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RESEARCH ARTICLE

Rudolf Wittkower versus Le Corbusier: A Matter of Proportion

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This article focuses on the origins of Rudolf Wittkower's theory of proportion and the ways in which Wittkower uses this theory in analyzing Leon Battista Alberti's and Palladio's architecture in his essays of the 1940s, which eventually formed the body of *Architectural Principles in the Age of Humanism*. The article examines a number of Wittkower's sketches of plans, sections and elevations. It explores these themes in relation to a previously unopened box of documents in the Wittkower Archive of Avery Library, Columbia University, pertaining to the preparation for the 1951 Milan conference on proportion.

Introduction

With just weeks to go before the 1951 IX Triennale of Milan, titled 'Divina Proporzione', the programme of the event had not yet been set.[1] Carla Marzoli, the promoter of the event, sent a letter asking Rudolf Wittkower to use his authority to contact Piero Sanpaolesi and Le Corbusier to send their papers for the Triennale in advance. On August 12, 1951, Marzoli wrote (in the letter cited in note 1):

> Mr. Le Corbusier is now extremely glad to come; […] but you know as he is and surely he shall not send his report […] I beg to do it of course, but I am sure he shall not send. If you would try to write him perhaps he could answer to you, but I am not sure.[2]

On September 19, Wittkower replied to Marzoli's request:

> I think it is better for me not to write to Mr. Sampaolesi [sic] to decide about the last speaker after my arrival. Nor shall I write to Le Corbusier. A letter from me would not mean anything to him. I think his presence has mainly propaganda value; between you and me, he is a very bad speaker and has not very much to say. With so many excellent relazioni on the programme, we might as well do without him.[3]

Wittkower's skeptical and unenthusiastic position toward Le Corbusier, as we will see in this essay, may be explained by analyzing some of the documents from Wittkower's archive, especially those related to his study of Leon Battista Alberti and Andrea Palladio.[4] The attitude Wittkower held toward Le Corbusier had deep intellectual roots and can be understood only after having traced the origin, practice, and goal of his theory of proportion, which was the subject of one of the most anticipated papers of the 1951 congress in Milan. This analysis allows the reader to wear the same lenses through which the German scholar perceived and understood the Swiss architect's own system of proportion, *The Modulor,* published in 1950.[5]

The Premises of Wittkower's Theory of Proportions

The decade of the 1940s was crucial for the rebirth of the theory of proportion as applied to architecture. However, the discourse emanated from two different sources: one established by art and architectural historians, the other by practicing architects, the former with analytical goals, the latter with creative purposes. Wittkower's theory of harmonic proportions was definitively published for the first time in 1949, in a chapter of his seminal *Architectural Principles in the Age of Humanism*, as a result of ideas and research developed over more than a decade at the Warburg Institute of London (Wittkower 1952).[6]

In this environment, Wittkower's critical outlook was moving towards an impression of the history of Renaissance architecture as it was conceived in the 1940s: one that was largely Anglo-Saxon, still romantic and formal, inscribed upon the Venetian stones of John Ruskin and taken up by Geoffrey Scott in his *Architecture of Humanism*, published in 1914 (Ruskin 1851–1853; Scott 1914). As Alina Payne has suggested, Ruskin and Scott, despite their different points of view, both believed that there was an absence of logic and consistency in Renaissance art and that its only scope was to provide aesthetic pleasure (Payne 1994: 325 n.15).[7]

Julius von Schlosser's bitter critique of Leon Battista Alberti, presented at a conference in Vienna in 1929 and published in 1938 (Von Schlosser 1938: 9–46), in which the Austrian art historian accused the Florentine humanist of having an 'anti-artistic spirit' and of having

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used clumsy and incorrect proportions, might have further compelled Wittkower to demonstrate that Albertian architecture, and the architecture of the Renaissance in general, represented instead an evolution of a critical approach to the antique divided into three distinct phases: the emotive, the archaeological, and finally the objective, all arranged in logical order. This was the content and goal of Wittkower's essay 'Alberti's Approach to Antiquity in Architecture', published in the *Journal of the Warburg and Courtauld Institutes* in 1940 (Wittkower 1940: 1–18, especially 18).[8]

Wittkower used the study of the proportional criteria he believed Alberti had adopted as an effective tool for demonstrating how Alberti had founded his architecture on a rational and scientific basis taken from the antique. Furthermore, Wittkower's argument constituted a polemic against Ruskin, Scott and Von Schlosser's idea of Renaissance aesthetics. For these purposes Wittkower analyzed the proportional systems of Albertian churches by employing architectural drawings that he personally drafted — not included in his article — as a tool of research and verification.

Applying a proportional reading to the architecture of the Renaissance was a form of analysis by no means taken for granted in the 1940s, though it was commonly applied to painting — especially contemporary painting — and to proposing links between botanical and artificial forms.[9] Wittkower had been deeply affected by Panofsky's 1921 seminal essay on the 'History of the Theory of Human Proportions', and the structure of Wittkower's inaugural lecture at the Triennial of Milan on 'Divina Proportione' thirty years later still recalled Panofsky's influence (Panofsky 1921: 188–219).[10]

According to Panofsky, Wittkower's close friend, 'the theory of proportions expresses the frequently perplexing concept of the *Kunstwollen* in clearer or, at least, more definable fashion than art itself' (Panofsky 1987: 56).[11] Although Panofsky considered only the proportions of human bodies represented in painting and did not deal with the realm of architecture, his methodological approach was very influential among art historians and soon expanded out of the field, influencing the field of architecture. The scholarship on proportion quickly multiplied: in 1921 Fredrik Macody Lund's influential article 'Ad Quadratum' was published (Macody Lund 1921); in 1924, Jay Hambidge's *The Parthenon and Other Greek Temples: Their Dynamic Symmetry* appeared (Hambidge 1924); and ten years later Theodor Fischer's short book *Zwei Vorträge über Proportionen,* which Wittkower considered 'a remarkably sober and illuminating little work, although the author accepts some of the antiquated research', was published (Fischer 1934).[12] These three publications are notable among the scholarship of the time because they focused on proportion pertaining to architecture rather than contemporary art, or else on purely scientific and mathematical issues.

