

Giacomo Barozzi da Vignola

Canon of the Five Orders of Architecture



Translated into English, with an introduction
and commentary by Branko Mitrović

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For my students and colleagues from the
University of Notre Dame, 1994-1996.

Acknowledgment

The original encouragement to start working on an English translation of and a commentary on Vignola's *Regola delli cinque ordini* came from Professor Lothar Haselberger of the University of Pennsylvania during one of our Roman walks in the late spring of 1996. The idea soon took its final form in a conversation with Mr. Robert Adam, whose insights into the contemporary classical movement helped me structure the project. Professor Thomas Gordon Smith provided not only the encouragement so important in the early phases of the work but also much good advice, including the suggestion that I should contact Acanthus Press as a potential publisher. This proved an excellent idea since the help and advice I later received from Mr. Barry Cenower from Acanthus Press, who carefully followed the project through all its phases, was immeasurable.

A number of my professors and colleagues provided additional encouragement for the project: Professors Joseph Rykwert and Marco Frascari of the University of Pennsylvania; Professors Samir Younés, Duncan Stroik and John Stamper of the University of Notre Dame, and Mr. Jonathan Lee of New York. Professor Christof Thoenes of the Max Planck Institut in Rome kindly reviewed the preliminary version of the book. Mr. John Sutherland and Mr. Tony van Raat, the Head and the Program Leader respectively of the School of Architecture at Unitec Institute of Technology, showed great sympathy for the project by providing relief from teaching and administrative duties in critical moments.

Translating Vignola's treatise seemed like an easy task in the beginning, but the complexities of Vignola's tortuous style and fractured sentences kept presenting many problems. Decisive help came from a number of friends whom I need to mention. They are Professor Gianfranco Bogliari of the Università per stranieri in Perugia, Professor Mario Carpo of the Ecole d'Architecture de Saint-Etienne, Mr. Carmine Carapella of Rome and Ms. Ivana Djordjević of McGill University. Dr. Med. Ranko Boljević prepared the final version of illustration 5. I owe special gratitude to Ms. Kathleen Moore of Acanthus Press, whose help in editing and proofreading was decisive in determining the final shape of the book.

The publisher and the author wish to express their gratitude to the Italian Ministero Beni Culturali e Ambientali and the Biblioteca Alessandrina in Rome for permission to reproduce their copy of the 1572 version of Vignola's *Regole delli cinque ordini* (EQ 21).

Our special thanks go to the Directress of the library, Ms. Maria Concetta Petrollo; we also thank Ms. Maria Gabriela D'Amore and Ms. Mirtella Taloni from the library's Libro Antico department for their help in resolving administrative and technical problems in reproducing Vignola's book.

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Preface to the PDF version of the book

This file is the PDF version of my translation of and the commentary on Giacomo Barozzi da Vignola's *Regola delli cinque ordini* that was originally published in 1999 by Acanthus Press, New York. I am exceptionally grateful to Barry Cenower for the permission to make the book freely available in PDF format and to Karl Fredrik Honningsvåg and Øystein Holdø for their help in the preparation of this PDF.

My original project to provide a modern English translation of and a commentary on Vignola's treatise was part of the wider effort to recover the knowledge of classical design in architecture in which I participated in the 1990s. The book was intended for use by classical architects and the training of students of classical architecture. One should certainly hope that it will be of interest to the same public in our present situation, that is marked by emphatic demands of the general public and architecture students to revive and teach classical architecture.

It is important to mention here a very specific caveat regarding English translations of Vignola's book on the orders. In the 1999 Acanthus edition that is presented in this PDF I translated Vignola's Italian title into English as *Canon of the Five Orders of Architecture*. This was thus the title of 1999 Acanthus volume. In 2011 Dover Publications reprinted the old 1669 English translation of the same treatise by John Leeke, and included an introduction by David Watkin. Instead of stating Leeke's original title of that translation as the title of their volume—this would have been *The Regular Architect: or the General Rule of the Five Orders of Architecture*—they stated on the cover my translation of Vignola's title, *Canon of the Five order of Architecture*. The result was a significant confusion. Online bookstores found it difficult to differentiate between the two editions, while architects and architecture students who wanted to buy a modern translation with a commentary that would help them with classical design ended up ordering by mistake a seventeenth century translation they were not looking for. One can thus imagine the impact that such editorial practice had on the reception of the modern English edition—and I will refrain from commenting on the ethics of the colleague who provided this practice with additional credibility by contributing his Introduction to the volume. In any case, it is important to state that this is the PDF of the modern English translation with a commentary of Vignola's *Regola delli cinque ordini*, that was published in 1999 by Acanthus Press, and not Leeke's seventeenth century translation.

Branko Mitrović
Trondheim, 8 June 2024

Preface

The notion that interest in a Renaissance architectural treatise can be more than a purely theoretical and academic exercise sounds strange to so many ears today that I feel obliged to provide some account of my reasons and motives in preparing this translation of and commentary on Vignola's *Regola delli cinque ordini*. In fact, I perceive the publication of Vignola's work as part of a wide effort, shared by many friends and colleagues, to recover the forgotten knowledge of building classically. At the same time I have undertaken the work on the translation and commentary of Vignola's *Canon* for a number of theoretical reasons that I gradually came to be aware of over a period of almost fifteen years.

It was during my early years as an undergraduate student of architecture at Belgrade University that I began to contemplate the explanations people provided for their aesthetic preferences. Rather early in my studies I became bored and dissatisfied with Modernist architecture. Le Corbusier's argument that the shapes of the Parthenon are great but should not be used struck me as paradoxical. It seemed wrong that we can appreciate certain shapes but we ought not use them. A year or two later I discovered Palladio and read Rudolf Wittkower's *Architectural Principles in the Age of Humanism*; like so many of Wittkower's readers, I was captivated by his erudite explanation of the principles of Renaissance architecture. For quite a number of years afterwards, I was satisfied that proportions were the underlying justification for the use of the classical orders.

It was only during the first year of my doctoral studies at the University of Pennsylvania that I felt something was missing in this approach. I could accept Wittkower's emphasis on meanings and symbolism in the interpretation of Renaissance architecture, but I perceived that this could hardly provide a base for practicing classical architecture today. Meanings we ascribe to certain shapes and associations we have about them are culturally relative, whereas the use of the classical orders necessarily requires a canon, a fixed set of rules on how one should use and combine their elements. If these rules were derived from the meanings individual cultures associated with the elements of the orders, they would have to be culture relative.

During this time I became increasingly concerned that Wittkower's emphasis on symbolism was of little use in justifying the modern use of the classical orders today. The way Wittkower talked about proportions still seemed relevant to me, but I was also aware that his argument could easily be used to support the Modernist dismissal of the classical orders—Wittkower indeed was read that way during the 1950s. For instance, arguments advanced by Colin Rowe were meant to show that there are “deep” or “fundamental” principles of architecture, such as proportions, which both Renaissance and Modernist architecture share, and classical orders,

from this point of view, become an irrelevant addition to buildings. Rowe's view was that since a villa by Le Corbusier and a villa by Palladio share the same proportions, their aesthetic qualities are comparable: the fact that Palladio's building looks radically different is of no importance. Consequently, Palladio's use of the classical orders is just an accidental and aesthetically irrelevant addition to the facade: Le Corbusier shows that one can do well without the orders. As it happened, while studying the impact of Rowe's argument on architectural theory during the 1950s, I was concurrently reading writings of German 19th-century formalists. Adolf Hildebrand's argument that proportions fit for a Doric temple are not fit for a Gothic cathedral made me doubtful and weary of general theories of proportions.

There was an even bigger problem looming on the horizon. I could accept that Renaissance architects associated shapes of columns with human bodies or triglyphs with beams protruding from an entablature, but such explanations were insufficient to explain how to *use* the orders. I could understand, for instance, how an Ionic volute can represent female hair, yet this interpretation did not explain why some methods of the geometrical construction of the volute are found to be unsatisfactory while others look good. Similarly, I could accept that triglyphs were historically associated with beams protruding from a Doric frieze, but this could hardly explain why they were not good for use on an Ionic frieze. Meaning-based theories sounded great until one had to use the orders in the actual design process or one had to teach students how to implement them. My doubts increased when I started teaching at the University of Notre Dame. Notre Dame's architecture school is a classical school, and my teaching studio there meant teaching the *use* of the classical orders in design. Working with students obliged me to consider classical orders as systems of shapes. Asking students simply to draw representations of female hair or protruding beams was of little use; what one had to discuss with them was the placement, details, geometrical construction and proportions of classical elements. Anthropomorphic or tectonic interpretations were interesting, but they were of no use in an actual design process. Right there I realized that the students sorely needed a good text from which they could learn how to use the classical orders. On occasion, I considered directing them to Vignola, but, at first, I was still under the sway of Modernist prejudices against this book.

Indeed, it was some time before I realized how great was Vignola's work. It was obviously a very useful manual, but its manual form had also brought to it the reputation of not being a particularly intellectual work; in any case it contained little of interest to those who, following Wittkower, searched for meanings in Renaissance architecture. Toward the end of my doctoral studies, I also became aware of the

alternative, formalist justification for the use of classical orders, which seemed much more plausible. According to this view, the appreciation of classical architecture is based purely on the appreciation of the shapes of the orders; it does not depend on culturally derived meanings associated with their elements. Aesthetic validity of the orders is explainable by the fact that their shapes were developed through gradual improvements by generations of architects over thousands of years; those that were found satisfactory were retained while others were dismissed. Among Vignola's contemporaries, the idea appears in Daniele Barbaro's commentary on Vitruvius; in this century it was defended by Geoffrey Scott, who saw in Renaissance architecture "an experimental science of taste." The discovery that Vignola described his formulation of the canon along such lines made me realize that the classical movement badly needed a modern version of the *Regola*. Gradually I started appreciating the little treatise precisely for those reasons that many other people had dismissed it. Its formalism appealed to me; in Vignola's straightforward concern for shapes I saw the theoretical purity that our contemporary architectural writings so often lack. I learned to see in it much more than a manual. I think that the battle for modern classicism has to be fought and won in architectural theory first, and because of this I believe that the greatest attributes of Vignola's treatise are that it not only teaches how one should use the orders but why one should use them as well.

Introduction

This translation and commentary of Giacomo Barozzi da Vignola's *Regola delli cinque ordini* are intended for the use of practicing classical architects and students of classical architecture. Only a few years ago this kind of public was almost nonexistent. But what was then a small group of enthusiasts has since become a significant architectural movement.

The increasing interest in classical architecture has surprised even those who have been engaged in the classical movement from its early days. As a consequence, only a few books on the classical orders are currently available in English—a problem felt particularly strongly by those who teach classical architecture. The theory of orders has been conspicuously absent from the training of architects for decades, and, therefore, both books and competent teachers are few; even active scholars in the field and studies on the comparative theory of the classical orders are rare. Hardly any book could better suit the intention of providing an introduction to the theory of orders for students and practitioners than Vignola's *Regola*, just as no Renaissance architectural treatise can compare to its publishing history of over 500 editions in 400 years. The reasons for its success are obvious: Vignola's short treatise presents the methods for combining the components of the classical orders in a way that is extremely easy use. One needs only to try to draw the details of the classical orders following the precepts of other Renaissance architectural writers and the advantages of Vignola's modular system become obvious. It is precisely for that reason, with the classical movement gaining strength and with classical architecture being more in demand, that there is a significant need for a new English version of the *Regola* with analytical commentary.

Early in my work I faced the difficult decision concerning which edition I should reproduce. Both versions of the first, 1562, edition were reproduced in this century. In my opinion they are not convenient for educational purposes or use in everyday office work. The first of these versions (preserved in Florence in the Biblioteca Nazionale Centrale) lacks captions to the illustrations and plate 20 is incomplete, which renders Vignola's description of the construction of the Ionic volute hard to understand. The second version of the first edition (for example, *Cicognara 416* in the Vatican library) corrects these mistakes. But both versions of the first edition lack the well-known plate in which the five orders are mutually compared and instead have a plate with the Papal privilege. Thus, they start with the front page, followed by the privilege and Vignola's introduction. What was later regarded as the standard ordering of Vignola's plates (front page, introduction and the plate with the orders) appears for the first time in the second edition (1572). A copy of this edition is preserved in the Biblioteca Alessandrina in Rome and is reproduced in this volume; this is also the first edition with the plate comparing the five orders. The authenticity of this illustration and the 1572 edition has been denied by

Christof Thoenesⁱ but affirmed by Maria Walcher Casotti.ⁱⁱ In any case, I felt that for the purposes of *teaching* classical architecture it would be advantageous to work with an edition that would include the comparison of the five orders, even though its authenticity has been disputed; whereas, the Papal privilege would be of little interest to students of classical architecture and to practitioners.

The public for which this book is intended also determined many of the solutions I adopted for the translation. When I was confronted with the choice between the more literal or scholarly rendering of the text or the version that would be easier to follow and use in everyday architectural practice, I opted for the latter. I have not even attempted to convert Vignola's style into English—his long sentences are hardly enjoyable to read in Italian and in English they are incomprehensible. I faced significant problems with those paragraphs where Vignola's textual explanations are unclear, vague or insufficient to understand his drawings. In these cases I opted for more liberal versions of the translation, which I believe make Vignola's instructions easier to follow. Where Vignola's text is incomplete I added my explanation of the related geometrical construction in the footnote. Vignola also uses a number of important terms in a highly nonstandard way: for example, his *imo scapo* refers to the top fillet of the base, and *pillastro* refers to the wall segment behind an engaged column. While translating passages that contained such terms, my main objective was my main objective was to render Vignola's intentions accurately.

The commentary is intended to summarize Renaissance theories of the classical orders so that they are easily applicable to design work. This means placing Vignola's theory of orders in its contemporary Renaissance context, pointing to those issues where Vignola's views differ from the standard Renaissance approach and organizing this material so as to facilitate its practical use. Most Renaissance treatises have poor graphical support and are very hard to work with; their textual descriptions of the classical orders are formulated in a way that is extremely hard to follow. Only Vignola's and Palladio's treatises offer the illustrations that efficiently define the dimensions of the elements of the orders. Therefore, I decided to include a system of comparative tables expressing all ratios in fractions of the lower column diameter as defined by Vitruvius, Sebastiano Serlio, Andrea Palladio, Daniele Barbaro and Vignola. This should make it possible not only to compare the views of these different authors but also to use their ratios efficiently in design work. The commentary thus summarizes most major Renaissance texts on the theory of orders, although Leon Battista Alberti's and Pietro Cataneo's views are included only when they seem relevant to individual problems. My original intention was to include Vincenzo Scamozzi

i. Christof Thoenes, "Vignolas *Regola delli cinque ordini*," *Römisches Jahrbuch für Kunstgeschichte*, 20, (1983), 345-376.

ii. Maria Walcher Casotti, "Le edizioni della *Regola*," in *Pietro Cataneo, Giacomo Barozzi da Vignola: Trattati*, (Milan, 1985), 527-538.

in this comparison, too, but I soon realized that a complete account of his views would take up so much space that it would dominate the rest of material. Because of the conflicting systems of measures that Scamozzi uses, his illustrations would be of little use in contemporary design work. Still, I included an account of his views on intercolumniation, since this topic had been poorly treated by the other authors.

Among the writers whose views I analyzed, Palladio and Barbaro (Palladio's mentor and the author of a commentary on Vitruvius), are particularly interesting. They were Vignola's contemporaries and their expositions of the theory of orders are more detailed than those of Serlio or Vitruvius.ⁱⁱⁱ Barbaro's commentary on Vitruvius has been included as the most representative Vitruvian commentary of the Renaissance. Palladio's theory of orders presents a number of problems. He wrote his treatise over a long period of time but compiled the final version hastily in 1570. Consequently, the sizes of the elements of the classical orders, which he gives in the text, tend to follow Vitruvius, and, where Vitruvius had left some elements undefined, Palladio's textual statements are equivalent to Barbaro's. However, this does not occur in the drawings, where Palladio's ratios have been defined with inordinate precision and rarely follow the text. One can assume that Palladio's text and illustrations represent different stages of the development of Palladio's thought.

As presented in his drawings, Palladio's account of the orders could almost compete with Vignola's in clarity and organization had it been completely exposed, but Palladio is much more thorough concerning the Tuscan, Doric and Ionic than he is with the Corinthian and Composite orders. Palladio derived his detail of the Corinthian capital and entablature from Vignola. But Palladio's details of the Tuscan, Doric and Ionic can compete in graphical quality with Vignola's and are likely to find use in everyday design practice, which is why I have included them as illustrations in the commentary. They are surely valid alternatives to Vignola's version.

It is the ease with which Vignola's precepts can be applied that has made the *Regola* the most published architectural book in history. This facility is the consequence of three aspects of Vignola's work: the completeness of his account of the orders, the easy applicability of the modular system (combined with clear indications of sizes in the drawings) and the author's formalist position. Vignola's system of classical orders leaves no detail or ratio undefined—something rare among Renaissance treatises, in which certain orders (the Corinthian and the Composite) and elements (cornices, for instance) were systematically treated with less care. Finally, Vignola treats the orders as ornaments to be applied to the facade after the main dimensions of the building have been determined. Their use, for Vignola, is a formal exercise.

iii. For the relation between Palladio's and Vignola's formulations of the theory of orders, see Branko Mitrović, "Palladio's Theory of the Classical Orders in the First Book of *I quattro libri dell'architettura*," *Architectural History*, 42 (1999).

Vignola's formalism and his reluctance to derive the canon from the meanings ascribed to architectural shapes make his theoretical position particularly strong. The significance of this approach becomes obvious if we take into account that meanings cannot be inherent to objects but must be culturally derived, based on convention and mutable as the culture changes. At the same time, a classicist architectural theory must explain the uses and sizes of the elements of the orders in a way that leaves no room for relativism in their use—it must be canonical. But if the correct use of the elements of the orders depends on the meanings we attach to them—and since meanings are always relative to the system of interpretation—then the use of the classical elements would be relative to the system of interpretation as well. The idea of a canon would become impossible.^{iv}

From this point of view, Vignola's formalism and his reluctance to rely on arguments based on the ascription of meanings to architectural shapes seem well justified. Formalism here implies that the aesthetic sensation humans derive from a building is based upon the contemplation of the shape of the building regardless of the meanings associated with the shape. Leaving meanings aside, Vignola justifies his precepts by the general consensus ("common judgment," as he says) that exists about the beauty of certain shapes. Classical orders, under this view, are the accumulated experience of generations of architects who gradually improved them from crude and primitive forms to more refined ones. Vignola's position implies that the "common judgment" provided that those improvements that met with wide approval were retained, while the others were discarded.

Thus, Vignola's is not only the most complete and easiest to use Renaissance account of the classical orders, but it is the one whose theory is the most appropriate to our contemporary aesthetics. From the point of view of twentieth-century theories of language and meaning, formalism makes Vignola's theoretical position look particularly well thought out. Today one simply cannot assume that certain objects have meanings by themselves nor that there exist symbols that are unconventional. The theory of contemporary architectural Classicism has to be formalist or it will run into many difficulties. Vignola's treatise should thus be read not only as a handbook on the orders but also as a very well-conceived theoretical treatise in its own right.

—Branko Mitrović

Canon of the Five Orders of Architecture

iv. For a wider discussion of this argument see Branko Mitrović, "Paduan Aristotelianism and Daniele Barbaro's Commentary on Vitruvius' *De architectura*," *The Sixteenth Century Journal*, 29 (1998), 667-688.

Plate 1
Title Page [opposite]

Plate 2
To the Most Illustrious and Reverend Signior and
My Most Excellent Lord, Cardinal Farnese [following]

The beginning of every work published to adorn the world shows us how common it is to dedicate one's efforts to those men whose nobility, greatness of soul, virtuous deeds, and abundance of riches elevate them above others, almost like terrestrial gods; following this example I, too, my most illustrious and reverend Signior, could dedicate this little work to you as it is, thereby ensuring that, protected by your great favor, it will safely find its way to the hands of men. However, since it was born in the garden of your great generosity, it all belongs to you, and my contribution is that of a mere manual worker. Assured of your kindness, in spite of the insignificance of the fruit, I cannot but present it to you most respectfully, trusting that the Lord above will act similarly to terrestrial lords, who sometimes enjoy small plants in their gardens for reasons of variety even when they do not appreciate them as equal to most noble ones, and that He will approve of our lowly efforts as if they were great, since they proceed from great fervor and the soul's pure affection. Let those of greater talent and other professions sing their praises on the greatness of your judgment in this art, which equals your magnanimity and the royal expenses that you have been pleased to bestow on it continually; I beseech you only to accept this little fruit I now bring before you. I hope that it will soon bring forth even greater fruits, which will prove to the students of this art that, as much as I have benefited from your courtesy and generosity, I have tried to distribute them further with equal largesse. At this point I kiss your hand most respectfully.

To the Readers

In order to ensure its better understanding, I intend to explain briefly the reason for which, kind readers, I have undertaken to do this little work, and then to offer it, such as it is, to the public use of those who find delight in this art.

While practicing the art of architecture for many years and in diverse lands, I have always enjoyed consulting the opinion of as many writers as possible regarding the practice of ornaments. Having compared their works with each other and with ancient buildings still in existence, I attempted to formulate a canon on which I could rely with certainty and which would please every expert of the same art in its entirety or in large part. This I did for my needs only, without any other purpose in mind. Leaving aside those subjects on which authors disagree considerably, in order to achieve greater certainty I studied the ornaments of the five orders that can be seen in the antiquities of Rome. Having considered and examined all of them by diligent measurement, I discovered that those that seem more beautiful to common judgment and appear more graceful to our eyes have a correspondence and simple numerical proportion so that every smallest part can be used to measure all other elements. Having dwelt at greater length on the delight our senses find in this proportion, and the fact that what is displeasing falls outside it, as musicians wisely prove in their science, years ago I undertook to arrange the five orders of architecture mentioned above into a simple and easily applicable canon. The method I used to achieve this was the following. For instance, when I wanted to include the Doric order in the canon, I started



from the fact that its version in the theater of Marcellus is for everyone the most prized example of Doric architecture, so I based the Doric canon on this example and accordingly defined its principal parts. If some small part did not fully obey the numerical proportions (since small elements can frequently be changed by the work of stonemasons or for other accidents which may have significant impact when it comes to such details) I accommodated this in my canon without yielding in important issues, and I made up for this small license by relying on the authority of other Doric buildings, which are also regarded as beautiful and from which I supplied other small parts when I found it appropriate. I made this choice for all the orders, not the way Zeuxis worked with virgins in Croton but the way my judgment led me. I took everything from the ancients and did not add anything of my own, except that I expressed proportions in simple numbers and avoided working with cubits, feet or palms of any city. Instead I introduced an arbitrary measure called module, divided into parts as will be seen for each order in its place. Thus this part of architecture, otherwise difficult, became so easy that even a mediocre talent, with at least some taste for this art, will be able to understand everything at a single glance and conveniently use it without much arduous reading. Though my intention was not at all to publish this, I was influenced by requests from many friends who urged me to do so and even more by the generosity of my perpetual signior, the illustrious and the most reverend Cardinal Farnese. Having received from his honorable house courtesies that enabled me to carry out this task, I was also given the means to satisfy my friends and to present to you soon other important things related to this subject, if you receive this one as I hope you will.

Since it is not my intention and I do not believe that I should here discuss objections that I know will be raised, I leave this to the work itself which, if it would please the more judicious readers, might prompt them to answer for me to my opponents; I shall only say that if someone would dismiss this labor by saying that it is impossible to formulate a Canon with certainty since, in everyone's opinion, and especially Vitruvius, it is often necessary to enlarge or reduce the proportions of the parts of ornaments in order to compensate artificially for the imperfections of our eyesight, my response in this case would be that it is always necessary to know what we want our eyes to see, and this will always be a firm rule regarding what is intended to be perceived. Then, one should proceed according to certain beautiful rules of perspective, whose practice is necessary both for this art and for painting, and about which I hope soon to publish a work which I am assured will please you.

As mentioned, my intention was only to be understood by those who had some introduction to art, and this did not require using any names of the elements of these five orders, since I assumed them to be known. But having seen later from experience that the work pleases many signiors who were moved by the zest of being able to understand with little effort all the art of these elements and that these individual names were missing for this, I decided to add them, in the form they are commonly called in Rome and in the order in which they can be seen. I only have to warn that the names of elements that are shared by more orders will be stated only in the order in which they appear first and will not be repeated later.

All' Ill^{mo} et R^{mo} S^{re} mio et Padrone Singulariss.^o
il Car^{le} Farnese

Dapoi che il dedicare le sue fatiche a quelli huomini, i quali per nobiltà, grandezza di animo, virtuose operationi, et ricchezza e aplisime soprastanno agli altri quasi terreni Iddij è tanto in uso (come ueggiamo) nella fronte di ciascuna opera che per adornarne il mondo si manda in luce. Ben potrei io parimente Ill^{mo} et R^{mo} S^{re} mio con questo esempio donarli questa operetta qual la sisia, accioche sotto l'ombra del suo gran fauore corresse sicura nelle mani de gli huomini, mapoiche ella nata nel giardino della sua gran liberalitate è tutta sua non ui hauendo io altra parte che di operario non posso far altro che assicurato dalla sua cortesia senza punto mirare la piccolezza del frutto porgergliela riuertem.^{te} affidandomi in cio che l'grāde Iddio accetta le nostre basse fatiche et le aggradiue per grandi, purchè da gran feruore et puro affetto d'animo procedano et li S^{re} terre: ni ancora qual minima pianta si troui ne' lor giardini benchè al paro: delle piu nobili non l'apprezzino nondimeno tal uolta per la sua uarieta se non per altro glie' cara. Et lasciando io à piu eleuati ingegni, et di altra professione il celebrare le sue lode et quanto in quest' arte particolare sia eguale il suo gran giudicio all' animo grande, et spese regali che in essa di continuo le piace di fare, supplicherolla si degni d'aggradire questo picciol frutto che per hora le porgo, il che sarà cagione di uederne in breue de' maggiori i quali renderanno testimonio alli studiosi di quest' arte che della sua gran cortesia, et liberalitate uerso di me usato io parimente ne sia stato largo dispensatore. Con questo riuertem.^{te} le bacio le mani.

Ai lettori

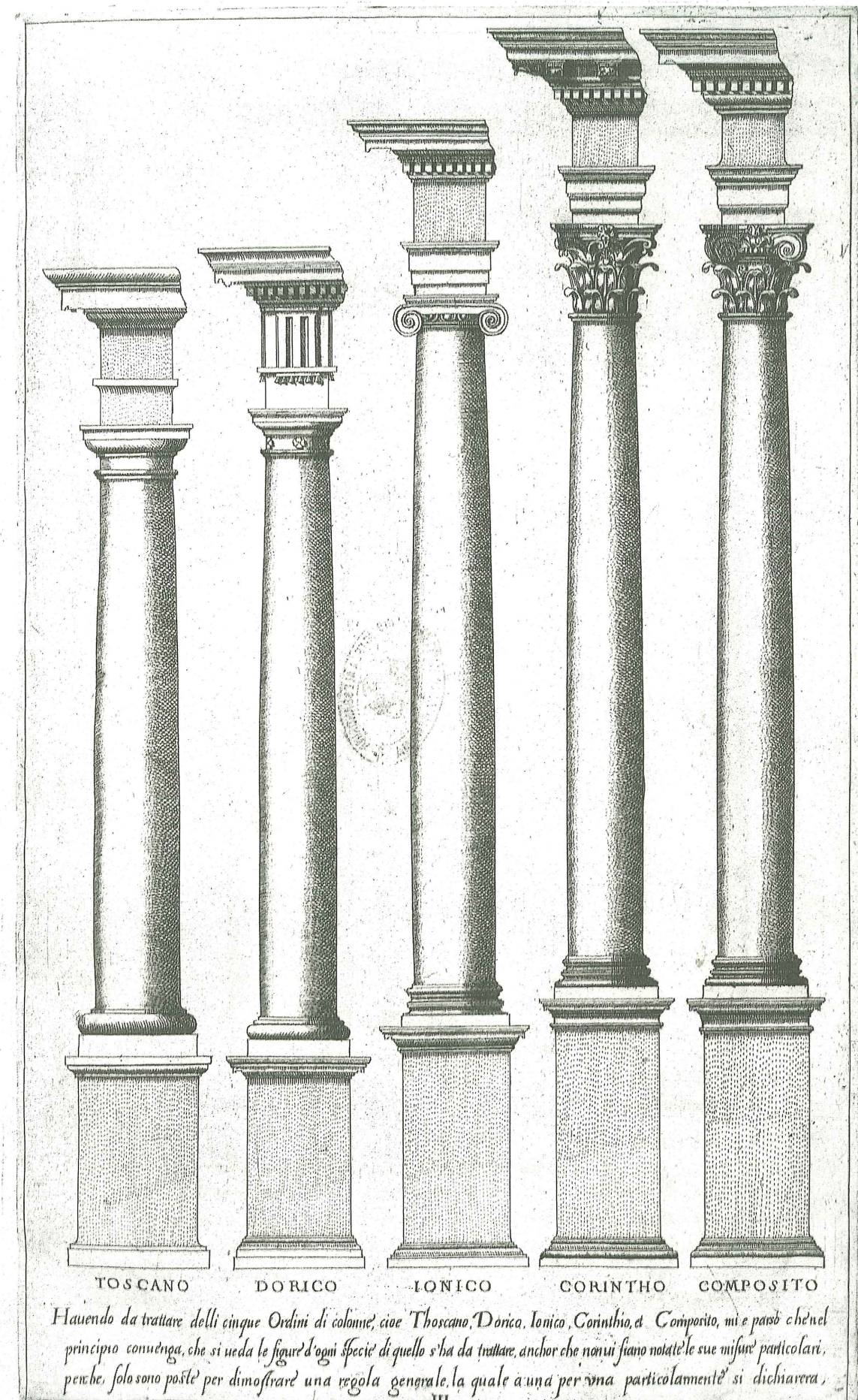
Da qual cagione io mi sia mosso benigni Lectori à fare questa operetta, et qual di poi la si sia al publico seruigio di chi in cio si diletta donarla, per piu chiara intelligenza di essa breuemente intendo di narrarui.

