Filarete's

TREATISE ON ARCHITECTURE

Being the Treatise by Antonio di Piero Averlino, Known as Filarete,

Translated with an Introduction and Notes by John R. Spencer

VOLUME 1: THE TRANSLATION

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I know you are of great excellence and that you delight in virtue and in worthy things, O Magnifico Piero de' Medici, as is justly the custom in noble minds, and especially in those [things] that give eternal and worthy fame. In consideration of this, I thought it would undoubtedly please you to learn the modes and measures of building. This is indeed worthy and fitting in men of your sort for several reasons, especially for the transmitting of their wealth to others who would otherwise perish through need and want, and again so that enduring fame may remain of their virtue and liberality. Such praise I wish to give to you and to your house and particularly to your father, whom I honor as the most worthy of men. Who dares say that I speak through flattery or desire to please, for the proof exists in the excellent buildings founded and commissioned by you and the magnificent and most worthy Cosimo, your father? [They are], among others, the beautiful chapel of the Annunciante in the [Church of the] Servi in Florence, and other fine things both in Florence and outside it, not only near to our city but also in various places outside Tuscany. In Milan [there is] a noble house, as will be seen in our twenty-fifth book, and other buildings constructed for them, but let us leave [this] aside. In parts of our Italy and even to the borders of the infidels they have had worthy buildings constructed. Where can one find private men of such fame and so worthy of praise as these in our time? Their other fitting virtues and special qualities I do not wish to mention, such as their foresight and humaneness in conserving and enlarging the state by themselves and by the aid of the republic. And they continue to enlarge it.

But I do not wish to expand on this at present, for my subject is only the ordering of buildings. This you understand very well. To be convinced that what I say is true, look at San Lorenzo, San Marco, and the others that anyone can see. I have worn myself out in composing this work. I thought, for the above-named reasons and for the goodwill and love I bear you, that it might please you to see it. For these reasons I send it to you, even though it is not, as it should be, worthy either through respect for your Magnificence or through the work [itself], for it ought to be in Latin and not in the vulgar. However, I thought I would be understood by more [readers]. Also there are [already] enough [works] to be found in Latin by most worthy men. Such as it is take it not as written by Vitruvius nor by other worthy architects, but by your Filarete architect, Antonio Averlino, the Florentine. It was I who made the carved bronze doors of Saint Peter's in Rome for the pontiff Eugene IV of worthy memory, and in the city of Milan the glorious shelter of the poor of God under Francesco Sforza, the fourth Duke of Milan, who laid the first stone of the foundation with his own hand. I planned other things there and the principal church of Bergamo [as well].

Whenever I had a little leisure recently, I composed this and other little works. If it does not displease you, read this book on architecture or have it read to you. In it, as I have said, you will find various modes of building constructed. For the Medici, 1435-57. A more complete list appears in Book XXV. The Medici buildings on "the borders of the infidels" probably refers to the pilgrim's hostel founded by Cosimo in Jerusalem.

1. Here and on the following folio Filarete lists some of the most important Medici building projects. A more complete list appears in Book XXV. The Medici buildings on "the borders of the infidels" probably refers to the pilgrim's hostel founded by Cosimo in Jerusalem.

2. S. Lorenzo. The Medici patronage of this building began in 1418 with Cosimo's father, Giovanni di Bicci. It was interrupted until 1442, when Cosimo headed a group of donors charged with the completion of the structure.

3. S. Marco was constructed under the direction of Michelozzo for the Medici, 1433-57.

4. Carved bronze doors—the bronze central doors for Old St. Peter's begun c. 1433 and installed and signed 1445. They were enlarged and restored to the central portal of the present church in 1619. They were cleaned in 1962.

5. An attempt has been made in the Magliabecchiana manuscript to alter Antonio Averlino fiorentino to Ausonio averlinorio faentino.

4. Carved bronze doors—the bronze central doors for Old St. Peter's begun c. 1433 and installed and signed 1445. They were enlarged and restored to the central portal of the present church in 1619. They were cleaned in 1962.

"The glorious shelter of the poor"—the Ospedale Maggiore in Milan. Filarete contributed the basic design (which was altered during construction) and was, at least nominally, architect in charge. The cornerstone of the building was laid April 12, 1457. Filarete's association with the project ended in August 1465. For the history of the building see Vincenzo Biagetti, L'Ospedale Maggiore di Milano (Milan, 1937); Gaetano Cajmi, Notizie storiche del Grand 'Ospitale di Milano (Milan, 1857); Pietro Canetta, Cronologia dell' Ospedale Maggiore di Milano (Milan, 1884).

The Cathedral of Bergamo. Planned by Filarete during 1457 under the direction of Bishop Barozzi. See Bortolo Belotti, Storia di Bergamo e dei Bergamaschi, 2 (Milan, 1949), 84–85, and below, Book XVI n. 2. The church was modernized by Carlo Fontana in 1689 and again in the nineteenth century.
construction. It contains as well various kinds of buildings. These things, I believe, will give a certain amount of pleasure to your ears. It contains proportions, qualities, measure, and their origins. This I will demonstrate by reason, authority, and example and [also I will show how] they all derive from the figure and form of man. [It] also [contains] all the things that must be observed to maintain the building. Then it treats of the materials of the building and how one ought to use lime, sand, brick, stone, wood, iron, cordage, and other useful things. [It also treats] of foundations, according to the site, and their requirements. Finally it contains what the architect ought to know as well as [what] he who commissions the building [ought to know]. Doing thus, I think that he will not go wrong in his building.5

[Book I]

I

Once I was in a place where a noble and many others were eating. In the course of a conversation about many different things they entered on architecture. One of them said, “It certainly seems to me that you have a high opinion of architecture, yet it doesn’t seem as great a thing as many make it out to be. They say you have to know so many kinds of geometry, drawing, and many other things. It seems to me I heard someone speak the other day of a certain Vitruvius and of another who seems to have been named Archimedes. [He said,] “They have written about building, measure, and many other bits of information that one ought to know. I don’t search out all these measurements and other things when I have something built. I don’t go looking for as many principles of geometry as they advise, and still it comes out all right.”