Wittkower's innovation was to view Renaissance architecture through a 'Warburghian' lens — namely, with an emphasis on the iconology and the revival of the past — that he explored with scholarly tools borrowed from the compositional process of architecture itself, including proportional features analyzed through the use of his own architectural drawings.[13] However, proportion differs from dimension: the latter is tied to the physical features of the structure and implies an archaeological knowledge of the building including all its flaws and irregularities. Proportion, conversely, deals with abstract features that can be independent of the built structure and be focused only on the geometrical matrix of the plan and elevation. These features can be studied from far away, but they require reliable measurements, not always available to Wittkower, who was forced to live in London until the end of the war.

Wittkower, Alberti and Palladio

For Wittkower, using proportion as a tool to provide Renaissance architecture with a pedigree deriving from Roman architecture was a definitively ideological move, as was the 'comparative method' he learned from Heinrich Wölfflin, under whom Wittkower studied in Munich for one year.[14] Michael Podro, in commenting on Wölfflin's theory of 'two roots of style', which Wölfflin had elaborated in the introduction to *The Principles of Art History*, claims that 'the division between two roots of style, where one root is the link with previous art, and the other root the link with the surrounding culture cannot [...] be subjected to some general rule' (Podro 1982: 131–132). The comparative method, in other words, must be framed within strict parameters. Since visual similarities are not sufficient to draw comparisons, perhaps proportions, responding to the same mathematical rules valid in different times, can provide a reliable tool. Paul de Man (1983) furthermore argues that the comparative method is a rhetorical form that allows the scholar to elucidate subjects equally, legitimizing each other, using one as a way to affirm the other.[15] De Man's statement explains Wittkower's strategy very well.

A pencil drawing from 1940 (**Fig. 1**), executed while preparing the essay on Alberti, was Wittkower's first attempt at studying the proportions of a building, in this case the Pantheon and its relation to the façade of Santa Maria Novella (the same comparison drawn in his article of 1940, 'Alberti's Approach to Antiquity'). The intention is clear: to show that the proportional rules of the Pantheon are the same as those used in Alberti's church façade. This drawing therefore reveals the method and the scope of Wittkower's research: to explore proportions as a tool of investigation and as a means to verify the idea that Renaissance architecture responded to the same universal rules as Roman architecture. This drawing reveals Wittkower's intention to show that Alberti used the proportional criteria of the Pantheon for the Florentine church. The German scholar himself confirmed the approximate date of the drawing, in the prologue of the Milan Triennale of 1951, stating that his interest in this area of architectural history had begun ten years earlier. At that time, Wittkower was explaining the theory of proportions found in Alberti's work from a historical point of

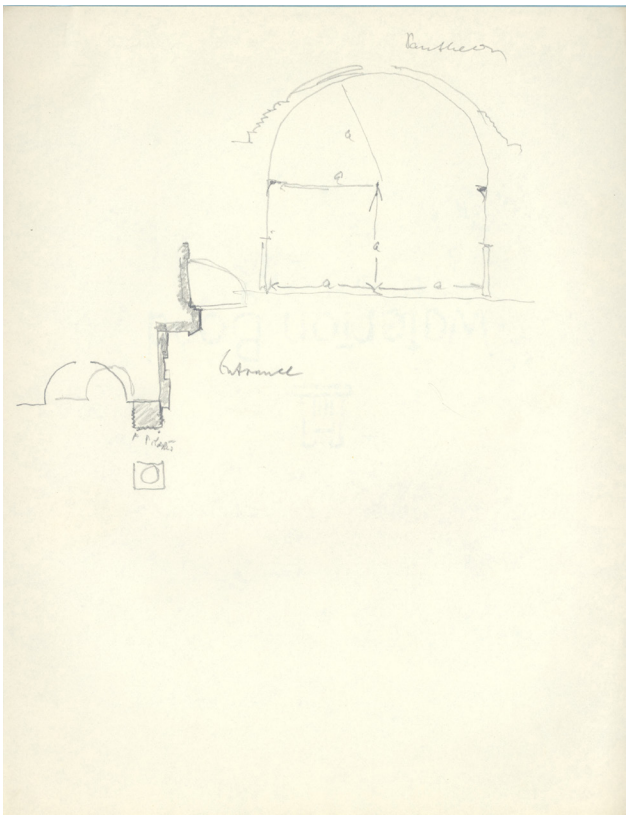

Figure 1: R. Wittkower. Pantheon, Rome. Section and plan of the left portion of the entrance. Rare Book and Manuscript Library, Butler Library (RBML), Columbia University, Rudolf Wittkower Archives, box 17, envelope 'Alberti 1'.

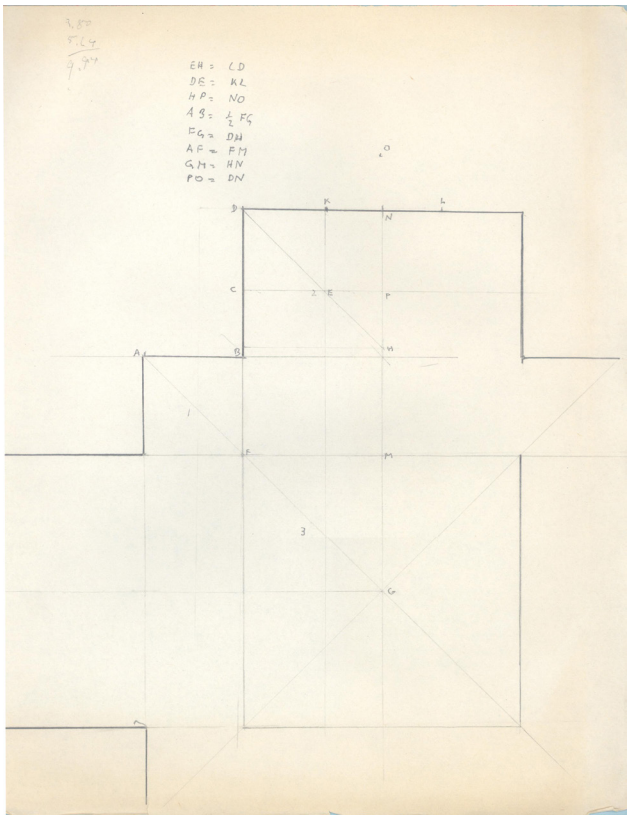

Figure 2: R. Wittkower. San Sebastiano, Mantua. Plan with geometrical studies. RBML, Columbia University, Rudolf Wittkower Archives, box 17, envelope 'Alberti 1'.

view to English students of architecture. Wittkower's students were fascinated, he notes, for Anglo-Saxon instruction rarely treated the theme (Wittkower 2007b: 44–47, esp. 44).