Hauendo io per tanti anni in diuersi paesi esercitato questa arte dell'Architettura; mi è piaciuto di continuo intorno questa pratica de gli ornamenti uederne il parere di quanti scrittori ho potuto, et quelli comparandoli fra lor stessi, et con l'opre antiche quali si ueggono in essere uedere di trarne una regola, nella quale io m'acquiesci con la sicurtà che ad ogni giudicio di simil arte douerò in tutto, ouero in gran parte piacere: et questa solo per seruirmente nelle mie occorrenze, senza hauer posta in essa altra mira. Et per far questo lasciando da parte molte cose de' scrittori doue nascono differenze fra loro non picciole; per poter mi appoggiare con fermezza maggiore mi sono proposto innanzi quelli ornamenti antichi delli cinque ordini i quali nelle Antichità di Roma si ueggono: et questi tutti insieme considerandoli, et con diligenti misure esaminandoli ho trouato quelli che al giudicio comune appaiono piu belli, et con piu gratia si appresentano agli occhi nostri; questi anchora hauer certa cortispondezza, et proportione de' numeri insieme meno intrigata, anzi ciascuno minimo membro misurare li maggiori in tante loro parti apūto. Laonde considerando piu adentro quanto ogni nostro senso si compiaccia in questa proportione, et le cose spiaceuoli essere fuori di quella come ben prouano li Musici nella lor scienza seratamente ho presa questa fatica piu anni sono di ridurre sotto una breue regola facile, et spedita da poterne ualere li cinque ordini di Architettura de' quali in modo che in cio fare ho tenuto è stato tale. Volendo mettere in questa regola (per modo di esempio) l'ordine Dorico; ho considerato quel del Teatro di Marcellò essere fra tutti gli altri da ogni huomo il piu lodato: questo dunque ho preso per fondamento della regola di detto ordine sopra il quale hauendo terminato le parti principali; se qualche minimo membro non haurà così ubidito intieramente alle proportioni de' numeri (il che auuene ben spesso dall'opra de' Scarpellini o per altri accidenti che in queste minutie ponno esser) questo l' hauerò accomodato nell' mia regola, non mi discostando in cosa alcuna di momento, ma bene accompagnando questo poco di licenza con l'autorità de' gli altri Dorici, che pur sono tenuti belli: da quali ne ho tolto l'altre minime parti quando mi è conuenuto supplire, à questa: talche non come Zeuxi dette Vergini fra Crotoniani, ma come ha portato il mio giudicio ho fatta questa scelta de' tutti gli ordini cauandogli puramente dagli antichi tutti insieme, ne ui mescolato cosa di mio se non la distribuzione delle proportioni, fondati numeri semplici seza hauer à fare con braccia, ne piedi, ne palmi di qual si uoglia luogo, ma solo ad una misura arbitraria detta modulo diuisa in quelle parti che ad ordine per ordine al suo luogo si potrà uedere, et data tal facilità à questa parte d'Architettura altrimenti difficile ch' ogni mediocre ingegno, purchè habbi alquanto di gusto dell' arte; potrà in un' ochiata sola senza gran fatica di leggere comprendere il tutto, et opportunamente seruirsene. Et non ostante ch' io hauerò l'animo molto lontano di douerla publicare hauerò potuto nondimeno in me tanto li prighi di molti amici che la desiderano, et molto piu la liberalitate del mio perpetuo S^{re} l' Ill^{mo} et R^{mo} Car^{le} Farnese che oltre l' hauerne hauuto dalla honorata sua casa cortesia tali che mi è stato concesso il potere fare queste diligentie, m' ha donato il modo anchora di potere sodisfare in questa parte à gli amici, et donare anco à uoi di corto altre cose maggiori in questo soggetto, se questa parte sarà da uoi accettata con quell'animo ch' io credo. Et perche io non penso in questo luogo di uolere occorrere à quelle obietioni che da qualcuno sò che saranno proposte; non ascendo questo mio intento, anzi lasciandone il carico all'opra istessa che col piacere à piu giudiciori, faccia anco che rispondino per me contro gli altri; dirò solamente che se qualcheuno giudicasse questa fatica uana con dire che non si può dare fermezza alcuna di regola, attesoche secondo il parere de' tutti, et massime di Vitruuio molte uolte conuene crescere o scemare delle proportioni de' membri delli ornamenti per supplire con l' arte doue la uista uostri per qualche accidente uenghi ingannata; à questo gli rispondo; in questo caso essere in ogni modo necessario sapere quanto si uole che appaia all' occhio nostro, il che sarà sempre la regola ferma che altri si hauerà proposta di obseruare; poi in cio si procede per certe belle regole di Prospettiva la cui pratica necessaria à questo, et alla Pittura insieme, in modo ch'io m'assicuro ui sarà grata, spero anco di torto donarui.

Come è detto il mio intento è stato di essere inteso solamente da quelli che habbino qualche introductione nell' arte, et per questo non hauerò scritto il nome à niuno de' membri particolari di quei cinque ordini presupponendoli per noti: ma uisto poi per esperienza come l'opra piace anco anzi à molti Signori mossi dal gusto di potere intendere con pochissima fatica l'intiero dell' arte intorno questi ornamenti; et che solo ui desiderano questi nomi particolari, ho uoluto aggiugnere in quel modo che à Roma uengono uolgarmente nominati, et con l'ordine che si potrà ualere; auuertendo solamente che i membri quali sono comuni à piu ordini, doppo che saranno notati una uolta sola nel primo ordine che occorriua, non se ne farai piu mentione negli altri.

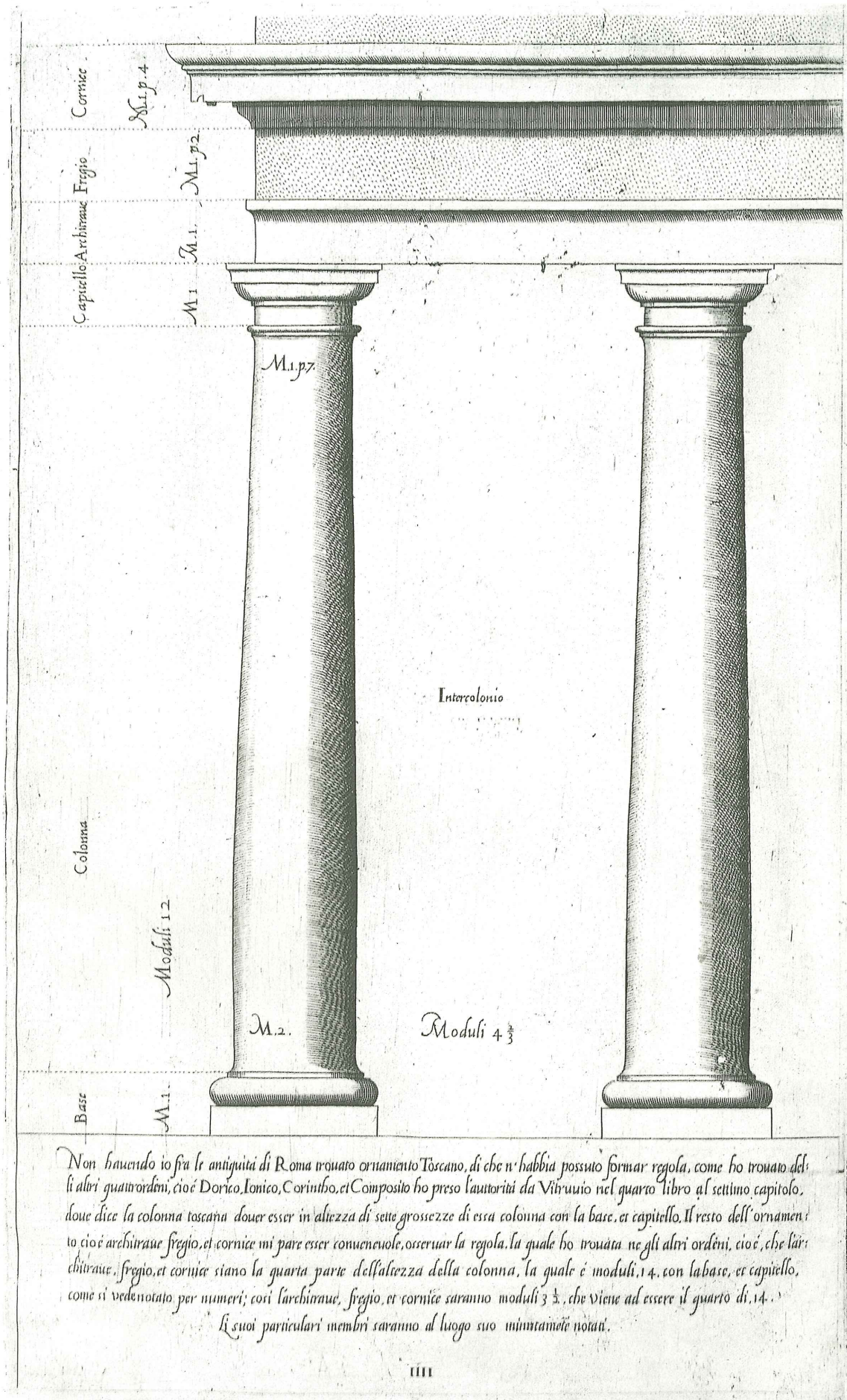
Plate 3
The System of the Orders

Having to discuss the five orders of columns, i.e., the Tuscan, Doric, Ionic, Corinthian and Composite, I thought it may be useful to see the shapes of each of them. Individual dimensions are not included and the drawing is intended to show the canon in general; details will be discussed afterwards.



**Plate 4
Tuscan Order**

Having failed to find in the antiquities of Rome the Tuscan ornament on which I could base the formulation of the Canon—the way I found it for the other orders, i.e., Doric, Ionic, Corinthian and Composite—I followed the authority of Vitruvius, who says, in Book Four, Chapter Seven, that the thickness of the Tuscan column* is one-seventh of its height, including the base and the capital. As regards the remaining ornament (i.e., the architrave, frieze and cornice), I think it is appropriate to obey the rule that I have discovered in other orders, whereby the architrave, frieze and cornice make one-fourth of the height of the column. The latter equals 14 modules, including the base and the capital as numbers indicate; so the architrave, frieze and cornice equal $3\frac{1}{2}$ in modules, i.e., one-fourth of 14. Their individual parts will be carefully indicated later.



* I.e., lower (bottom) column diameter.

Plate 5
 Tuscan Order

When making the Tuscan order without pedestals, one should divide its total height by $17\frac{1}{2}$. Each of these parts will be called a module and is further divided into 12 equal parts. The entire order with all its individual parts will be formed using these units, as shown by the whole numbers and fractions in the illustration.

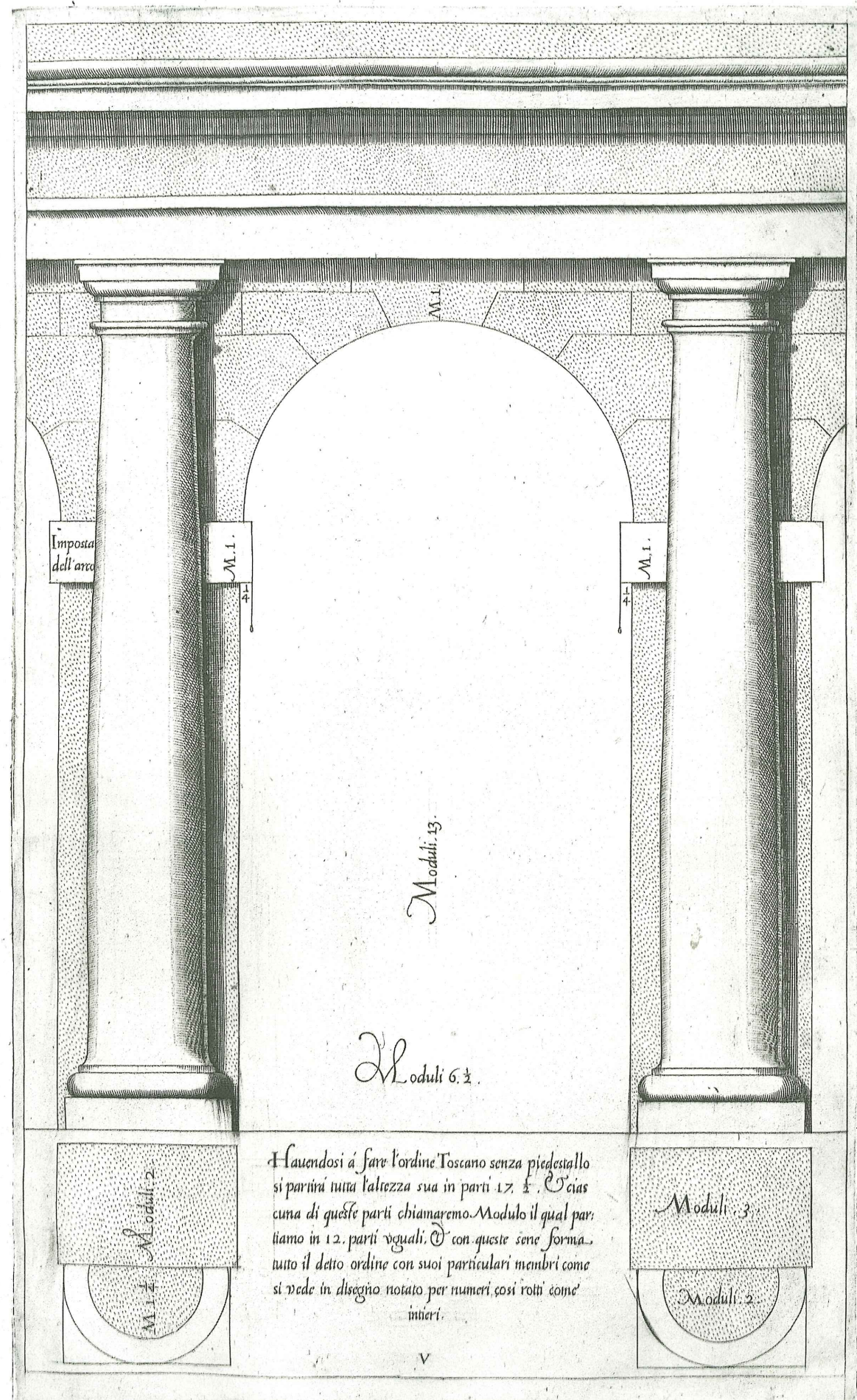
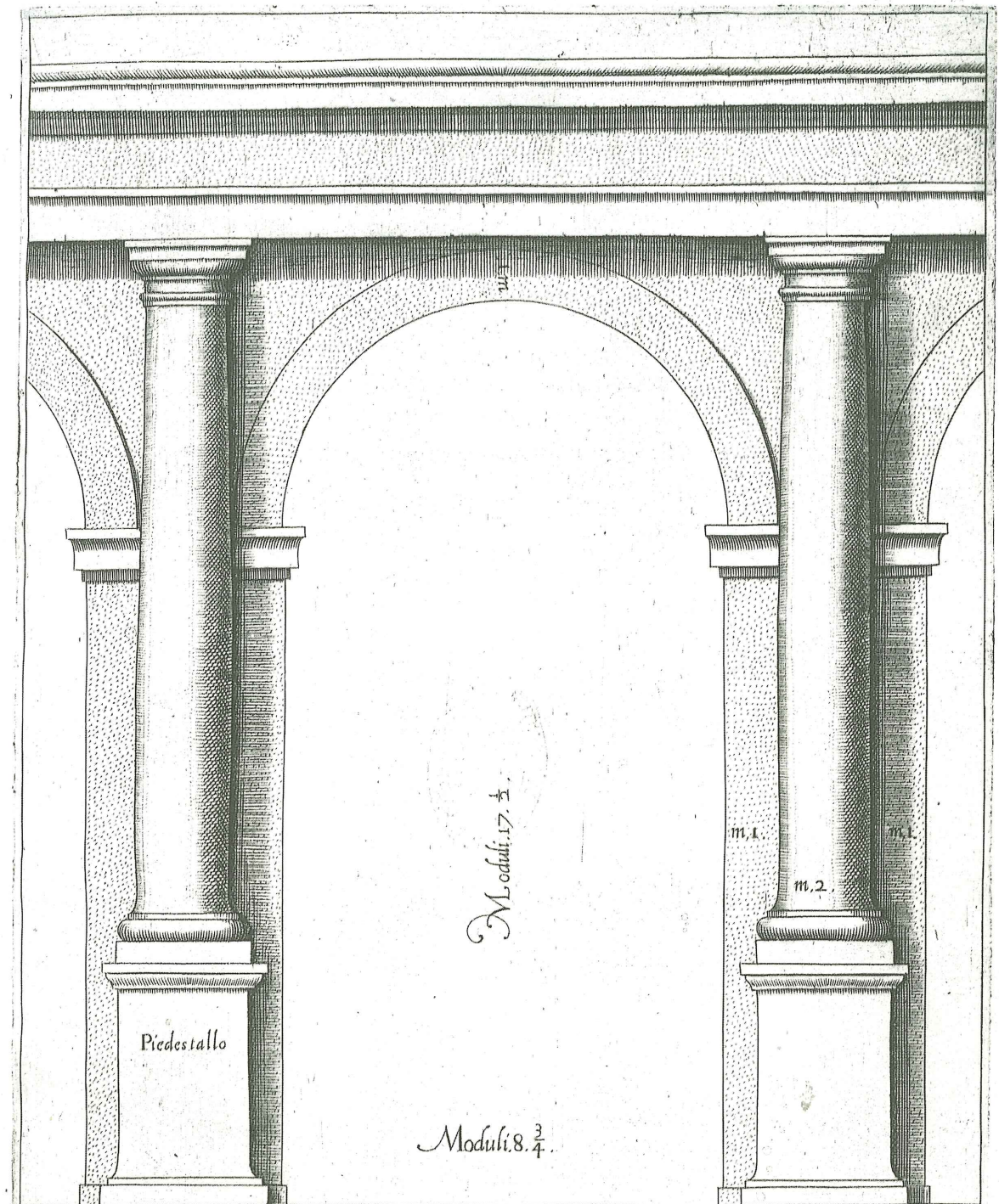


Plate 6
Tuscan Order

But if this order is to be made with its pedestals, one should divide the total height in $22\frac{1}{6}$ parts because the height of the pedestal must be one-third of the column taken together with the base and capital. Since the column height (including the base and capital) is 14 modules, one-third equals $4\frac{2}{3}$. When this is added to $17\frac{1}{2}$, it makes $22\frac{1}{6}$ altogether.



Ma dovendosi fare quest'ordine col suo piedestallo si partirà tutta l'altezza in parti 22 $\frac{1}{6}$. et cio sia perche il piedestallo ricerca hauere in altezza la terza parte della sua colonna con la base & capitulo ch'essendo moduli 14. la terza parte sono moduli $4\frac{2}{3}$. aggiunti a $17\frac{1}{2}$. Vanno al numero di 22 $\frac{1}{6}$.

Plate 7
Tuscan Order

Although the Tuscan order rarely is used with pedestals, nevertheless I have included here such a combination. I have noticed that in all five orders the pedestals with their ornaments must equal one-third of the column height taken together with the base and the capital; the total thickness of the ornament on the top (the architrave, frieze and cornice) should be one-fourth. Understanding this and taking it into account makes work very easy. To apply any of the five orders, one should determine the required height (including the ornaments) and divide it into 19 parts. The height of the column is then determined and divided into modules depending on whether it is going to be Corinthian, Doric or of some other order*. Finally, this module, divided into its parts (as will be seen later), serves as a basis for everything else.

- A Column
- B Fillet†
- C Torus
- D Plinth
- E Fillet
- F Gola reversa
- G Die
- H Fillet
- I Socle

* The height of the column will be $\frac{12}{19}$ of the total height; the height of 'ornaments' $\frac{3}{19}$ and the height of the pedestal $\frac{4}{19}$. The choice of the order determines the column height-to-diameter ratio; once the lower column diameter is known all other sizes are easily calculated.

† Vignola used *imo scapo* as the name for the fillet on the top of the base; the standard Vitruvian use of this term referred to the bottom of the column. (cf. Cristof Thoenes, "Vignolas Regola delli cinque ordini," *Römisches Jahrbuch für Kunstgeschichte*, 20, 1983, p. 358).

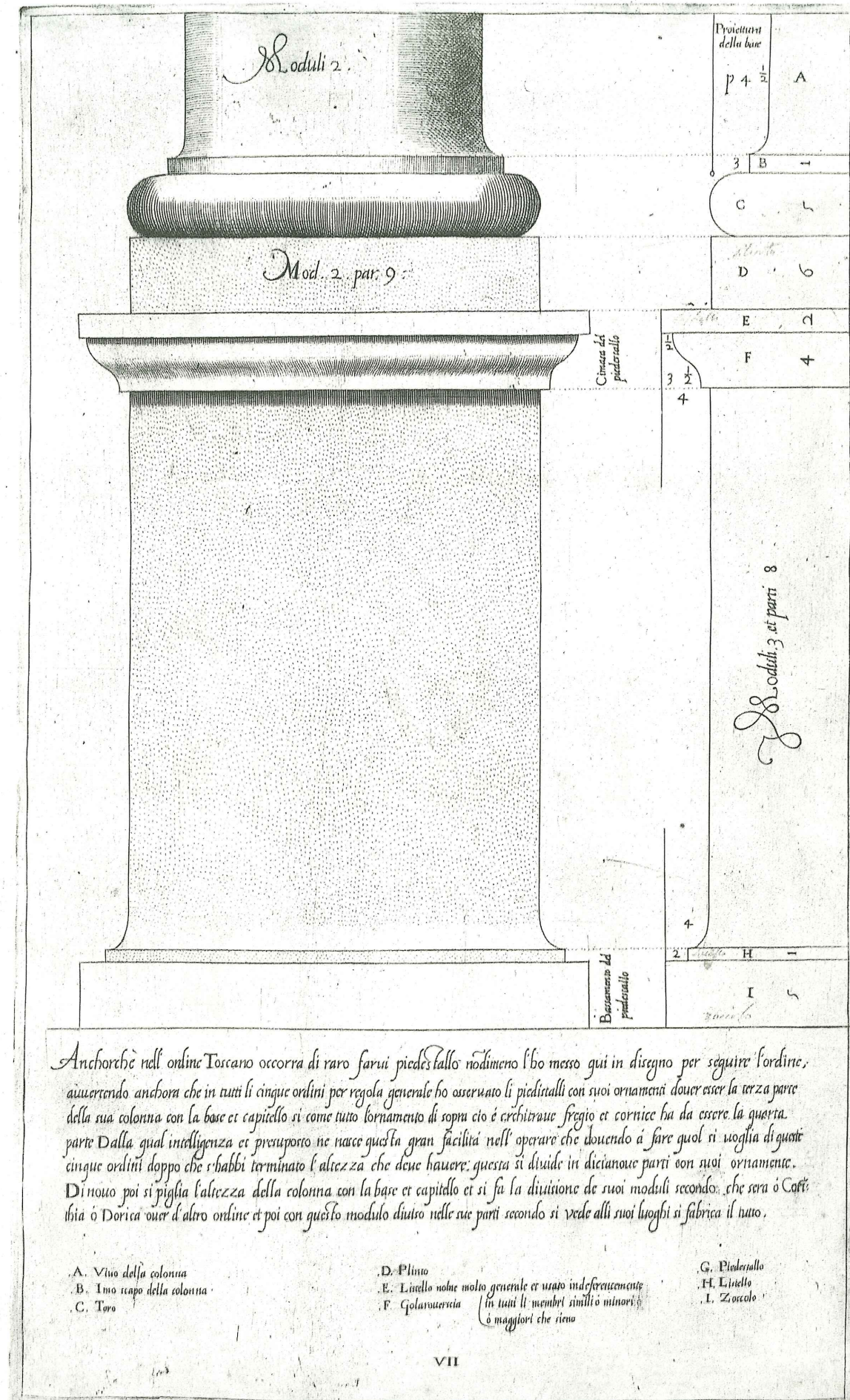
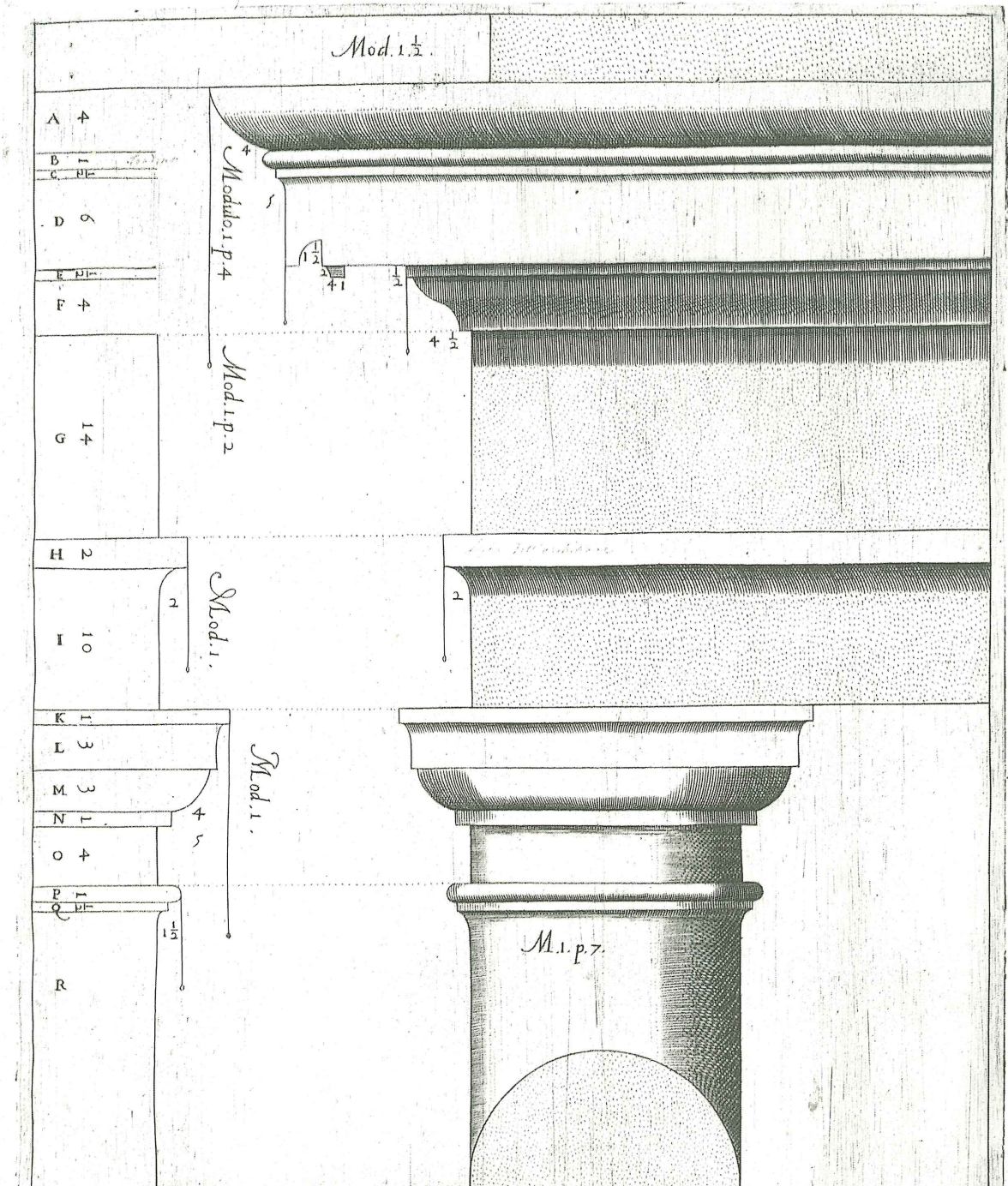


Plate 8
Tuscan Order

I have already described the principal measures of the Tuscan order; since the clarity of the drawing with numbers next to it is sufficient for understanding without many words, as everyone will realize with little consideration, I have presented the parts of the Tuscan order enlarged here and on the next page,* showing the division of even the smallest parts with their projections.

- A Ovolo
- B Astragal
- C Fillet
- D Corona
- E Fillet
- F Cyma reversa
- G Frieze
- H Fillet of the architrave
- I Architrave
- K Fillet of the abacus
- L Abacus
- M Echinus
- N Fillet
- O Frieze of the capital†
- P Astragal
- Q Fillet
- R Top of the column



Hauendo scritto in generale qui adietro le principali misure per far l'ordine Toscano qui et nella faccia accedente ho disegnato queste parti in grandi accio particolarmente si possa vedere la divisione d'ogni minimo membro con le proieiture insieme, et perche la chiarezza del disegno con li numeri appresso supplica da se sola a farsi intendere senza molte parole come ageuolmente ciascuno con qualche consideratione potra conoscere.

