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## Vitruvian Echo through the Renaissance

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**Abstract:** *Marcus Vitruvius Pollio, 1<sup>st</sup> century BC author of the only architectural treatise to survive from antiquity, profoundly influenced Renaissance architecture, despite the notorious obscurities of his unillustrated manuscripts. The “De architectura” was known throughout the Middle Ages in Italy (copies were owned by Petrarch and Boccaccio), but the superior manuscript found by Bracciolini coincided with increased 15<sup>th</sup> century interest in the principles of ancient architecture. Vitruvius saw architecture as an imitation of nature, which must therefore follow rational principles – an idea taken up by Alberti and Palladio. As “Utility, strength, and beauty” were for Vitruvius the three divisions of architecture, thus his importance for the Renaissance architectural theory and architecture in practice laid upon three main points: proportions, orders and the concept of the Ideal City. Vitruvius’s idea of beauty as derived from symmetry and the modular relationship of the parts to the whole appealed to the Renaissance both for its mathematical basis, and for its recourse to anthropomorphic proportions. The Early Renaissance did not define proportions strictly, but the architects Vignola, and especially Palladio did. Palladio made proportional systems that lead to a superior and universal aesthetic, which will become timeless and popular all over the world, making Vitruvius relevant until today. Above all, Renaissance responses to the Vitruvian orders reveal changing attitudes to his authority. Alberti understood the orders (Doric, Ionic and Corinthian), and added the ornate Composite. Not only in theory, but also in practice, during the Renaissance the Vitruvian concept of the Ideal City was developed and realised through several outstanding examples in Italy.*

**Key words:** *Vitruvius, architecture, Antiquity, Renaissance, proportion.*

Two treatises have dominated architectural theory. Vitruvius, writing in the first century A.D., wrote the first one. Leon Battista Alberti revised and reformulated that body of theory in the early years of antiquity’s restoration and renewal at the dawn of the modern age. Together, these two treatises present a comprehensive and rigorous theoretical complement to a rich and maturing practice in architecture. We know a little about the role of Vitruvius’s treatise before Alberti wrote his, and we know a great deal about the role they both played afterwards. To remain current they needed only fragmentary contributions or partial and respectful amendments to absorb new knowledge or to give theory a different emphasis. For example, Filarete sought to give a princely perspective that would counter Alberti’s republican bias, and both he and Francesco di Giorgio Martini restored and expanded Vitruvius’s comments about the anthropomorphic analogy Alberti had left implicit. Philibert de l’Orme

adapted the full body of material to address conditions in France. Serlio, following Cesariano's publication of Vitruvius, introduced images to supplement the text, and Palladio, knowing that his audience was familiar with the body of theory, wrote his in a kind of shorthand. The treatises link buildings to the larger body of knowledge that an educated person ought to possess. Buildings and treatises provide complementary ways to investigate and comprehend the content and meaning of the stable, coherent, and rational moral universe.

There are some well known facts about Vitruvius, especially connected with his theoretical work. **Marcus Vitruvius Pollio** (c.75 BC – c.15 AD) was a Roman military engineer and architect active during the reign of Augustus to whom he dedicated his *De architectura libri decem* (Ten Books on Architecture), the first and most famous of all architectural handbooks. His treatise described existing practices in details, including the design and construction of buildings, but also elaborated the questions that are today thought of as engineering disciplines.

Vitruvius' outlook was essentially Hellenistic. His wish was to preserve the classical tradition in the design of temples and public buildings, and his prefaces to the separate books of his treatise contain many pessimistic remarks about contemporary architecture. *De architectura* was based on Vitruvius' own experience, as well as on theoretical works by Greek architects. It is divided into ten books dealing with many problems, among which are city planning, temple construction and the use of the Greek orders.

Vitruvius's work *De architectura libri decem* presents significant teaching material, suggesting that an architect needs a good understanding of philosophy, geometry, music, and medicine - indeed all of the liberal arts and sciences (Book I, chap. I, 4). This system is adopted in Freemasonry which takes architecture, geometry and a symbolic understanding of the liberal arts and sciences as the basis for instruction in the morality of Man. His style is prescriptive and gives direct advice: "*I have drawn up definite rules to enable you, by observing them, to have personal knowledge of the quality both of existing buildings and of those which are yet to be constructed.*"<sup>1</sup>

Vitruvius tells us that an ideal building must have three virtues: *utilitas*, it has to serve its function well; *firmitas*, it must stand up; and *venustas*, beauty. He leaves us in no doubt that the last is the product of the other two; a building cannot be truly beautiful unless it is also both solid and functional. For all three virtues he looked to nature, creator of the most efficient machines, and to the human body. Besides his wide and wise contribution to architecture in general, it seems as Vitruvius's most genius achievement is his esthetical thought, based on module measurements, which confirmed his esthetical system. Its foundation lies in ancient philosophy, his own experience, and natural talent.

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<sup>1</sup> Preface, Book I, Morgan's translation of Vitruvius's treatise. Vitruvius, *The Ten Books on Architecture*, translated by M. H. Morgan, PhD, Cambridge, Harvard University Press, London: Humphrey Milford, Oxford University Press, 1914.

The influence of Vitruvius in Antiquity was very limited. His ambition to establish critical norms for architecture was not fulfilled in the age for which he wrote. He had no influence on the architectural practice or thinking of the early Imperial era; only Pliny the Elder quotes Vitruvius as a source reference for the thirty- fifth and thirty-sixth books of his *Naturalis historiae*.<sup>2</sup>

There is no break in the transmission of Vitruvius during the Middle Ages. Concrete interest in his work is noticed from the Carolingian times, increasing in the High Middle Ages, and leading in the Renaissance to a degree of fame that Vitruvius can hardly have dreamt of. The peculiar fate of Vitruvius's treatise has been aptly characterised as follows: "In the history of art there is probably no other example of a systematic text-book aiming at contemporary influence, missing its target, and yet achieving such overwhelming success centuries after its appearance".<sup>3</sup>

A Vitruvius manuscript of the fourteenth century in Oxford bears marginal notes by Petrarch in connection with the rebuilding of the pope's palace in Avignon.<sup>4</sup> Boccaccio possessed a copy of Vitruvius's manuscript, which he quotes profusely in his *De genealogia deorum*.<sup>5</sup> Cennino Cennini (1370- 1440) relies directly on Vitruvius in his work on the proportions of the human body in his late fourteenth-century treatise on painting, while Filippo Villani (2<sup>nd</sup> half of the XIII cen. – 1348) compares the painter Taddeo Gaddi with Vitruvius a decade later on account of his depiction of architecture in paintings.<sup>6</sup>

In the fifteenth century there was a considerable dissemination of the knowledge of Vitruvius, as the numerous manuscript copies from this period make clear. Poggio Bracciolini (1380- 1459) divulged at the Monastery of St Gallen and translated Vitruvius's treatise in 1414 (Codex Harleianus), making it the major authority for western architecture until the end of the 19<sup>th</sup> century and afterwards. We know from various sources that Vitruvius was now not read only for antiquarian or literary reasons, but was also consulted on specific questions of building. Interest in Vitruvius during the Early Renaissance started with the Humanists, but soon spread to architects, and other kinds of artists and their clients, who were united by a common new interest in the architecture of Classical antiquity, for which Vitruvius was the only literary source.