Wittkower attempted to ascertain the Pantheon's recurring dimensions, indicated by the 'a' arrows in **Figure 1**, by using a section drawing. This graphic reasoning allowed him, in a paragraph devoted to Santa Maria Novella, to claim,

> Proportions recommended by Alberti are the simple relations of one to one [and] one to two [...], which are the elements of musical harmony and which Alberti found in classical buildings. The diameter of the Pantheon, for instance, corresponds exactly to its height, half its diameter corresponds to the height of the substructure as well as that of the dome. (Wittkower 1940–41: 10)[16]

Wittkower's studies on Alberti's proportions went further. For the church of San Sebastiano in Mantua, the drawing again was used as a tool of analysis, verification, and imagination: a first freehand drawing shows the interior perimeter of the plan provided with accurate measurements.[17] From this freehand drawing Wittkower elaborates a diagram made with a ruler and scaled 1:100 according to the aforementioned dimensions, representing only a part of the whole plan (**Fig. 2**). The drawing is focused on the central area underneath the church's vault, the building's left side and the apse. The drawing's limits are the inner edges of the church; it does not depict the thickness of the building's walls (published in Benelli 2006: 560). The purpose of this diagram was to discover the geometrical logic through which the plan was conceived.[18]

Through this drawing Wittkower was able to suggest dimensional relations in the church based on the use of the square, rectangles, and their diagonals or those rules indicated by Alberti in *De re aedificatoria.*[19] However, in this graphic analysis of the geometrical composition of the plan, according to Wittkower, a discrepancy emerges indicating that the plan is not organized according to a composition of squares: a discrepancy of 40 centimeters between the square that functions as a module for the central area under the dome (FMG), and the square that serves a corresponding function in the apse (BDN).

Such a significant discrepancy underlines the weakness of the scheme and probably persuaded Wittkower to discontinue this path of research. It must have become clear to him that this mode of analysis requires accurate measurements of every part of the building as well as detailed drawings that evidently were not available to him. He probably also realized that because the sections of the walls varied according to their position and structural function, an analysis based only on the grid was not sufficient to understand the geometrical nature of the building. The structure and its consequences on

the dimensions of the elements were in fact issues that could conflict with a desire for geometrical clarity. In the published text of Wittkower's study of San Sebastiano, this type of analysis does not appear. Although Wittkower introduced these approaches and objectives in his study of Leon Battista Alberti's work, they would find their natural continuation in his research on Palladio, as stated in the chapter 'The Mean Proportionals and Architecture' in *Architectural Principles.*[20]

Exile in London kept Wittkower away from the places in which he primarily was interested, and led him towards topics of study that were compatible with his interests and methods but possible to pursue at a geographical distance. The study of Palladianism, or the beginnings of classicism in England, satisfied the atmosphere of the Warburg Institute, which was permeated with the legacy of the classical world. Wittkower's initial research resulted in his publication in 1943 of an article foreshadowing the studies on Palladio that would appear in the following two years.[21] Numerous studies on Palladio had been published before 1944, even outside of Italy,[22] but as James Ackerman has observed, they were concerned for the most part with Palladio's existing buildings and his *Four Books* rather than theoretical issues (Ackerman 1951: 195–200).

Apart from having introduced the aforementioned methods of investigation concerning Renaissance architecture and new ends for those investigations, Wittkower attempted to address the concept of the architect as a 'universal man' by comparing the theoretical and graphic elements of Palladio's *Four Books* with the actual buildings Palladio constructed. Wittkower's main contribution to the study of Palladio was to release him from his territorial and local contexts by hypothesizing about the 'architectural principles' of his buildings based upon those 'eternal rules' or 'universal precepts', applicable anywhere, that according to him Palladio appropriated from ancient architecture.[23] For the first time, therefore, a direct relationship was proposed between the thought and culture of the architect and the edifices that he designed, isolating the buildings as much as possible from restrictions and consequences pertaining to construction and other practical issues.

In order to verify Palladio's statement that 'one part of the building may correspond with the other, so that the whole body of the edifice may have in itself a certain harmony (*convenienza*) of members which may make it entirely beautiful and graceful', Wittkower again made use of drawings as an analytical tool (Palladio 1570: Book II, chap. 2, 78).[24] A number of his drawings drafted for the writing of his essay 'The Problem of Harmonic Proportion in Architecture' survive in his archive and provide documentation for the way in which he approached the issue.[25]

Wittkower used the dimensions included in the illustrations of the *Four Books.* For the Villa Malcontenta, all of the calculations seem to work out for the German scholar (**Fig. 3**). The relationships of the space produce the harmonic sequence 12, 16, 24, 32. The first and last numbers in particular, 12 and 32, correspond to the dimensions of