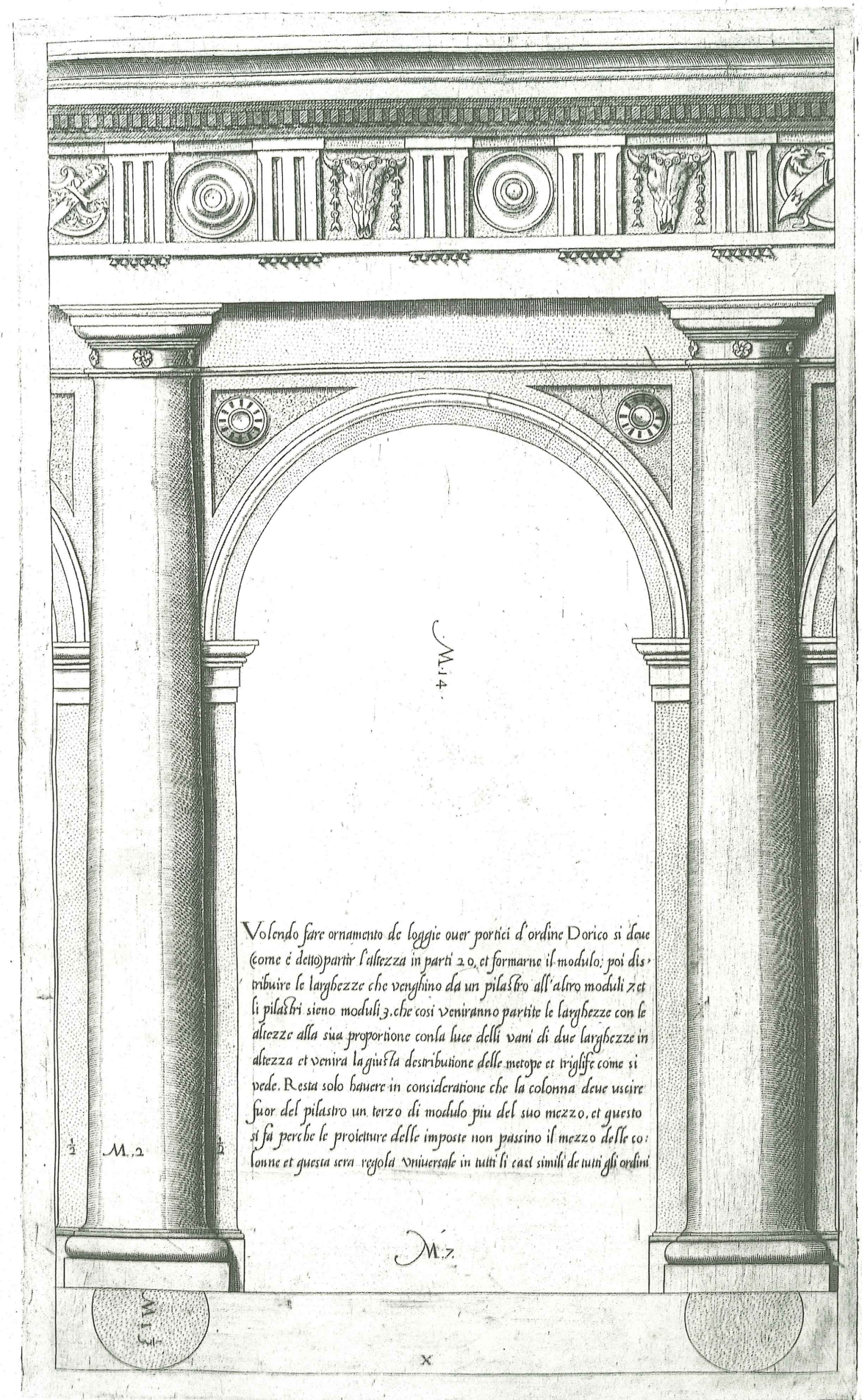
- | | | |
|------------------------------|--------------------------------------|--------------------------------|
| A. Vuouolo | G. Fregio | N. Listello |
| B. Tondino | H. Lita dell'Architrave | O. Fregio del capitello |
| C. Listello ouero regoletto | I. Architrave | P. Tondino |
| D. Corona ouero gocciolatoio | K. Listello dell'abaco ouero cimatio | Q. Colarino della colonna |
| E. Listello | L. Abaco | R. Vito della colonna di sopra |
| F. Gola oueracia | M. Vuouolo | |

* Vignola obviously refers to the previous page.

† Very much like Palladio, Vignola avoids Vitruvius' terms "hypotrachelium" and "apophysis". The use of the term "frieze" for the part of the capital below the echinus appears in other Renaissance treatises, for instance in Serlio.

**Plate 10
Doric Order**

If one wants to decorate loggias or porticos using the Doric order it is necessary, as described earlier, to determine the module by dividing the height into 20 parts. Wall segments will be 3 modules wide and the width of the openings between them will be 7 modules. Widths will thus be adjusted to heights so that the openings are 2 widths high; metopes and triglyphs will be properly distributed as the illustration shows. The column must project from the wall for one-third of the module beyond one-half of its diameter* so that the projection of the impost does not exceed the middle of the column.† This rule applies to all similar situations in all orders.

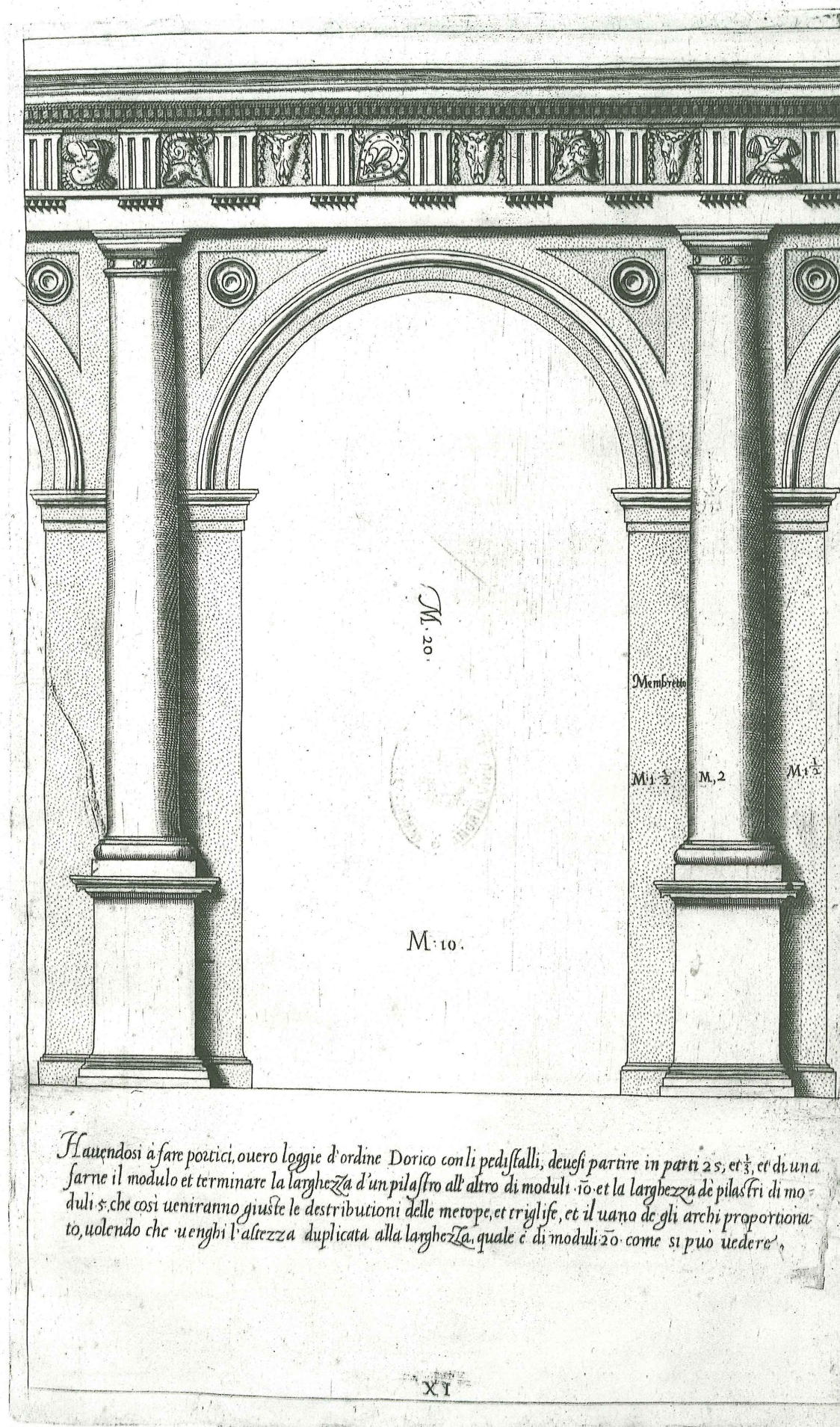


* The column projects for two-thirds of its diameter from the wall.

† The impost projects for one-sixth of the column diameter (see plate 12).

Plate 11
Doric Order

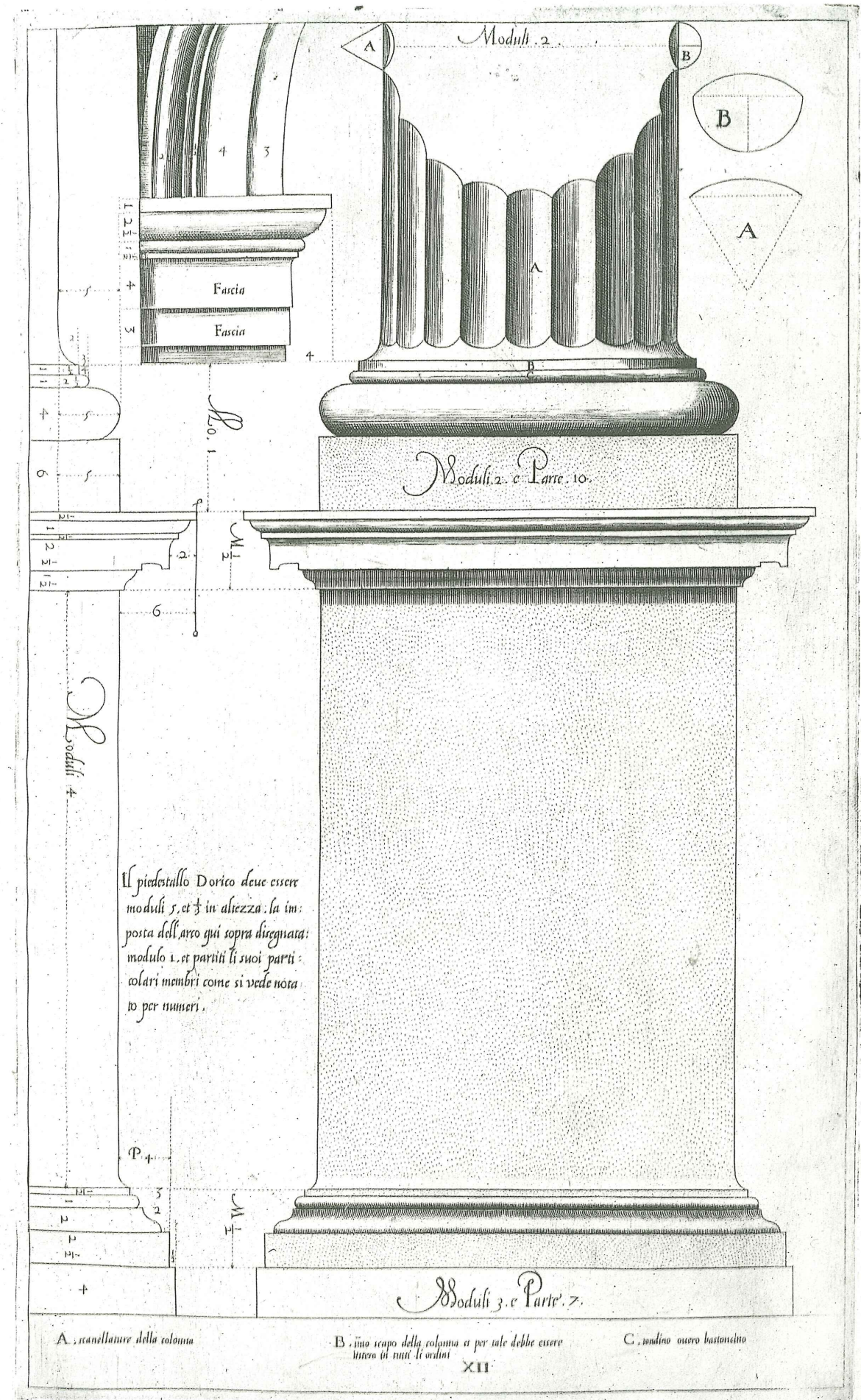
If porticos or loggias are to be made in the Doric order using pedestals, it is necessary to divide the height into $25\frac{1}{3}$ parts, taking 1 part as the module. The distance between the wall segments is 10 modules, their width 5 modules. This will yield the proper distribution of the metopes and triglyphs. The height of the opening will be twice its width, which is 20 modules, as can be seen in the illustration.



**Plate 12
Doric Order**

The pedestal of the Doric order must be $5\frac{1}{3}$ modules high. The impost presented here measures 1 module and its parts are divided as indicated by the numbers.

- A Flutings of the column
- B Fillet*
- C Astragal

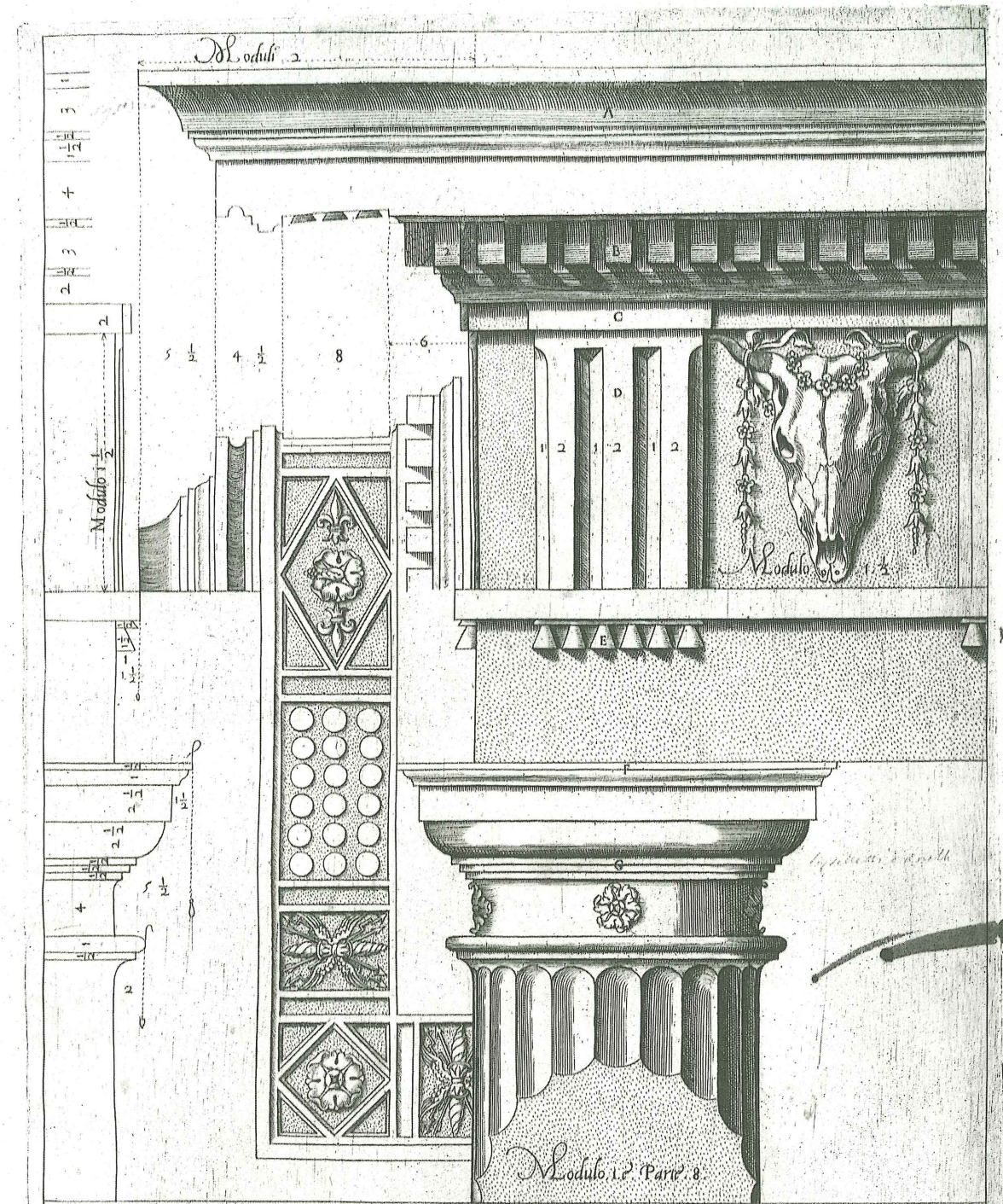


* Vignola actually wrote: "Imo scapo of the column; to be understood so in all orders." For the use of the term *imo scapo* see footnote † plate 7.

**Plate 13
Doric Order**

As mentioned in the introduction, this segment of the Doric order is taken from the Theater of Marcellus in Rome and retains the same proportions.

- A Cavetto
- B Dentils
- C Capital of the triglyph
- D Triglyph with 2 channels; the square spaces between the triglyphs are called metopes
- E Guttae
- F Top of the abacus*
- G Annulets



Questa parte d'ordine Dorico è cavata dal Teatro di Marcellus in Roma come nel proemio per modo di esempio fu detto, et posta in disegno ritene questa medesima proportion.

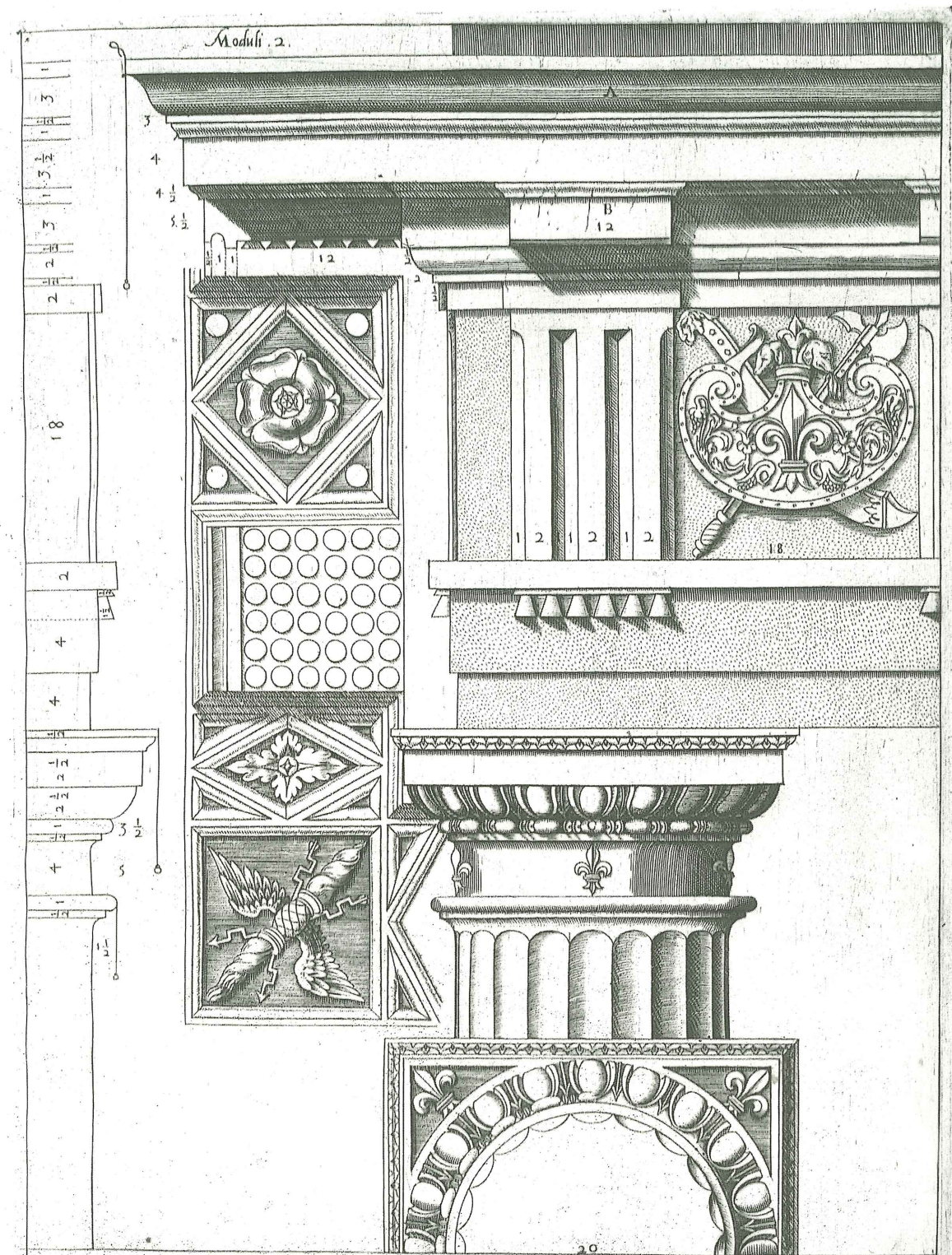
- | | |
|---|-----------------------------|
| A. spacio | E. fozze ouero campanelle |
| B. dente | F. cimatio |
| C. capitello del triglifo | G. anuletti ouero lielletti |
| D. triglifo nel quale le parti che sfondano indouo sono nominate canaletti, et lo spazio quadrato del foglio che resta fra l'un triglifo, et l'altre si chiama metopa | |

* Vignola's *cimatio* here designates the cyma and fillet together. Palladio used the term *cimacio* in the same context. Vignola normally used the term *gola* for the cyma alone and *cimatio* or *cimasa* for the combination of cyma with another element (but cf. plates 24, 25 and 27.)

**Plate 14
Doric Order**

This, another version of the Doric order, has been taken from different fragments of Roman ruins. I have put these elements together, and found them successful in practice.

- A Cyma recta
- B Modillion—all elements that support the corona are called so, regardless of their shape*
- C Bead-and-reel



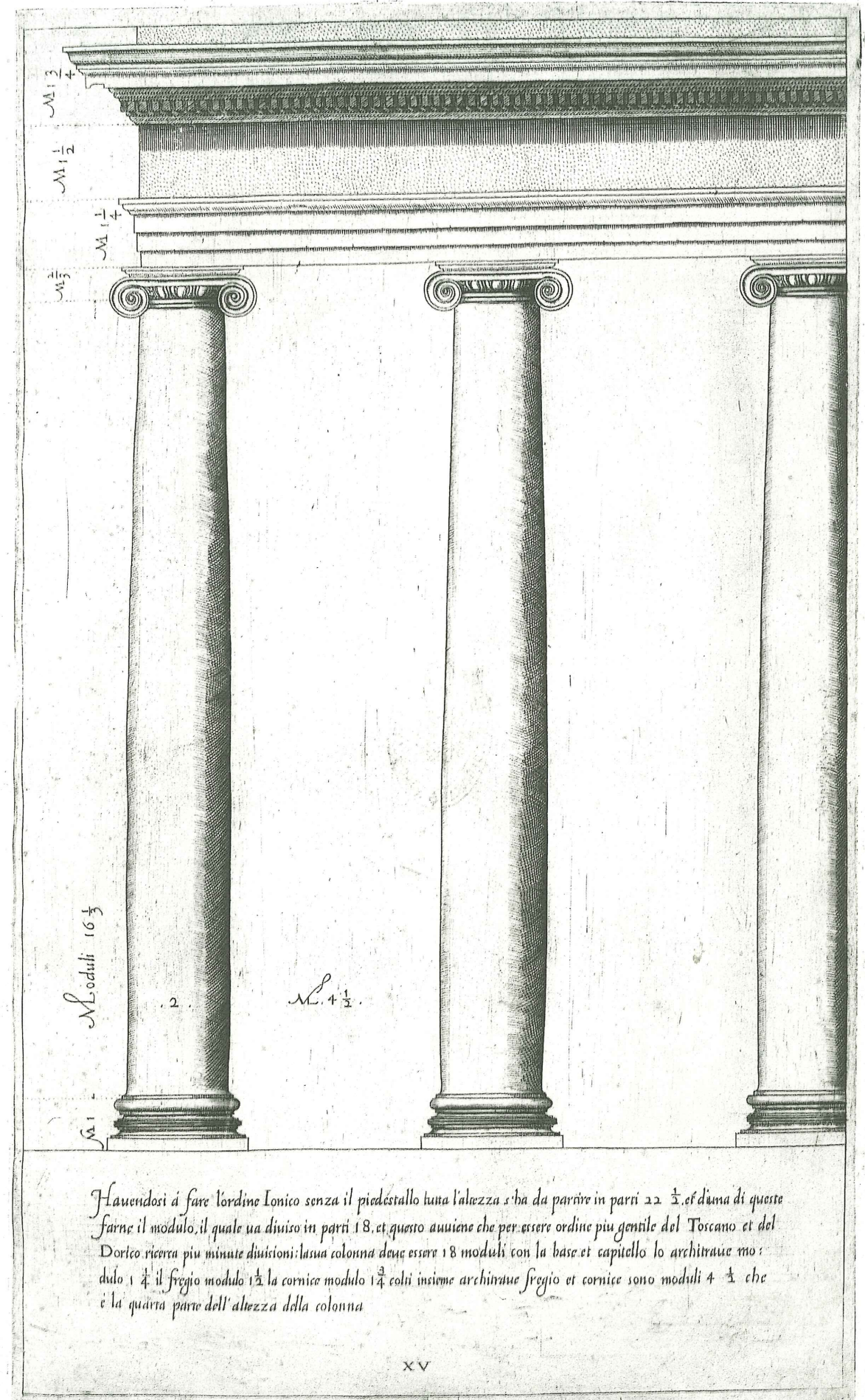
Quest'altra parte d'ordine Dorico è cavata da diversi fragmenti delle antichità di Roma et fattone un composito tale che in opera l'ho provato riuscire molto bene.

- A. gola diritta
- B. Modiglione ouero modello, et con questo nome usano chiamati tutti ancorche sieno di varia forma purchè mostrino l'ufficio di sostenere la corona che gli è discopra.
- C. fusticelli

* Vignola here used the words *modiglione* and *modello*. During the Renaissance the distinction between *mutule* (a panel below the soffit adorned with *gittae*) and *modillion* (a bracket supporting the corona) was not always clear. For a discussion of this problem see Branko Mitrović, "Palladio's Theory of the Classical Orders in the First Book of *I quattro libri dell'architettura*," *Architectural History*, 42 (1999).

Plate 15
Ionic Order

If the Ionic order is to be made without pedestals, the total height has to be divided into $22\frac{1}{2}$ parts, one of which will be taken as the module and divided into 18 parts. This is because this order is more graceful than the Tuscan or Doric and requires more precise division. The column takes up 18 modules, including the base and the capital. The architrave takes up $1\frac{1}{4}$ modules, the frieze $1\frac{1}{2}$ modules and the cornice $1\frac{3}{4}$. This way the architrave, frieze and cornice together make $4\frac{1}{2}$ modules, which is one-fourth of the height of the column.



Hauendosi à fare l'ordine Ionico senza il piedestallo tutta l'altezza s'ha da partire in parti 22 1/2. et d'una di queste farne il modulo, il quale sia diuiso in parti 18. et questo auuene che per essere ordine piu gentile del Toscano et del Dorico ricorra piu minute diuisioni: la sua colonna deue essere 18 moduli con la base et capicello lo architrave modulo 1 1/4 il fregio modulo 1 1/2 la cornice modulo 1 3/4 colti insieme architrave fregio et cornice sono moduli 4 1/2 che e la quarta parte dell'altezza della colonna

Plate 16
Ionic Order

If porticos or loggias are to be made using the Ionic order, the wall segments will be 3 modules wide. The width of the opening will be $8\frac{1}{2}$, its height 17 modules, i.e., twice the width. This rule is to be followed firmly in all arches of similar ornaments and one should depart from it only in the case of greatest necessity.