Writing a century later in the preface of his "Lives of the Artists", from the lofty heights of one who had witnessed the High Renaissance first-hand, Giorgio Vasari said

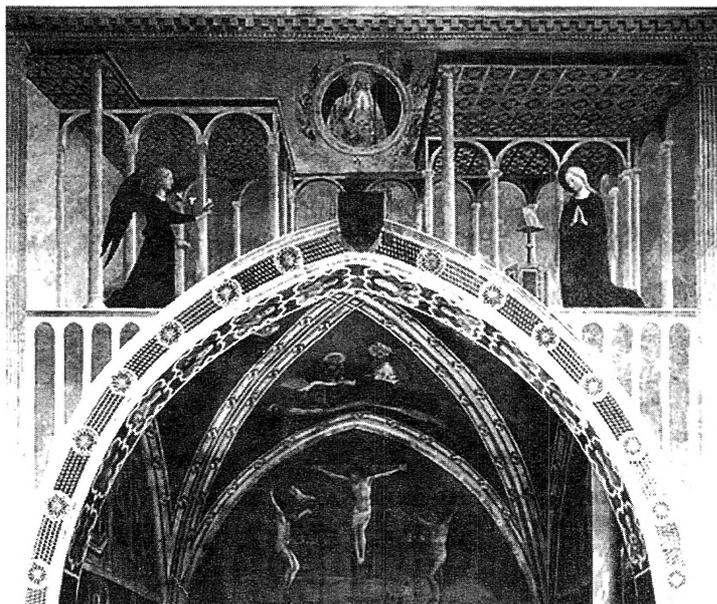
<sup>2</sup> H. Walter-Kruft, *History of Architectural Theory*, Princeton Architectural Press, 1994, p. 30.

<sup>3</sup> Qtd. In *Ibid.*

<sup>4</sup> *Ibid.*, p. 39.

<sup>5</sup> *Ibid.*

<sup>6</sup> *Ibid.* Antonio Beccadelli records in his biography of Alfonso of Aragon that the latter had "sent for Vitruvius's book on the art of building", when he embarked on the reconstruction of the Castelnuovo in Naples (1442-43). Pope Pius II (Enea Silvio Piccolomini) names Vitruvius in his *Commentarii* in connection with the building of Pienza (1459-64). Other kinds of artists besides architects read Vitruvius in the first half of the fifteenth century, as Lorenzo Ghiberti's *Commentarii* show. His translation of Vitruvius seems to have formed the basis for drawing Vitruvian proportions by Ghiberti in his "Stephanus" (1427-28).



**Fig. 1.** Masolino da Panicale, „Annunciation“, 1425- 31, fresco, The entrance of Castiglione Chapel, San Clemente, Rome.

that the medievals had made columns as tall or as short as they wished, ignoring the rules on proportion which had governed the buildings of Vitruvius and the ancients. In the thin columns of the Early Renaissance (as seen in Brunelleschi's Ospedale degli Innocenti in Florence, under construction while Masolino was painting at San Clemente, and often considered the first building of the Renaissance) we can see the first tentative steps on a route towards the confident forms which would culminate at the Tempietto of Bramante almost a century later.<sup>7</sup>

Masolino was painting at San Clemente (1425-31) about three years after Filippo Brunelleschi's (1377 – 1446) development in Florence of the one-point perspective system.<sup>8</sup> These developments in perspective are central to the Early Renaissance, the two-dimensional abstraction of the Middle Ages was already a distant memory and the 'rebirth' of the ancient was finding its feet and moving towards a solid and logical material certainty. In fact the classicism of the architectural setting of the *Annunciation* above the arch is somewhat at odds with the pointed Gothic nature of the stone and mortar arch itself. This juxtaposition serves as a fine illustration of the chapel's importance in Roman art as a bridge between the Middle Ages and the Renaissance. **(fig. 1)**

Brunelleschi's projects in fact had not represented the real revival of Roman architecture. This early Renaissance architect used some experiences from the Roman

<sup>7</sup> Đ. Vazari, *Životi slavnih slikara, vajara i arhitekata*, choice and preface Eros Sequi, translation made by Ivanka Jovičić, Beograd: Libretto, 2000, p. 103.

<sup>8</sup> A. Perez-Gomez, L. Pelletier, "Architectural Representation beyond Perspectivism", in *Perspecta*, Vol.27, (1992), pp. 21-39, p. 24. Brunelleschi, to whom we attribute the earliest example of linear perspective, worked mostly from models in his architectural practice. This transition between *perspectivus naturalis* and *perspectivus artificialis* constituted a first step toward a greater rationalization of the visual image and the detachment from medieval tradition.

building practice, following the extant monuments and the mathematical rules laid down by Vitruvius.<sup>9</sup> He succeeded in building the dome of the Florence Cathedral, which was a great engineering victory that is not fully based on the Roman building structure. Brunelleschi also was not really able to distinguish the Orders.

Like Brunelleschi, Alberti (1404 – 1472) was exploring the remains of ancient Rome himself and he is an author of several treatises, concerning *Descriptio urbis Romae*, (Della) *Pittura*, *Scultura* and *Architettura*, actually the visual part of the Liberal Arts. He evoked Vitruvius directly with *De re aedificatoria*, presented to Pope Nicholas V. Like a real humanist Alberti took an active role in the intellectual climate in Rome in the 1430s and 40s, “studying” Vitruvius systematically and involving his essential influence in early Renaissance architecture and art. By doing this, he initiated the idea, so potent in the later fifteenth century and all through the sixteenth, that the true model of architecture was to be sought in a reconciliation between the text of Vitruvius and the monuments. Alberti thought of the art of architecture as essentially governed by mathematical laws and proportions, according to the statements made by Vitruvius himself about harmony and proportion. In this context he wrote about his Tempio Malatestiano at Rimini: “You can see where the sizes and proportions of the pilasters come from: if you alter anything you will spoil all that harmony”.<sup>10</sup>

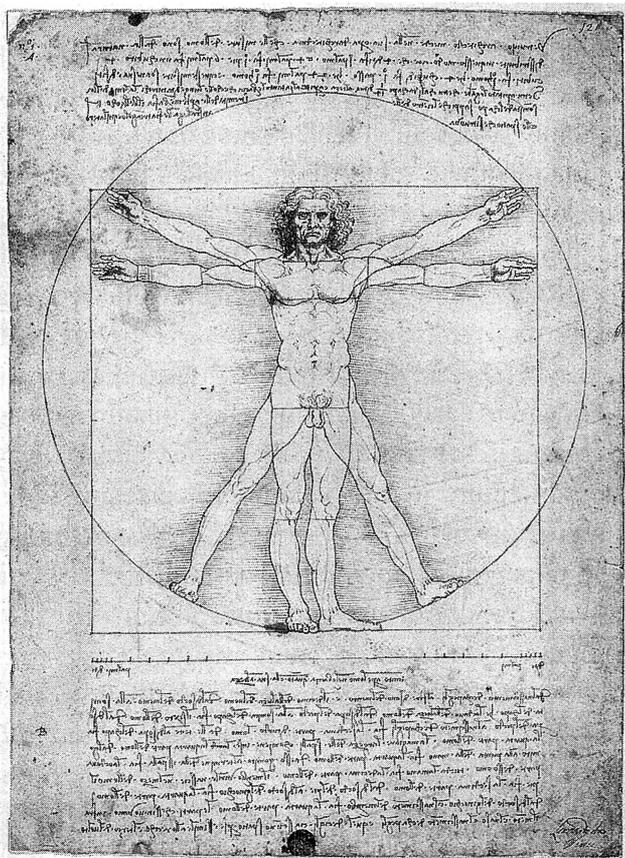
Alberti’s great theoretical treatise, written in Latin, is constructed in the same way as *De architectura libri decem*, and even has almost identical chapter headings. The most significant of Alberti’s reflections under these headings are those on plans. (i. 9) As criteria for the quality of a plan, he names purpose – better to be understood as “function” (*utilitas*), dignity (*dignitas*) and attractiveness or amenity (*amoenitas*). Here Alberti integrates the criteria of functionality, aesthetics and use. The same chapter contains his analogy of house and state, the state being regarded as a great house and the house as a small state. The two are held together by the organic concept that “as the Members of the Body are correspondent to each other, so it is fit that one Part should answer to another in a Building”.<sup>11</sup> It is obvious that here Alberti has in mind Vitruvius’s conclusions on proportions of the human body. As Vitruvius wrote, founding a perfect architectural measuring system, according to the parts of the human body and their proportions:

