre progetti per la villa — Uffizi 273 A, 314 A, 1356 A —, materiale ben noto che non è stato precedentemente studiato con ogni possibile completezza. L'autrice indica le differenze tra le dimensioni descritte e quelle reali di molti spazi nel progetto di 273 A; uno stadio precedente al progetto di 314 A, che comprendeva una corte circolare il cui diametro misura la metà di quello disegnato alla fine; e la genesi del progetto del giardino in 1356 A, che ha subìto almeno due stadi. Infine, l'autrice prende brevemente in esame due vedute di Heemskerck della scala triangolare di Villa Madama, che offrono un'evidenza visiva al calcolo dell'inclinazione della scala non più esistente.

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Gabinetto Disegni e Stampe degli Uffizi, Florence: Figs. 1-5. - Staatliche Museen zu Berlin, Kupferstichkabinett: Figs. 6, 7.