Then one of the others who seemed to speak more seriously said, “Don’t talk that way. I think that anyone who wants to construct a building needs to know measure very well and also drawing in order to lay out a large house, a church, or any other sort of building. I do not believe he could do it at all correctly if he does not have drawing, measuring, and the other things. I also believe that anyone who commissions a building should know these things. Nevertheless, do not say that, since it is not my craft, I only know enough to argue about it. I would pay a great deal to find someone who would teach me what it takes and what measure should be used to make a building [well] proportioned, the source of these measurements, and why one reasons and builds in this manner. I would also like to know what their origins are.”

5. Biblioteca Nazionale, Florence, Pal. 1411, fols. 1r and 1v, bears the following dedication to Francesco Sforza (I have maintained the orthography and punctuation of the manuscript. Line endings are indicated by the diagonals): Eine IlEXCELLENTSIMO PRINCIPE per che ti dilecti dedicate come in moltrte altre / virtu se excellenti: credo quando non sarai occupato / in maggiorc cose, ti piacera vedere et intendere / questi modi et misure et proportioni dedificare / le quale sono stato trovate da valentissimi ho- / mini: Si che tu come degno et magnanimo principe / et optimo maestro di guerra et amatore et conservatore di pace / quando non se occupato da quella che per difendersi si fa con ra- / gione: Tu per non istare in oto collefetto teserciti collamente, / senza niuna istima di spesa: Questa et ben cosa degna a uno / principe a simile eser­ / titio attendere si per utilita si per gloria: / et per accomodare anchora il suo tesoro a molte persone et dare / vita a molti i quali perirebbero E questo si vede inte et che cosi / sia la tes­ / timonanza appare nello exelso tuo castelli: et in molti / altri edificij: quali senza una grande ispesa non si fano: chome / aque­ / ducti: cioe navilij princepiati et instaurati: et altre reparotione / dedetij di nuovo facti: che arebbero mosse pensiero a quelli / principi romani antichi: Piacciati daccepitlarl et vederla non / per / che de loquenza sia degna: ma solo per li varij modi di / misure / che sappartenghono di sapere a chi vuole edificare: Per questo credo / ddra alquanto di piacere a tuoi orecchi: Si che / non essendo cosi bene / ornata pigliala non chome da oratore ne / come da Vetrudio / ma come dal tuo Architecto Antonio Aver­ / lino fiorentino: Il quale fece le porti di bronze di sancto pietro di / Roma iscolpilte / di degue memorie di sancto pietro et di san / paulo et deugenio / Quarto sommo pontifico sotto il quale le / fabricai E nella incluya tua cita di milanlo lo glorioso Albergho de / poveri di Christo II / quale colla tua mano la prima pietra nel / fondamento collo- / -casti: et anche altre cose per me in essa / ordinate: Et la chiesa / maggiore di bergamo con tua licenza / ordinai: Si che Illustrissimo / principe non ti rincresca di leg­ / gere o far leggere: per che in essa / (fol. Iv) intendo chome o / detto di sopra di trattare modi proportioni qualita / et misure / et donde dirivorono i primi loro origini, e questo ti / mostrero per ragioni et per auctorita e per exempli et come / dalla figura et forma dellhuomo tucxe si derivano et così tutte / quelle chose che si deono osservare a conservare et fare ledifis­ / E poi trac­ / teremo di materie opportune alledificare et chome / sanno a / usare calchne, harene, o vuoi dire sabbione, pietre cote / e vive / legnami ferramenti e corde, et altre cose opportune e / coesi de / fondamenti sicondo iluogi e iloro bisogni e poi quello / apparte­ / nente allarchitecto o vogliamo dire inge­/5
On hearing this conversation I stepped forward, because it pertained to my profession and because there was no one else there who practiced it. I said, "Perhaps you will think me presumptuous for attempting to tell you these modes and measures, since other capable men both ancient and modern have written very elegant works about this discipline. For instance, Vitruvius, among others, wrote a worthy treatise on this subject, [as did] Batista Alberti. The latter is one of the most learned men of our times in many disciplines, very skilled in architecture and especially in design which is

the basis and means of every art done by the hand. He understands drawing perfectly and he is very learned in geometry and other sciences. He has also written a most elegant work in Latin. For this reason and also because I am not too experienced in letters or in speaking, but rather in other things, I have applied myself. Perhaps I shall seem [to have been] too rash and presumptuous in attempting to describe the modes and measure of building. I do this in Italian and [only] because I am pleased by and experienced in these skills—drawing, sculpture, and architecture—in several other things, and in investigations. At the proper place I shall make mention [of them]. For this reason I am bold enough to think that those who are not so learned will be pleased by it, and that those who are more skilled and learned in letters will read the above-named authors.

Because these matters are a little arduous and difficult to understand, I beg your excellency to be attentive while he listens to my arguments to the same extent that he would if he had ordered his troops to reconquer or defend one of his dearest possessions, and as if letters had been sent from them to him telling that they had reconquered or, better, defended that thing and with no small difficulty had enjoyed a victory over the enemy. To this degree, turn your ears to this. If you do so, I think that it will please you and it will not be at all tedious for me to talk. While enjoying it, you will derive some utility from it.

In order that you can better understand it, I will divide my talk into three parts. The first will recount the origin of measure; the building, its sources, how it ought to be maintained, and the things necessary to construct the building; what one should know about building to be a good architect; and what should be noted about him. The second will narrate the means and the construction for anyone who wants to build a city, its site, and how the buildings, squares, and streets ought to be located so that it will be fine, beautiful, and perpetual according to the laws of nature. The third and last part will tell how to make various forms of buildings according to antique practice, together with things I have discovered or learned from the ancients that are almost lost and forgotten today. From this it will be understood that the ancients built more nobly than we do today;"
“Then, tell me why there are beautiful buildings built today, at least according to my opinion, such as the cathedrals of Milan and of Florence to name only a few? Others I will omit to mention for the sake of brevity.”