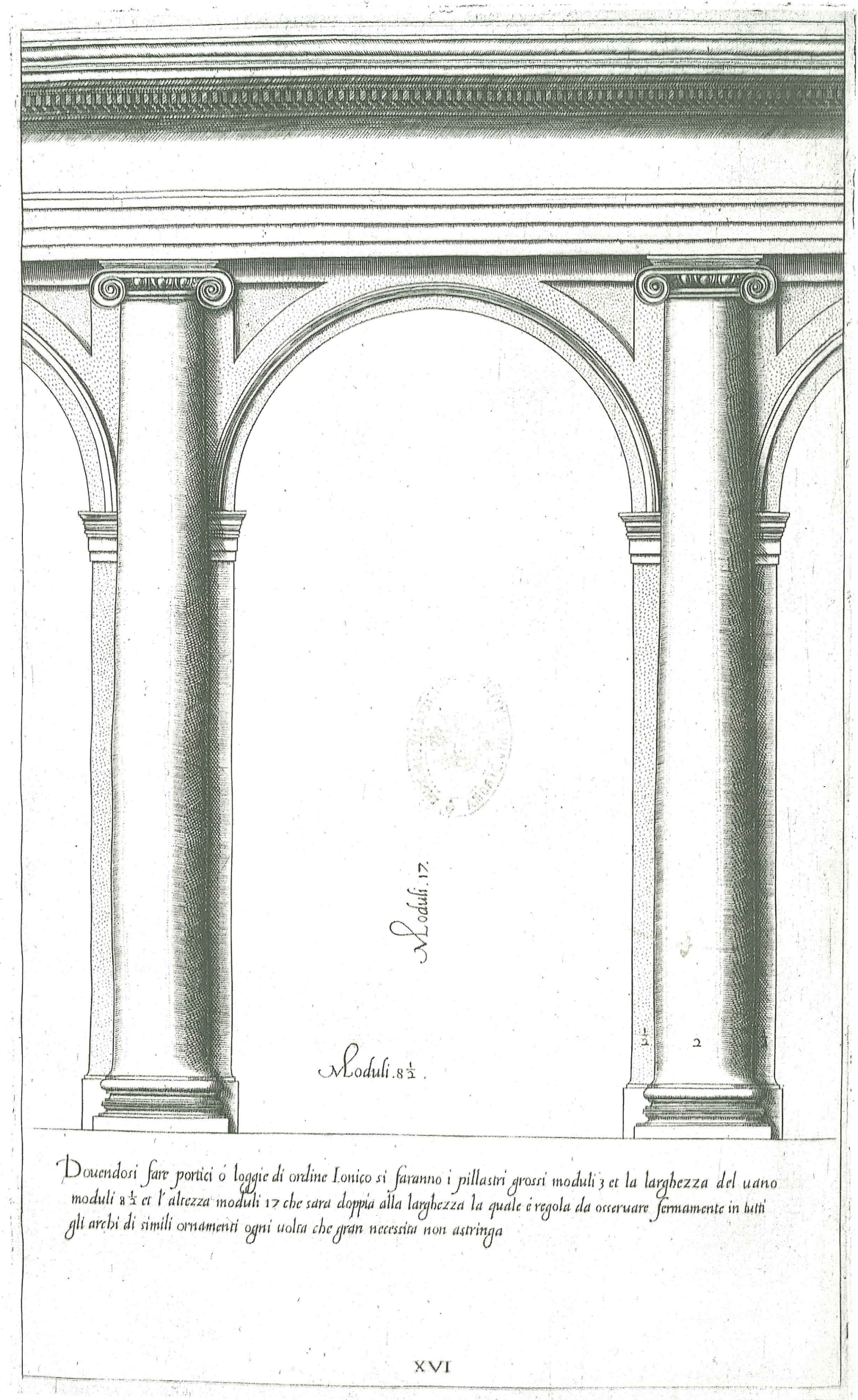
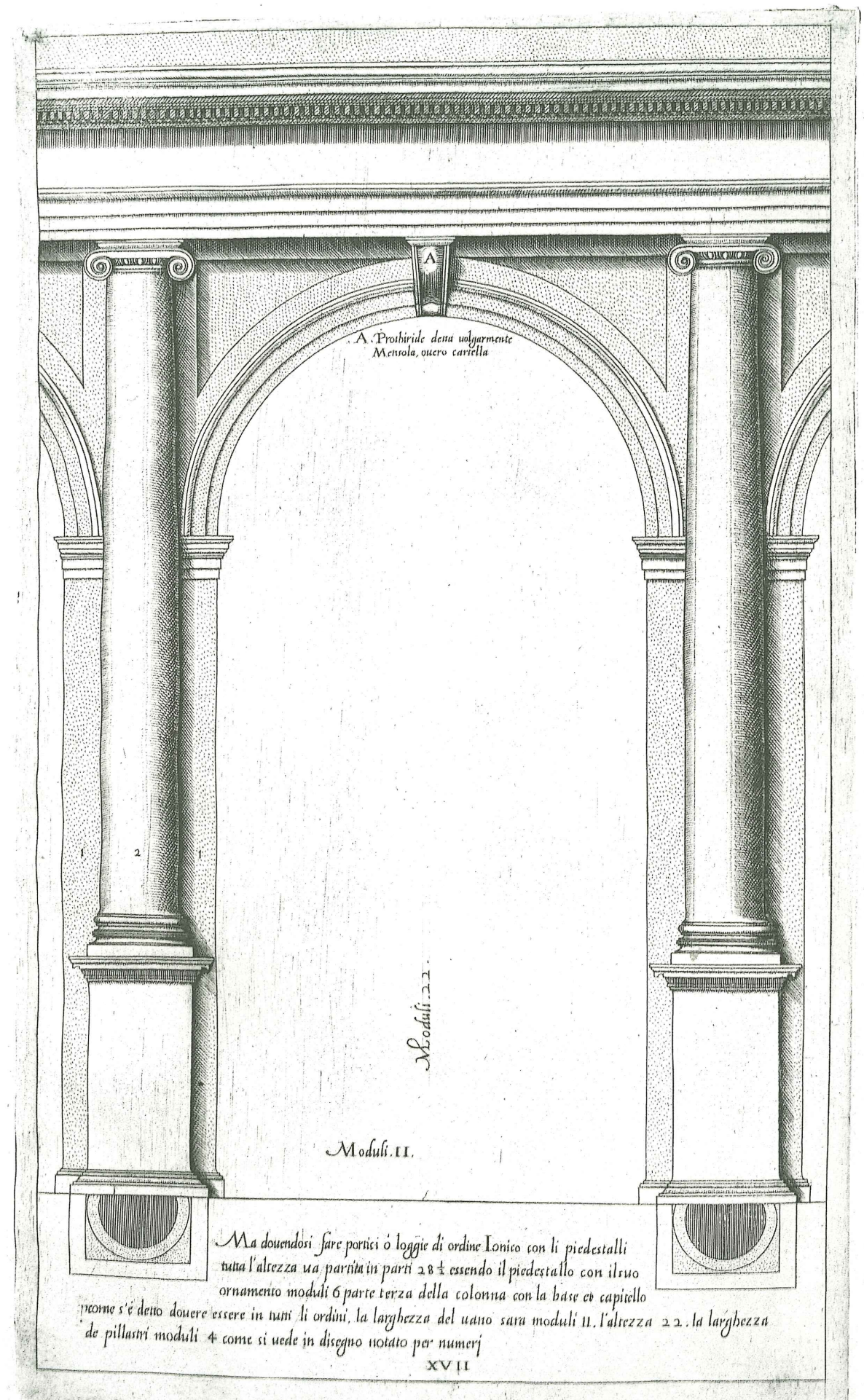


Plate 17
Ionic Order

But if porticos or loggias are to be made using the Ionic order with pedestals, the total height will be divided into $28\frac{1}{2}$ parts. The pedestal with its ornament equals 6 modules, or one-third of the column with the base and the capital—the way it was said it had to be in all orders.* The width of the opening will be 11 modules, the height 22, the width of wall segments 4 modules, as indicated by the numbers in the drawing.

A Console

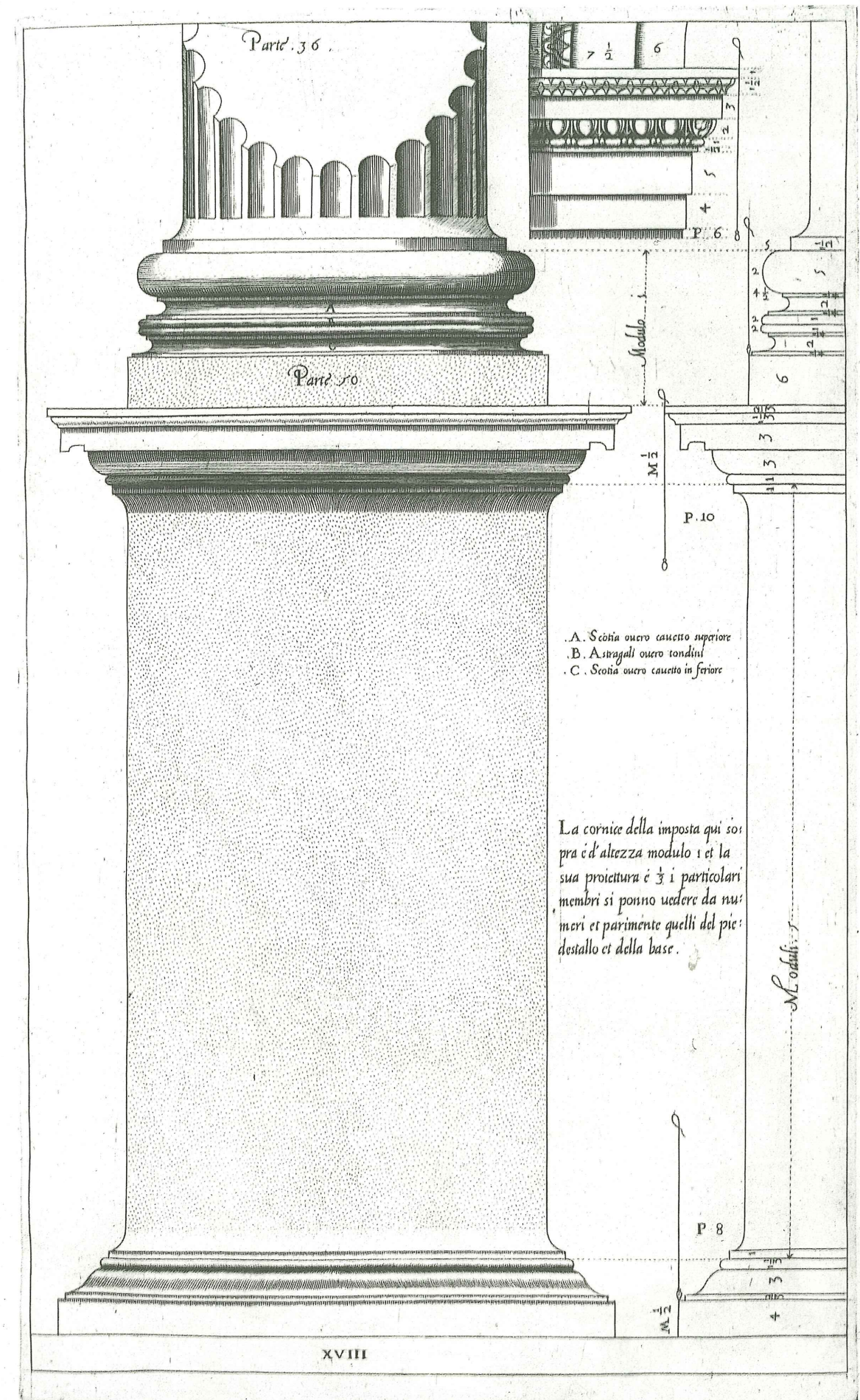


* Cf. plate 6.

Plate 18
Ionic Order

The cornice of the impost is 1 module high and projects for one-third of the module.* The sizes of individual elements (both those belonging to the pedestal and those of the base) are indicated by numbers.

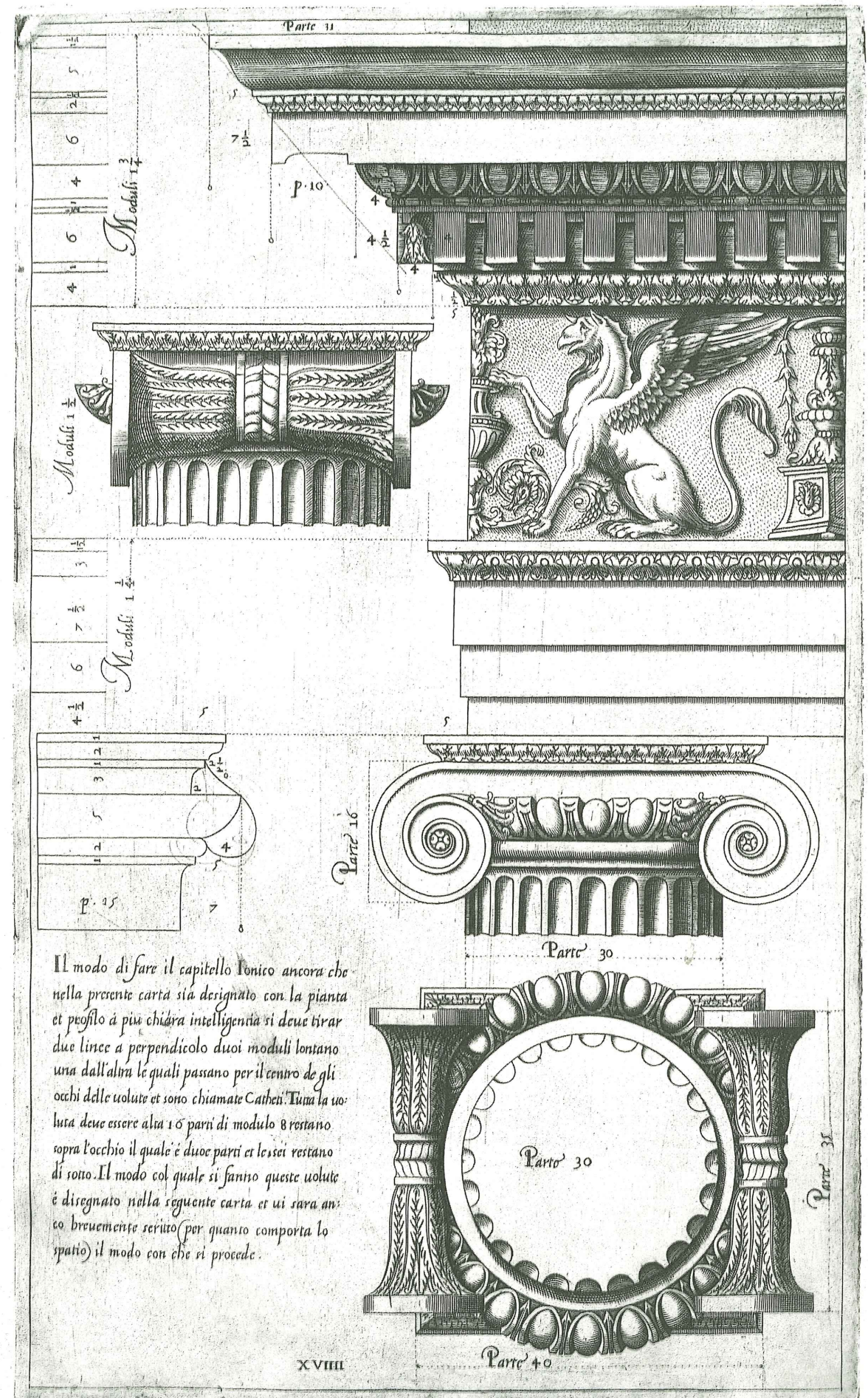
- A Scotia or upper trochilus
- B Astragals
- C Scotia or lower trochilus



* The edge of the impost goes through the middle of the column, cf. plate 10.

Plate 19
Ionic Order

To ensure better understanding, the construction of the Ionic capital is presented here both in horizontal plan and in elevation. Two vertical lines should be drawn 2 modules apart; these lines are called cathetes and pass through the eyes of the volutes. The total height of the volute should be 16 parts of the module, 8 parts should be above the eye, the eye itself takes up 2 parts, and 6 parts are below the eye. The construction of the volutes is presented in the following plate, along with a brief (for reasons of space) written description.



Il modo di fare il capitello Ionico ancora che nella presente carta sia designato con la pianta et profilo à piu chiara intelligetia si deve tirar due linee a perpendicolo duoi moduli lontano una dall'altra le quali passano per il centro de gli occhi delle volute et sono chiamate Catheti. Tutta la voluta deve essere alta 16 parti di modulo 8 restano sopra l'occhio il quale è duoc parti et le sei restano di sotto. Il modo col quale si fanno queste volute è designato nella seguente carta et vi sarà anco brevemente scritto per quanto comporta lo spazio il modo con che si procede.

**Plate 20
Ionic Order**

One should draw the cathete and the horizontal line that passes through the center of the eye. The eye is to be divided as indicated in the drawing A. Starting from point 1 and using a compass, one should draw one-quarter of a circle; after this from point 2 one should draw the next quarter of the circle and, progressing further, 3 full circles are to be made. After this, one should provide for the thickness of the fillet, equivalent to one-fourth of the segment with which the construction of the spiral started. Consequently every segment of the lines that have provided centers has to be divided into 4 parts, and by drawing 12 new quarter circles the fillet will be constructed.

In order to draw the volute according to the method below, one should start from a cathete whose length is 16 parts of the module. The center should be placed so that there are 9 parts above and 7 parts below and the circumference be divided into 8 parts as indicated in the drawing. After this one should draw the triangle B-C-D so that line B-C is 9 parts of the module and line C-D is 7 parts. Since the drawing and numbers show this well, I think that this explanation is sufficient. After this the points from the line B-C are to be transferred onto the lines that divide the circumference of the volute, as shown by the numbers in the drawing. Going around the volute, from one point to the next, the centers are determined by placing the stationary leg of the compass in point 1 and, taking the distance to the center of the eye as the radius, one should draw a small segment of a circle. Then, without changing the opening of the compass, one should move its stationary foot onto point 2; the center of the curve between points 1 and 2 will be where the segment of the circle whose center is 1 intersects the previous one. After this, one should place the stationary foot of the compass at 2 and, taking the distance between point 2 and the center of the eye as the radius, draw a small segment of that circle. Retaining the same radius, one should then draw a small segment of the circle with the center in point 3; the point of intersection of the 2 segments will be the center of the segment of the volute between points 2 and 3. This way one should proceed step by step.

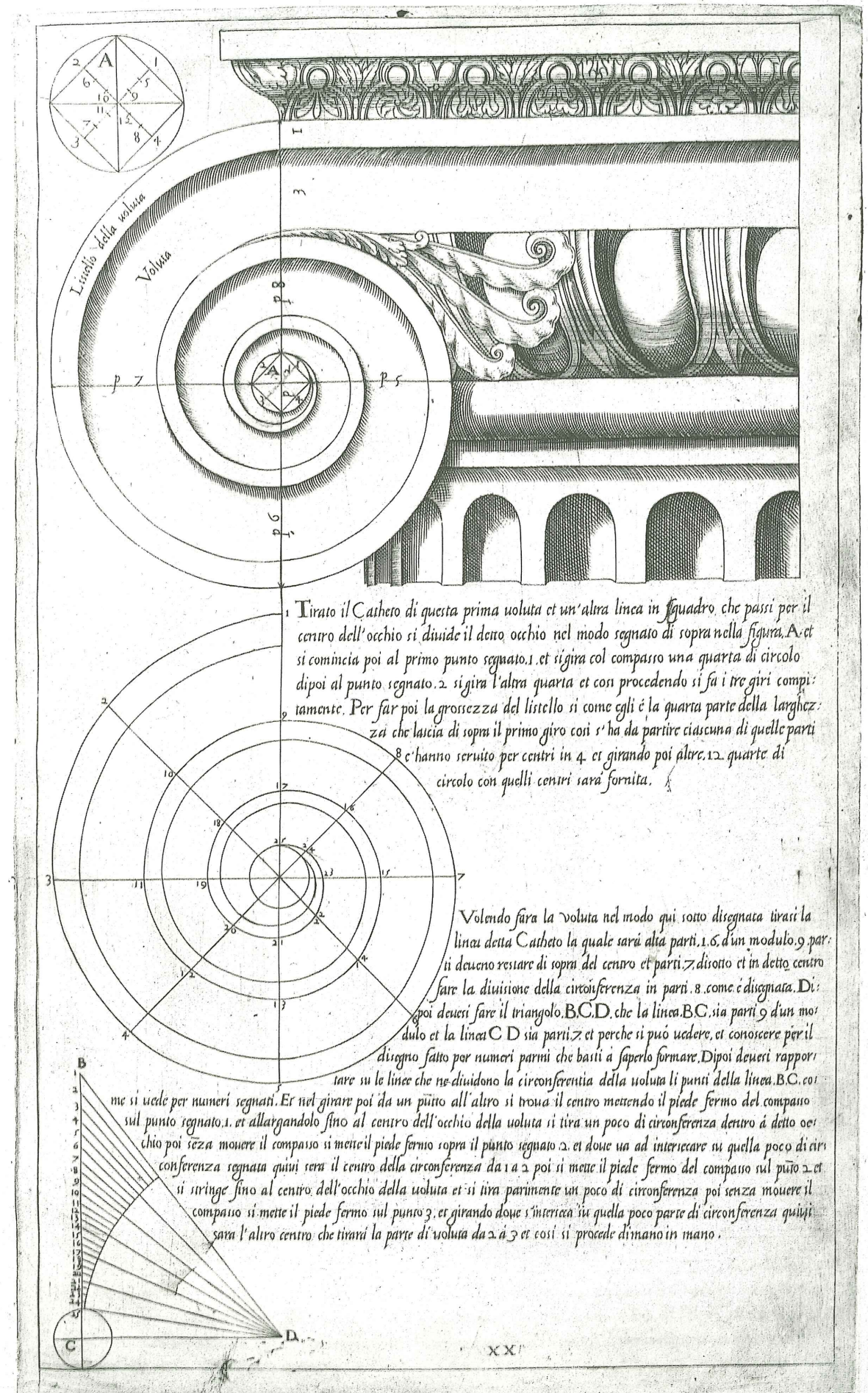


Plate 21
Corinthian Order

In order to make the Corinthian order without pedestals, the total height should be divided into 25 parts, one of which should be taken as the module. The module itself is divided into 18 parts, as in the Ionic order. Further principal divisions are indicated in the drawing. The distance between the columns should be $4\frac{2}{3}$, so that the architraves do not bear too much weight and also to ensure that the modillions in the cornice coincide with the axes of the columns and are placed at an equal distance from each other.

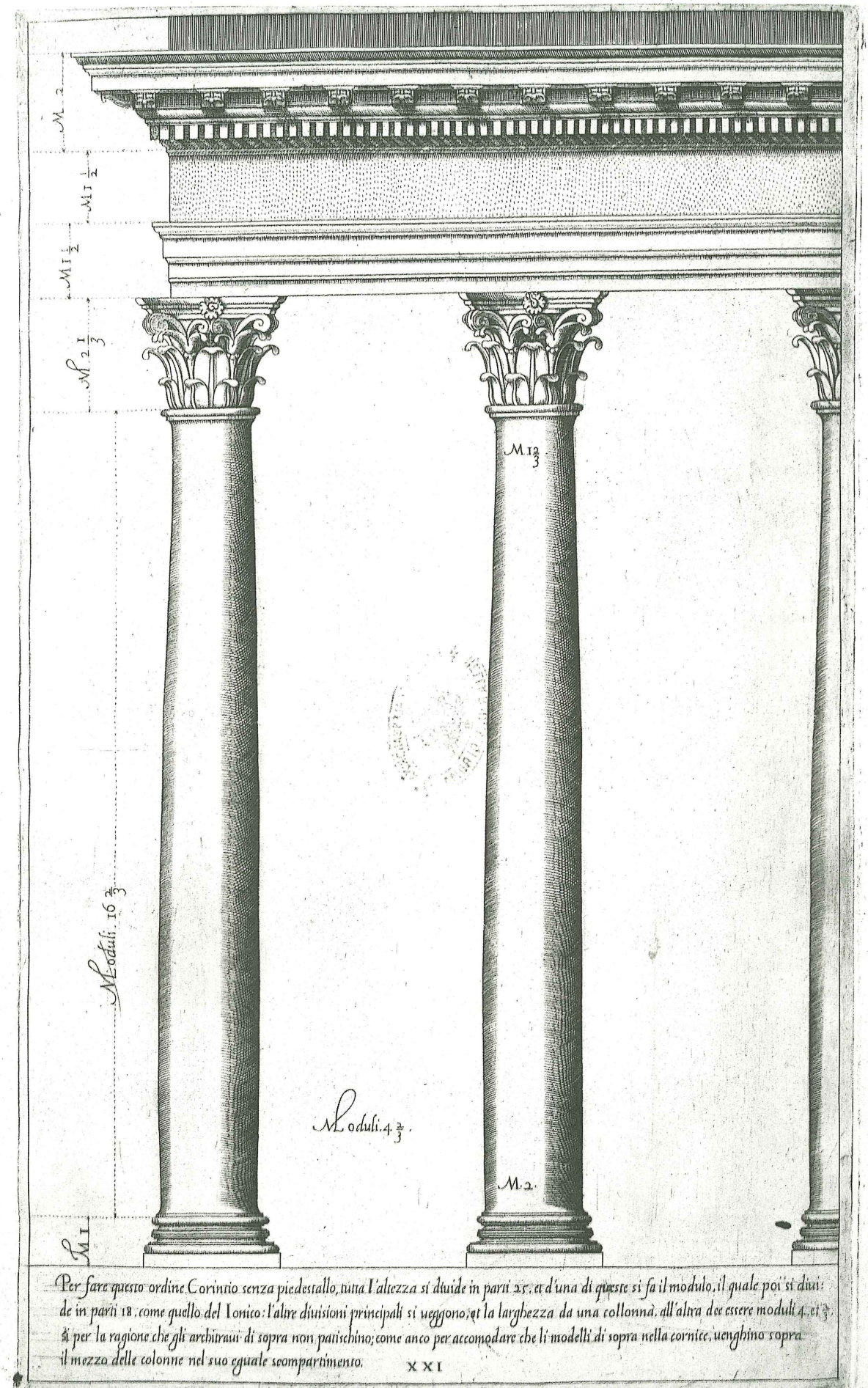


Plate 22
Corinthian Order

If this order is used on arcaded loggias without pedestals, it is necessary to make the dimensions as the numbers indicate: the openings should be 9 modules wide and 18 modules high; the wall segments should be 3 modules wide.

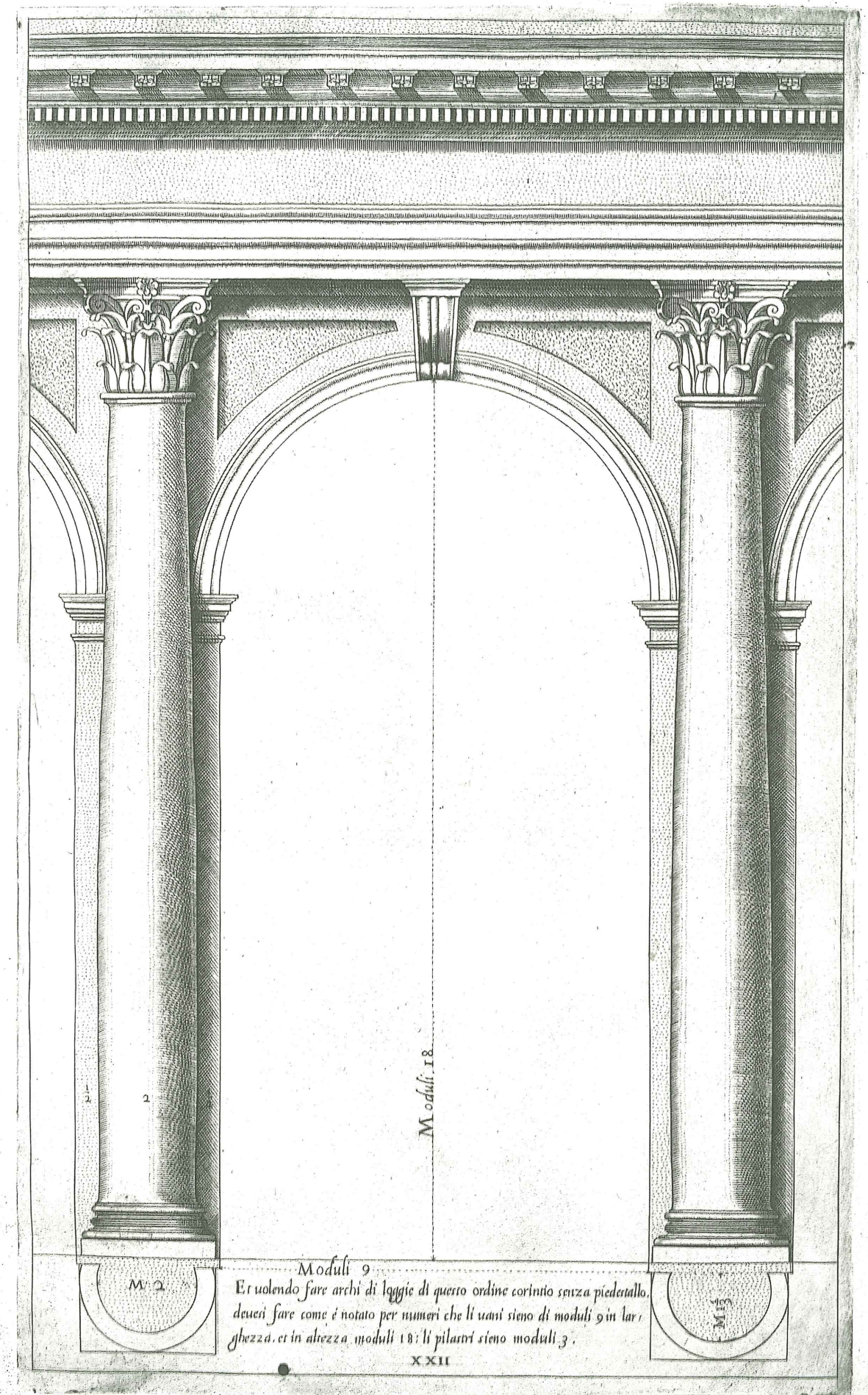


Plate 23
Corinthian Order

But if the loggias or porticos are to be made with pedestals, the total height is to be divided into 32 parts, one of which will be the module. The width of the opening will be 12 modules and the height will be 25. The opening will exceed 2 squares, but this will make the order more graceful. The wall segments are to be 4 modules, as indicated.