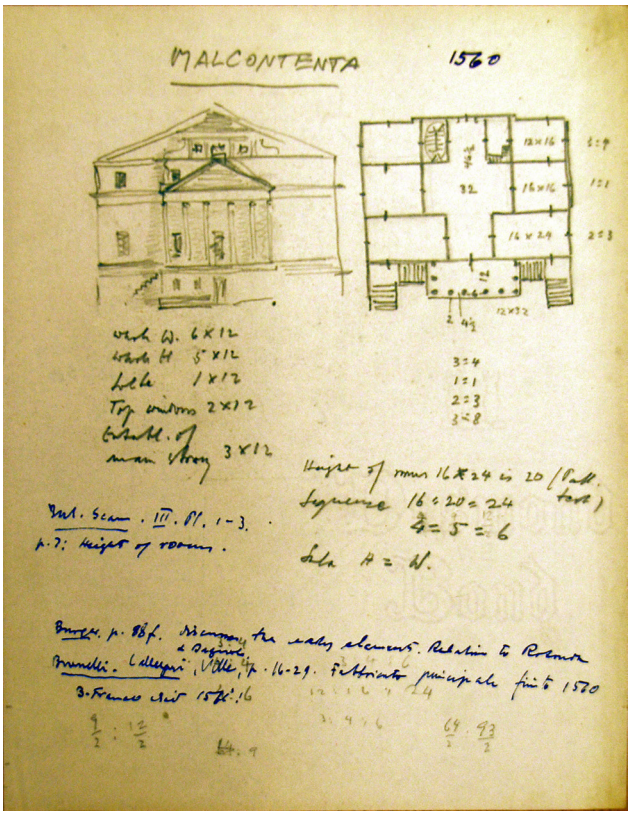

Figure 3: R. Wittkower. Villa Malcontenta. Plan and elevation. RBML, Columbia University, Rudolf Wittkower Archives, Series IV, box 44.

the portico, which is the relationship of *diapason* to the *diatessaron* (**Fig. 4**). Other drawings show that he speculates about the same harmonic relationships in the Villa Godi, Villa Emo, Villa Thiene in Cicogna and in Palazzo Porto Colleoni — all examples mentioned in his essay 'The Problem of Harmonic Proportion in Architecture'.

To verify the use of harmonic proportions in the Villa Rotonda, Wittkower clearly copied the plan drawings from Palladio's *Second Book* (**Fig. 5**). In this plan, the thicknesses of the walls are shown as single lines, further simplifying the already idealized widths illustrated in the plates of the *Four Books*, reducing the drawing to a diagram. Wittkower copied the wall-to-wall distances from Palladio's plan into this diagram, and then supplemented them with the published survey measurements available to him.[26]

Below the plan, he indicated the building's external dimensions, both with and without the thicknesses of the walls. In emphasizing the relation between these dimensions, therefore, Wittkower attempts to verify through numbers Palladio's definition of beauty in the wake of Alberti and Vitruvius, and therefore ultimately to demonstrate the definition of architectural beauty for the entire classical tradition. Palladio's definition of beauty states:

> 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, because buildings must appear to be like complete and well-defined bodies, of which one member

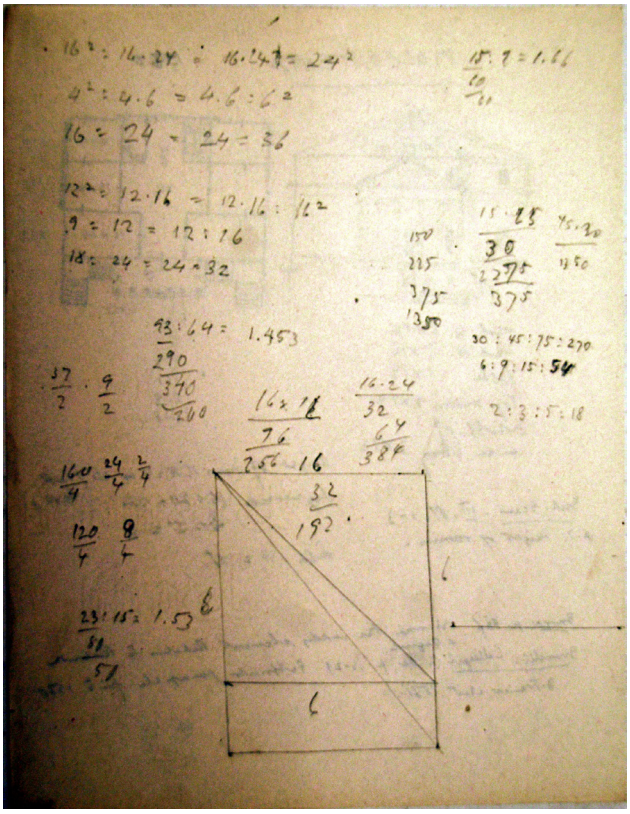

Figure 4: R. Wittkower. Villa Malcontenta. Calculation for studies on proportion. RBML, Columbia University, Rudolf Wittkower Archives, Series IV, box 44.

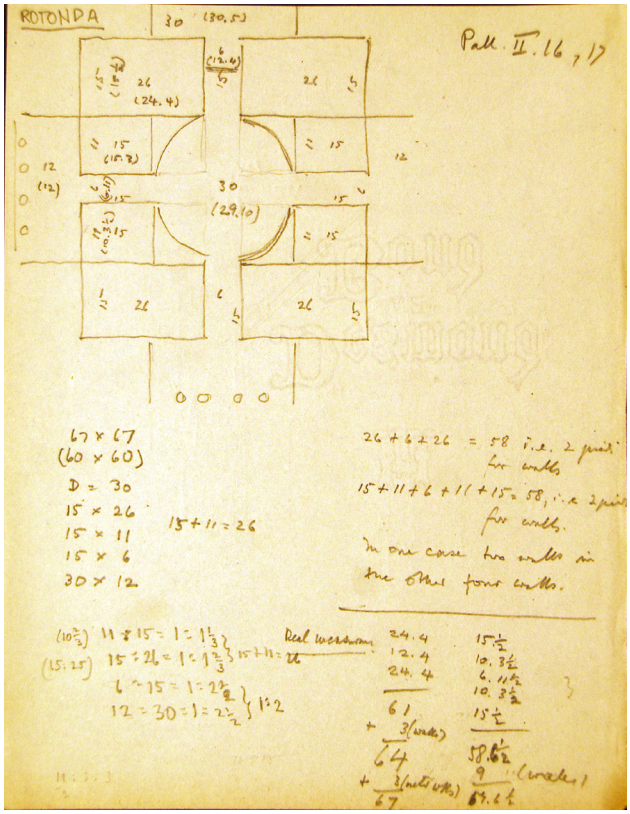

Figure 5: R. Wittkower. Villa Rotonda. Plan. RBML, Columbia University, Rudolf Wittkower Archives, Series IV, box 44.

> matches another and all the members are necessary for what is required. (Palladio 1997: 7)[27]

This definition is both qualitative, because it refers to 'graceful shapes', and quantitative, because ultimately it is about geometrical forms made of numbers and related to each other through proportions.