Sir, if these are of great price, [they will appear beautiful to you]. Let us leave for the present the widespread failures of modern churches. These all stem from the almost universal belief held by anyone who builds that he has hired a good architect. For this reason, there are more masters in this art than in any other, but there are fewer good ones than in any other. [I speak] especially of those who know how to put a stone in lime, daub it with mortar, and think they are excellent masters of architecture. If, moreover, Archimedes or Daedalus, who built the labyrinth, should return to life, these modern architects would consider themselves more worthy. If they do anything at all, they [succeed] more through experience than through [any] knowledge of drawing, letters, or measure that they may have. In order to be advised of these errors and

also to be aware of them, you will see by reading this [book] the faults committed and caused to be committed by anyone who puts his trust in such men. This occurs because they understand neither the measures nor the proportions of architecture. Thus in their error they think that nothing can be done better, [and] in their ignorance they believe blindly in themselves as many blind men [who,] when led by a blind man, find themselves all in a ditch because of the bad guide. If anyone who knows tries to tell them anything, they think they know so much that they would rather continue in their own erroneous ways than follow the judgment of one who tells them the truth. In order to remove such pitfalls for those who wish to learn these precepts, I will take up this difficult task for the greater good. They can [thus] recognize these errors. In order that it may be better understood I shall begin with the first origins of measure and its sources. We shall continue in the same manner with the origins and sources of the building and with the other things that pertain to it.

As everyone knows, man was created by God; the body, the soul, the intellect, the mind, and everything was produced in perfection by Him. The body [was] organized and measured and all its members proportioned according to their qualities and measure. He allowed them to produce each other, as is seen in nature. He granted the mind of man [the power] to do various things for his existence and pleasure. As is seen, [some] have more intellect than others, some in one discipline and some in another, some more, some less, according to the way it occurs among men. This is due, many times, to the celestial constellations and to the planets, so that nature produces one who is more industrious than another, as it pleases her. Many times it happens according to the needs of man that through necessity his intellect becomes much more acute in many things and especially in that which he needs most. As they say, necessity makes man clever. The first need and necessity of man, after food, was habitation; thus he endeavored to construct a place where he could dwell. From this, then, public and private buildings were derived, as will be seen below.

Since man is made with the measure stated above, he decided to take the measures, members, proportions, and qualities from himself and to adapt them to this method of building. In order that you can understand every part and its source, I will relate to you first of all the measures, members, and proportions of man. When a man is well formed and every member is in harmony with every other, then we say he is well proportioned. You well know that when one has a twisted shoulder and misformed members he is badly proportioned. Of this I will treat more fully in its place. It is true, as Vitruvius says, that in order to understand well this art of building one has to know the seven sciences, or at least participate in them as much as possible.

Let us look briefly at quality and measure and their parts. So far as I understand from the measure of man, there are five qualities. Let us leave aside two of them, because one cannot take true or perfect measure
from them. These are dwarfs and overly large men who depart from the normal like the species of giants. Perhaps I should say something about the origin of these giants, according to what I have read. I will not enlarge on it, because I do not believe it; it seems fictional and poetic rather than true history. They say that long ago there were some [women] who gave birth to giants in this manner. There were handsome young men of great stature and whose seed

[was brought together] in an indirect manner. There were some large women with whom one of these young men lay. It happened that his seed was received together with that of others who lay with this girl. As a result of this libidinosness she conceived, became pregnant with much seed, and gave birth to many large men. In this way they say giants were born. For this reason they are rarely found and are also a travesty of nature. Even if you should find some, do not take your measure from them. Let us leave them and lay down the three principal ones. They are the following: small, medium, and large men, and from them we will take our measures, proportions, and members. You can say that I too have seen some large men, like Niccolò of Parma, who was with the Emperor Sigismund when he came to Rome to be crowned in the time of Eugene IV. I also saw another in Rome who came from Ascoli in the Marches. He was a man of great size and quite malformed. You speak the truth, because I also saw both of them. Because of their size they were malformed, so let us leave them aside.8

Since the large, small, and medium are universal in their proportions, from them we shall take the measure. I believe the ancients took it from them. We shall also take this rule as the best way and explain it part by part in such a way that I believe everyone will be able to understand it. Because we first have this measure from the Greeks—as they had it from Egypt and from others—we shall use their terms. Vitruvius also named them thus, so we shall follow their order, naming these measures, proportions, and qualities Doric, Ionic, and Corinthian, and explaining them as much as we can. Therefore, our first measures will be these—proportion and quality. For the present, we will leave the principal measures of man for another place.

I [will] speak of the three qualities. Their measures are these. The first, which we call Doric, that is, large, they measure with the head. It is nine heads. This quality is called Doric, that is, large. The small one is called Ionic and it is seven heads. The third is called common, or medium, that is, Corinthian, and is eight heads.9 The two other qualities we will let stand for the reason mentioned above. The origins of these measures [which explain] why the Greeks called them Doric, Ionic, and Corinthian, will be treated in another place. We have begun with the largest as is fitting. First of all, we will begin with the largest. Because it seems fitting that the large things should precede the smaller, we will begin with these. It is to be believed that the inventors of these things must have taken these measures, that is, quality, from the best-formed large men. It is probable that this quality was taken from the body of Adam, because it cannot be doubted that he was handsome and better proportioned than any other [man] who has ever lived, since God formed him. Nature has since transformed [man] into large, small, medium, and other sorts. You can say that the discoverers of these measures did not see Adam. Perhaps they did see him. Perhaps he was even the inventor. This is not known with certainty. We believe that the first inventors, whoever they were,
I looked at the most worthy and beautiful form, whatever it was. Since Adam's was the most beautiful, as has been stated [above] with various reasons, it is credible that it was taken from him, and [with] his head the first measure was made. They began with the head, which was a worthy thing to do, for the head is the most noble and most beautiful member. They did well, therefore, to begin with it, since it is moreover the most outstanding and most commensurate member and divisible into many various parts. The reason I believe it should be called the first measure and why they divided it into many parts and what its division[s] are will be seen below. They measured the whole man and then composed and divided and increased the measure, and from it all are derived. It seems to me we should treat of these measures as they are found in and derived from their origins.