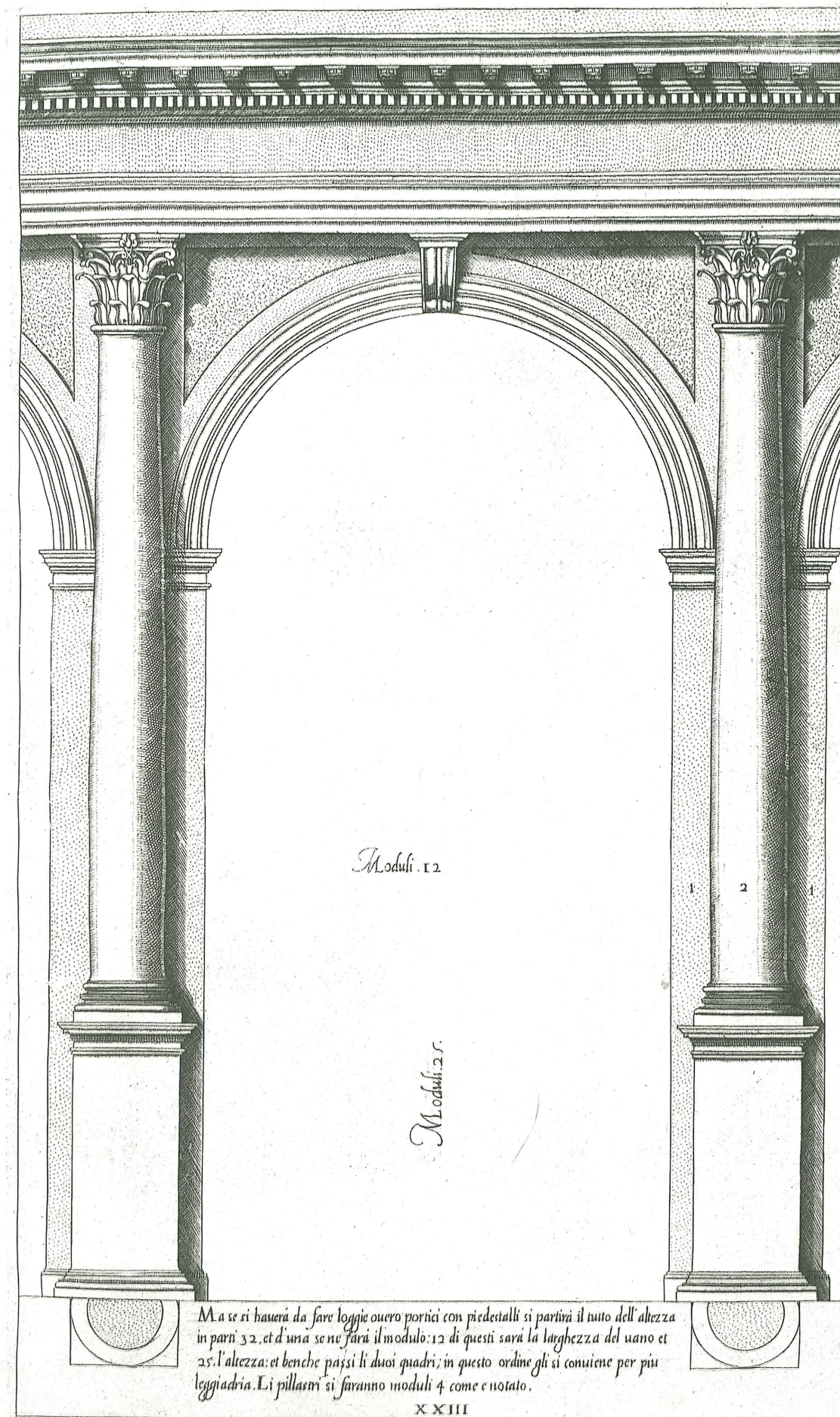
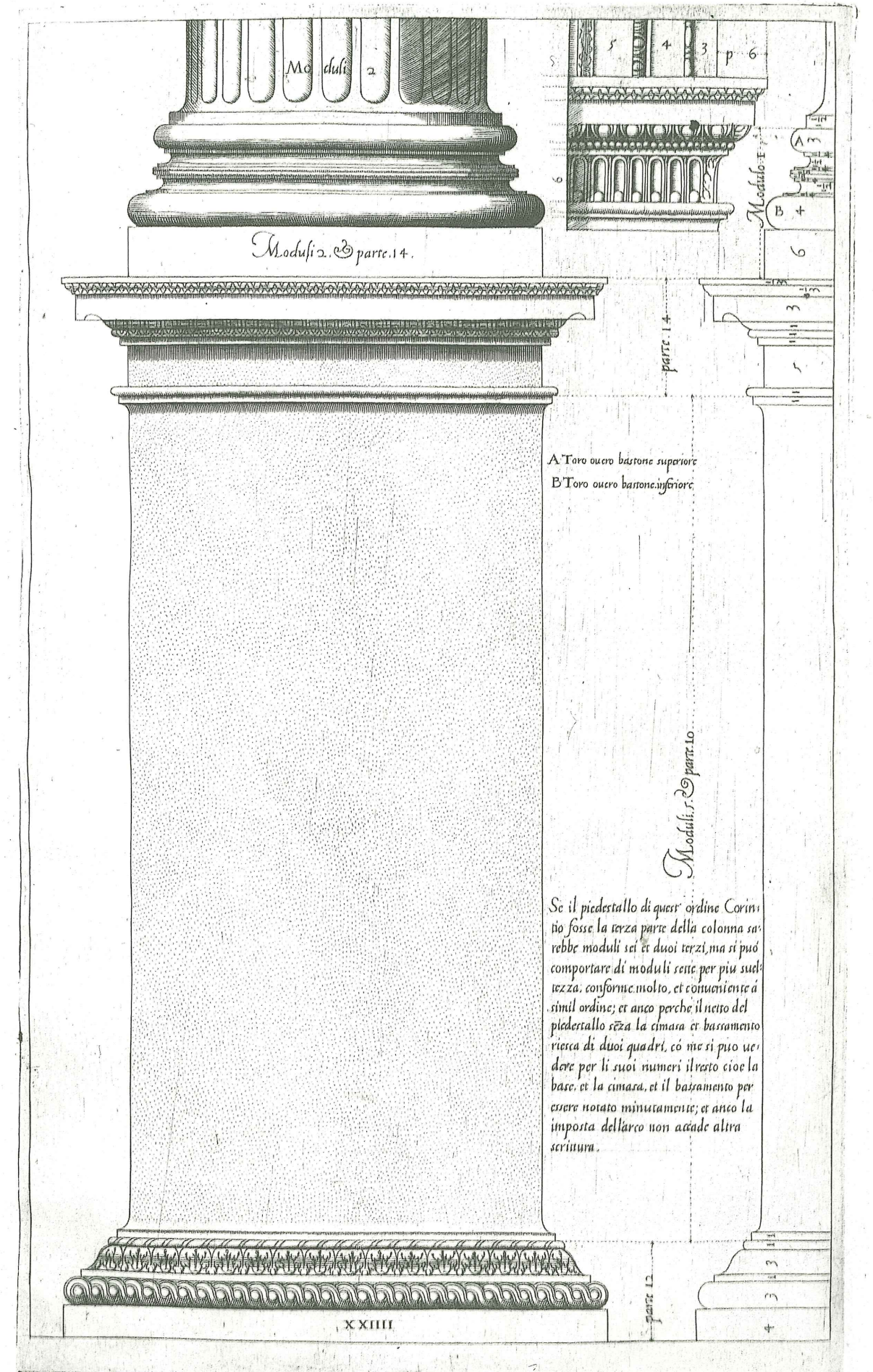


Plate 24
Corinthian Order

If the pedestal of this Corinthian order were one-third of the column, it would make $6\frac{2}{3}$ modules, but in order to achieve greater slenderness, which is appropriate for such an order, it can be made 7 modules. Also, in this way the pedestal alone, without the top and bottom areas, makes 2 squares, as can be seen from the numbers in the drawing.* The dimensions of the base, the top and the bottom of the pedestal, as well as the impost of the arch, have been carefully indicated and need no further description.

- A Upper torus
- B Lower torus

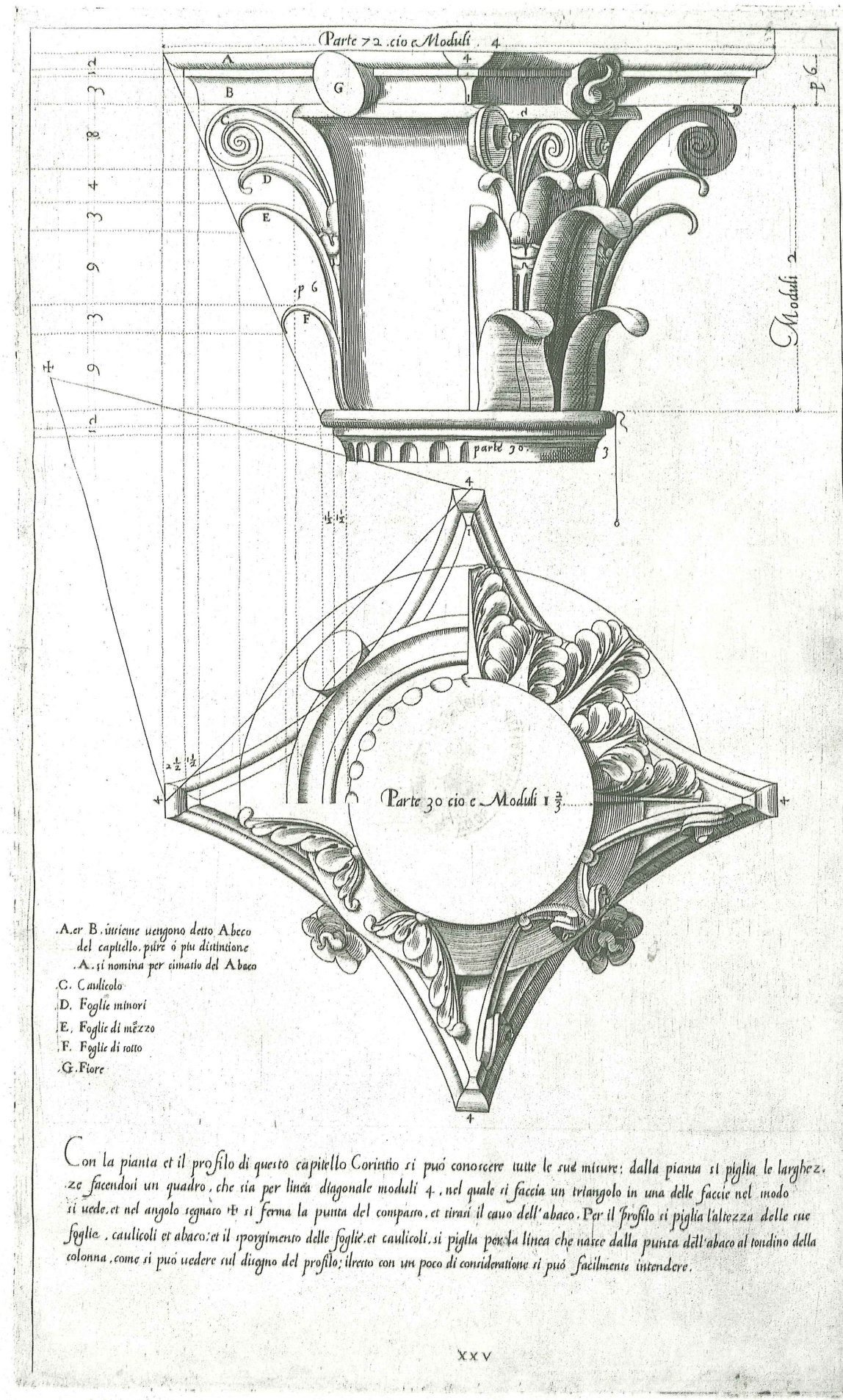


* The width of the pedestal is 2 modules and 14 parts, the height of the dado with its fillets 5 modules and 10 parts. Vignola used the term *cimasa* to refer to the entire upper ornamented zone of the pedestal, not only the cyma. (Cf. also plates 13, 25 and 27.)

Plate 25
Corinthian Order

All the dimensions of the Corinthian capital can be understood from the plan and section. To determine the widths from the ground plan one should draw a square whose diagonal is 4 modules. Over the side of this square a triangle should be constructed as shown and, using a compass, one should draw the curve of the abacus from the point marked +. The height of the leaves, the cavliculi and the abacus are to be taken from the section. The projections of the leaves and the cavliculi are to be determined using the line that connects the abacus with the astragal at the bottom of the capital as shown in the section. The rest can be understood easily, with little effort.

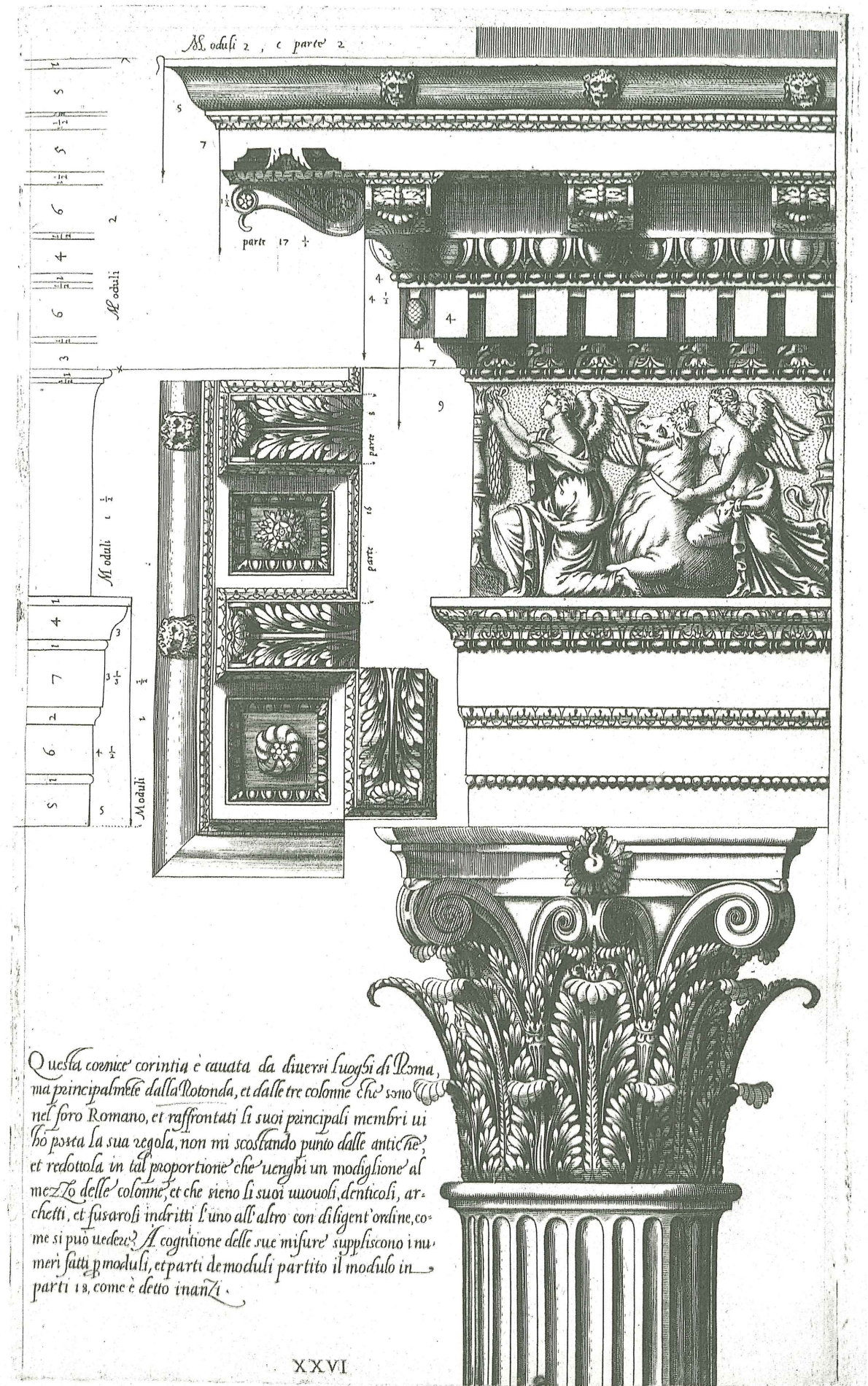
- A and B are together called the abacus of the capital; A is also called the cymatium of the abacus*
 C Cavliculus
 D Minor leaves
 E Central leaves
 F Lower leaves
 G Flower



* Another example of Vignola's non-standard use of the term *cymatium*. In this case it refers to the ovolo. Cf. plates 14, 24 and 27.

Plate 26
Corinthian Order

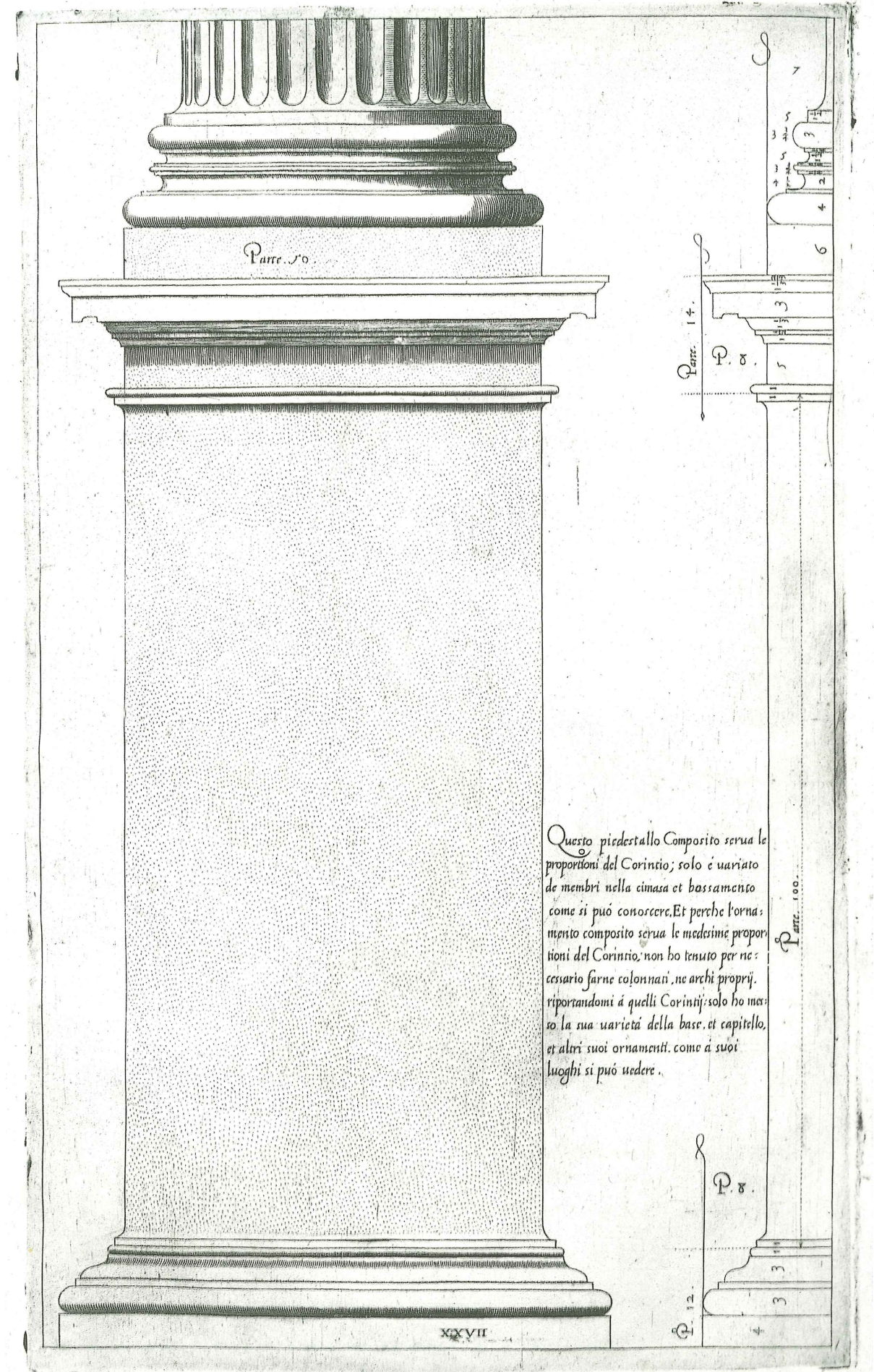
This Corinthian cornice has been taken from different sites in Rome, but in the first place from the Pantheon, and the three columns in the Forum Romanum. Having compared the principal elements I have formulated the rule without departing from ancient works; and I have reduced proportions so that a modillion always comes in the axis of the column and that its ovoli, dentils, egg-and-dart and bead-and-reel are carefully adjusted to each other, as can be seen in the drawing. The numbers that express modules and their parts are sufficient to understand the measures, the module being divided into 18 parts, as noted earlier.



Questa cornice corintia è cavata da diversi luoghi di Roma, ma principalmente dalla Rotonda, et dalle tre colonne che sono nel foro Romano, et raffrontati li suoi principali membri ui ho posta la sua regola, non mi scostando punto dalle antiche, et reduola in tal proportion che uenghi un modiglione al mezzo delle colonne, et che sieno li suoi uuouoli, denticoli, archetti, et fusaroli indritti l'uno all'altro con diligent online, come si può uedere. A cognitione delle sue misure suppliscono i numeri fatti pmoduli, et parti de moduli partito il modulo in parti 18, come è detto inanzi.

Plate 27
Composite Order

This Composite pedestal preserves the same proportions as the Corinthian and the only difference, as can be seen, is in the parts of the top and bottom moldings.* Since the Composite order uses the same proportions as the Corinthian, I have not considered it necessary to show how columns are aligned or how arches are made. Instead, I have only presented the parts wherein this order differs from the Corinthian—the base, the capital and other ornaments, as will be seen.

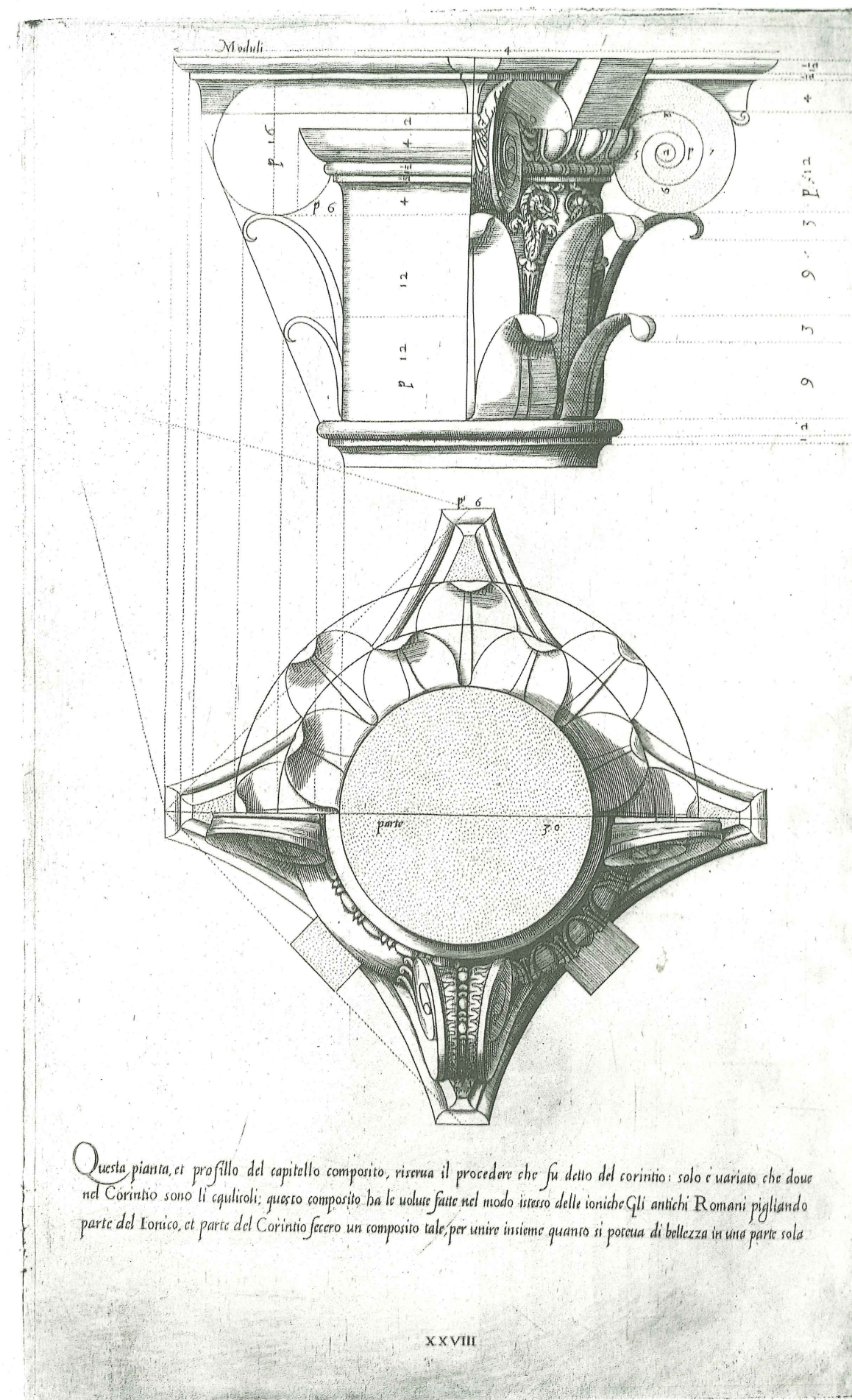


Questo piedestallo Composito serua le
proporzioni del Corintio; solo è uariato
de membri nella cimasa et bassamento
come si può conoscere. Et perche l'orna-
mento composito serua le medesime propor-
zioni del Corintio, non ho tenuto per ne-
cessario farne colonnati, ne archi proprij.
riportandomi à quelli Corintij: solo ho mes-
so la sua uarietà della base, et capitello,
et altri suoi ornamenti, come à suoi
luoghi si può uedere.

* As in plate 24, cimasa refers to the entire upper ornamented zone of the pedestal and not only the cyma.

Plate 28
Composite Order

This plan and section of the Composite capital are equivalent to those of the Corinthian, but instead of cavliculi it has volutes made the same way as in the Ionic order. The ancient Romans, taking part of the Ionic and part of the Corinthian, invented the Composite, which unites in one piece as much beauty as possible.

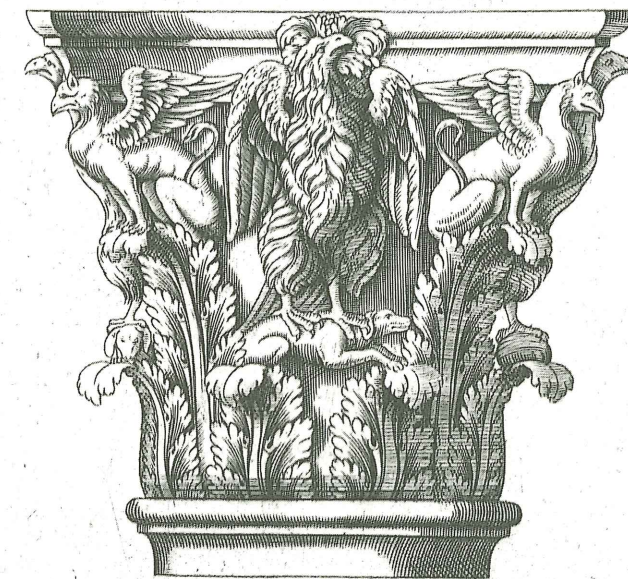
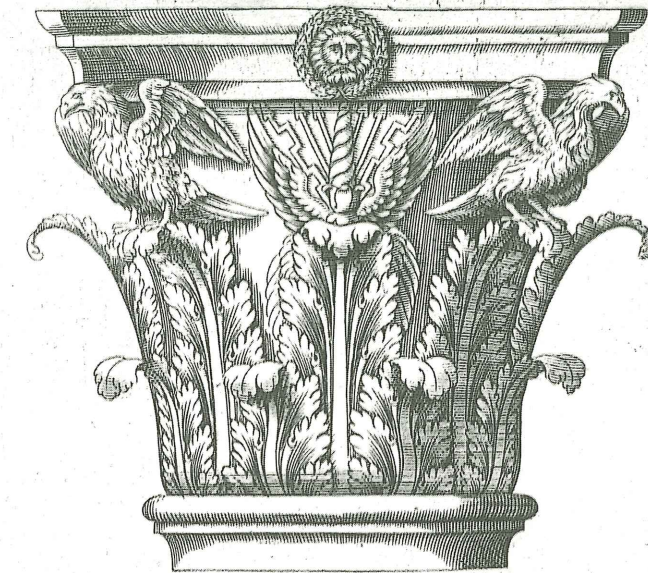


Questa pianta, et profilo del capitello composito, riserva il procedere che fu detto del corintio: solo è uariato che doue nel Corintio sono li cavlicoli; questo composito ha le volute fatte nel modo istesso delle ioniche. Gli antichi Romani pigliando parte del Ionico, et parte del Corintio fecero un composito tale, per unire insieme quanto si poteva di bellezza in una parte sola

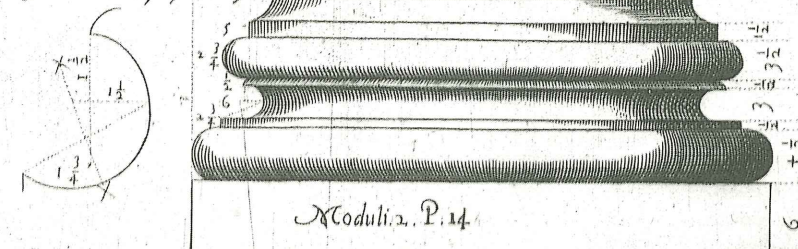
Plate 30
Composite Order

Among the ruins of Rome there exists an infinite variety of capitals that do not have a name of their own but can be described collectively as Composite. Since they were derived from the Corinthian and the Ionic, they too follow the proportions of the Composite order. In some of them there are animals in place of the cavliculi and horns of plenty in others. According to what was deemed appropriate, other things are also found, as can be seen from the one presented here, which has four eagles instead of the cavliculi, and in place of the flower is the face of Jupiter with thunderbolts below. It is easy to conclude that it came from a temple dedicated to Jupiter. The same can be said of the other capital, which has four griffons in the place of the cavliculi and four eagles in the center, each with a dog in its claws, and was thus rendered suitable to some other idol of theirs. Except for the animals, its proportions are similar to those of the Corinthian

In his Book Three, Chapter Three, Vitruvius called this base *atticurga*, since it was first invented and used by the Athenians. In our times it has been used at the bottom of the Doric, Ionic, Corinthian and Composite orders indiscriminately. It suits the Composite order best and can be tolerated in the Ionic order when its proper base is not used. But under columns belonging to other orders I would judge it rather inappropriate. I could state more reasons for this, but I do not want to discuss something used with so much license. Suffice it to say that its module is divided into 18 parts, as is the case with the Ionic and Corinthian orders.