“For the human body is so designed by nature that the face, from the chin to the top of the forehead and the lowest roots of the hair, is a tenth part of the whole height; the open hand from the wrist to the tip of the middle finger is just the same; the head from

<sup>9</sup> P. Murray, *Renaissance Architecture*, New York, Harry N. Abrams, Inc. 1971, p. 10. After his death, in the anonymous *Life*, the point is made that Brunelleschi was the hero of the revival of architecture, partly because of his study of Roman structural techniques and partly because of his rediscovery of the mathematical rules governing proportion and ornament.

<sup>10</sup> Qtd. In *Ibid.*, 17. *De Re Aed.* Lib. vi, 2; Lib. ix, 5. Alberti’s idea of beauty is also explicated in A. Blunt, *Umetnička teorija u Italiji 1450- 1600*, Beograd: Clio 2004, p. 20. (translation of A. Blunt’s *Artistic Theory in Italy 1450- 1600*, Oxford University Press, 1940)

<sup>11</sup> L. B. Alberti, *O arhitekturi (De re aedificatoria)*, translated by Miklavž Komelj, Ljubljana: Studia humanitatis, 2007, p. 31. (i. 9).



**Fig. 2.** Leonardo da Vinci, „Vitruvian Man“, c. 1485- 90, drawing pen and ink on paper, 343 x 245 mm, Galleria dell' Accademia, Venice.

the chin to the crown is an eighth, and with the neck and shoulder from the top of the breast to the lowest roots of the hair is a sixth...”<sup>12</sup>

He continues,

“Then again, in the human body the central point is naturally the navel. For if a man be placed flat on his back, with his hands and feet extended, and a pair of compasses centred at his navel, the fingers and toes of his two hands and feet will touch the circumference of a circle described therefrom. And just as the human body yields a circular outline, so too a square figure may be found from it. For if we measure the distance from the soles of the feet to the top of the head, and then apply that measure to the outstretched arms, the breadth will be found to be the same as the height, as in the case of plane surfaces which are perfectly square.”<sup>13</sup>

This description was the inspiration for Leonardo’s celebrated drawing *Vitruvian Man* in the late fifteenth century. It demonstrates the enthusiasm for the theories of

<sup>12</sup> Book III I, 2, Morgan’s translation; Also Витрувиј, *Десет книги за архитектурата*, Скопје: Зумпрес 1998 (translation by Ljubinka Basotova of Vitruvii, *De Architectura Libri Decem*, Harleian 2767, British Museum, London, 8<sup>th</sup> century).

<sup>13</sup> Book III I, 3. Also qtd. In E. Граси, *Теорија о лепом у антици*, Београд: Књижевна мисао, 1974, pp. 172, 240-241. (translation of the Ernesto Grassi, *Die Theorie des Schönen in der Antike*, Köln: Verlag M. DuMont Schauberg, 1962)

Vitruvius among da Vinci and his contemporaries. In his treatise, Vitruvius discussed proper symmetry and proportion as related to the building of temples. The architect believed that the proportions and measurements of the human body, which was divinely created, were perfect and correct. He therefore proposed that a properly constructed temple should reflect and relate to the parts of the human body. He noted that a human body can be symmetrically inscribed within both a circle and a square; this idea influenced his architectural practice.

Various artists and architects had illustrated Vitruvius' theory prior to Leonardo, but da Vinci's drawing differs from the previous works in that the male figure adopts two different positions within the same image. (**fig. 2**) He is simultaneously within the circle and the square; movement and liveliness are suggested by the figure's active arms and legs. Leonardo is representing the body as a building and illustrating Renaissance theory which linked the proportions of the human body with architectural planning.

The text which surrounds the figure in Vitruvian Man paraphrases Vitruvius's theory. It is apparent that da Vinci wrote the text after creating the drawing, as the words are tailored to the contours of the circle and the square. The presence of the text legitimates the image; the authority of Vitruvius explains why Leonardo created the drawing. The image is not, however, simply an illustration of the text. Words and image interact in the work and the significance of the piece lies in the connection between the two.<sup>14</sup>

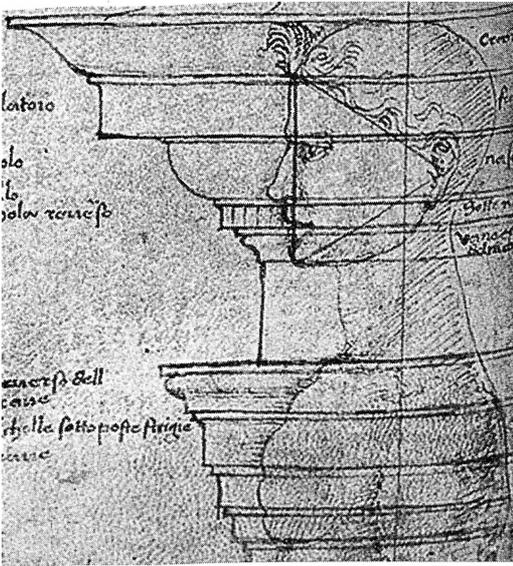
Renaissance architects seem to have truly believed that "Man is the measure of all things" as an evidence of an anthropocentric world view. Since man was made in the image of God, so it was believed the proportions exemplified in the human form would reflect a "divine and cosmic order."<sup>15</sup> Leonardo's practically – oriented approach is, however, especially worthy of note, since it synthesises ideas by Vitruvius, Alberti, Filarete and Francesco di Giorgio. He possessed Alberti's treatise in the 1485 edition and annotated a manuscript of Francesco di Giorgio's, making excerpts from it. Filarete's total anthropometrist is obvious from the use of the concept of Vitruvian man, which he did not, however illustrate – to base even the basic geometric shapes on human proportions. He considered the circle, the round, the square, and every other measurement derived from man. He went further saying that architecture is not only derived from human proportions but actually resembles the human organism: it lives, sickens and dies, as man does.<sup>16</sup> Drawings by Francesco di Giorgio illustrate such proportional concepts directly and vividly. (**fig. 3 and 4**) "Francesco di Giorgio demonstrates by means of the inscribed human figure how to weld together organically the centralized and the longitudinal parts of such a church design. The centralized eastern end is developed from the basic geometrical figures of the circle and square."<sup>17</sup>

<sup>14</sup> Drawing Pan and ink on paper, c. 1485 – 1490, 343 x 245 mm, Galleria dell' Accademia, Venice. It is also referred to "Canon of Proportions" or "Proportions of Man".