Therefore, we shall begin with the head. First, we shall divide it into the principal and most obvious parts. I believe they first divided it into three parts; we will follow that [same] rule. I believe the first of these three parts was the nose[, for it is] the most apparent member for dividing and measuring the head. They found that the head was three noses long, that is one nose from the nose to the chin, the nose itself, and one nose from the bridge of the nose to the hairline. The same for the form of the ear, since the ear is as many noses long as there are noses from the eye to the ear. This is reasonable. As for the noses across the face, that is, from one ear to the other, there are three noses or the length of the face. The crown of the head is commonly [the measure of] a head and a half, taking its length from the proportioned head. You well know that if these measures are changed they will no longer be in harmony.

In order that you [may] understand clearly how these measures are derived from man, I will measure this figure of a man for you member by member, so that you can better understand every measure member by member in your building. As I have told you, the head is one of the parts and a member of the person. Its support, that is, the neck, is one-half the length of the head. The rule is that from the beginning of the neck down to the stomach, that is, the chest, is one head. The width from one shoulder to the other is two heads. From the groin up to the chest there are two heads, hence from the neck to the branching of the legs is three heads. There are two heads from the beginning of the thigh to the knee. From the point of the knee to the instep there are two more heads, and from the instep to the sole of the foot there is one-half head. In this fashion, with the half of the neck and the half of the foot, the figure of a well-proportioned man comes to nine heads. Its measure in width is equal to its length or, better, height. If you measure from the armpit, it is two and one-half heads to the wrist. Since the arm is two and one-half heads and the extended hand is as much as the foot or the head, man is of the same measure vertically and horizontally. In this way, if the arms are opened and the hands extended, [the man] will be nine heads in either direction. Vitruvius says that the navel is the middle of the figure of man. The navel would be the center for the point of a compass that would circumscribe the man in a circle. From this the circle derives. It is a good enough reason to confirm our proposition that all measures are derived from man. However, it

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10. For occhio read orecchio.
11. This discussion of human proportion and of the units of measurement derived from man is quite typical of Filarete and of one facet of the Renaissance. Unlike those of his contemporaries who determine proportions on the authority of the ancients (Ghiberti) or who derive them from their own measurements of a large group of men (Alberti, De Statua), Filarete manifests a conventional sort of religiosity when he states that all proportions go back to Adam and hence to God. This statement has led many critics to emphasize the medieval traditions in Filarete's treatise, yet it represents a way of thinking that is not atypical of the fifteenth century or of Florence. Oettingen (Tractat, p. 688) criticizes Filarete's departure
In order that these measures and their varieties may be understood at greater length or, better, more distinctly, we will state their names according to their varieties and name them in our vulgar idiom. I think [we should first] understand, as I have said above, how this head was multiplied in three parts, that is, its length was taken three times, so far as I can understand. By reason it is seen that it has in itself three principal divisions; hence it seems to me that they wished to multiply it by threes. Man has no member that conforms so well to this measure as the arm. If you measure the arm, as I have said, stretching out the hand, you will find it [contains] three heads. Therefore, this first measure was called a braccio. Six kinds of measure are contained in the braccio. [The braccio is] like the pound [and is divided] into twelve parts. These are called ounces, and in some places polisi. It is also divided into eight parts and this part is called an octave; it is one and a half once. It is also divided into six parts and this part is called a sixth; it is two once. It is divided into four parts and this part is called a fourth; this is three once. It is divided into three parts and this is called a third; it is four once. It is divided in two and this is called a half; it is six once. In this manner you have seen, in these six varieties of measure that are contained in the above-named braccio, how the braccio is divided. It is possible to treat of these measures much more minutely because they are transformed in many and various ways according to the use and the user. There are many who have talked about them, and [talked] very extensively. I will treat only of those that I think are most useful for us, and the others I will leave to those who wish to understand them better and at greater length. Let them read mathematicians and geometricians like Euclid, who wrote subtly about this, or Campano da Vigevano, who commented on him and demonstrated all the subtleties of measure. We only need those that are named to measure our buildings. Therefore, let us leave aside these other measures, such as the passo, which is two braccia, and the canna, which is four, and the traboccho, which is four and a half Milanese braccia. The perticha, which is . . . , we will also leave aside, for these are [all] measures of land and possessions. In every country there are different measures according to the place and things measured. As the thing [to be measured] is more precious, so the measure is larger or smaller even with a measure of the same name and properties, as, for instance, the braccio. The braccio for measuring wood is longer than that for wool. The braccio for wool is longer than that for velvet, et sic de singulis. The braccio is longer in Rome than in any other place, [for there] it is four palms. Perhaps this is because the braccio took its origins from large men. Since [Rome] was still the largest city, perhaps they wished to accord [with this greatness]. Other types of measure which were formerly called cubits are not used today. I think that from the strict (but rather vague) canons of Vitruvius; however, it is this freedom from or perhaps refinement of Vitruvius which brings him closest to his Florentine contemporaries and seems to reflect some common shop practice. Filarete’s proportions are much closer to those expounded by Ghiberti in the third book of his Commentar[io] than to Vitruvius. In fact, the face three noses wide criticized by Oettingen clearly derives from Ghiberti or a common source in shop practice. Filarete’s reluctance to accept Vitruvius’ description of the human figure inscribed in a circle is also found in Alberti, Ghiberti, and Leonardo da Vinci. Like these other artists, Filarete is concerned with the relations between man and the universe; hence their common preoccupation with the source of all proportion and all geometric shapes in the form of man. A man whose height is equal to his outstretched arms can be circumscribed by a square. With arms and legs spread he fits in a circle. From the circle or the square or a combination of the two, all plane and solid geometric forms can be derived. Man as the measure of all things—and particularly the use of the head, the locus of reason, as the unit of measurement—is fundamental for the fifteenth century, and perhaps this, rather than the authority of Vitruvius, explains the anthropomorphism which characterizes much of fifteenth-century architectural theory and practice. Filarete recognizes clearly one of the major problems of textual interpretation confronting any system of proportions based on Vitruvius. Any human figure drawn in strict conformity with Vitruvius’ definition will have a different center when enclosed in a square from the same figure enclosed in a circle. Leonardo’s well-known drawing in the Accademia, Venice, illustrating this passage, conforms to Filarete’s observation. As Charles Seymour, Jr., pointed out years ago in a Renaissance seminar at Yale, the center of the man in the circle lies at the umbilicus, of the man in the square at the base of the pelvis. This not only summarizes the two major systems of human proportions found in painting and sculpture of the fifteenth century, but also provides the geometric source for systems based on the Golden section deriving from the circle and those based on numerical progression and the square root of two deriving from the square. It is to be noted that Filarete prefers the square and its derivatives. The attempts to rationalize the problems raised by the two figures in Vitruvius are well-known. A reference to the “man of perfect proportion” illustrating Cesariani’s Vitruvius is adequate to indicate sixteenth-century attempts to solve the dilemma. 12. The braccio, perhaps the most generally used measurement during the Middle Ages and Renaissance in Italy, was ostensibly derived from the length of a man’s arm. In practice, however, the actual dimensions of the braccio varied widely. In this treatise Filarete states the differences between the braccio used in Rome, Florence, Milan, and Bergamo. In addition, the braccio varied according to the thing measured; the braccio for wood was longer than the one for wool, and that, in turn, was longer than the one for velvet. In general practice the Florentine braccio can be converted to 25 inches or 58.36 centimeters. 13. Famous thirteenth-century mathematician, better known as Campano da Novara. Oettingen assumes, quite rightly, that Filarete must have known Campano’s commentary on Euclid’s fourteenth book. 14. Lapsus in all texts. Pertia is defined (fol. 125v) as 24 tavole, the tavola is 12 pie, the foot is 12 once, the oncia is 12 punti, the punto is 12 aptimi, the aptimo is 12 michi.
one [cubit] was two heads, or better a half braccio because it seems to be [the same] as the elbow, which is in the middle of the arm. Another measure was called the foot; it is used rarely although it is, perhaps, used in some places. This foot is equal to two clenched hands or, if you wish, the four fingers joined together and the fifth extended. [When] the point of one is joined to the point of the other, this is called a foot (Fig. fol. 4r). Another is called the palm; this is derived from the opened hand. It is reasonably true, as I said above, that these measures vary, some large and some small, according to the locality and the desire of the inventors.