Though reasoning with diagrams 'a fil di ferro', Wittkower included the thickness of the walls regularized first to 2 Vicentine feet, and later reduced them to a more probable 1.5 (in reality they measure 1.42 feet).[28] Nonetheless, Wittkower computed the final calculations of the harmonic proportions of the spaces by keeping the measurements published by Palladio in mind, which are very close to the real measurements, excluding the thickness of the walls.[29] After tabulating the results, however, Wittkower believed that the data obtained through these operations did not satisfy what he called Palladio's 'fugal' Pythagorean-Platonic system of proportion. This lack of correspondence between the Villa Rotonda dimensions and Wittkower's conception of 'fugal' proportions led him to exclude the Villa Rotonda from the examples he cited in the second part of his essay 'Principles of Palladio's Architecture', which is dedicated to proportion. With this exclusion he admits implicitly that Palladio was not using the proportional system systematically in all his buildings. Wittkower drew diagrams of all the villas and palaces published in the *Four Books*, applying the same methods described above.

Wittkower's method of using the diagram was probably derived from Palladio's own method, as indicated in Palladio's drawing for the reconstruction of Casa Volpi (**Fig. 6**).[30] It would appear that Palladio's drawing provided Wittkower with a persuasive example of how much the diagram, given its clarity, serves as an efficient tool for the comparative method applied to architecture, in the way it set side by side all the different villa plans.[31] The diagram as an analytical tool allows a representation of a building to be abstracted from archaeological and tectonic evidence, lending itself to theoretical considerations compatible with the objectives set by Wittkower, in particular with his theory of proportion. Due to the idealizing quality of diagrams, and also to the lack of information, including in particular the lack of accurate measurements available at that time, Wittkower intentionally did not acknowledge evidence that Palladio's villas were often built upon preexisting medieval constructions, further reaffirming his interest in the theoretical and universal aspect of architecture.[32] The foundations of medieval buildings, however, often made up merely the initial nucleus of a Palladian plan's spatial and dimensional conception, as can be observed in the plans for Villa Trissino a Cricoli, Villa Gazzotti a Bertesina, Villa Saraceno a Finale and others.[33] They do not really affect Wittkower's affirmation, however, that Palladio, 'once he had found the basic geometric pattern for the problem of the "villa", adapted it as clearly and simply as possible to the special requirements of each commission' (Wittkower 1944: 111).

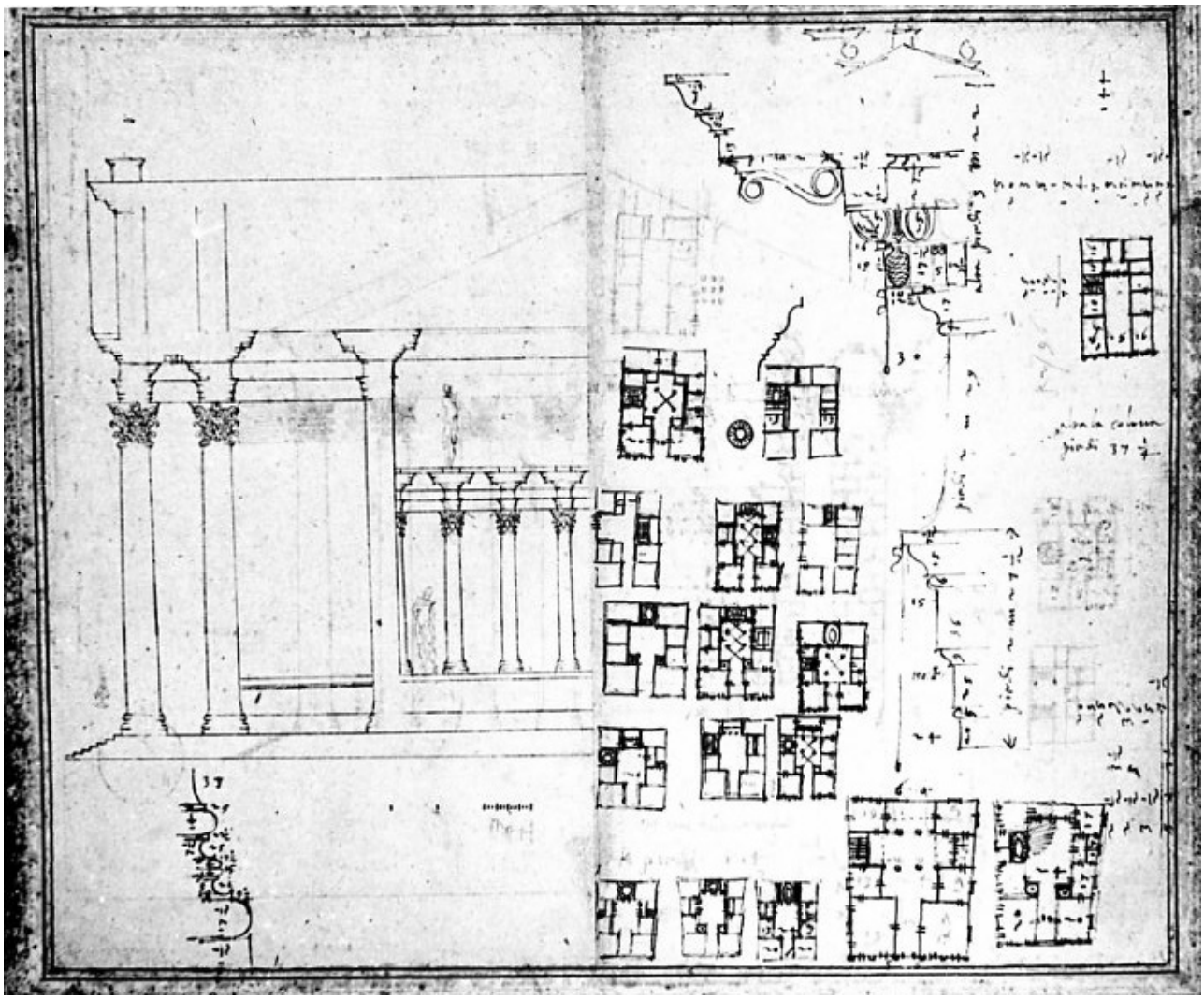

Figure 6: Andrea Palladio. Drawings for Villa Volpi. The photo of the drawing was owned by Rudolf Wittkower. Wittkower Photo Archive, Photograph Collection of the Visual Media Center, Department of Art History and Archaeology, Columbia University, New York, drawer 5.