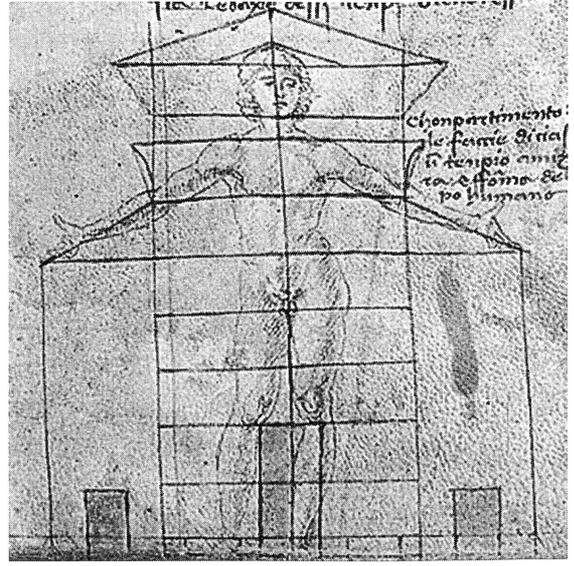
<sup>15</sup> P. Steadman, *The Evolution of Designs: Biological Analogy in Architecture and the Applied Arts*, A revised edition, London and New York, 2008, p. 17.

<sup>16</sup> Walter- Kruff, p.53.

<sup>17</sup> R. Wittkower, *Architectural Principles in the Age of Humanism*, London: Alec Tiranti LTD., p. 11.



**Fig. 3.** Francesco di Giorgio Martini, „Classical column compared to a human figure“, drawing from *Trattato di architettura, ingegneria e arte militare*, 1470 – 1480.



**Fig. 4.** Francesco di Giorgio Martini, „Church design compared to a human figure“, drawing from *Trattato di architettura, ingegneria e arte militare*, 1470 – 1480.

(**fig. 5**) He used a comparison of the plan of a church based on the proportions of the human body: “And basilicas having the proportions and shape of human body, as a man’s head is the most important part of the latter, so the chancel must be the most important part, and head, of the church.”<sup>18</sup> (**fig. 6**)

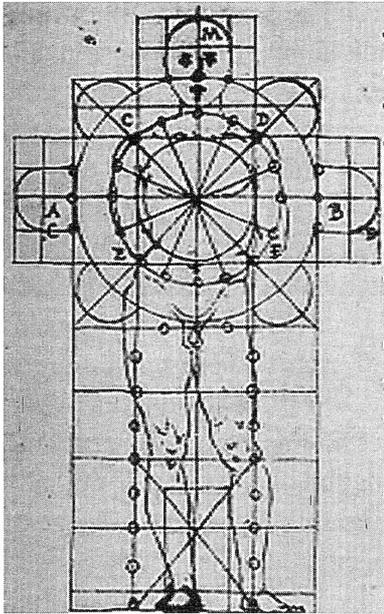
The *Vitruvian Man* was very much a part of this order and need for proper proportion, “Order stands at the center of the received character of the Italian Renaissance. The circle is the image of divine perfection, the five Platonic solids the building blocks of the cosmos, and the human figure the microcosm of that universe, a figure whose extensions area encompassed by the circumscribed shapes of the circle and the square.”<sup>19</sup> Geometry and arithmetic were given a special role in the interpretation of the cosmos. The importance of number as the principle underlying cosmic order had been elaborated in Antiquity in Pythagorean, Platonic and Neoplatonic philosophy. St Augustine drew on this tradition in his treatise *De musica*, in which he demonstrated how musical harmony conforms to mathematical rules. In the opinion of St Augustine music and architecture are sister arts, both based on number, which ranks as the source of all aesthetic perfection.<sup>20</sup>

The Franciscan friar and professor of mathematics, Luca Pacioli (1445 – post 1514), offers a remarkable synthesis of the ideas current at the end of the Quattrocento.

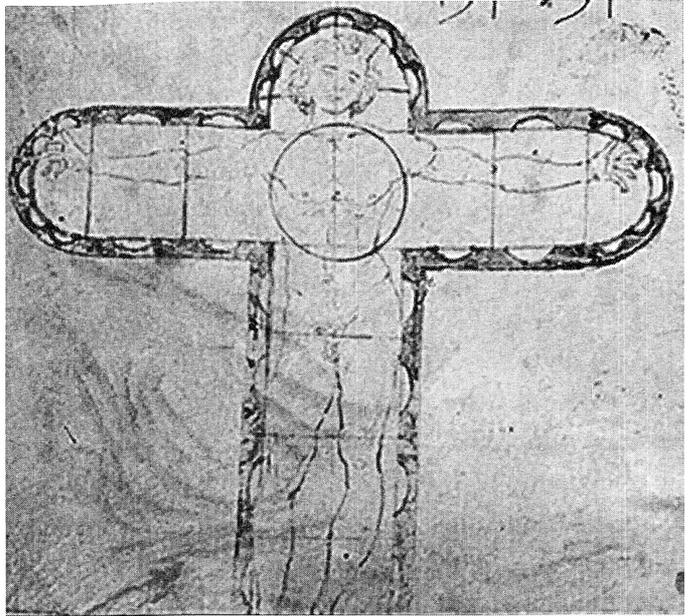
<sup>18</sup> Qtd. In Walter-Kruft, p. 56.

<sup>19</sup> R. Turner, *Inventing Leonardo*, Berkeley and Los Angeles: University of California Press, 1994, p. 210.

<sup>20</sup> Walter-Kruft, p. 36.



**Fig. 5.** Francesco di Giorgio Martini, „Human figure inscribed in church plan“, c. 1476, drawing from *Trattato di architettura, ingegneria e arte militare*, also in *Codex Magliabechiano* (second version of the treatise from 1487 – 1500), fol. 42 v., Biblioteca Nazionale Centrale, Florence.



**Fig. 6.** Francesco di Giorgio Martini, „Human figure inscribed in church plan“, drawing from *Trattato di architettura, ingegneria e arte militare*, 1470 – 1480.

He was a pupil of Piero della Francesca, and in the course of his career had close contact with Alberti, Bramante, Francesco di Giorgio and Leonardo da Vinci. Both a mathematician and a theorist about art, he was possibly the object of Durer's mysterious visit in 1506 to Bologna, where he was lecturing at

the time. His treatise *De Divina proportione*, published in 1509, is addressed to a wide circle of those interested in philosophy, perspective, painting, sculpture, architecture, music and mathematics.<sup>21</sup> Although Pacioli's following of Euclid takes the Golden Section as the *divina proportione*, it must be noted that, contrary to what is generally believed, during the Renaissance this proportional relationship played a subordinate role, and preference was given to integral arithmetical ratios. Combining the ideas of Vitruvius and Francesco di Giorgio – without naming the latter – Pacioli derives every measurement and form in architecture from the human body.

“At one level, it is urged that the layout of the building match the body part for part. Vasari, for example, in his recommendations for the design of an ideal palace, compares the façade with the face, the central door with the mouth, the symmetrically placed windows with eyes, the courtyard with the body, staircases with the legs and arms... the typical proportional ratios to be detected in the measurements of the human

<sup>21</sup> P. Hemenway, *The Secret Code*, The mysterious formula that rules art, nature, and science, Koln: Evergreen, 2008, pp. 105-109.

figure and limbs are to be employed for sizing the elements of the building, without any sense at all of the plan or façade corresponding to the body in general disposition.”<sup>22</sup>

Luca Pacioli, like Francesco Colonna in his *Hypnerotomachia Poliphili* turns the theory of proportion into an esoteric doctrine. The age of a relatively unfettered approach to Vitruvius and the architecture of Antiquity was over by around 1500. After that the trend is towards the normative and the doctrinaire. Editions and translations of, and commentaries on Vitruvius became widely established as normative of architectural theory. Fra Giocondo’s edition from 1511 is followed by one hundred and forty woodcuts that had a decisive influence on the majority of later editions of Vitruvius. In dedication to Pope Julius II, Giocondo compared him with Augustus as great builders. The method of architectural representation described by Vitruvius as *ichnographia*, *orthographia* and *scaenographia* are illustrated by Giocondo as plan, elevation and perspective view.<sup>23</sup> Cesare Cesariano’s (1483-1543) translation of Vitruvius from 1521 reflected both in his illustration and in his commentary – the fact that his knowledge of Classical and Renaissance architecture was limited to North Italy. This edition proved influential, not only because the Italian translation made the Vitruvian text accessible, but also because it insured a direct link with current practice.