You have seen these measures of man that you need to know and understand for our affairs, whence and in what way measure is derived, how it was distributed and divided according to need and desire, and you have understood the variety of names in our idiom, that is, the vulgar tongue.

Now we [must] look at the origin of the building, the need it was first invented to fulfill, then in what way these measures are used in its construction. Therefore, we will relate, as I have told you, first of all whence derive the first origins of the building and how building was discovered—this according to my opinion, the opinions of others, probability, and the sayings of skillful men. In the proper place I shall state them in such a way that you will understand them to be true.

There is no doubt that architecture was invented by man, but we cannot be certain who was the first man to build houses and habitations. It is to be believed that when Adam was driven out of Paradise, it was raining. Since he had nothing else at hand to cover [himself], he put his hands over his head to protect himself from the rain (Fig. fol. 4v). Since he was constrained by necessity to [find his] living, both food and shelter, he had to protect himself from bad weather and rain. Some say that before the Flood there was no rain. I incline to the affirmative, [for,] if the earth was to produce its fruits, it had to rain. Since both food and shelter are necessary to the life of man, it is to be believed for this reason that after Adam had made a roof of his hands and had considered the need for his sustenance, he thought and contrived to make some sort of habitation to protect himself from the rain and also from the heat of the sun. When he recognized and understood his need, we can believe that he made some sort of shelter of branches, or a hut, or perhaps some cave where he could flee when he needed. If such were the case, it is probable that Adam was the first.

You could say, but how could he make this shelter since he did not yet have iron? I would reply to this with two arguments, that is, just as he did his best to survive through the grace that God gave him, or by his own acts, so did he strive to construct a shelter. Just as he instinctively put his hands over his head, so was he able to break branches and in the same way cut them in pieces bit by bit and then stick them into the earth and make a shelter (Fig. fol. 5v). Either he did it this way or he did not. According to my opinion, it seems to me that he was the first to invent habitation, that is, either a house or, if you prefer, a hut. It is true that Vitruvius says that the first to invent habitations were those first men who lived in the forests and made themselves huts and grottoes as best they could. However it was, I believe that Adam was the first for the reasons named above. Whoever it was, it is certain that the first origins derived from the necessity for survival.

You have seen and understood the source of the first origins of building. Now you will understand how the form of the building is derived from the form and measure of man and from his members, as I have told you before. Since the building was discovered by man through his necessity and need, it has almost every form and nature of man, as I will show you with reasons and figures. Buildings are truly made ac-
cording to these modes and similitudes and are thus derived and ordered. To prove that this is true: You know how man has, in himself, measure, form, and members; you know how the head of man or, better, the face, has in itself the principal beauty, and by it each one is recognized. The edifice, too, ought to have all the other members in harmony with the face, even though there are some men who are beautiful in the face but [who have] more or less deformed and twisted members. No one wishes to look at someone like this, because he is not handsome; the edifice would be the same.