Conclusion

Wittkower's studies of the villas of Palladio coincided with the victory of the Labour party in 1945 that created the conditions for the introduction of modern, 'continental' architecture into England, which heretofore had not enjoyed great success. The new program for the construction of a great number of low cost housing units, soon to be realized, was conducive to the intensive use of prefabricated elements that were interchangeable and proportionally modular (Berdini's introduction to Rowe 1990: xii). Providing a noble history to an experimental modular system that began with Roman architecture and persisted through Renaissance and then British Palladian architecture was therefore a way to encourage and foster a new and necessary era for post-war British architecture. For this reason Wittkower's study of proportion inevitably interfered with the theory and the practice of architecture of that time.

On the other end, apart from reevaluating an architect from the Veneto and Renaissance architecture in general, Wittkower's work on Palladio provided Renaissance architecture with a noble pedigree consisting of imagined measurements and proportions that, in their significance and legacy, surpassed ornament and style in importance. This interpretation of proportions and measurements would be taken up immediately by Colin Rowe, Wittkower's student at the Warburg Institute in 1945 and 1946, who projected those Palladian 'principles' identified by Wittkower onto the architecture of some of Le Corbusier's villas (Rowe 1947: 101–104).[34]

In March 1947 Rowe published an odd but immediately successful article in the *Architectural Review* entitled 'The Mathematics of the Ideal Villa'. Using the same tools adopted by Wittkower — mostly the comparative method and less so the analysis of proportion — Rowe proposed for Le Corbusier's villas a pedigree rooted in the architecture of Palladio (Rowe 1947: 101–104, republished in Rowe 1976)[35]. According to Alexander Caragonne, Wittkower did not warmly welcome Rowe's article. He privately criticized his student for being 'excessively unorthodox' by comparing Palladio with the Swiss architect.[36] It also can be argued that Wittkower was surprised to discover the potential of his own work and its immediate but unexpected repercussions on different historical periods.

Between 1947 and 1950 not only were published Wittkower's studies on Palladio and Colin Rowe's 'Mathematics' article, but also two other seminal works on proportion: James Ackerman's 1949 'Ars sine scientia nihil est', on the proportions of the Gothic Cathedral of Milan and Le Corbusier's *Le Modulor* in 1950.[37] Le Corbusier's new dimensional and proportional system in particular was based on premises quite similar to Wittkower's. The Modulor system was inspired by classical foundations such as the Vitruvian man but also by medieval number progressions taken from the Fibonacci series, which Le Corbusier applied to a module of 2.26 cm (which he then diminished to its half: 1.13 cm) and integrated with the golden section. Since the latter is a mathematically irrational ratio, the various adjacent numbers in the Fibonacci series can only approximate the golden section.

The Modulor combined classical and medieval influences, and thus contrasted with the differentiation that Wittkower had been elaborating for at least a decade: that the medieval use of proportion descended from Pythagorean-Platonic geometry as expressed by figures, and thus contrasted fundamentally with the numerical proportions Wittkower claimed were favored during the Renaissance.[38]

Wittkower, who used — at times manipulatively — his theory of proportion for the purpose of re-evaluating Renaissance architecture, saw that Le Corbusier was using similar tools — that 'propaganda' defined by Wittkower in his letter to Carla Marzoli — to promote his own architecture. Le Corbusier's attitude is indeed rather understandable for a practicing architect acting also as an entrepreneur, as Le Corbusier candidly admitted in his Milan talk when he defined himself as a theoretician and an *homme de métier* at the same time (Cimoli 2007: 219).[39] Ultimately, the German scholar and the Swiss architect represent opposite sides of the same medal, being not that different in promoting their own work. This is very likely the reason for Wittkower's skepticism and bitterness toward Le Corbusier, increased by the disappointment of finding the Triennale conference already set up as a virtual celebration of the famous architect.

In preparation for the Milan Triennale, Wittkower was asked to deliver the introductory paper, to serve as an acting member of the board that would choose the other speakers, and to suggest possible topics to them.[40] Le Corbusier was a member of the same board and his paper on the Modulor was delivered during the evening of the second day of the conference. Wittkower had already left Milan that afternoon, his excuse being that the conference conflicted with his son Mario's wedding.[41] But Wittkower was probably irritated not only by his realization that the conference had been shaped around the Swiss celebrity, but also by the organizers' refusal to accept his exhibition project on proportion, entitled *Mostra di studi sulle proporzioni*, in parallel with the conference, which had been accused by the conference committee of being too academic.[42] Wittkower did not attend Le Corbusier's lecture, having been compelled to leave immediately after his own lecture. According to one reliable source, Wittkower did not miss much: an unpublished letter written by James Ackerman to Wittkower, who had asked the young American scholar, himself a speaker at the conference, his opinions of the speakers who Wittkower had missed.[43] Ackerman wrote, without getting into details, that 'Corbusier spoke so badly I couldn't follow but I think he was a great bore'.[44]

Acknowledgements

A crucial improvement of this essay from the version I have presented at the conference is due to the sharp and logical observations generously offered by Matthew Cohen, the best possible editor. I am grateful to Jessamyne Conrad who edited my English. All the mistakes left in the essay are mine. This essay is in memory of Paolo Berdini.

Notes

[1] The proceedings of the conference have never been published in a satisfactory manner until very recently, in Cimoli and Irace (2007). Originally, the proceedings were meant to be published by Einaudi Editore, where Bruno Zevi was directing a collection on architecture. This information is provided in a three-page-long letter written to Wittkower by Carla Marzoli on August 12, 1951 (Columbia University Rare Book & Manuscript Library, The Rudolf Wittkower archives (hereinafter RWA), box 39. Series 3. Folder: 'Congress on Proportion. Milan, September 1951. Correspondence and Lectures'. Within the folder the documents are loose and not numbered. Regarding the publication of the proceedings, see Cimoli's excellent reconstruction of the IX Triennale (2007: 226–228). All translations are by the author, unless otherwise noted.