The Vitruvian Academy was established in Rome in 1542, under the protection of Cardinal Bernardino Maffei. Its members were, among others, the Frenchman Guillaume Philander, the young architect Vignola (1507 – 1573), and the Sienese Humanist Claudio Tolomei, who set out the Academy’s programme. The great ambition of the Academy, to develop the gigantic plan of a complete corpus of the architecture of Classical Antiquity, failed soon and produced only Philander’s commentary on Vitruvius in 1544, which projected sixteenth-century ways of thinking and seeing on to Vitruvius.

Around 1547, before he met Palladio, Daniele Barbaro had already begun a new translation of Vitruvius, with commentary, which is the most conscientious of the whole sixteenth century. The first edition appeared in 1556 and its illustrations are mainly based on drawings by Palladio.<sup>24</sup> Andrea Palladio (1508 – 1580) would also emulate Vitruvius by writing his *Four Books of Architecture*. In his aesthetic ideas Palladio was largely dependent on Vitruvius and Alberti and firmly oriented towards Classicism. He did not see himself as an imitator, but as a continuator of Antiquity. But, when his *Quattro libri dell’architettura* appeared in 1570, they surprisingly showed originality in the un-Roman and polemically practical ideas. Palladio makes an analogy between the concept of *commodità* and the human organism. The organic and aesthetic correspondence of individual parts to each other and to the whole is repeatedly emphasised by him. Pallazzo Chiericati, like the most of his buildings, shows a biomorphic plan: the human body is also symmetrical on either side but

<sup>22</sup> P. Steadman, p. 17.

<sup>23</sup> Walter-Kruft, pp. 66-67.

<sup>24</sup> The illustrative part is used in Vitruvius’s translation by Dr. Matija Lopac, *Deset knjiga o arhitekturi*, Sarajevo: Svjetlost, 1990 (Valentinus Rose’s edition – In Aedibus B. G. Teubneri, Lipsiae MDCCCXCIX)

not in depth; axial features are single, like the nose and mouth, and lateral elements paired, like the eyes and arms.<sup>25</sup> It seems that Palladio overtook Vitruvius's role for the next generations, because his architecture seemed the perfect embodiment of the classical tradition. Although superficial, its obvious references to Greek and Roman Antiquity made Palladio the most imitated architect in history, especially influential on the development of the English and American architecture. By contrast from his contemporaries, Palladio kept full control of width and depth as well as height relationships in the central block of the building, in the lateral blocks, and in the interrelationship of all these to the whole aspect, both in elevation and in plan. The design was thus tightly knit as an organism.<sup>26</sup>

Although Vitruvius posted his theory on architectural proportions a long time ago, many Renaissance architects and theoretically engaged *uomini universali*, made an effort to implement it in one way or another as a basis for the esthetical and philosophical principles of contemporary classicistic architecture. Besides this, two other problems especially attracted their attention: Vitruvius's relation to the Orders and the urban planning, which they transformed into an idea of the *Ideal city*.

Alberti's conception of proportion (*finitio*), which corresponds roughly to *symmetria* and *eurythmia* in Vitruvius, covers the modern idea of proportion, but in a broader sense. *Concinnitas* is the absolute and supreme law of Nature, but it stands above Nature; it is the governing principle of creation.<sup>27</sup> The application of *concinnitas* to architecture rests for Alberti on the observation and imitation of Nature, whose multiplicity of phenomena he sees reflected in architecture in the different Orders. Studying ancient Orders upon Vitruvius, he discovered a new one, which is not described from Vitruvius – the Composit Order (enriched version of Corinthian), discovered and used after his death, actually for the first time on A.D. 82, on the Arch of Titus.

The rule established in Quattrocento was that good architecture had to consist of a concordance, a *concinnitas*, between Vitruvian proportional theory, the ancient monuments, and the traditional skills of the building crafts. The details of the Orders were still, in the fifteenth century, of minor importance, because the architect thought in terms of three-dimensional models, using drawings for his own instruction and, especially, for the accumulation of antique *exempla*. The actual cutting of a capital was still largely the province of the master-mason, and the impetus to architectural thought was to come from the further development of the art of draughtsmanship. This change, fundamental to the architecture of the sixteenth century, was made by Leonardo and Bramante in Milan in the last years of the fifteenth century.<sup>28</sup>

<sup>25</sup> J. S. Ackerman, *Palladio*, London: Penguin Books, 1991 (1966), p. 163.

<sup>26</sup> *Ibid.*, p. 161.

<sup>27</sup> Alberti, *De Re Aed.*, Lib. ix, 5; The highest beauty *concinnitas* is, according to Alberti "animi rationisque concors", a statement of perfection, a goal to whom the nature is aspiring in its creations. Also mentioned in H. Vefflin, *Renesansa i barok: istraživanje o suštini i nastanku baroknog stila u Italiji*, Novi Sad: Budućnost, 2000, p. 96. (translation of H. Wolfflin, *Renaissance und Barock. Eine Untersuchung über Wesen und Entstehung des Barockstils in Italien*, München: F. Bruckmann A.- G. 1908)

<sup>28</sup> P. Murray, p. 19.

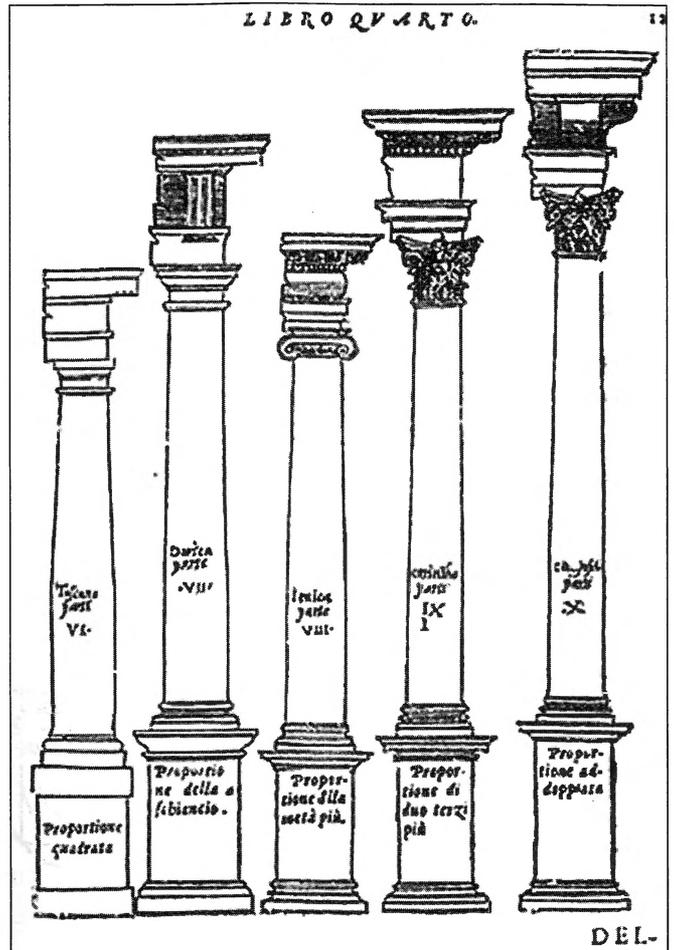


Fig. 7. Sebastiano Serlio, „Classical Orders“, drawing from *Tutte L`opere d`architettura*, Venice, 1537, Book IV.