When I have brought forth reasons and parallels, you will see it is true that the building is derived from man in form, members, measures, and quality. You cannot deny that there are many varied types and qualities of persons, the beautiful, less beautiful, and more beautiful; rich, poor, poorer, and richer; old, young, and middle-aged; deformed, crippled; and many different kinds, states, and forms. [Here is] a simile that is very evident and known to everyone, yet is not considered highly by many. [They] do not value it, because it is so well known to everyone; for this reason it is one of the unknown secrets. I think that God created it for greater beauty. It is this: Of all the generations of man that are and have been and will be, none is completely similar to another in every particular. If perhaps by chance someone can be found who is similar in one part to another either in face or form, the other parts will not be similar. Even if they are the same in all these things [they are different]. Valerius says that [there was] a Roman citizen who looked so much like Pompey that many times he was greeted and mistaken for him. It would have been useful for Pompey to have had him along when he crossed the Egyptian sea in that boat so the other would have been captured by mistake. I do believe that they were similar in form and face but that they were not completely alike in every particular. Man has these differences and dissimilarities for a good reason. I have told you that a building is made in human form and simile. You see this same result in buildings. You never see any building or, better, house or habitation, that is totally like another either in [structure], form, or beauty. [Some are] large, small, medium-sized, beautiful, less beautiful, and ugly, and some uglier, like man himself. For this reason I believe that God showed this variety and dissimilarity in man as in the brute beasts in order to demonstrate his great power and wisdom, and also, as I have said, for greater beauty. Thus He has granted to the human mind, since man does not know from whom he comes, that there has not yet been a building that is totally like another. Therefore God wished that man, just as he was made in His image, should make something similar to himself. In this way [man] participates in God by making something in his image through the use of his God-given intellect.

You may say, however, "I have seen men who were very much alike, as for example the two I saw in Milan. They were from Brescia and whoever saw one saw the other." I am not surprised, because they came from the same mold. But yet there was some difference; if in nothing else it was in their clothing and in the soul. You can say the same thing about buildings. The Colosseum of Rome and the Arena of Verona truly appear very like each other. Nevertheless, there are differences of size and area. Even though they are almost alike, still there are those differences that I have mentioned. You can believe me, [for] I have seen both. Even though they appear to you to be very like each other, there is a difference. This is enough of the first reason and similitude.

Again you may say, "I have seen many habitations that are very much alike, even though they are not noble edifices, as the cottages of poor men, huts, or, better, wretched country hovels, camp pavilions, tents and canopies, caves, and other dwellings." I reply to you that they are of such a nature that they will have some, indeed many, similarities with each other, but if you consider carefully you will understand there are not a few differences. This is similar to what they say about the Tartars who all have the same sort of face or, better, about the Ethiopians who, even though they are all black, are different if you look closely. Of
this there is no doubt. Also, nature has made many animals who are very like, such as flies, ants, worms, frogs, and many fish so that in their species one cannot be told from the other. This is enough; we need not go to extremes. Worthy things are enough.

As I have said, the building is constructed as a simile for the human figure. You can say that, if man wanted to, he could make many things that resembled each other, of one form and likeness so that they would be all alike. You know well that God could make all men alike; however, he has not done so. Man would not be able to do this himself if God had not granted it to him. If all the riches of Darius or Alexander or any other rich man were given to one man and if he wished to build a hundred or a thousand houses all in the same mode and on the same model, he could never make them all alike in every part, even if it were possible for them all to be built by one man. Here some things should be said that I will leave for the speculative. If they were all built by one [man], [would they be alike] as one who writes or paints is known by the letters he makes? The painter is known by the manner of his figures, and in every discipline one is known by his style. But this is another question. Nevertheless, everyone, no matter how greatly he may vary [his work], is known by his hand. I have seen painters and engravers draw heads, and especially that of the aforementioned Illustrissimo Signiore, Duke Francesco Sforza. Many portraits were drawn of him because his was a noble and handsome head. More than one of them were made to conform [closely] to his, and indeed looked very much like him;

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nevertheless, there were differences. I have also seen differences in the letters of scribes. Whence this subtlety, property, and comparison derive we will leave for the philosophical to declare.

You see that I have shown you by means of a simile that a building is derived from man, that is, from his form, members, and measure. Vitruvius also says that the building is derived from the human form.\textsuperscript{15} Now, as I have told you above, I will show you how the building is given form and substance by analogy with the members and form of man. You know that all buildings need members and passages, that is, entrances and exits. They should all be formed and arranged according to their origins. The exterior and interior appearance of the building is arranged effectively in such a way that the members and passages are suitably located, just as the exterior and interior parts and members are correct for the body of man.

[When they are] measured, partitioned, and placed as best you can, think about my statements and understand them clearly. I will [then] show you [that] the building is truly a living man. You will see what it must eat in order to live, exactly as it is with man. It sickens and dies or sometimes is cured of its sickness by a good doctor. Sometimes, like man, it becomes ill again because it neglected its health. Many times, through [the cares] of a good doctor, it returns to health and lives a long while and finally dies in its own time. There are some that are never ill and then at the end die [suddenly]; others are killed by other people for one reason or another.

You can say that a building does not sicken and die like a man. I say to you that a building does just that, for it sickens when it does not eat, that is, when it is not maintained and begins to fall off little by little exactly as man [does] when he goes without food, and finally falls dead. This is exactly what the building does. If it has a doctor when it becomes ill, that is, the master who mends and cures it, it [will] stand a long time in good state. This is obvious. I can attest to this, for the court of the Signoria of Milan was ill from lack of food and half dead, when at great expense I restored it to health.\textsuperscript{16} Without this pro-

\textsuperscript{15} Although Alberti likens the building to an animal (De Re Aed., IX.5), neither he nor Vitruvius (3.1.) goes to such anthropomorphic extremes as Filarete.