[2] Quoted verbatim from the document. See also Cimoli 2007: 220.

[3] RWA, box 39. Series 3. Folder: 'Congress on Proportion. Milan, September 1951. Correspondence and Lectures'. Cimoli published this excerpt from the letter received by Carla Marzoli in *Archivio Storico Fondazione La Triennale di Milano*, series IX Triennale, folder 'Convegno De divina Proporzione' fald. 1, fasc. 'Copie lettere e telegrammi'. See Cimoli (2007: 202–231, especially 220).

[4] For Wittkower's studies on Alberti and Palladio see Onians (1989: 9–14); Samsa (2003: 51–94); Benelli (2006: 556–567); Benelli (2008: 49–53); Benelli (2010: 97–111); and Cohen (2013: 34–35 and 39–40).

[5] Even if the publication happened only in 1950 Le Corbusier had made it public in previous years. See Le Corbusier (1950). This essay cites the following edition translated into English by Peter de Francia and Anna Bostock: Le Corbusier, 2000 *Le Modulor,* Basel: Birkhäuser. For a sequel to the Modulor, see Le Corbusier (1955). See also Cohen (2014).

[6] Many of the issues included in this chapter appeared in three articles on Palladio by Wittkower (1940–1941: 18; 1944: 102–122; and 1945: 68–106). For the influence of the Warburg Institute on Wittkower's thought see Mazzucco (2010: 73–95) and Benelli (2006: 557).

[7] Now published in an extended version in Payne (2008/2011: 91–93).

[8] In the same essay republished in *Architectural Principles,* Wittkower adds a conclusion that Palladio dealt with the issue of church façades in the 'same penetrating analitical spirit', as Alberti did (Wittkower 1959: 51). In stating so, the German scholar shows a methodological continuity and adaptation in dealing with Palladio.

[9] For the diffusion of studies on proportions applied to the field of art, see Cimoli (2007: 202–231, esp. 204).

[10] Now also in Panofsky (1987: 55–107). For the same topic, including a rich bibliography, see also Payne (2008/2011: 50–87). Edition consulted: 2011. For a brief discussion of Wittkower and proportion see Padovan (1999: 1–17). Wittkower's paper in Milan is published in Wittkower (2007a: 48–49). Wittkower had no hesitation to declare Panofsky's influence on certain aspects of his idea of proportion (Wittkower 1952: 91).

[11] For Panofsky's notion of *Kunstwollen* and proportions, and its legacy from Alois Riegl, see Cohen (2013: 46–47).

[12] RWA, box 36, series 2. Personal note. Folder: 'Proportions: Notes on Literature'. Loose sheets.

[13] Caroline van Eck notes that 'Rudolf Wittkower describes 18th-century developments in the use and theory of what he calls proportion, without distinguishing between mathematical proportion and proportion-as-beauty, as a matter of decline and increasing relativism, caused mainly by the impact of British Empiricist aesthetics. By locating the foundation of judgments on beauty, so his argument runs, in the sensuous experience of the subject, and not in the measurable qualities of the object, beauty judgments lose their objective basis, and with this shift proportion lost its foundational role as the basis for beauty as well' (2014: 4).

[14] Connors and Montagu use this term in their introduction to Wittkower (1999: Vol. 1, ix).

[15] On the comparative method, its origin and its use in art history, see Benelli (2006: 556–567). For the comparative method as a rethorical tool the bibliography is vast, particularly in the field of literary criticism. See De Man (1983). For a history of the comparative method used for pedagogical purposes through teaching with pairs of slides see Dilly (1975: 153–172). The author demonstrates that Wölfflin was not the first professor of art history to use pairs of slides.

[16] For this topic see Benelli (2006: 561).

[17] The dimensions used by Wittkower appear to be very accurate if compared with those published by Calzona and Volpi Ghirardini (1994: drawing 15). When they differ the discrepancy never exceeds one centimeter. Wittkower draws from two main sources: Schiavi (1932) and Mancini (1911). As of today the Schiavi book does not appear in the index of the Warburg Library, nor, according to www.worldcat.org in any London libraries. It is possible that he owned a personal copy of the book. The Mancini book contains the San Sebastiano plan, with dimensions in *braccia*, drafted by Antonio Labacco (1911: 396). However, such dimensions are different from those used by Wittkower. It is not clear, in the end, what is the source from which Wittkower took this very accurate dimension. Wittkower's drawings, however, were clearly based upon those published by Seroux d'Agincourt, although d'Agincourt's do not include dimensions, given the very small size in which they were printed (Seroux d'Agincourt 1823: plate lii).

[18] For the proportional characteristics of St. Sebastiano's plan, see Calzona and Volpi Ghirardini (1994: 220–248).

[19] Alberti (1988: 306–307).

[20] '[I]t seems appropriate to inquire how far the harmonic ratios of Greek musical scale influenced architectural proportion of the Renaissance in theory and practice. Alberti and Palladio are our main sources for an accurate estimate of Renaissance opinion on this point' (Wittkower 1952: 94).

[21] At the very beginning Wittkower proclaims the intention of the article: 'to study their [architectural motives] translation from Italian into English idiom, and thereby to throw new light on the movement as a whole' (Wittkower 1943: 154; republished in a longer and revised version in Wittkower 1974: 155–174).

[22] In the twentieth century the most popular studies on Palladio before Wittkower were: Fletcher (1902); Pée (1939); Dalla Pozza (1943, with earlier bibliography in footnote 1, p. 9). To this list should be added the important and documented work by Marini (1845), frequently quoted by Wittkower. For a brief but effective synthesis on European literature on Palladio during the twentieth century see Oechslin (1999: 65–91, esp. 83–88).

[23] 'Onde si vede che anche gli Antichi variarono: ne' però si partirono mai da alcune regole universali e necessarie dell'Arte come si vederà ne' miei libri dell'Antichità' (Palladio 1570: Book I, chap. 20, 52). For the English translation see Palladio (1997: 55–56). This passage is quoted in Wittkower (1944: 109).