Book IV from Serlio's (1475- 1554) five volume treatise on Architecture, the first to be published on the Orders, was the most important in his own view. It contains the theory of the five Orders, here systematised for the first time. The Orders (Tuscan, Doric, Ionic, Corinthian and Composite) are defined in terms of column heights as integral multiples of their lower diameters, pedestals being also thus defined.<sup>29</sup> (fig. 7) The significance of Serlio's theory of the Orders founded a tradition codified in innumerable books on the Orders, especially in northern Europe in the sixteenth century, reducing architectural theory to the theory of the Orders and instructions on their use. Basing himself explicitly on Vitruvius's prescriptions of propriety in the use of Orders, Serlio stipulated adjustment to the needs of contemporary architecture. The Orders are subordinated to their context in both sacred and profane domains.

In his *Regola delli cinque ordini d'architettura* (1562), Vignola took this a step further, by not even writing a comprehensive book on the Orders, but instead demonstrating through his plates a method of his own devising of constructing them. He is chiefly concerned to evolve a universally valid method of obtaining exact

<sup>29</sup> Walter-Kruft, p. 75.

measurements for the five Orders.<sup>30</sup> He did not adduce mathematical or geometrical laws, but measurements from the building of Antiquity. Only for the Tuscan order he used Vitruvius's specifications as a basis, as he knew no building of Antiquity of this Order in Rome.

Palladio takes the Orders as fixed by Serlio and Vitruvius as axiomatic. Again, Vitruvius's argument is of less importance for him than his own measurements. More clearly than Serlio, he established precise proportional relationships based on the use of modules between the orders, the proportions within each kind of column and intercolumniations. Palladio followed Vignola's *Regola* down to the very form of his illustration. He observes that the antique Doric columns originally have no bases, but decides in favour of the use of an Attic base to change that, showing an undogmatic stance vis-a-vis Antiquity which will increase its length.<sup>31</sup>

In an effort to recover the public vitality of ancient life, Renaissance architects increasingly turned to study Vitruvius as well as the works of Polybius.<sup>32</sup> They often envisioned entirely new cities planned along lines suggested by these antique writers. The correspondence between the planimetry of the city and the customs and ethics of its inhabitants, a major point in More's communist views, is derived from the thought of classical texts – from Plato's philosophical writings to Vitruvius's *De Architectura* – whom European humanists re-read and re-interpreted according to new epistemological paradigms.<sup>33</sup>

The ideal cities presented in Italian Renaissance treatises such as Leon Battista Alberti's *De Re Aedificatoria* (1443-1452), Filarete's *Trattato di architettura* (1460-1464), Francesco di Giorgio Martini's *Trattato di architettura, ingegneria e arte militare* (1470-1480), and Leonardo da Vinci's drawings and writings, originated from a thorough analysis and critique of medieval towns.<sup>34</sup> While the latter ones grew loosely without any definite geometrical evolution, Renaissance cities were conceived as harmonic, volumetric shapes which were to rise and evolve according to a definite urban planning.

The cultural atmosphere of the Italian Renaissance, imbued with the idea of the *homo faber* who masters his own destiny and moulds his environment, and the political situation between 1450 and 1550, were favourable to the rise of architects who, though dependant on patrons for financial support, were creative minds driven by strong will. By the middle of the 15<sup>th</sup> century humanist architects, supported by wealthy merchants

<sup>30</sup> *Ibid.*, pp. 80-81.

<sup>31</sup> *Ibid.*, p. 89.

<sup>32</sup> P. M. Soergel (editor), *Arts and Humanities: Renaissance in Europe 1300 - 1600*, Farmington Hills: Thomson and Gale, vol. 4, p. 15.

<sup>33</sup> R. Jaeck – Woodgate, *Individual Happiness and Social Morality: An Introduction to Francesco Patrizi da Cherso's La Città Felice*, pp. 99-111, 2008, p.100, in web. Source <http://openjournals.library.usyd.edu.au/index.php/SSR/Article>.

<sup>34</sup> M. Ragazzi, *La città ideale del Rinascimento*, Istituto Italiano Edizioni Atlas, pp. 1-2; [http://edatlas.it/.../02\\_La\\_citt\\_ideale\\_del\\_Rinascimento\\_pdf](http://edatlas.it/.../02_La_citt_ideale_del_Rinascimento_pdf). See also G.C. Sciolla (a cura di), *La città ideale del Rinascimento*; con un saggio introduttivo di L. Firpo, Torino, UTET, 1975.