\textsuperscript{16} Perhaps a reference to undocumented work on the Palazzo Azzone, which occupied a site to the south of the Cathedral of Milan where the Palazzo Reale now stands. When Francesco Sforza entered Milan in February 1450, the Ambrosian Republic had destroyed the former Visconti residence in the fortress outside the Porta Giovia. While the fortress was being rebuilt he occupied the older Visconti palace in the center of the city until December 1451 at the earliest, and more probably until 1453. Terminal dates are provided by a document cited by Beltrami (Luca Beltrami, Il Castello di Milano, Milan, 1894, pp. 101-02) in which Francesco requests the court astrologer to determine the
both large and small, of porphyry, marble, and other stones of various sorts. We read that 160,000 persons worked 12 years on it. Look at the Antoniana, at the Templum Pacis, where there is still a marble column of extraordinary dimensions. It has 24 flutes around it all more than a palm wide, and between them more than half that [space]. Where is the Palazzo Maggiore, where is the Capitoline that, as we still read, was a marvelous thing? Where is the palace of Nero which had doors of sculptured bronze, according to the engravings we still see on his medals? Where is the palace and the theater of Octavian that is called Pincio today? In it or in front of it was an obelisk all carved with Egyptian letters in the form of animals like the one at Saint Peter's, that is, the Guglia. Where is [the theater] of Pompey that is no longer seen, except for some caves in the Campo dei Fiori? [Where is] Caesar's? In Rome they say that there are still some traces, that is, the wing of a wall near the Torre de' Conti. There is another called Le Capoccie near the Colosseum, all in ruins and covered with many vines. There is a piece of his court [yard] in which there is an intact stone vase, all of one piece [of stone], and some thirty braccia in circumference. I shall leave aside the Colosseum and many others for the present. I shall omit the temple of the Pantheon, that is, Santa Maria Ritonda, because it is more intact. This happened because it was probably given [food] to eat out of respect for religion. I do not wish to say anything of the houses of Agrippa, except that they had doors

The majority of these ruins are listed in the Mirabilia, and especially in the writings of fifteenth-century humanists. It is difficult to find precise influences of these buildings on Filarete, especially in the writings of fifteenth-century humanists. It is difficult to find precise influences of these buildings on Filarete.

To prove that this is true, look at Rome where some [buildings] can be seen that reasonably ought to have been eternal. Because they did not receive food, that is, were not maintained, they are in ruins. If you were to see the baths of Diocletian, you would marvel how a building of such mastery could ever have come to this state. So far as we can now understand, it contained more than three hundred columns,

most propitious date for troops to occupy the castello at Porta Giovia and by references to René d'Anjou's visit to the almost completed fortress in September 1453 (Beltrami, Castello, p. 149). Since the Palazzo Azzone had been in disuse for some years, repairs were necessary in 1450, whether carried out by Filarete or a local architect. Concurrently, the Fabbrica of the Milan Cathedral requested permission from Francesco Sforza early in 1450 to begin laying foundations of the cathedral within the court of the Palazzo Azzone. Plans for the cathedral extension necessitated the removal of a part of the facade of the ducal residence (see Paolo Mezzanotte and Giacomo C. Bascape, nell' arte e nella storia, Milan, 1948, p. 158, for a sixteenth-century plan of the piazza which indicates the area removed). On August 16, 1452, Archbishop Giovanni Visconti led a procession for the purpose of laying these foundations. From these peripheral facts it may be assumed that Filarete's work on the Palazzo Azzone occurred prior to 1452 and more probably prior to September 1451, when he is first documented at work on the Castello (Beltrami, Castello, p. 107, n. 2). It is not unlikely that the work began in the summer of 1450, which might give further credence to Vasari's statement (II,455) that Filarete entered Milan in the train of Francesco Sforza. If this is the case, it would represent his earliest known, although not surviving, architectural commission.

17. Antoniana—Baths of Caracalla.

Templum Pacis—Basilica of Maxentius or Constantine. Giovanni Rucellai refers to a fluted column 12 braccia in diameter.

Palazzo Maggiore—Domus Augusti on the Palatine.

Capitoline—it is not clear whether Filarete here refers to the temples or Tabulatium on the Capitoline or to the Capitolium Vetus on the Quirinal. Probably it is the latter, since remains of the Tabulatium were still visible in his day.

Palace of Nero—on the Esquiline, covered in large part by the subsequent Baths of Trajan and of Titus. Known to Filarete through coins (see Coins of the British Museum, I, pl. 43, for examples) and texts.

Theater of Octavius, called the Pincio—perhaps the Domus Pinciana, although reference to an obelisk makes the Horologium Augusti in the Campus Martius under the Pincian Hill more likely.

Theater of Pompey in the Campo dei Fiori—no remains in the Campo dei Fiori today. Generally occupied by the Palazzo Pio.

Caesar's theater near the Torre de Conti—probably a reference to the Forum of Augustus, since there was no theater near the Torre de Conti.

Le Capocci—not a theater, but more probably a reservoir for the Acqua Giulia on a site now occupied by the monument to Vittorio Emmanuelle. It did have cavelike vaults in Filarete's time.

Houses of Agrippa—perhaps refers to the Thermae Agrippae behind the Pantheon.


The majority of these ruins are listed in the Mirabilia, and especially in the writings of fifteenth-century humanists. It is difficult to find precise influences of these buildings on Filarete, although they may have determined the megalomania exhibited in his projects.
and windows of bronze, and that nothing remains but some broken walls. They are near the temple for which he built a portico. This is still seen both through the work [itself] and through letters one braccio high. In this [temple] he made many columns of extraordinary height and width. He had the beams [of the porch] made of bronze in order to support the covering; this can still be seen today. He had many other things done and many buildings that are no longer seen. If these [buildings] did not remain as proof, even though it were found in writing, one would not believe that this private citizen of Rome had done so much. As much was done by others that does not remain at all today.