Trovansi fra le anticaglie di Roma quasi infinite uarieta di capitelli, quali non hanno nomi proprii ma si possono tutti inneme co questo uocabolo generale nominare composti & anco seguono le misure principali delli altri composti derivati solamente dal Ionico & Corinthio. Ben e uero che in alcuni si uederano animali in luogo delli caulicoli & in altri cornucopi, in altre cose secondo che alor propositi occorreua come si puo giudicare per il presente qui disegnato e che hauendo quattro aquile in luogo delli caulicoli & in luogo delli fiori facie di Gioue con li fulmini sotto; si puo facilmente conoscere fosse in un tempio conseruato a Gioue. Cori si puo dire che quet'altro, il quale ha quattro griffoni in luogo de caulicoli, et quattro aquile nelli mezza con un cane nelle grife fosse appropriato a qualche altro loro Idolo. La sua proportione eccetto li animali e simile alli Corinthij.



Moduli. 2. P. 14

Questa base e da Vitruuio nominata atticurga nel terzo libro alterzo capitolo, come prima dalli Atheniesi trouata & posta in opera. Alli nostri tempi e in uso metterla in opera sotto il Corinthio, Composito, Ionico & Dorico indifferentemente, la qual pero piu si confa al Composito che ad alcuno altro, & anco si puo tollerare nel Ionico non si seruendo della sua propria. Sotto ad altri ordini poi io l'ariputerei sconueniente: affatto & in addurrei piu ragioni: ma non uoglio mettermi a dire sopra cosa passata in tanta licenza: basti con l'ordine passato mostrame il suo spartimento qual nasce dal modulo partito in parti come quello del Ionico & Corinthio.

Plate 31
Entasis

There are several ways to make the entasis and here I shall discuss the two regarded as the most successful. According to the first and best known method, one should first determine the height of the column, its thickness and the reduction in the top. The reduction starts above the lowest third of the column. At this level, one should draw a semicircle. The part of the circle outside of the vertical line that falls from the *sommo scapo** should be divided into as many identical parts as one wishes. The upper two-thirds of the column should be divided into an equal number of parts. The points of intersection of horizontal and vertical lines will determine the curve of the column, as can be seen in the drawing. This form of column can be used with the Tuscan and Doric orders.

The other method I have devised myself and, although it is much less known, it will be easily understood from the drawing. Once all parts have been defined,† one should draw an infinite horizontal line at the level of the lower third of the column, starting from point C and going through D.‡ One should then determine point B, which is on the vertical axis of the column; its distance from point A is equal to C-D. Point E is on the extension of the line A-B.§ From point E one should draw a number of lines that cut the central axis of the column and go towards the edge. The end of these lines¶ will be found by indicating the line length CD from the axis towards the edge, both above and below one-third of the column height.¶ This kind of swelling is to be used with the Ionic, Corinthian and Composite orders.

If one wanted to make columns straight but twisted, similar to those in the church of St. Peter in Rome, it would be necessary to start from the horizontal plan as shown in the drawing. The small circle in the middle determines how much the column is to twist. Once it has been divided into 8 parts and the 4 lines parallel to the central axis of the column have been drawn, the entire column is to be divided into 48 parts. Thus one should form the central spiral from which the thickness of the column has to be measured, line by line, as shown. Since the laying out must start in the center, one should be warned that points 1, 2, 3, 4 indicated in the plan should be used between the bottom of the column and the first crest. Further up one should follow the small circle except that, in order to determine the last half cycle of ascent, one should use the 4 points as at the bottom.¶

* Vignola used *somo scapo* to denote the smallest, top diameter of the column; unlike his use of *imo scapo*, this corresponds to the Vitruvian tradition. Cf. plate 7.

† I.e., the lower diameter, the upper diameter and the height of the column.

‡ I.e., it cuts the axis of the column in D.

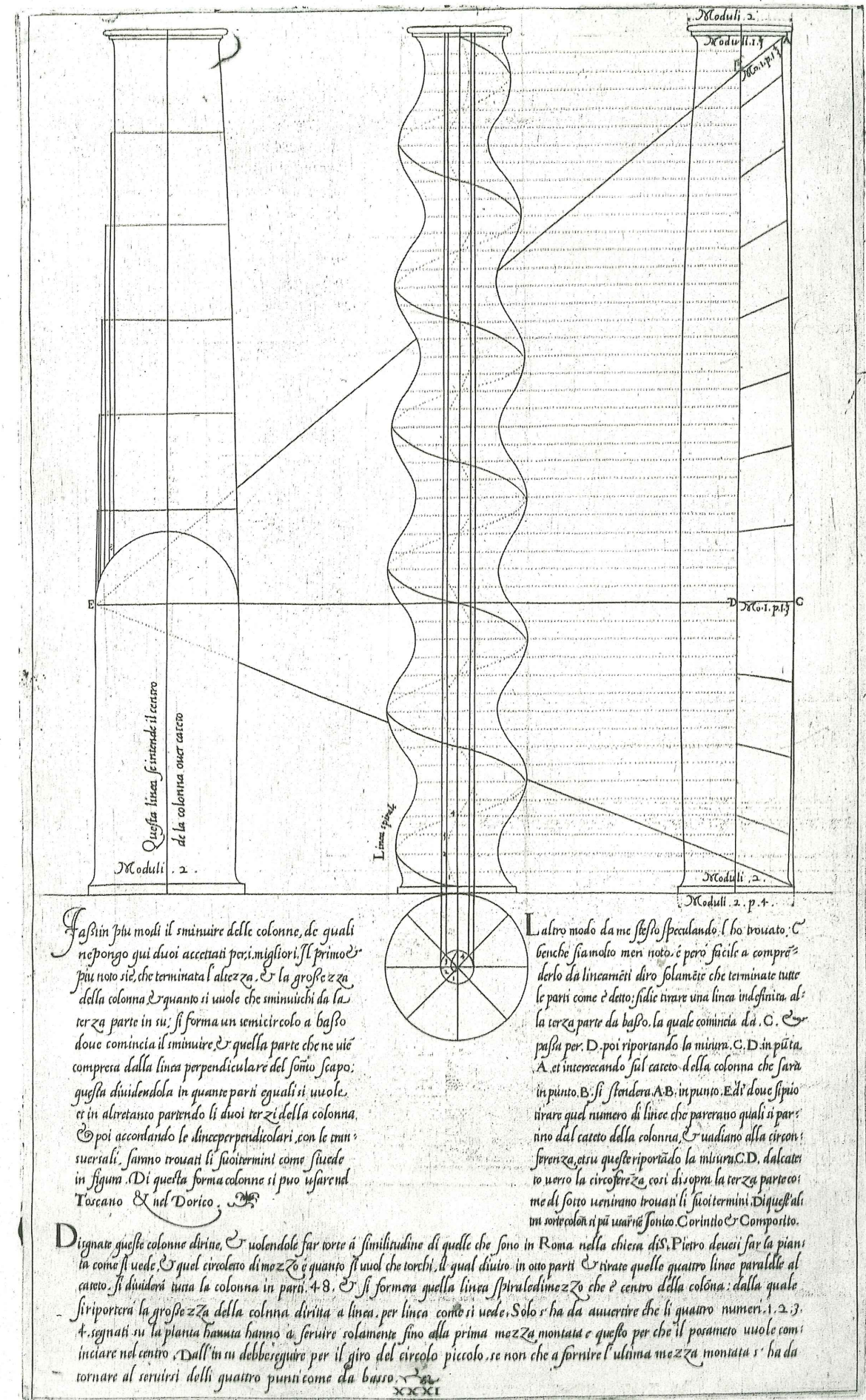
§ I.e., The intersection of the extensions of lines AB and CD is point E.

¶ I.e., the contour of the column

¶ I.e., one should draw a number of lines that radiate from E and intersect the central axis of the column. Then one should indicate, on each of them, the distance CD starting from the point of intersection with the central axis of the column. This will define the swelling of the column.

¶ Vignola's account here is cryptic, incomplete, and his drawing not as precise as it should be. The small circle and 48 horizontal lines are used in order to define the central, spiral, axis of the column. The form of the column is determined by marking, on each of the 48 horizontal lines, the radius of the column starting from each point where a horizontal line cuts the vertical spiral axis of the column.

Exceptionally, in the areas close to the top and bottom end of the column the central axis is not determined by using the small circle. The tangents of the column in the final points of the column have to be vertical, which means that at the bottom and the top of the column the central axis must go through the center of the small circle. Points 1, 2, 3, 4 are intended to provide this transition of the central axis from the circumference of the small circle to its center. Vignola does not explain how these points are constructed—he draws them on the intersection of the diameters of the small circle with a spiral, but the construction of this spiral is unclear. Additionally, his drawing is marred by graphical imprecision: in the plan, point 3 is more to the left than point 2, whereas in the elevation it is the other way around. Points 1, 2, 3, 4 can be easily determined by placing point 1 at the distance of $\frac{1}{4}$ of the radius of the small circle from the center, point 2 at the distance of $\frac{1}{2}$ of the radius, and point 3 at $\frac{3}{4}$ of the radius from the center. Point 4, as can be seen in the drawing, is already on the small circle.



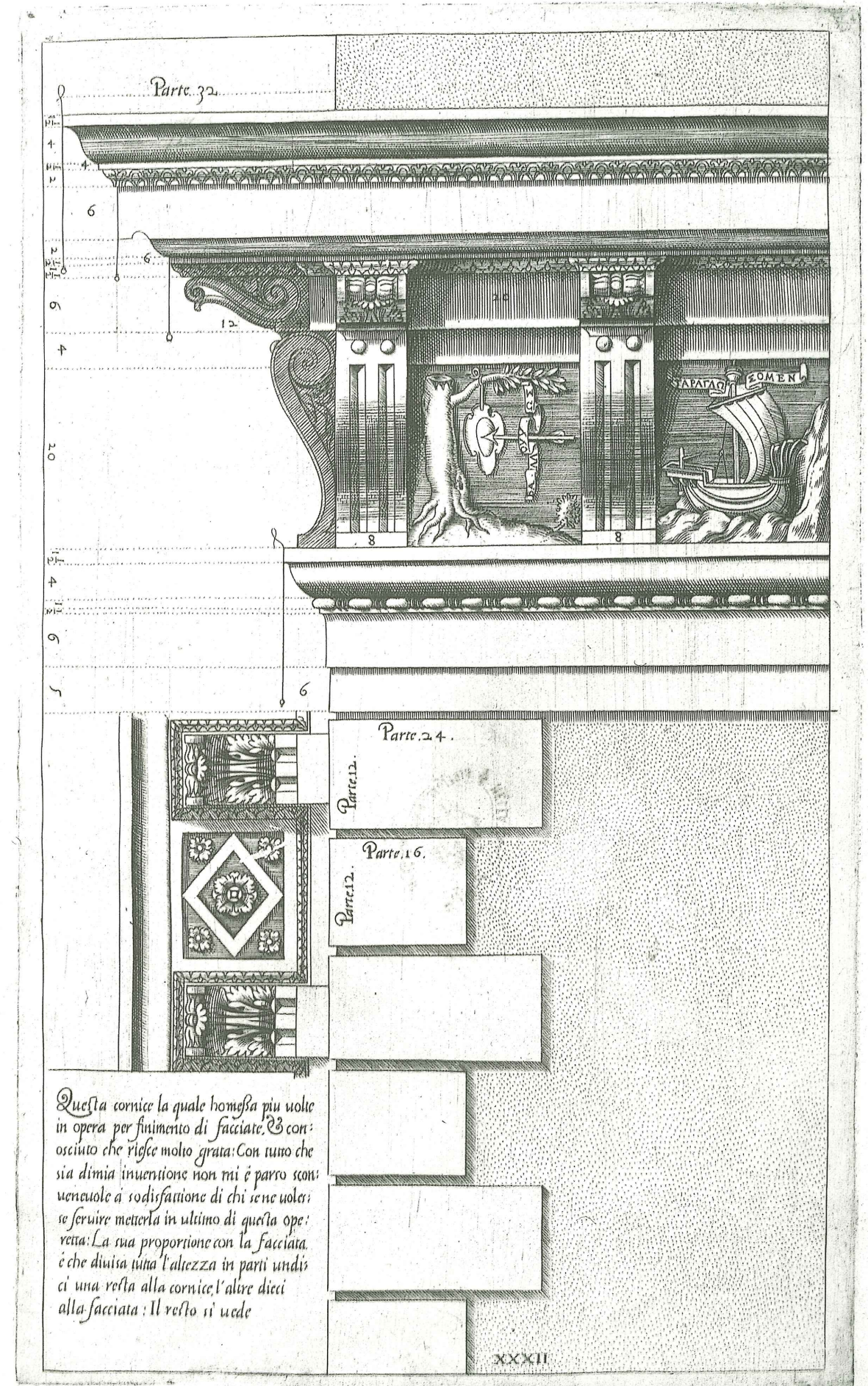
Ma in più modi il sminuire delle colonne, de quali ne porgo qui due accetate per i migliori. Il primo è più noto, che terminata l'altezza, & la grossezza della colonna, & quanto si vuole che sminuischi da la terza parte in su, si forma un semicircolo a basso doue comincia il sminuire, & quella parte che ne uic compresa dalla linea perpendicolare del somo scapo, questa diuidendola in quante parti eguali si vuole, et in altrettanto partendo li duei terzi della colonna, & poi accostando le linee perpendicolari, con le misure reali, sanno trouari li suoi termini come si uede in figura. Di questa forma colonne si puo usare nel Toscano & nel Dorico.

Altro modo da me stesso speculando l'ho trouato, & benchè sia molto men noto, è però facile a comprenderso da lineamenti diro, solamente che terminate tutte le parti come è detto, si tira una linea indistinta alla terza parte da basso, la quale comincia da C, & passa per D, poi riportando la misura C, D in p. A, & intersecando sul cateto della colonna che sarà in punto B, si stendera A, B, in punto E, & doue si puo tirare quel numero di linee che pareranno quali si parano dal cateto della colonna, & ualiamo alla circonferenza, et uero la circonferenza, cori di sopra la terza parte, come di sotto uenirano trouati li suoi termini. Di questi altri un colore si puo usare nel Ionico, Corintio & Composito.

Dignate queste colonne dirine, & uolendole far torce a similitudine di quelle che sono in Roma, nella chiesa di S. Pietro deuesi far la pianta come si uede, & quel circolato di mezzo è quanto si uol che torchi, il qual diuiso in otto parti & tirate quelle quattro linee parallelle al cateto, si diuiderà una la colonna in parti 48. & si formera quella linea spirale di mezzo che è centro della colonna: dalla quale si riportera la grossezza della colonna dirina a linea, per linea, come si uede. Solo s'ha da auuertire che li quattro numeri 1, 2, 3, 4, segnati su la pianta hanno a seruire solamente fino alla prima mezza montata & questo per che il posamento uole cominciare nel centro. Dall'in su debbere seguire per il giro del circolo piccolo, se non che a fornire l'ultima mezza montata s'ha da tornare al seruire delli quattro punti come da basso.

**Plate 32
Cornice**

I have used this cornice successfully in my work on the upper parts of facades. Although it is my invention, I do not find it inappropriate to place it at the end of this work for those who want to use it. The height of the facade should be divided into 11 parts, 1 of which should be assigned to the cornice and the remaining 10 to the facade. The rest can easily be seen.



Commentary

Vignola's Introduction Plate 2

Giacomo Barozzi da Vignola was born in Vignola in 1507; he was educated as a painter and in that profession commenced his career in Bologna.¹ Vignola's introduction to architecture was gradual, but already in 1541 he was appointed the architect of the church of San Petronio in Bologna by Pope Paul III. He took this position only in 1543, and during the period from 1541–1543 Vignola also worked at Fontainebleau. His work on San Petronio left little mark and his main work in Bologna was the later Banchi facade, which completed a side of Bologna's main piazza. In 1551 Vignola, together with Giorgio Vasari and Bartolomeo Ammannati, started working on the Villa Giulia for Pope Julius III. Probably at the same time he designed the little church of St. Andrea in Via Flaminia. Together with his late church of Sant'Anna dei Palafrenieri (1572–1573), the church of St. Andrea initiated the Baroque tradition of oval church plans. Towards the end of the 1550s Vignola started working on the Palazzo Farnese in Caprarola. This palazzo was started earlier as a fortress by Antonio da Sangallo and Baldassare Peruzzi, but Vignola reshaped the project into one of the most cheerful Renaissance palaces. Another project by Vignola for the Farnese family was the unfinished palazzo in Piacenza, also begun in the late 1550s. The Farneses were thus Vignola's most important patrons and there should be little wonder that he dedicated the *Regola* to Cardinal Alessandro Farnese. It was through Cardinal Farnese that he received his last major commission, the church of Il Gesù. This last work was completed by Giacomo della Porta after Vignola's death in 1573.

However, Vignola's reputation as an architect was overshadowed by his little treatise on the classical orders. With over 500 editions in 400 years, the *Regola delli cinque ordini* is by far the most frequently published architectural book in history. For generations of architects it has laid out *the proper way* to design the orders, and its great success can be measured by the imperceptibility of its influence: we are little aware of how strongly our understanding of the classical orders is shaped by the solutions formulated by its author. When Vignola published his *Canon*, it was one of many attempts to formulate a system of the classical orders. These attempts constituted the core sections of Renaissance architectural treatises starting with Alberti and Renaissance commentaries on Vitruvius, such as Cesare Cesariano's and Barbaro's, which carefully discussed Vitruvius' explanations of the classical orders.

Renaissance architects and theorists had two sources from which to recover the forgotten knowledge of composing the elements of the classical orders: Vitruvius' *Ten Books on Architecture* and Roman ruins. As regards terminology, however, only Vitruvius was of any use. Vignola's treatise came out during an interesting period—it was the first major discussion of the classical orders after Barbaro's and Palladio's commentary on Vitruvius of 1556. Because of their terminology and abundance of technicalities, Vitruvius' Books Three and Four (which contain the theory of the classical orders) were notoriously hard to comprehend for Renaissance readers. The publication of Barbaro's and Palladio's commentary was the turning point in the history of Vitruvian exegesis: it allowed Vitruvius' theory of the classical orders to be understood the way we understand it today. Modern scholars regard it as the first commentary to have achieved the full understanding of Vitruvius' text.² It is remarkable that Vignola used the ruins of Rome and not Vitruvius as his main authority and preferred to work with archaeological and not textual evidence. Recent studies have pointed out, on the basis of his terminology, that Vignola was not too well acquainted with Vitruvius' treatise in any case and we shall see that his proportional precepts differ significantly from those of Vitruvius.³

The impact of Vignola's treatise thus can be measured by the wide acceptance of the details that he advocated. He was probably the only Renaissance author to favor the use of the Ionic base, and

the fact that this base was widely used by Baroque architects may be seen as an aspect of his influence. Similarly, Vignola's version of the Corinthian capital became the standard Corinthian capital during the Baroque. When Gian Lorenzo Bernini chose to use Vignola's version of the Doric base in the colonnade of St. Peter's, he stepped out of a long tradition that regarded Donato Bramante's application of the Attic bases on the *Tempietto* as most appropriate for the Doric order.

The main intention of this commentary is to explain the contemporary context of Vignola's theory of the classical orders—not so much in order to explore the lines of influence (which would be a scholarly undertaking and of little value to practicing architects) but rather to clarify how much and in which points Vignola's position differed from those of other Renaissance theorists. This should help us to distinguish between those aspects of Vignola's doctrine that were his own and those that were shared by other Renaissance theorists. At the same time, it should offer a general survey of sixteenth-century theories of orders, facilitating the application of precepts for the use of orders formulated by Vignola's contemporaries as well.

Formalism is a particularly important aspect of Vignola's empirical approach to the formulation of the canon. Ever since Wittkower published his *Architectural Principles in the Age of Humanism* in 1949, researchers have emphasized the conceptual, often esoteric and mystical aspects of Renaissance architectural theories. This is partly due to the Modernist position that tries to explore "principles" instead of architectural shapes, leaving aside those segments of Renaissance treatises that deal with the shapes of the orders. It is true that treatises by Filarete or Alberti and commentaries on Vitruvius by Barbaro and Cesariano contain a significant quantity of material that could be viewed as a discussion of "principles"—i.e., systems of culture-based associations about the orders. Vignola's *Regola*, on the other hand, is little more than a dry canon of the orders. It deals with architecture and does not regard meanings or the cultural context as relevant. Vignola never mentions the harmony of the spheres, proportions of the human body, the universal diffusion of numbers, cosmology, symbolism or imitation. He never expresses the view that meanings associated with ornaments contribute to the beauty of buildings or add to the skill of the architect. A good example can be found in plate 30, where Vignola actually discusses the symbolism of two Roman capitals. The symbolism of these capitals is obviously pagan, but for Vignola this is not a reason to dismiss their shapes. The justification of his chosen solutions—both the combinations of elements and their sizes—is empirical and based on "common judgment." Having assumed that certain shapes were more likely than others to meet general approval, Vignola studied the solutions used by the ancient Romans in order to find pleasing combinations of sizes and elements. In his view, the classical orders are formal *ornaments* and their purpose is to make buildings more beautiful; to use the orders correctly, it is not necessary to account for the origins of the individual elements. The use of the orders is defined by the canon and there are no abstract "principles" in the background; it is all about putting together different shapes in a way that is approved by "common judgment."

The concept of symmetry, upon which Vignola based his modular system, originates with Vitruvius and, thus understood, was commonplace during the Renaissance. Symmetry implies a preference for ratios between whole numbers and precludes the use of incommensurable ratios such as $\sqrt{2}D/1$, $\sqrt{3}D/1$ or the Golden Section. From Vitruvius' *Ten Books* through Renaissance architectural treatises, of all the elements of the classical orders only the Corinthian abacus was attributed a size that created an incommensurable ratio. Vignola's reference to musical theories pertains to the fact that during the Renaissance only commensurable ratios were regarded as musically acceptable: in fact, incommensurable ratios were normally referred to as *radici surdi*. For Renaissance men, music was not limited to audible music; it also included the music of the heavenly spheres, the ratios present on the human body, and so forth—it was believed that these ratios were universally diffused and that the Universe was organized in accordance with them.⁴ What we call music today was then

only the audible aspect of the number-based organization of the world. This also meant that architects should imitate the works of the Divine Craftsman, who created the world, by using the same ratios that He had used. But when Vignola mentions musical theory, this does not mean that he derived the canon on the basis of such speculations. He did not decide to use commensurable ratios because of musical theory; rather after having studied fragments of Roman ruins, he discovered that:

those that seem more beautiful to common judgment and appear more graceful to our eyes have a correspondence and simple numerical proportion so that every smallest part can exactly measure all other elements. Having dwelt at greater length on the delight our senses find in this proportion, and the fact that what is displeasing falls outside it, as musicians wisely prove in their science, years ago I undertook to arrange the five orders of architecture mentioned above into a simple and easily applicable canon. (plate 2)

Both the decision to rely on commensurable ratios and Vignola's formulation of the canon are thus empirically derived on the basis of common judgment. Musical theory is there only to confirm Vignola's empirical observations.

The relation between any two sizes in the canon can be expressed as a ratio between two whole numbers—the subsequent success of Vignola's treatise was largely due to the ease with which this system could be applied. All Vignola's ratios are defined as parts of the same module and their sizes are easily legible from his illustrations; no other Renaissance presentation of the classical orders has the same clarity. The descriptions of the classical orders in the treatises of Serlio and Alberti or in Barbaro's and Cesariano's commentaries on Vitruvius are textual and extremely difficult to follow. Palladio's *Four Books* gives textual descriptions parallel with illustrations but the dimensions stated in the illustrations are not the same as those in the text, and neither the text nor the illustrations can compare to Vignola for clarity.

The use of the orders as described by Vignola is extremely convenient: the orders are applied to a building only after its main dimensions have been established. Depending on the choice of the order, the height of the building is to be divided into a number of units whose further division determines the size of every element.

The end of Vignola's introduction mentions an issue deeply rooted in Renaissance proportional debates: the problem of optical corrections. The idea that the human eye deceives us and that we need to adjust the proportions of buildings accordingly is mentioned a few times by Vitruvius, especially in his treatment of the Ionic entablature, whose ratios he defines depending on the position of the observer. Consistently applied, this approach would render Vignola's canon either meaningless or extremely complex. Barbaro, in his commentary on Vitruvius, favored the idea of optical corrections; Palladio, however, omitted the issue altogether and defined the ratios of the Ionic entablature in a way similar to Vignola's, regardless of the position of the observer.⁵ Vignola's argument is that corrections should be made where the eye cheats us, but that the canon should specify which proportions we want to be perceived. The same argument was repeated before the end of the sixteenth century by Giovan Paoplo Lomazzo.⁶

The background of the debate is very complex and strongly reflects the influence of Renaissance philosophy on the architectural theory of the period.⁷ From the Platonist point of view, buildings are reflections of a Higher Reality and the introduction of optical corrections means making them even less similar to their eternal prototypes. In the *Sophist*, Plato directly criticized the idea of optical corrections.⁸ In Renaissance architectural theory, a similar view was behind the dismissal of perspective as a method of architectural presentation precisely because it distorted proportions.

This view was clearly formulated in a letter written by Raphael's circle to Pope Leo X. That letter defined perspective as *apparenza*; since it distorts angles and proportions it is unsuitable for architectural presentation. Similarly, a number of scholars have warned about Palladio's tendency in his *Four Books on Architecture* to represent not the buildings as they were executed but their *ideas*, and to compose drawings in a way that the buildings could never have been perceived.⁹ Vignola's solution—later repeated by Lomazzo—combines both views. The eye deceives us but the canon enumerates the proper proportions. Since buildings are judged in the mind of the observer, it is important to adjust proportions so that the building can be properly appreciated.¹⁰

The Five Orders Plate 3

If Vignola's treatise is the most frequently published architectural book in history, the plate presenting the five orders is its most widely known illustration. It was not, however, the first attempt to represent the orders in a comparative drawing. Similar illustrations can be found before Vignola in Cesariano's commentary on Vitruvius and in Serlio.¹¹ Neither Barbaro nor Palladio bothered to include such drawings in their works, but a similar illustration appears later in Scamozzi.

In recent decades the authenticity of Vignola's illustration has been denied by Christof Thoenes, who pointed out that it did not appear in the first edition of the treatise but only in the 1572 edition and that the spelling used (*Thoscano, Corinthio*) is more similar to Serlio's than to Vignola's.¹² Contrary to this, Maria Walcher Casotti thinks that the 1572 edition was prepared by Vignola. The first edition (1562) contained, as its second plate, the ten-year publication privilege granted to Vignola by the Pope. According to Walcher Casotti, Vignola omitted the expired privilege in the second edition, turned what had been plate three (the dedication to Cardinal Farnese) into plate two and included the representation of the five orders as plate three.¹³

The extension of the term *ordine* as a general name for column types (Tuscan, Doric, Ionic, Corinthian, and Composite) largely is a consequence of the wide circulation of Vignola's treatise. Vitruvius himself uses the terms *mores* and *genera*. In sixteenth-century treatises, the word *genus* tends to be avoided and the term *mos* hardly appears at all. Cesariano uses a whole range of terms such as *generatione, opera, specie* and *genera*,¹⁴ and Barbaro uses *maniere*,¹⁵ *ragione*,¹⁶ or *opera*¹⁷ indiscriminately. Serlio is more methodical; he refers to the Tuscan mostly as *opera* and to other orders as *ordini*.¹⁸ Palladio and Vignola were the first to use the term *ordine* systematically and it was due to the distribution of their treatises that this term gained wide acceptance.