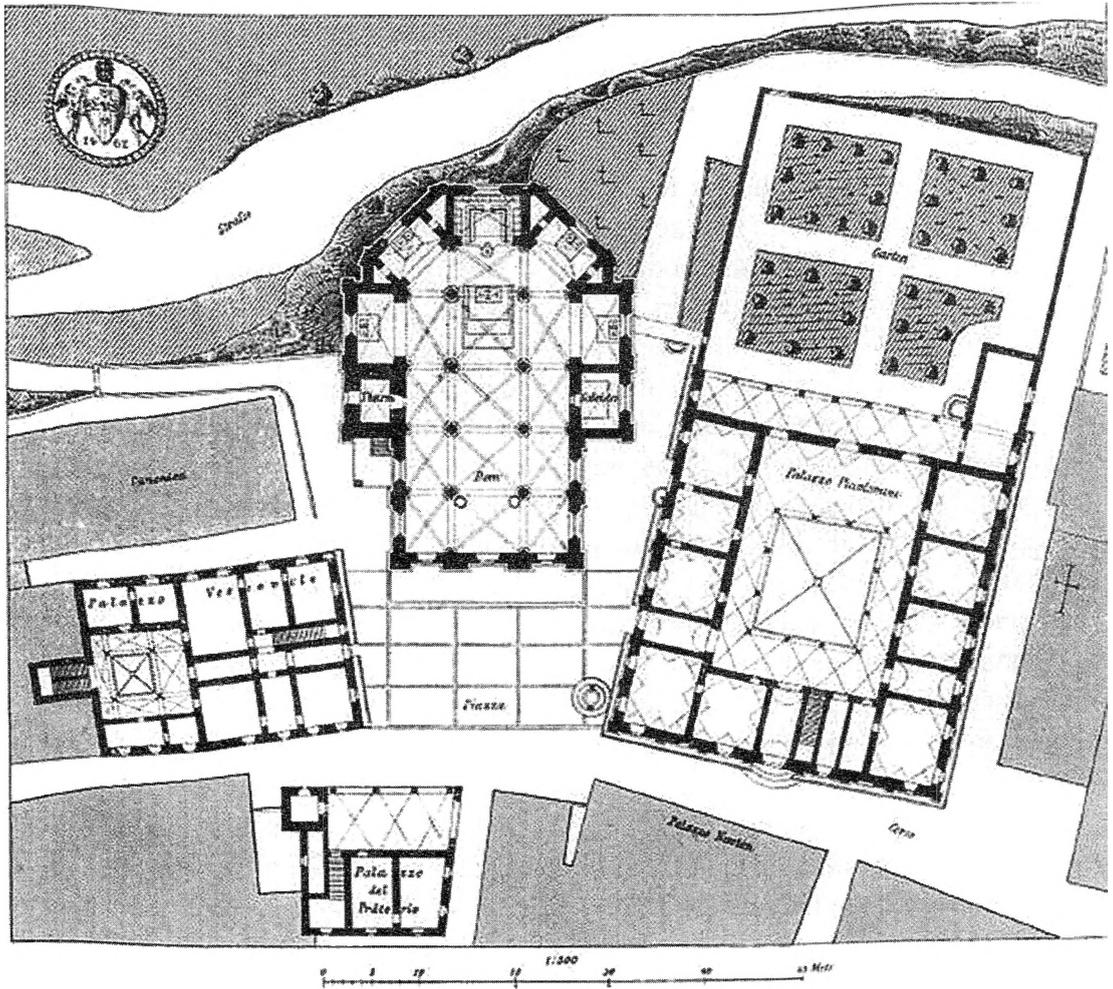


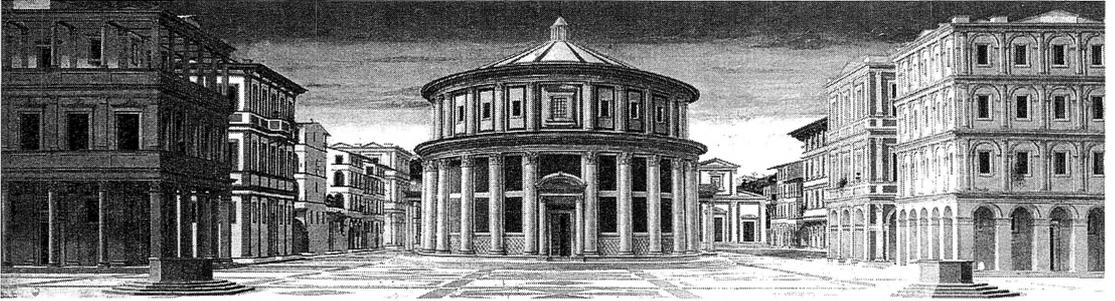
Fig. 8. Bernardo Rossellino, Plan of Pienza, 1460.

and illustrious families and less dependent on the Church, conceived of new rational urban plans founded on the theory of the balance between microcosm and macrocosm, as was articulated in the philosophical works of the Neo-Platonic Marsilio Ficino. Leon Battista Alberti set out the principle of such an ideal order in the *De re aedificatoria* and strenuously attempted to realise it in buildings patronised by the Church or by the influential Signori of Italian cities such as the Chiesa di Sant'Andrea in Mantua and the Tempio Malatestiano in Rimini.

The fifteenth century, though, did produce one fine example of a planned city. During the 1460s Pope Pius II had his native village south of the city of Siena rebuilt along the lines suggested by contemporary Renaissance architects.<sup>35</sup> Eventually named Pienza in his honor, the town featured a plan in which streets and subsidiary squares radiated out from a central plaza. (fig.8) Within Pienza, different architectural proportions

<sup>35</sup> Soergel, pp. 15- 16.





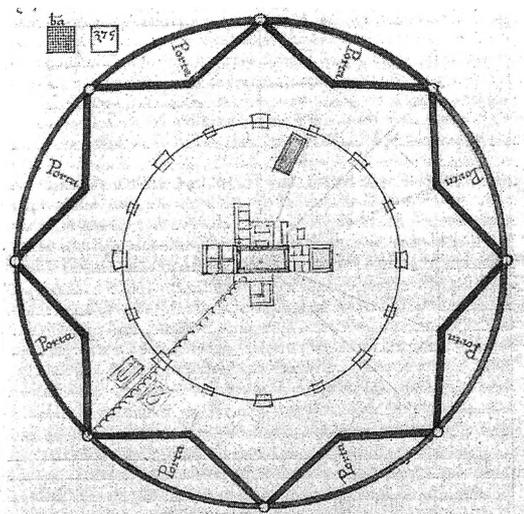
**Fig. 11.** Piero della Francesca, „Ideal City“, c. 1470, tempera on panel, 60 x 200 cm, Galleria Nazionale delle Marche, Urbino.

human body should be regarded as a source for architectural proportions, Di Giorgio Martino tried to explain in words and illustrations how this could work, particularly in term of columns: he demonstrated that a man’s shoulders support the neck and head just like a column’s architrave should support the cornice and the frieze. In the drawing entitled *L’uomo città-fortezza* (**fig. 9**) the architect conceives of the city in the shape of the human body: the heart coincides with the square, the torso is the cathedral, the city walls are conceived in a vertical way, in order to follow the legs and the arms of the human body.<sup>37</sup> (Book III) At the very top there is the fortress, which coincides with the head. At the very opposite, and thus far away from the head-fortress, is the entrance to the city. This drawing very well shows the anthropomorphous conception of the town, which has ancient roots, and can clearly be visualised in *Pianta de Napoli* di Pico Jeronimo Fonticulano (1575).<sup>38</sup> (**fig. 10**)

The Urbino court artist Luciano Laurana designed one of the most famous plans for an ideal city of this sort. In a plan from around 1475 the architect grouped all structures in a large city around a central square in which he placed a classically styled round “temple” inspired by the architectural writings of Alberti. The central Italian painter Piero della Francesca immortalized Laurana’s visually appealing plans in a famous panel painting, *Vision for an Ideal City*. (**Fig. 11**) Most fifteenth-century architects, Laurana included, had to be satisfied with far more limited successes, such as the design of the small squares that surrounded their architectural creations. In the well known picture of the ideal city of Urbino, the urban scenario focuses on a circular temple where two external orders of pillars of different size exalt the principle of symmetry. The surrounding rectangular buildings are constructed on multiple orders of floors. The interplay between the foreground and the surroundings is enhanced by the perspective, which can be regarded as a privileged theoretical dimension in which Renaissance architects and theorists studied spatial relationships and developed speculative models. Renaissance towns are not only based on a new idea of space, which expands horizontally rather than vertically, as in medieval towns which were

<sup>37</sup> *Ibid.*

<sup>38</sup> T. Michalsky, “Gewachsene Ordnung. Zur Chorographie Neapels in der Frühen Neuzeit”, in: Jöchner, Cornelia (Hrsg.): *Räume der Stadt von Antike bis heute*, Berlin 2008, S., pp. 268- 288, fig. 7.



**Fig. 12.** Antonio Averlino – Filarete, Plan of Sforzinda, c. 1461- 1464, drawing with pencil and brown ink and water - colour, a part of *Trattato di Architettura*, vol. II, Florence, Biblioteca Nazionale centrale, Codex Magliabechiano II. I. 140, fol.13 v.



**Fig. 13.** Giulio Sovarnano, Palmanova, built up in 1593, aerial view of the town.

built high on hills, but also on the idea of a centre, which is usually delineated by a square or open space, and from which light radiates in every direction. Medieval towns are intricate webs of alleys and dark passages, while Renaissance cities present an airy, enlightened and harmonious spatial organization that highlights harmony among the citizens.