[24] Quoted in Wittkower (1952: 114). For Wittkower's Palladio studies see (RWA, Series IV, boxes n. 43, 44). Some drawings related to the studies on Alberti have been published in Benelli (2006: 556–567). See also Panza (2000: 96–99).

[25] RWA, Series IV, box 44.

[26] From Wittkower's notes one reads that he used two sources: Burger (1909) and Fasolo (1929). However, these two books do not include detailed measurements. One can guess that Wittkower used Bertotti Scamozzi (1761: table VI) or Bertotti Scamozzi (1776–1783: book II, 59), both very rich in measurements.

[27] 'La bellezza risulterà dalla bella forma, e dalla corrispondenza del tutto alle parti, delle parti fra loro, e di quelle al tutto conciosiache gli edificij habbiano da parere uno intiero, e ben finito corpo: nel quale l'un membro all'altro convenga, & tutte le membra siano necessarie a quello, che si vuol fare' (Palladio 1570: Book I, chap. 1, 6–7).

[28] For accurate measurements, see Bertotti Scamozzi (1776–1783: Book II, 59).

[29] In the lower right corner of the sheet, Wittkower writes 'real measurm.' (abbreviation of measurement), without quoting the source.

[30] This drawing was certainly known to Wittkower not only because it is part of the RIBA collection in London (XI, 22v), but mostly because it was part of his own photographic archive: Wittkower Photograph Archive, Visual Media Center, Department of Art History and Archaeology, Columbia University, drawer 5. For the analysis and description of this drawing, see Burns (1999: 58–59). The drawing was published for the first time in 1981 in Lewis (1981: 175).

[31] Wittkower seems to have derived from this drawing the same inspiration that John Webb drew from it in the seventeenth century, as perhaps demonstrated by the Oxford drawing (Worcester College, H & T, 173), in which are represented twenty-one diagrams of plans for palaces and houses copied from Palladio and other sources. For a description of Webb's drawing, see entry 14b by Burns (1999: 100).

[32] In two sources on Palladian villas used by Wittkower, preexisting structures were discussed. See Burger (1909) and Fasolo (1929). Burger, however, sometimes overlaps the plans of the *Four Books* with those of the actual villas. Preexisting structures that conditionsed Palladio's projects can be found at least in Villa Trissino at Cricoli, Villa Pisani a Bagnolo, Villa Gazzotti a Bertesina, Villa Zeno a Cessalto, Villa Badoer a Fratta Polesine and Villa Barbaro a Maser. See Beltramini and Padoan (2000: 13, 116–121, 151–166).

[33] Villa Trissino, no longer attributed to Palladio, has been built around a Gothic structure still visible today in the two side towers flanking the loggia (Beltramini and Padoan 2000: 13). For Villa Gazzotti and Villa Saraceno, see Beltramini and Padoan (2000: 120, 130–131).

[34] Republished in Rowe (1976: 1–28). Colin Rowe was Wittkower's only student at the Warburg Institute between 1945 and 1947 (Rowe 1996: Vol. I, 2). For the influence of *Architectural Principles* on twentieth century architecture see Millon (1972). See also Benelli (2010) and Payne (2008/2011: 126–144; edition consulted: 2011).

[35] I am defining Rowe's article as "odd" because in those years Renaissance architecture was not popular at all in Anglo-Saxon journals of modern architecture. Moreover Rowe, in comparing Le Corbusier's Stein and Garches houses with Palladio's Villa Malcontenta, was subverting the historicist premise that the originality of Modern architecture depended upon neglecting tradition. The first person to note this aspect of Rowe's work is Berdini (1990: IX).

[36] Rowe confessed to Caragonne that his comparison was motivated both by Wittkower and other, unspecified, scholars of modern architecture (Caragonne 1995: footnote 32, p. 122).

[37] For *Le Modulor* see footnote 5 in Ackerman (1949); now in Ackerman 1991.

[38] The same year of the Triennale, Wittkower delivered an unpublished talk for the Festschrift in Honor of Johannes Wilde: 'Some Observations on Medieval and Renaissance Proportion' (RWA, box 36. Series 2. Folder: 'Some Observations on Medieval and Renaissance Proportion. Unpubl. Contribution to (unpubl.) Festschrift in Honour of Johannes Wilde 1951'). There is no date in the archives, making it impossible to understand if this talk was delivered before or after the Milan Triennale. However, Wittkower's paper for Milan was a short synthesis of the one delivered for the Festschrift. Later this paper would be published in a final version in Wittkower (1960), where Wittkower expressed skepticism on the contents and outcome of the Triennale marking the event as a failure.

[39] In a lecture delivered at Columbia University in 1961, titled 'Le Corbusier's Modulor: a System for Our Time', Wittkower referred to 'Le Corbusier himself, whom I may (perhaps not too charitably) describe as a cross between a prophet and a salesman of rare ability'. The lecture ended defining Le Corbusier's mind as 'poetic and illogical' (RWA, box 5, 'Le Corbusier. Notes, Lectures 1961'). In the proceedings of the conference Wittkower eliminates such harsh definitions (Wittkower 1963).

[40] For the preparation of the conference see Cimoli (2007).

[41] Wittkower's son Mario's wedding was scheduled for Saturday 29th, forcing him to choose between missing all of the conference or else leaving Milan in the afternoon of the 28th. This conflict is explained by Wittkower in a series of letters sent to the organizational committee of the conference (RWA, box 39. Series 3. Folder: 'Congress on Proportion. Milan, September 1951'. Correspondence. Unsorted letters.).

[42] The exhibition ended up being curated mainly by Carla Marzoli in a way that was disliked by Wittkower. For the preparation of the exhibition and for Wittkower's reaction see Cimoli (2007: 206–210).

[43] That Wittkower did not attend Le Corbusier's lecture is confirmed in an unpublished letter written by James Ackerman, dated October 21, where the young American scholar reported back to Wittkower about the papers of the conference he had missed (RWA, box 39. Series 3. Folder: 'Congress on Proportion. Milan, September 1951. Correspondence'). See also Ackerman (2007: 19–35).

[44] Ibid.

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