Our contemporary understanding of the term "order" is closer to the intention of Vignola than that of Palladio. It seems more plausible to think of the orders as ornaments applied to the building than to see in them a system that defines the building as a spatial object. Yet Palladio and his mentor Barbaro used the word *ordine* in this latter sense. Barbaro explained Vitruvius' term *ordo* by means of the following example: if the column radius is taken as the module when designing a temple with four columns in front, and if such a temple should have the central intercolumniation of 3 modules and the side intercolumniation of $2\frac{1}{4}$ modules wide, then the length of the entire elevation will be $11\frac{1}{2}$ modules. For Barbaro, *ordine* was the contribution of proportional relations to the totality of a building, whereas *proportion* was the ratio between individual parts.¹⁹ Palladio's further step, which Barbaro never made, was to identify the choice of the type of columns (i.e., Tuscan, Doric, Ionic, Corinthian, Composite) as decisive for the spatial organization of the building (*ordine* in Barbaro's sense). In Vignola's design process, however, the decision about the choice of the order only comes after the spatial and structural framework of the building have already been determined; it is purely formal and affects only the decoration of the building. Depending on the choice of the order, the height of the building is to be divided into a number of modules whose division then determines the size of every other element. Vignola explicitly says that the orders are ornaments, which is a clear manifestation of his formalism.

Intercolumniation
Plates 4-6, 10-11, 15-17, 21-23

Closely related to the concept of the orders is the problem of intercolumniation. Vignola described individual systems of intercolumniation for every order in its turn, but for the purposes of this survey it may be useful to review them all in one place, by means of tables, as will be done later with other elements of the orders. Vignola's ratios pertaining to intercolumniation are compared only to those of Scamozzi and Palladio, since a comparison with authors who wrote about the orders before Vignola would not yield much.

Vignola's system postulates three types of intercolumniation: pure intercolumniation without arches, intercolumniation with arches but without pedestals and intercolumniation with arches and pedestals. The principle of composition is always the same: in the first case, columns stand alone; in the second and third case they are engaged. Intercolumniation with arches and without pedestals is thoroughly discussed only by Vignola. Scamozzi's description is full of dimensional inconsistencies, while Palladio describes this type of intercolumniation only for the Doric order. He states the width of the opening as $5\frac{19}{30}D$ (where D is the lower column diameter), the height of the opening as $41D/4$ and the width of the wall between openings as $28D/15$.

Intercolumniation Without Arches

	Vignola	Palladio	Scamozzi
Tuscan	2.333D*	4D	3D
Doric	2.75D	2.25D	2.75D
Ionic	2.25D	2.25D	2.5D
Corinthian	2.333D	2D	2D
Composite	2.333D	1.5D	2.25D

* D = lower column diameter

Intercolumniation with Arches but Without Pedestals: Vignola

	Tuscan	Doric	Ionic	Corinthian	Composite
Opening width	3.25D*	3.5D	4.25D	4.5D	4.5D
Opening height	6.5D	7D	8.5D	9D	9D
Wall between openings	1.5D	1.5D	1.5D	1.5D	1.5D

Intercolumniation with Arches and Pedestals

	Vignola	Palladio	Scamozzi
Tuscan order			
opening width	4.375D	6.417D	4.333D
opening height	8.75D	7.667D	8.542D
wall between openings	2D	1.867D	2.333D
Doric order			
opening width	5D	5.633D	5.25D
opening height	10.0D	10.25D	9.933D
wall between openings	2.5D	1.867D	2.25D
Ionic order			
opening width	5.5D	5.408D	4.833D
opening height	11D	11D	10.25D
wall between openings	2D	1.883D	2.167D
Corinthian order			
opening width	6D	4.6D	5D
opening height	12.5D	11.167D	12.333D
wall between openings	2D	1.9D	2D
Composite order			
opening width	6D	4.85D	5.5D
opening height	12.5D	12.333D	11.75D
wall between openings	2D	2.4D	2.0833D

* D = lower column diameter

Tuscan Order Plates 4, 6-8.

Vignola's complaint that he did not find traces of the Tuscan order in the ruins of Rome was common among architectural writers during the Renaissance. Alberti already had mentioned that he never had found in ancient buildings a circular plinth of the type that, according to Vitruvius, the Etruscans used.²⁰ Palladio mentions that something similar to Vitruvius' Tuscan order is to be found in the arenas of Verona and Pola, but these similarities are proportional and not morphological. The descriptions of the Tuscan order supplied by Renaissance authors depended solely on Vitruvius' account.²¹ All of these authors except Serlio agree that the height of the Tuscan columns should be 7D. Serlio reports 7D as the column height prescribed by Vitruvius but remarks that this ratio is normally taken to be the height of the Doric column; the Tuscan order, since it is more robust, should have a column height of 6D.²²

Vignola's Tuscan base is not atypical for the Renaissance. Vitruvius mentions that the Tuscan base should have a plinth, a torus and an *apophysis* at the bottom. The interpretation of the term *apophysis* has remained to the present day one of the cruxes of Vitruvian exegesis; typically the standard Renaissance solution is a base consisting of a plinth, torus and fillet.²³ Palladio suggests the use of simple pedestals under the base one column diameter in height.²⁴ Serlio proposes square pedestals as high as the plinth is wide.²⁵

In Vitruvius' view, the Tuscan order should have a wooden entablature.²⁶ For Palladio this means that the span of the Tuscan entablature may be wider than that of any other system of intercolumniation, and he includes a drawing of the Tuscan order with a wooden beam and the span of 4D. But Serlio already had described the stone entablature appropriate for the Tuscan order.²⁷ He stated D/2 as the height of the architrave, which should include the taenia, D/12 thick. The thickness of the frieze and the cornice also should be D/2. The latter should contain the upper cyma (D/8), the corona (D/4) and the fascia (D/8) between the frieze and the corona.²⁸ Vignola is less summary. He assigns D/2 to the architrave (including D/12 for the taenia), 7D/12 to the frieze and 2D/3 to the cornice. Palladio also supplies a description of the stone entablature for the Tuscan order. Both Palladio and Vignola carefully state the sizes of the elements of the cornice, but the elements they prescribe differ in shape and order and have different morphologies, which is why the Tuscan entablature has not been compared in the tables. Palladio supplies no textual description and the sizes he states in his drawing can be seen in illustration 1. This illustration also presents Palladio's alternative version of the Tuscan capital and the Tuscan base. In another drawing Palladio supplies the standard version of a Tuscan capital; that version has an echinus and an abacus of D/6 each and a fillet of D/40 below the echinus.

The Tuscan Base

	Vitruvius	Barbaro	Serlio	Palladio text	Palladio illustration	Vignola
Height of the base	0.5D*	0.5D	0.5D	0.5D	0.5D	0.5D
Plinth	0.25D	0.25D	0.25D	0.25D	0.25D	0.25D
Torus and fillet		0.25D	0.25D	0.25D	0.25D	0.25D
Torus alone		0.187D	0.167D	0.187D	0.208D	0.208D
Fillet alone		0.062D	0.083D	0.062D	0.0417D	0.0417D
Width of plinth and torus		1.333D	1.414D	1.333D	1.333D	1.375D

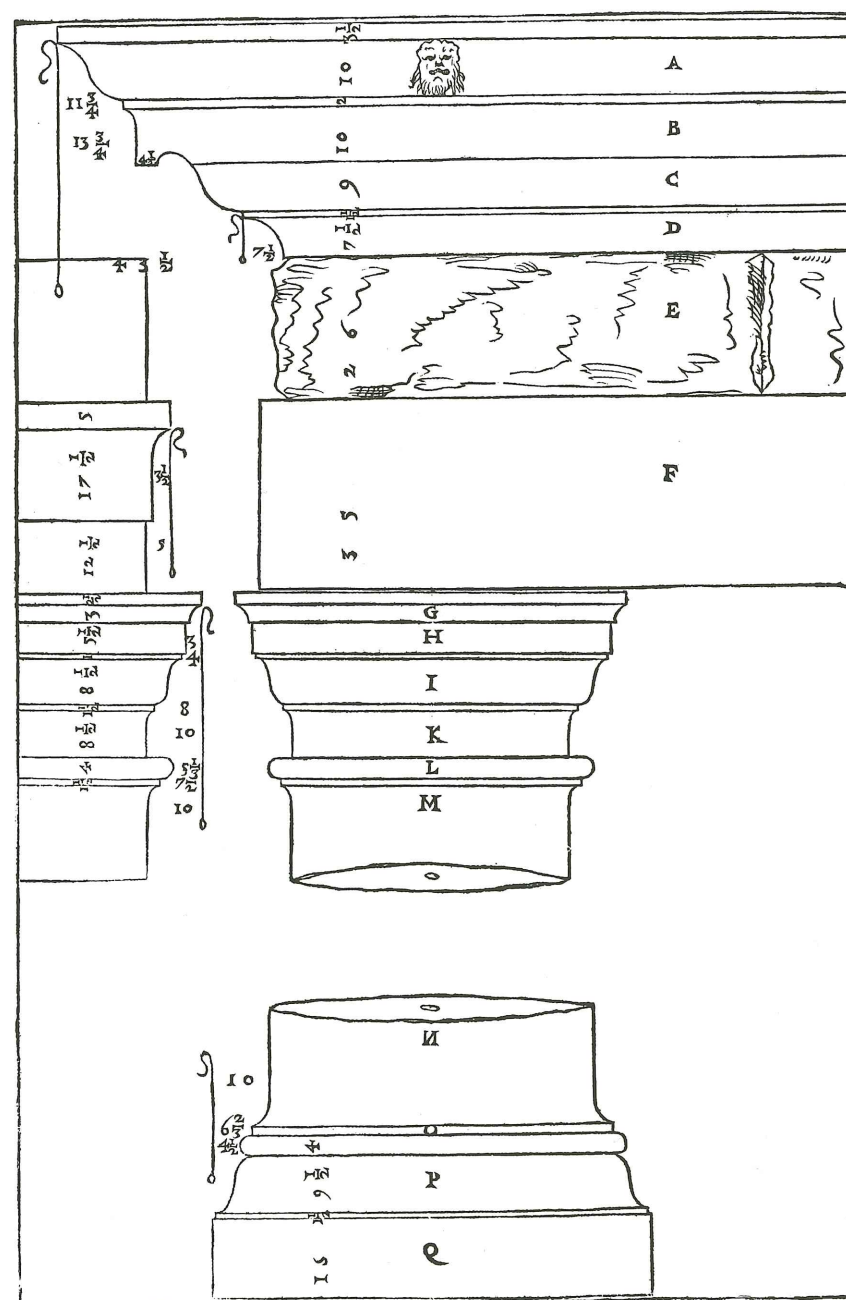
The Tuscan Capital

	Vitruvius	Barbaro	Serlio	Palladio text	Palladio illustration	Vignola
Height of capital	0.5D	0.5D	0.5D	0.5D	0.5D	0.5D
Abacus width	D	D	D	D	D	D
Abacus	0.167D	0.167D	0.167D	0.167D	0.167D	0.167D
Echinus	0.167D	0.167D	0.125D	0.167D	0.167D	0.125D
Subechinal fillet			0.042D	0.024D	0.025D	0.042D
Frieze of the capital	0.167D	0.167D	0.167D	0.143D	0.142D	0.167D
Bottom astragal			0.055D	0.047D	0.067D	0.042D
Bottom fillet			0.028D	0.024D	0.025D	0.021D

* D = lower column diameter

Illustration 1. The Tuscan entablature and the alternative versions of the Tuscan capital and base according to Palladio. The module is equal to the lower column diameter and divided into 60 minutes.

- | | | | |
|--------------|-----------------------------------|---------------------------------------|--------------------|
| A cyma recta | E frieze | I cyma recta of capital ³⁰ | N column |
| B corona | F architrave | K frieze of the capital | O fillet |
| C cyma recta | G top of the abacus ²⁹ | L astragal | P cyma of the base |
| D cavetto | H abacus of the capital | M column | Q the plinth |



the architrave into fascias can be traced back to Alberti, who divided the Doric architrave into three fascias (lower $D/6$, middle $D/4$ and upper $D/12$).⁴⁵

Vitruvius described the Doric order by expressing all dimensions in modules, which equal half of the lower column diameter.⁴⁶ His idea of placing a piece of the metope at the corner of the Doric frieze became the standard solution to the corner problem during the Renaissance. Vitruvius talks about semi-metopes in the corners; a simple calculation shows that his *semi* (which normally means "half" in Latin) should be one-third of the metope or less.

The Doric cornice is the least clearly defined part of the Doric entablature. In the table below, the ratios stipulated by Vignola in his plate 14 are compared with those of Palladio and Serlio. Vignola's version from plate 13, which has dentils and thus differs morphologically from Renaissance standards, was not considered for comparison. The drawing in Barbaro's commentary contains little information about the Doric entablature above the frieze. Barbaro compensates for this in the text by stating that the corona is placed between the two *cimase*; together they make $D/4$, each *cimasa* being $D/16$ and the corona $D/8$.⁴⁷ As he explains, *cimasa* is a combination of a cyma and a fillet; fillet should take one-third and cyma two-thirds of the thickness of the *cimasa*. In the text of the *Four Books*, Palladio gives $7D/12$ as the height of the entire cornice; the cavetto and ovolo are allotted $14D/66$, the corona $49D/132$, together with the cyma recta and cyma reversa.⁴⁸ In the drawing, however, the corona is $2D/15$, upper cymae $9D/80$ and $13D/240$, and the broken cyma under the cornice $D/5$ ⁴⁹ (see illustration 2). Vignola's cornice differs from Palladio's by its double cyma reversa and the fascia. Serlio's detail of the Doric cornice is very similar to Palladio's, but he omits the fillets in the middle and at the bottom.

The Doric Capital

	Vitruvius	Barbaro	Serlio	Palladio text	Palladio illustration	Vignola
Capital height	0.5D*	0.5D	0.5D	0.5D	0.5D	0.5D
Capital width	1.083D	1.2D	1.083D with reserves	1.2D		1.125D
Abacus with cyma and fillets	0.167D	0.167D	0.167D	0.167D	0.186D	0.167D
Abacus alone		0.1D	0.111D	0.1D	0.112D	0.104D
Cyma and fillets		0.067	0.055D	0.067D	0.074D	0.062D
Cyma alone		0.044D	0.037D	0.044D	0.044D	0.042D
Echinus and annulets	0.167D	0.167D	0.167D	0.167D	0.164D	0.167D
Echinus alone		0.111D	0.111D	0.111D	0.108D	0.104D
Annulets		0.055D	0.055D	0.055D	0.055D	0.062D
Bottom astragal		0.065D		0.055D	0.058D	0.042D
Bottom fillet		0.032D		0.028D	0.025D	0.021D
Frieze of the capital	0.167D	0.167D	0.167D	0.167D	0.15D	0.167D

* D = lower column diameter

The Doric Entablature

	Vitruvius	Barbaro	Serlio	Palladio text	Palladio illustration	Vignola
Architrave and taenia	0.5D*	0.5D	0.5D	0.5D	0.5D	0.5D
Taenia	0.071D	0.071D	0.071D	0.071D	0.075D	0.083D
Guttae with their fillet	0.083D	0.083D	0.083D	0.083D	0.083D	0.083D
Fillet under taenia		0.028D	0.021D	0.028D	0.022D	0.021D
Guttae alone		0.055D	0.062D	0.055D	0.061D	0.0625D
Height of triglyphs	0.75D	0.75D	0.75D	0.75D	0.75D	0.75D
Width of triglyphs	0.5D	0.5D	0.5D	0.5D	0.5D	0.5D
Thickness of triglyph capital	0.083D	0.083D	0.083D		0.083D	0.083D

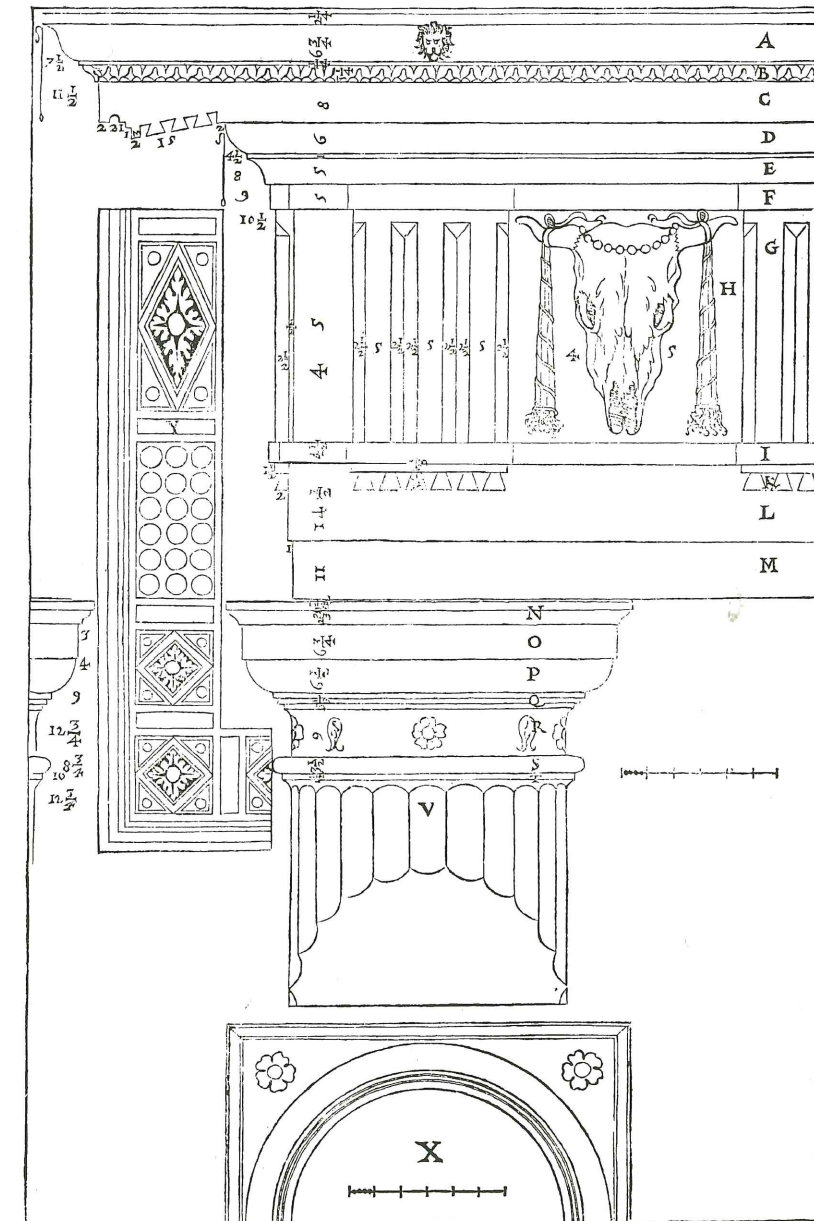
The Doric Cornice

	Palladio illustration	Serlio	Vignola (Plate 14)
Top fillet	0.037D*	0.031D	0.042D
Cyma recta	0.112D	0.25D	0.125D
Medium fillet	0.012D		0.021D
Cyma reversa	0.054D	Cyma above the corona 0.05D	0.042D
Corona	0.133D	0.15D	0.146D
Ovolo	0.1D	Cyma below the corona 0.05D	0.083D
Bottom fillet	0.016D		0.021D
Cavetto	0.083D		

* D = lower column diameter

Illustration 2: The Doric capital and entablature according to Palladio. The module equals half of the lower column diameter and is divided into 30 minutes.

- A cyma recta
- B cyma reversa
- C corona
- D ovolo
- E cavetto
- F capital of the triglyph
- G triglyph
- H metope
- I taenia
- K guttae
- L upper fascia
- M lower fascia
- N top of capital
- O abacus
- P echinus
- Q annulets
- R frieze of the capital
- S astragal
- T fillet
- V column
- X Plan of the capital and the module divided into 30 minutes



Ionic Order Plates 15—20

Vitruvius' description of the Ionic order left open a number of theoretical and archaeological problems and they were widely disputed during the Renaissance. Among them are the application of optical corrections to the Ionic entablature, the geometrical construction of the volute and the use of the Ionic base. Regarding the height of an Ionic column, Palladio states it as 9D; in Barbaro it is 8D; in Vitruvius it is 9D; in Serlio it is 8D, and in Vignola it is 9D. Palladio's textual description of the Ionic order tends to follow Barbaro's commentary on Vitruvius, but his drawings differ significantly.

The Ionic base was hardly popular during the Renaissance; however, Vignola used it in the courtyard of the villa in Caprarola, described it in the *Regola* and largely contributed to its rehabilitation. For the majority of Renaissance authors it was a less favored solution. Serlio mentions that the Ionic base as described by Vitruvius was found unsatisfactory by most people.⁵⁰ Cataneo says that he strongly disliked its "monstrous and deformed" torus and could not imagine that anyone intelligent would like it, concluding that it should not be used.⁵¹ Alberti's version of the Ionic base has a lower torus as well—it is the kind of base that can be seen on the Pantheon and which Palladio calls *composta*.⁵² Serlio describes a corrected Ionic base that has the same shape but somewhat different proportions: the plinth is identical but the torus is D/9. With one exception, Palladio systematically drew the Attic base at the bottom of Ionic columns in his *Four Books*, openly admitting that he preferred such bases.⁵³ Even archaeological evidence worked against the Ionic base: Guillaume Philandrier, for instance, states that he never had seen an Ionic base among the Roman remains.⁵⁴ Vignola's use of the Ionic base (as well as his dismissal of the Attic base, which will be discussed later) must have seemed heretical to his contemporaries.

The Ionic capital is one of the hardest elements to compare. The table supplies a general comparison of the dimensions of elements, in so far as the authors defined them in their texts. The only really workable drawings are those by Palladio and Vignola. Vitruvius' description of the construction of the Ionic volute does not yield satisfactory results. The same is true of many early Renaissance solutions, including Alberti's and Serlio's. It was probably the Venetian painter Giuseppe Porta, known as Salviati, who discovered the first of the two methods described by Vignola; later this became the standard solution to the problem of drawing the Ionic volute. Salviati's authorship of the method was disputed and caused bitter confrontations during the 1540s and 1550s.⁵⁵ Salviati wrote a book about the construction of the Ionic volute and dedicated it to Barbaro, but in his commentary on Vitruvius, Barbaro was hesitant to give Salviati credit for the discovery. In the first edition of his commentary on Vitruvius, Barbaro remarks that he knows of at least ten persons who claimed the discovery of the same method.⁵⁶ Palladio, who seems to have been among the claimants, presented in his *Four Books* the first of the two methods described by Vignola as the correct one (illustration 3). Other Renaissance methods for the construction of the Ionic volute, though numerous, are of historical importance only.

The philosophical aspects of the debate about optical corrections and their application to the Doric entablature need not interest us here; they have been outlined in the comments on Vignola's introduction. According to Vitruvius (and Alberti, Serlio and Barbaro, who follow this approach), there is no fixed ratio for the height of the Ionic architrave, but there is a whole set of ratios that depends on the height of the column (i.e., on the position of the observer and perceptual conditions). All of these authors follow Vitruvius and further deduce all other dimensions of the entablature from the height of the architrave A; dissenting, Vignola and Palladio supply their own systems of dimensions, which can be expressed as the ratios of the lower column diameter. Consequently Vignola's and Palladio's ratios do not depend on perceptual conditions. Since Barbaro and Serlio

repeat what Vitruvius says about the Ionic entablature, there is no need to include their ratios in the tables. (In the table, A stands for the thickness of the architrave, H for the height of the column and D for the lower column diameter.) Palladio's textual description of the Ionic entablature corresponds morphologically to his drawing, but the ratios in the text and in the drawing are different. Additional problems follow from the way Palladio defines the dimensions of the Ionic entablature in his text: he states that the height of the column together with the capital and the base should be 9D (i.e., the column alone makes 8D) and that the height of the entablature should be one-fifth of the height of the column. He deduces all other ratios by dividing the thickness of the entablature. It remains unclear whether one should work with one-fifth of the column height with base and capital included or not. The table lists the ratios according to both options.

Vignola's use of dentils in the Ionic entablature belongs fully to the Vitruvian tradition: Vitruvius advocated this solution and it was followed by Serlio and Barbaro.⁵⁷ Vitruvius writes that it is wrong to place mutules over dentils since the former represent primary and the latter secondary rafters.⁵⁸ In his commentary Barbaro remarks that the practice had defeated this way of reasoning and that such a combination looked good although it did not make sense.⁵⁹ According to Vitruvius, the dentils should be 4A/14 high, half as wide as they are high with metopes between them being one-third the width of a dentil. Dentils should project as much as they are high. Vignola's dentils are D/4 high and project for D/6. Palladio's use of modillions instead of dentils in his *Four Books* was a non-standard approach during the Renaissance.⁶⁰ (See illustration 4.)

The Ionic Base

	Vitruvius	Barbaro	Serlio	Palladio text	Vignola
Height of the base	0.5D*	0.5D	0.5D	0.5D	0.5D
Width of the base (plinth)	1.375D	1.375D		1.75D	1.389D
Thickness of the plinth	0.167D	0.167D	0.167D	0.167D	0.167D
Thickness of the torus	0.143D	0.143D	0.111D	0.142D	0.139
Each trochilus with its astragals and fillets	0.095D	0.095D	0.111D	0.095D	0.097D
Astragals	0.009D	0.009D	0.018D	0.009D	0.028D
Thickness of the fillet above torus		0.047D		0.048D	0.042D

* D = lower column diameter

The Ionic Capital

	Vitruvius	Barbaro	Serlio	Palladio text	Palladio illustration	Vignola
Abacus width	1.055D*	1.055D	1.055D	1.055D	1.055D	1.111
Capital height	0.528D	0.528D	0.333D	0.527D		0.528D
Abacus thickness with its top	0.083D	0.083D	0.083D	0.083D	0.085D	0.083D
Echinus thickness		0.125D			0.125D	0.139D
Horizontal coordinate of eye center†	0.083D	0.066D	0.083D	0.055D		0.055D
Vertical coordinate of eye center†	0.25D	0.25D	0.25D	0.25D	0.314D	0.305D
Eye diameter	0.055D	0.055D	0.055D	0.055D		0.055D
Volute channel		0.083D				0.083D
Bottom astragal		0.042D			0.044D	0.055D

* D = lower column diameter

† The horizontal coordinate is the distance from the vertical side edge of the abacus; the vertical coordinate is the distance from the bottom of the abacus.

The Ionic Entablature

	Vitruvius	Vignola	Palladio text H = 8D	Palladio text H = 9D	Palladio illustration
Architrave	12-15ft. = 0.5D* 15-29ft. = 0.07692H* 20-25ft. = 0.08H 25-30ft. = 0.08333H	0.625D	0.533D	0.6D	0.608D
Frieze	3A*/4; with figures, 5A/4	0.75D	0.4D	0.45D	0.45D
Cornice	0.071A	0.868D	0.667D	0.75D	0.762D
Top of the architrave	0.143A	0.083D	0.107D	0.12D	0.124D
Projection of the top of the architrave	0.143A	0.139D			0.083D
Lower fascia	0.214A	0.125D	0.107D with astragal	0.12D with astragal	Fascia 0.108D astragal 0.029D total 0.137D
Middle fascia	0.286A	0.167D	0.142D with astragal	0.16D with astragal	Fascia 0.139D astragal 0.033D total 0.172D
Upper fascia	0.357A	0.208D	0.178D with astragal		0.175D
Top of the frieze	0.107A or 0.178A	0.111D			

* A = thickness of the architrave; D = lower column diameter; H = height of the column

Illustration 3: Palladio's Ionic base and the method of construction of the Ionic volute. The module is equal to the lower column diameter and divided into 60 minutes.