Nor does the fame of either the buildings or their men [remain], because they were not maintained and because they were perhaps helped to die, [which], as I have said, occurs to men. I think this was due both to civil and foreign wars. We read also of Attila and Totila, who would have desolated and ruined [them] completely if they had not been told that their fame, since they were barbarians, would have died out in a short period of time. For this reason [they] determined to leave only a sign of ruin. In all the soundest and most beautiful [buildings] and in those that seemed to be kept in best repair, [they] had certain holes made with picks and chisels as if [they] really wished to ruin them. I think [they] learned this custom from the Romans themselves, for they sent a person to the house of another either for debt or civil disturbance and had them make a small hole in the wall. This can still be seen today in the houses of Rome. As I have said, [they] had these holes and breaks made in all the most noble places. Some say that these holes and breaks were made by [the Romans] themselves in order to extract the bronze pins and the lead that joined the stones together. This is not likely, because [after] having

entered these high buildings, few would have gone on, as for example to the top of the column of Trajan, or on top of the Antoniana, where there are so many noble memorials carved in marble by the hand of most excellent masters, or into the Castel Sant' Angelo, which was the tomb of Trajan and of Hadrian, or into many other places that it would take too long to recount. It is more likely that the holes were made for the ends named above. Whatever it was, it is clear that by being killed or by not eating, one dies; so do buildings.

You can say, one eats, and even so one dies. The building also must decline through time just as one [person] dies sooner than another or has better or poorer health. Many times this comes from the complexion, that is, from being born under better planets or better signs. The building also declines more or less rapidly according to the goodness of the material and also according to the sign or planet under which it was built.

As I have said above about valiant men and great lords who have died, so there are great buildings known that have declined. As the fame of great men [lives on], so is there almost the same effect for buildings in their own way. The one aids the other in transmitting their living reputations to us. Through writings we know of many worthy men of great fame because of the great things they have done, that is, the great buildings erected by these men. The fame of the building is such, because of its magnitude and beauty, that the fame of the man endures for the great and beautiful things he has done. The same applies to buildings [i.e. the building is remembered because of the man]. Even though they are in ruins and no trace remains of them, we still know about them for the above reasons. Many are found that were recorded by authors, as [for example] the labyrinth of Porsenna which was in Tuscany according to the story of Varro. He says it was 300 feet tall. On the interior [it was arranged] in such a fashion that whoever entered without a string or guide could not find his way out. On top of it were four pyramids 150 feet tall and 80 feet wide on each face. Atop each of these was a tall, or very large, bronze horse with an instrument that made a loud sound like bells when moved by the wind. He says that there was also a circle, above which there were four more pyramids that were as tall as all the rest of the structure. [He also says] that Porsenna exhausted his entire
kingdom where this was, so that there is no trace of it today.\textsuperscript{18} This is for the above reason. It would be possible to name other marvelous buildings that once existed but are now no more, except in writing. Where is the mausoleum that Artemisia had built? Where are the buildings of Thebes and the city of Thebes itself, that is, Egyptian Thebes, which is said to have had 100 gates, many of them very high? Where is the [city of] Semiramis?\textsuperscript{19} I do not wish to extend myself in this first book to record great and marvelous buildings that have been built and have been [ordered] built by men worthy of fame. It is enough to understand that the building lives and dies, is helped to die or to live—as the passing of time dictates, or as happens to man himself, or to the body of man. In the second book we will treat of how the building is generated proportionately to the generation of the body of man.

[Book II]

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How the building is generated proportionately to the generation of the human body.

In the first book you have seen, as I have demonstrated to you, the origins of the building and its origins in my opinion, how it is proportioned to the body of man, how it needs to be nourished and governed and how through lack it sickens and dies like man. You have seen briefly the measures, understood their names and sources, their qualities and forms. I told you they are called by their Greek names, Doric, Ionic, and Corinthian. The Doric I told you is the one of the major quality; the Corinthian is in the middle, and Ionic is smallest for the reasons alleged by the architect Vitruvius in his book, [where] he shows how they were in the time of the emperor Octavian.\textsuperscript{1} In these modes the Doric, Ionic, and Corinthian correspond in measure and members to the form or, better, to the quality of the form to which they are proportioned. I will explain to you as best I can, and so far as my small wit can demonstrate, what is possible for us with these three modes and orders.

You perhaps could say, “You have told me that the building is similar to a man. Therefore, if this is so, it needs to be conceived and then born.” As [it is] with man himself, so [it is] with the building. First it is conceived, using a simile such as you can understand, and then it is born. The mother delivers her child at the term of nine months or sometimes seven; by care and in good order she makes him grow.

“Tell me, how is this conception achieved?”

The building is conceived in this manner. Since no one can conceive by himself without a woman, by another simile, the building cannot be conceived by one man alone. As it cannot be done without a woman, so he who wishes to build needs an architect. He conceives it with him and then the architect carries it. When the architect has given birth, he becomes the mother of the building. Before the architect gives birth, he should dream about his conception, think about it, and turn it over in his mind in many ways for seven to nine months, just as a woman carries her child in her body for seven to nine months. He should also make various drawings of this conception that he has made with the patron, according to his own desires.

\textsuperscript{18} Pliny, \textit{Natural History}, 36.19, describes the structure as 300 feet square and 50 feet tall. The pyramids are 150 feet high but only 75 at the base. Pliny cites Varro only in reference to Porsonna’s burial under the city of Chisium (Chiusi). Also mentioned by Alberti, \textit{De Re Aed.}, VIII.3.

\textsuperscript{19} Thebes of 100 gates: Diodorus Siculus, \textit{Bibliotheca historica} 1.15.1. Cited by Alberti, \textit{De Re Aed.}, VIII.9, as Thebes of 100 stables.

Semiramis, Diodorus Siculus, ibid. 2.3.

1. Vitruvius, 4.1. See also Book I, note 9.