A major concern was the balance between symmetry and beauty on the one hand, and security on the other, as emerges from the plans of two emblematic ideal cities: Sforzinda (1457-64) and Palmanova. Sforzinda was named in honour of his patron, Francesco Sforza, and presented by the architect Antonio Averlino, named Filarete (c.1400 – c.1469), in his *Trattato di architettura*, a lengthy work written between 1460 and 1464. (fig. 12) Even though Sforzinda can be considered the first complete plan of an ideal city, it is a wholly abstract model, as can be seen in the map, where the main concern is for the perfection of its star-like shape and for the regular distribution of its buildings.<sup>39</sup> A comparison between the ideal city in architectural treatises and the utopian city is interesting: while the centralised structure can also be found in many cities in utopian literature, the difference lies in the choice of the site: Filarete's drawing is detached from any real link with territory, while utopian writers are very much concerned about the choice of the site. Among the few extant Italian examples of ideal cities, which were actually built and inhabited, Palmanova and Sabbioneta are

<sup>39</sup> E. Garen, *Kultura Renesanse*, serija Biblioteka Istorija, Beograd: Nolit, 1983, p. 158 (Serbian translation of E. Garen, *La Cultura del Rinaschimento*, Bari: Editoriale Laterza, 1976).

the most outstanding. Palmanova (**fig. 13**) near Venice is a fortified city, conceived by a military architect, probably Giulio Savargnano in collaboration with Vincenzo Scamozzi. The fortifications, located in the spear-like walls, respond to the decision, taken by the Venetian senate in 1593, to protect its Eastern frontier against the potential attempt of the archduchies of Trieste and Gorizia, locally, and the Turkish enemy, abroad.

Leonardo Da Vinci's contribution to Renaissance architectural planning stemmed from the desire to ameliorate the hygienic and hydric system of contemporary towns. Horrified by the filth and promiscuity of medieval towns, he conceptualised rational alternatives to the existing urban, and consequently social, conditions.<sup>40</sup> In some drawings he speculates on specific locations such as Milan, in others he presents abstract schemes with no particular site in mind. Leonardo's sketches of a city organised on different levels have been the object of critical attention for a long time: whether the precise distribution of the population involves a hierarchical structure of society is still to be assessed.

In Patrizi's book *La città felice* (1553) the choice of the site where the city has to be built and the perfect symmetry of the town plan, in which every functional space and building on the left is mirrored on the right, can be explained as a theoretical realization of a Vitruvian ideal city.<sup>41</sup>

It was not until the early Humanists that the significance of Vitruvius's system came to be recognized, and from their endeavours arose the first systems of architectural theory since Classical antiquity, which, though not replacing Vitruvius, to some extent far surpassed him in intellectual significance.

The presence of Italian architects in France, Germany, and Spain, as well as the journeys of craftsmen to Italy, gradually helped to develop a more complete understanding of classical architecture, its design elements, and its uses, as did the spread of architectural treatises written by Italians like Serlio, Palladio, and Vignola. These works, with their engraved illustrations, deepened the appreciation of classicism among European architects working outside Italy. The foundation of the Royal Academy of Architecture in Paris (1671) established the canons of French classicism as normative in public building projects undertaken during the seventeenth and eighteenth centuries. English architecture overtook a great Renaissance and Palladian influence which incorporate Vitruvian lessons. From Sir Cristopher Wren to Colen Campbell (*Vitruvius Britannicus*, 2 vols., London 1715&1717), the persistent classicism in designing public and private buildings showed the vitality of Vitruvius's ideas in the Age of Baroque. The same stream was present in the activity of Scottish architect Adam William, which *Vitruvius Scoticus* was published in Edinburgh in 1812, and *Den Danske Vitruvius* I-II, published between 1746 and 1749 in Copenhagen, whose appearance is a valuable source of information on the many Danish buildings and

<sup>40</sup> *Ibid.*

<sup>41</sup> Francesco Patrizi, *La Città felice*, Venezia, 1553.

is another proof of the domination of the classical esthetical norms and canons in European architecture, presented by Vitruvius a long time ago. Beside the already mentioned, every significant European city owes Vitruvius its recognisability: Paris, Vienna, Prague, Petrograd etc. Vitruvius's treatise is translated in many languages. Judging the work of the Baroque architects, Bellori complained that "they madly deform buildings and even towns and monuments with angles, breaks and distortions of lines; they tear apart bases, capitals, and columns by the introduction of bric-a-brac of stucco, scraps, and disproportions; and this while Vitruvius condemns similar novelties and puts before us the best examples."<sup>42</sup>

After the period of Neoclassicism, the colonial architecture made Vitruvius actual also for other continents. Maybe unexpected, but his timeless existence found its way into contemporary 20<sup>th</sup> century architecture. Vitruvius had become synonymous with architectural rule-making, and proportion was at its heart. Modernism's great protagonist Le Corbusier would deliberately cite Vitruvius and come up with his *modulor*, which sought to reconcile the French metric system with traditional measurements (cubit, braccia, foot) which took their length from elements of the human body.

Are all of these facts sufficient for answering the question: Is Vitruvius really the most influential architect in the history of architecture, without constructing any single building during his life, making classical rules in architecture immortal? Was his rich, complex and complete written material important enough to make him so celebrated, studied and cited from almost every architect through the ages, even to the present day? We certainly know that through the antique revival of the Renaissance, the classical phase of the Baroque, during the Neoclassical period, and even in 20<sup>th</sup> century until today his work is the chief authority on ancient classical architecture.

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<sup>42</sup> Giovanni Pietro Bellori in *Michelangelo and the Mannerists; The Baroque and the Eighteenth Century*. Vol. II of *A Documentary History of Art*. Ed. Elizabeth G. Holt (Englewood Cliffs, N.J.: Prentice Hall, 1958): pp. 104–105.

## Ехото на Витрувиј во епохата на Ренесансата

### *Резимé*

Иако единствено зачувано античко дело за архитектурата, своевидната компилација од постари грчки текстови и градителски искуства (проследени со незграпен латински превод на грчки стручни термини), *Десетте книги за архитектурата* на римскиот архитект Марко Витрувиј (од I век пред Христа) ќе имаат далекусежни последици за архитектурата и, воопшто, естетиката на неколку столетија. Но, нивното влијание не ја тангира во толкава мера архитектурата и уметноста на вековите што следат, туку на оние во кои се обновува идејата за класицизмот: пред сè, епохата на ренесансата, потоа и онаа на барокот, неокласицизмот, а може да се рече и до најново време. Ренесансните градители и теоретичари го обработиле темелно трактатот на Витрувиј, адаптирајќи го на современите барања на архитектурата преку антиципирање на три, според нив, најважни моменти: прашањето на пропорциите, стилските и на решавањето на проблемот на „Идеалниот град“. Веќе Л. Б. Алберти формулира еден од најважните поими на класицизмот, дефиницијата на убавината како хармонија на сите делови, мисла на Аристотел која тој ја нашол кај Витрувиј. Покрај тоа што ја напишал својата *De Re Aedificatoria*, инспириран од Витрувиј, тој презема од него многу идеи, како онаа дека архитектурата е имитација на природата, или дека системот на редови (дорски, јонски, коринтски) го изградил чувството за пропорции кај античките градители, до идејата за споредба на идеалните пропорции на човечкото тело, како врвна креација со пропорциите на самата градба. Раната ренесанса не ги дефинирала пропорциите, како што тоа подоцна ќе го направат архитектите Вињола и Андреа Паладио: строго и стриктно дефинирани пропорциски системи, кои стремат кон еден вид врвна универзална естетика. Преку Паладиевите принципи за деловите и нивниот хармоничен однос со целината, лекциите на Витрувиј ќе ги пробијат временските и географски бариери, правејќи го античкиот градителски метод вечен и универзален.