- | | | | |
|-------------------------|-----------|-------------------|----------------------------|
| A abacus | E fillet | L fillet | P lower trochilus |
| B channel of the volute | F column | M torus | Q plinth |
| C echinus | G cathete | N upper trochilus | R projection of the plinth |
| D astragal | K column | O astragals | S the eye of the volute |

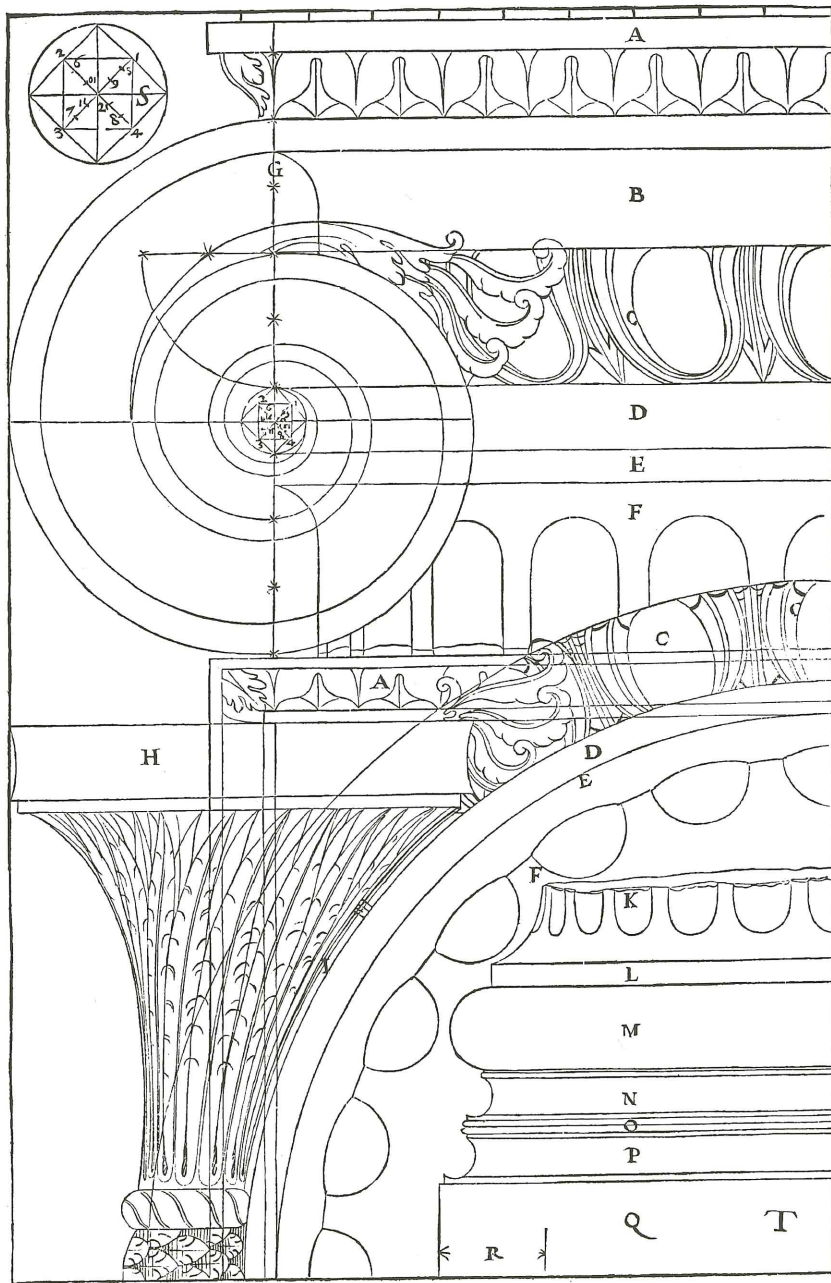
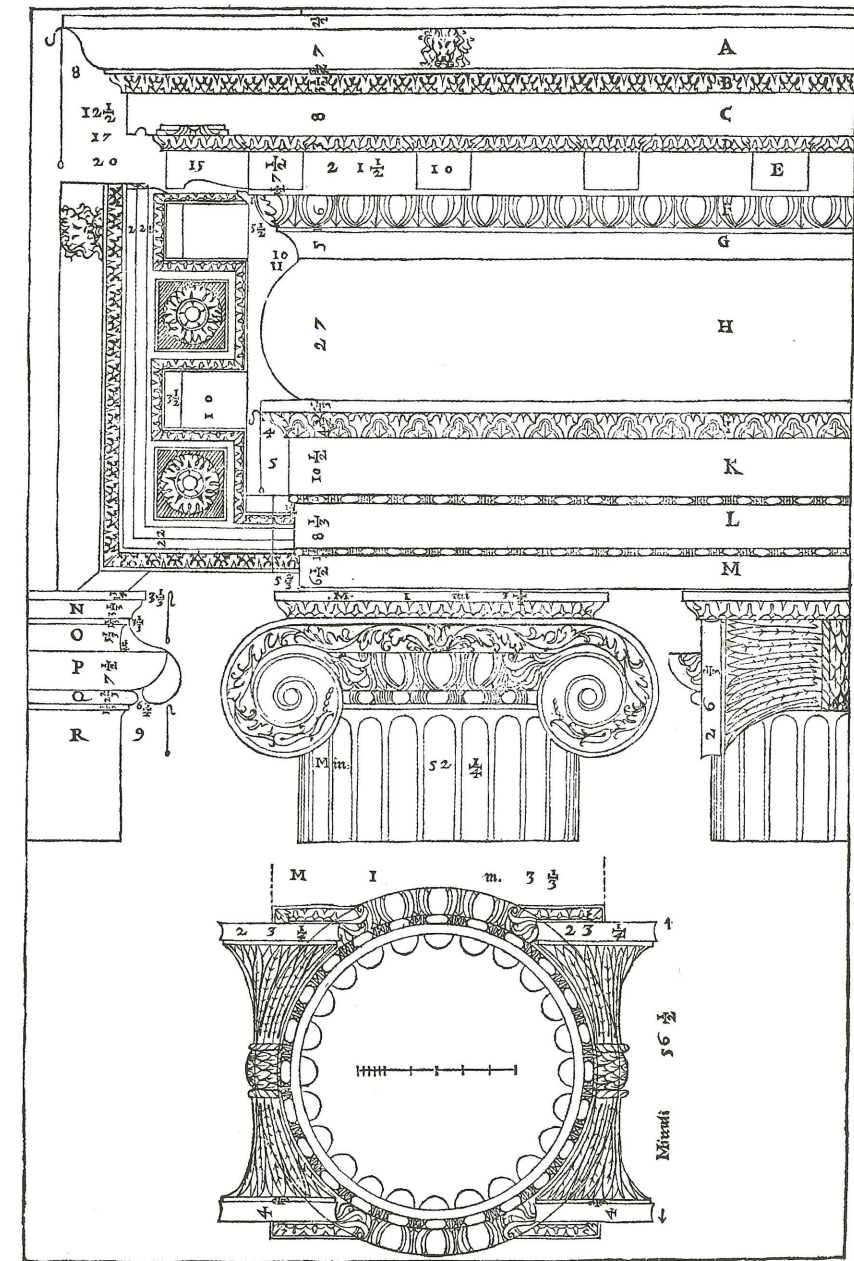


Illustration 4: Palladio's Ionic capital and entablature. The module is equal to the lower column diameter and divided into 60 minutes.

- | | | | |
|-----------------------------|--------------|--|-----------|
| A cyma recta | E modillions | I cyma and fillet above the architrave | N abacus |
| B cyma reversa | F ovolo | K upper fascia | O volute |
| C corona | G cavetto | L middle fascia | P echinus |
| D cyma above the modillions | H frieze | M lower fascia | R column |



Corinthian and Composite Orders Plates 21—30

It makes sense to treat the Corinthian and Composite orders together, partly because of their similarity and partly because Vitruvius does not discuss the Composite order at all and his Renaissance successors left poor accounts of it. Palladio, for instance, mainly enumerates the few differences between the two orders. In Barbaro and Vitruvius the account of the Corinthian order is limited to the treatment of capitals and a few words about entablatures. In fact, Vignola's is by far the most complete Renaissance account of these two orders. According to Palladio the column height should be $9\frac{1}{2}D$. Vignola's column height is $10D$, including the base and the capital (plate 21). The base should be of the kind that Palladio calls *composta*, with two toruses and two trochiluses—like the bases on the Pantheon. Serlio states $9D$ as the height of the Corinthian column, including the capital and the base, and also proposed the use of a base like that on the Pantheon.⁶¹

Palladio's and Vignola's drawings of the Corinthian capital and the entablature are almost identical. Palladio essentially reproduces Vignola's version of the Corinthian capital and entablature, introducing only very minor changes. When describing Roman temples in Book Four of his *Four Books*, Palladio draws this kind of Corinthian capital even where it does not correspond to archaeological evidence. The height of the Corinthian capital as stated by Vitruvius, Serlio and Alberti includes the abacus; Barbaro, however, recommends adding the thickness of the abacus to this dimension.⁶² Palladio also treats the abacus as an added element.⁶³ The width of the abacus is the only incommensurable size used in the theory of the classical orders: most of the authors prefer $\sqrt{2}D/1$. Palladio's and Vignola's geometrical construction of the abacus can be seen in illustration 5. Recent research has pointed out that they both were trying to reconstruct the method by which the abacuses of the portal of the Pantheon were designed.⁶⁴ Alberti states $10/7=1.428\dots$ as the width of the abacus—an approximation for $\sqrt{2}$.⁶⁵

Vitruvius describes the Corinthian entablature as a combination of the Ionic and the Doric; according to Barbaro, the Corinthian entablature should be the same size and morphology as the Ionic.⁶⁶ Serlio agrees that the Ionic entablature should be used with the Corinthian order, but he also proposes his version of the Corinthian entablature: its height is $9D/4$; the architrave and the frieze are $27D/40$, and the cornice is $9D/10$.⁶⁷ Palladio states that the difference between the Ionic and the Corinthian entablatures is in the cornice. The Corinthian entablature he presents in his *Four Books* seems to have been derived from Vignola.⁶⁸ Vignola says that the cornice of his entablature was taken from the Pantheon and "the three columns on the Roman Forum." Indeed the lower part of Vignola's cornice follows the one on the Pantheon, but the entablature on the Pantheon does not have dentils. "The three columns on the Roman Forum" Vignola mentions seem to pertain not to the temples of Castor and Polux or Vespasian and Titus but to the temple of Venus Genetrix on the Forum of Caesar.

While the morphologies of the Corinthian entablature suggested by Palladio and Vignola are almost identical, the sizes of the elements are different, most notably the thickness of the frieze, which is much thinner in Palladio. The table below compares the sizes specified by Vignola and Palladio for the elements of the Corinthian entablature.

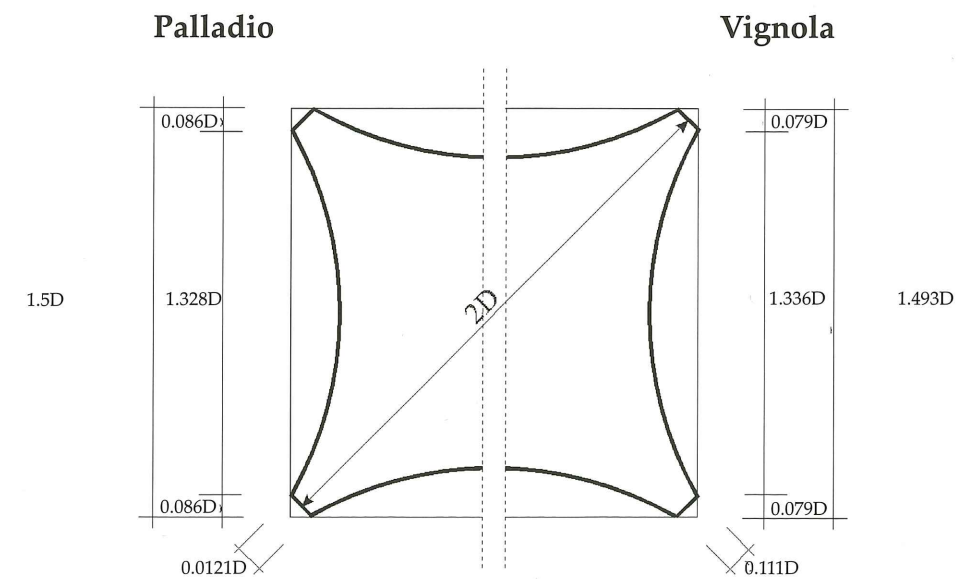
Barbaro and Vitruvius don't discuss the Composite order. Palladio says that its columns are $10D$, and the pedestal $10D/3$.⁶⁹ In his view, the base should be Attic or a combination of Attic and Ionic (i.e., an Attic base with a double trochilus, as on the Pantheon).⁷⁰ The upper third of the capital corresponds to the volutes of the Ionic order. Vignola's Composite capital (plate 28) has two layers of leaves (not three, like his version of the Corinthian capital); the architrave (plate 29) in this case has two fascias (again not three, as in the Corinthian). Composite entablatures supplied by Vignola and Palladio are morphologically different, so that any comparison would make little sense.

The Corinthian Capital

	Vitruvius	Palladio	Vignola
Capital height	D*	D	1.167D
Abacus	0.141D	See illustration 5	See illustration 5
Abacus Thickness	0.143D	0.167D	0.167D
Lower leaf of the capital	0.286D	0.333D	0.333D
Central foglia	0.286D	0.333D	0.333D
Stalks	0.286D	0.167D	0.222D (visible segment)

* D = lower column diameter

Illustration 5: Corinthian abacus according to Vignola and Palladio. Both Vignola and Palladio assume that the diagonal distance between small corner segments is $2D$. Vignola simply states the length of small segments as $D/9$; Palladio determines it geometrically by assuming that the abacus has been inscribed into a square whose side is $1.5D$. For the geometrical construction of the curve, see Vignola's plate 25.



Layers listed downwards	Vignola	Palladio
Fillet	0.028D*	0.037D
Cyma recta	0.139D	0.105D
Fillet	0.014D	0.011D
Cyma reversa	0.042D	0.05D
Fascia	0.139D	0.122D
Fillet	n/a	0.011D
Cyma reversa	0.042D	0.039D
Modillions	0.181D	0.125D
Ovolo (egg-and-dart)	0.111D	0.075D
Astragal	0.028D	n/a
Fillet	0.0139D	0.017D
Dentils	0.167D	0.092D
Fillet below dentils	0.014D	0.008D
Cyma reversa	0.084D	0.075D
Astragal	0.028D	n/a
Fillet	0.014D	n/a
Frieze	0.75D	0.475D
Fillet	0.028D	0.046D
Cyma reversa	0.111D	0.083D
Astragal	0.028D	0.033D
Upper fascia	0.194D	0.175D
Vignola: cyma reversa Palladio: astragal	0.055D	0.029D
Middle fascia	0.167D	0.137D
Astragal	0.028D	0.029D
Lower fascia	0.139D	0.104D

* D = lower column diameter

**Attic Base
Plate 30**

Vignola's dismissal of the Attic base is atypical for the Renaissance, very much like his adoption of the Ionic base. Renaissance treatises usually discussed the Attic base in the context of the Doric order. Palladio systematically includes the Attic base in all his drawings of the Ionic, Corinthian and Composite columns because it could be seen in many buildings and—as he said—he liked it better.⁷¹ But the Attic base he uses together with these orders in his drawings has an astragal between the upper torus and the fillet. The thickness of the astragal is $D/48$ in combination with the Ionic and Corinthian and $D/20$ in combination with the Composite order. Another specific aspect of Palladio's use of the Attic base is that the plinth should have the cavetto on its edge when it is used with a pedestal (see illustration 6). This does not occur if the base is used without the pedestal. Barbaro's version of the Attic base is omitted from the table because of a printing error that made his text unreliable at this point.

The dimensions of the trochilus and its adjacent fillets are not given by Vitruvius. Alberti and Serlio suggest dividing the trochilus-with-fillets segment into 7 parts, assigning 1 part to each fillet and 5 parts to the trochilus.⁷² Both Barbaro and Palladio divide the total thickness of the trochilus with fillets into 6 parts and assign 1 part to each fillet. Palladio's ratios in the drawing partly follow Vitruvius (e.g., the height of the plinth), but the thickness of the trochilus-with-fillets segment given in the drawing is $43D/360$, and not $D/8$.⁷³

The Attic Base

	Vitruvius	Serlio	Palladio text	Palladio illustration	Vignola
Thickness of the base	0.5D*	0.5D	0.5D	0.476D	
Width of the base (plinth)	1.5D	1.5D	1.333D	1.333D	1.389D
Thickness of plinth	0.167D	0.167D	0.167D	0.167D	0.167D
Thickness of the part above plinth	0.333D	0.333D	0.333D	0.319D	
Upper torus	0.083D	0.083D	0.083D	0.075	0.097D
Lower torus	0.125D	0.125D	0.125D	0.125D	0.125D
Trochilus with its fillets	0.125D	0.125D	0.125D	0.119D	0.111D
Each individual fillet		0.018D	0.021D	0.021D	0.014D
Trochilus alone		0.089D	0.083D	0.078D	0.083D

* D = lower column diameter

Entasis
Plate 31

Vitruvius' drawing, which explains the construction of the entasis, has not been preserved.⁷⁴ Vignola's descriptions of the construction of the entasis are the most comprehensive accounts of this problem supplied in a Renaissance treatise. In his commentary, Barbaro expresses the view that refinements such as the swelling of the column are much more subject to the judgment and estimation of individual architects than can be formulated in a fixed rule.⁷⁵

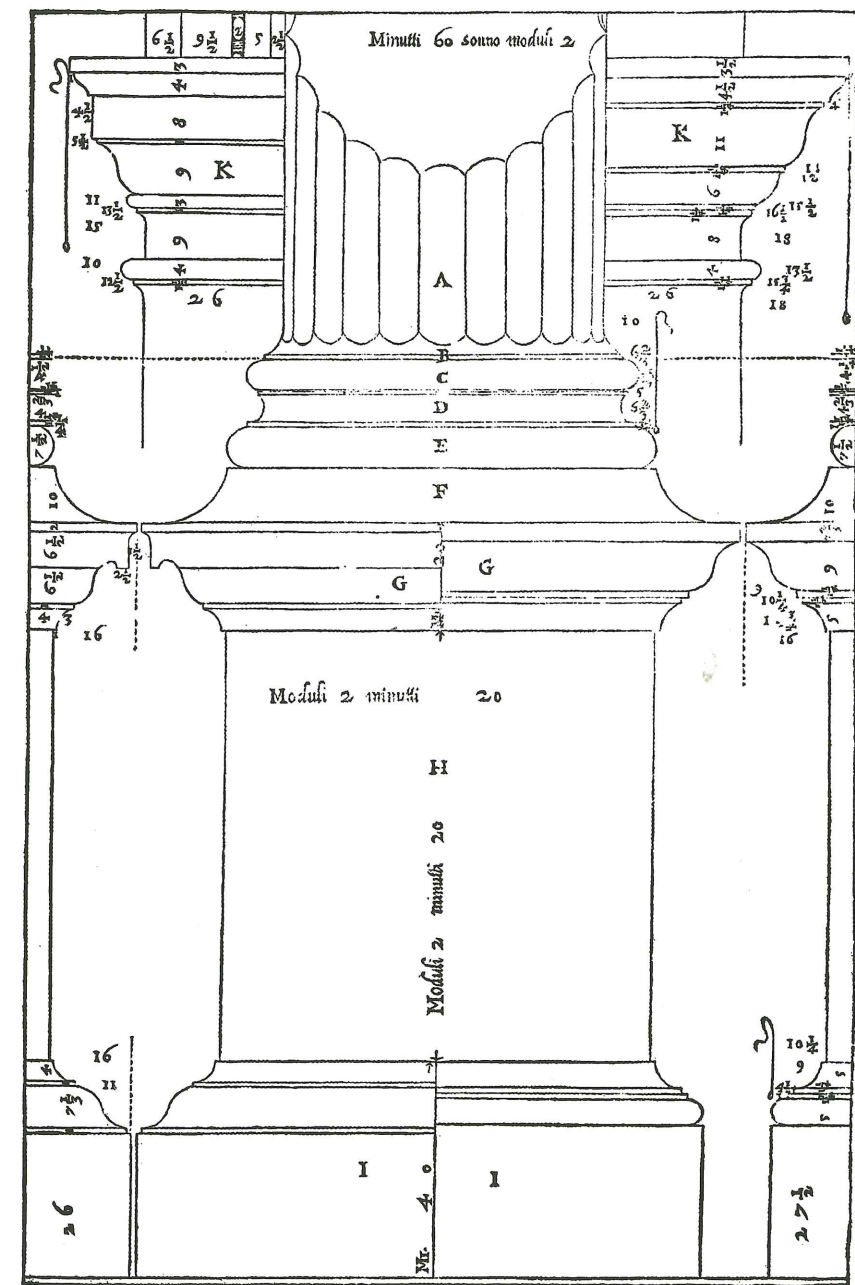
Vitruvius gives us a rule about the reduction of the column at the top and Palladio repeats it in his treatise. Depending on the height of the column, the upper diameter should be as follows:⁷⁶

Column height	
less than 15 ft.	10D/13
15ft. - 20 ft.	6D/7
20ft. - 30ft.	7D/8
30ft. - 40ft.	12D/15

Vignola's rule for the diminution of the top of the column is different and depends on the order. According to Vignola, the upper diameter of the column should be 19D/24 for the Tuscan order, 20D/24 for the Doric and 5D/6 for the Ionic, Corinthian and Composite orders.

Illustration 6: Palladio's version of the Attic base used with the Doric order. The module equals half of the lower column diameter and is divided into 30 minutes.

- | | | |
|---------------|------------------------|------------------------|
| A column | E lower torus | H dado |
| B fillet | F plinth | I base of the pedestal |
| C upper torus | G cyma of the pedestal | K imposts of arches |
| D trochilus | | |



Endnotes to the Commentary

- ¹ For Vignola's biography see Peter Murray, *Renaissance Architecture*, (Milan 1987), 112-117 and Wolfgang Lotz, *Architecture in Italy 1500-1600*, (New Haven and London, 1995). The latter book has been revised by Deborah Howard and has an extensive and up-to-date bibliography on Vignola.
- ² Cf. Manfredo Tafuri, "Il norma e il programma: il 'Vitruvio' di Daniele Barbaro," in M.P. Vitruvio, *I dieci libri di M.P. Vitruvio tradotti e commentati da Daniele Barbaro* (Milan 1987) xiv.
- ³ Christof Thoenes, "Vignolas Regola delli cinque ordini," *Römisches Jahrbuch für Kunstgeschichte* (1983), 345-376.
- ⁴ The best description of the impact of this set of beliefs on architecture is in Rudolf Wittkower, *Architectural Principles in the Age of Humanism* (London 1949). See also Eugenio Battisti, "Un tentativo di analisi strutturale del Palladio tramite le teorie musicali del Cinquecento e l'impiego di figure rettoriche," *Bollettino del Centro Internazionale di Storia dell'Architettura*, 15 (1973), 211-232; Deborah Howard and Malcolm Longair, "Harmonic Proportion and Palladio's *Quattro Libri*," *Journal of the Society of Architectural Historians*, 41 (1982), 116-143; Diego Feinstein, *Der Harmonie-begriff in der Kunstliteratur und Musiktheorie der italienischen Renaissance*, Ph.D. dis., (Freiburg 1977); Paul von Neredi-Reiner, "Musikalische Proportionen, Zahlensymbolik, und Zahlenästhetik im architektonischen Werk L.B. Albertis," *Jahrbuch des Kunsthistorischen Institutes der Universität Graz*, 12 (1977), 86-212.
- ⁵ Daniele Barbaro, *I dieci libri dell'architettura tradotti et commentati*, 2nd ed. (Venice 1567; Milan 1987), 282.
Andrea Palladio, *I quattro libri dell'architettura* (Venice 1570), 52-53. Pagination stated according to the Pordenone 1992 edition, Mario Biraghi, ed. See also the recent English translation by Robert Tavernor and Richard Schofield: Andrea Palladio, *The Four Books on Architecture* (Cambridge Mass., 1997).
- ⁶ Giovan Paoplo Lomazzo, *Trattato dell'arte della pittura, scoltura et architettura* (Milan 1584), 264.
- ⁷ Branko Mitrović, "Objectively Speaking," *Journal of the Society of Architectural Historians*, 52 (1993), 59-67.
- ⁸ Plato, *Sophist.*, 236a.
- ⁹ Bernhard Rupprecht, "Prinzipien der Architektur-Darstellung in Palladios *I Quattro Libri dell'architettura*" in AA.VV., *Vierhundertjahre Andrea Palladio* (Heidelberg 1982), 11-43.
- ¹⁰ For the relation between the Platonist belief in eternal Forms and the formalist dismissal of meanings see Mitrović, "Paduan Aristotelianism and Daniele Barbaro's Commentary on Vitruvius' *De architectura*," *The Sixteenth Century Journal*, 29 (1998), 667-688. Vignola's position in this sense can be seen as parallel to Barbaro's.
- ¹¹ Cesare Cesariano, *Di Lucio Pollione Vitruvio de architectura libri decem* (Como 1521; reprint Milan 1981), 63.
Sebastiano Serlio, *Tutte l'opere d'architettura et prospetiva* (Venice 1619), 4.127 (the first number designates the book and the second the page). See also, Sebastiano Serlio, *On Architecture*, Vaughan Hart and Peter Hicks, trans. (New Haven and London, 1996).
- ¹² Thoenes, "Vignolas...."
- ¹³ Maria Walcher Casotti, "Le edizioni della Regola," in Pietro Cataneo, Giacomo Barozzi da Vignola: *Trattati*, (Milan, 1985), 527-538.

- ¹⁴ Cesariano, *Di Lucio*, 60.
- ¹⁵ Barbaro, *I dieci*, 163.
- ¹⁶ *Ibid.*, 170.
- ¹⁷ *Ibid.*, 171.
- ¹⁸ Serlio, *Tutte*, 4.127, 4.139, 4.158, 4.170, 4.183.
- ¹⁹ Barbaro, *I dieci*, 130.
- ²⁰ Leon Battista Alberti, *De re aedificatoria*, 7.7. For a recent English translation see Leon Battista Alberti, *On the Art of Building*, (Joseph Rykwert, Neil Leich and Robert Tavernor, trans.), (Cambridge, Mass., 1988).
- ²¹ James Ackerman, "The Tuscan/Rustic order: a study in the metaphorical language of architecture," *Journal of the Society of Architectural Historians*, 42 (1983), 15-34.
- ²² Serlio, *Tutte*, 4.129.
- ²³ Pierre Gros, *Vitruve: de l'architecture*, (Paris 1992), vol. 4, 188.
- ²⁴ Palladio, *I quattro libri*, 33.
- ²⁵ Serlio, *Tutte*, 4.129.
- ²⁶ Vitruvius, *De arch.*, 4.7.4.
- ²⁷ Serlio, *Tutte*, 4. 128.
- ²⁸ Serlio's *cyma* here could be an ovolo, however. The illustration is imprecise, whereas his formulation *cimatio detto vuovolo* indicates that he used the terms synonymously.
- ²⁹ Palladio uses here the term *cimasa* in a way which corresponds to Vignola's use of the term *cimatio*. But cf. footnotes in plates 13, 24, 25 and 27 of the translation. Barbaro uses the term similarly in his description of the Doric cornice to refer to the combination of a *cyma* and a fillet. (Barbaro, *I dieci*, cf. 146 and the illustration in 148.)
- ³⁰ Palladio did not use the term *echinus* here.
- ³¹ Barbaro, *I dieci*, 173.
- ³² Serlio, *Tutte*, 4.140.
- ³³ Palladio, *I quattro libri*, 38.
- ³⁴ "Capitulique crassitudo unius moduli, latitudo duorum et moduli sextae partis." Vitruvius, *De arch.*, 4.3.4.
- ³⁵ Serlio, *Tutte*, 4.140.
- ³⁶ Barbaro, *I dieci*, 145 and 173.
- ³⁷ Barbaro, *I dieci*, 145.
- ³⁸ Palladio, *I quattro libri*, 38.
- ³⁹ Barbaro, *I dieci*, 145.
- ⁴⁰ Palladio, *I quattro libri*, 37.
- ⁴¹ Barbaro, *I dieci*, 145.
- ⁴² Palladio, *I quattro libri*, 38.

- ⁴³ *Ibid.*, 43.
- ⁴⁴ *Ibid.*, 38, 43.
- ⁴⁵ Alberti, *De re*, 7.8.
- ⁴⁶ Vitruvius, *De arch.*, 4.3.3.
- ⁴⁷ Barbaro, *I dieci*, 146.
- ⁴⁸ Palladio, *I quattro libri*, 41.
- ⁴⁹ *Ibid.*, 43.
- ⁵⁰ Serlio *Tutte*, 4.158.
- ⁵¹ Pietro Cataneo, *L'architettura* (Venice 1554). Quoted according to the Polifilo reprint of the second edition (Venice 1567) in Pietro Cataneo, Giacomo Barozzi da Vignola, *Trattati* (Milan 1985), 361.
- ⁵² Alberti, *De re*, 7.7.; Palladio, *I quattro libri*, 64-65.
- ⁵³ Palladio, *I quattro libri*, 47.
- ⁵⁴ Guillaume Philandrier, *M. Vitrovii Pollionis. De architectura libri decem*. (Lyon 1586), 118. Lemerle and Pauwels confirm that Philandrier was right and say that the Ionic base as described by Vitruvius simply cannot be found in the ruins of Rome. (Frédérique Lemerle and Yves Pauwels, "L'ionique: un ordre en quete de base," *Annali d'architettura*, 3 (1991), 7-13.
- ⁵⁵ The story of the Ionic volute during the Renaissance is extremely complex and has been extensively described in a study by Maria Losito. "La ricostruzione della voluta ionica vitruviana nei trattati del rinascimento" *Mélanges de l'école française de Rome*, 105, 1993.1, 133-175.
- ⁵⁶ Barbaro, *I dieci*, but see the first edition (Venice 1556), 95.
- ⁵⁷ Vitruvius, *De arch.*, 3.5.11.; Barbaro, *I dieci*, 153; Serlio, *Tutte*, 4.161.
- ⁵⁸ Vitruvius, *De arch.*, 4.2.5.
- ⁵⁹ Barbaro, *I dieci*, 171.
- ⁶⁰ Palladio, *I quattro libri*, 53.
- ⁶¹ Serlio, *Tutte*, 4.169.
- ⁶² Vitruvius, *De arch.*, 4.1.11.; Barbaro, *I dieci*, 155.; Serlio, *Tutte*, 4.169; Alberti, *De re*, 7.8.
- ⁶³ Palladio, *I quattro libri*, 59.
- ⁶⁴ Mark Wilson Jones, "Designing the Roman Corinthian Capital," *Papers of the British School in Rome* (1991), 89-150.
- ⁶⁵ For a history of the Corinthian abacus during the Renaissance see Frédérique Lemerle, "La théorie architecturale à la Renaissance: le tracé du tailloir corinthien," *Annali d'architettura*, 6.1994, 64-71.
- ⁶⁶ Barbaro, *I dieci*, 155.
- ⁶⁷ Serlio, *Tutte*, 4.170.
- ⁶⁸ See Branko Mitrović, "Palladio's Theory of the Classical Orders in the First Book of *I quattro libri dell'architettura*," *Architectural History*, 42 (1999).
- ⁶⁹ Palladio, *I quattro libri*, 61.

⁷⁰ Ibid., 64.

⁷¹ Ibid., 47.

⁷² Alberti, *De re*, 7.7.; Serlio, *Tutte*, 4.139.

⁷³ Palladio, *I quattro libri*, 48.

⁷⁴ Vitruvius, *De arch.*, 3.3.13.

⁷⁵ Barbaro, *I dieci*, 133.

⁷⁶ Vitruvius, *De arch.*, 3.3.12.