Rhythm as Aesthetic Criterion (Part 1)

Monday 5 November 2018, by Pascal Michon

Sommaire

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The 19th century witnessed a remarkable spread of the concept of rhythm in art history and aesthetics in German speaking countries such as Germany, Switzerland, and Austria-Hungary. However, in order to better assess the novelty of this spread, we need first to understand the traditional views concerning the rhythm that had developed both in the artistic practice and in the philosophical reflection on beauty and art.

The Introduction of *Eurhythmia* into Architecture (Vitruvius – 1st Cent. BC)

In volume 1 (p. 247 *sq*.), we have seen that the concept of rhythm was introduced into architecture by Vitruvius in the 1st century BC. It did not yet, however, characterize a regular succession such as that of windows in a façade or columns under a portico but only an aesthetic quality, he called *eurhythmy*, produced by *appropriate proportions* between the various parts of a whole—especially between the height, the breadth and the length of a building—resulting from a special quality he called, borrowing again from the Greek, "symmetry."

> Eurythmy is beauty and fitness in the adjustments of the members. *[Eurythmia est venusta species commodusque in compositionibus membrorum aspectus].* This is found when the members of a work are of a height suited to their breadth, of a breadth suited to their length, and, in a word, when they all correspond symmetrically *[et ad summam omnia respondent suae symmetriae].* (*De architectura*, I, 2, 3, trans. Morris Hicky Morgan)

"Symmetria" did not mean though, as today, "a perfect correspondence in size, shape, and relative position of parts on opposite sides of a dividing line" but, as in classical Greek, *συμμετρία* – *summetría* – [lit. *measured together* PM] *due proportion, suitable relation, convenient size* (Liddel & Scott, *A Greek-English Lexicon*). Vitruvius made it clear for the Roman reader: it was "a proper agreement between the members of the work," i.e. in three dimensions, resulting from a "relation between the different parts and the whole," but he added "in accordance with a certain part selected as standard," for instance the diameter of a column, the size of a triglyph, or that of a module. As far as I know, it has rarely been noticed but this last detail might well account for the transposition of the term *rhuthmós* to architecture. We know that Vitruvius most probably knew of Aristoxenus' work, as the section of his book on harmony, where the latter is extensively quoted, convincingly

proves. The architectural rhythm would be then the result of the repetition of basic measures and their association into organized wholes, just as poetry or oratory resulted from the addition of feet or periods and their integration into larger wholes. This additive logic of the Ancient rhythmology appears indeed clearly in Aristoxenus (see vol. 1, p. 114) and it has been rightly underlined by Thrasyboulos Georgiades (1958, p. 15).

> Symmetry *[symmetria]* is a proper agreement *[conveniens consensus]* between the members of the work itself, and relation between the different parts and the whole general scheme, in accordance with a certain part selected as standard. […] In the case of temples, symmetry may be calculated from the thickness of a column, from a triglyph, or even from a module. (*De architectura*, I, 2, 4, trans. Morris Hicky Morgan)

Contrary to what is often said due precisely to Renaissance abusive reinterpretations, this "appropriateness" was not meant, as in music, according to a Pythagorean metaphysical and mathematical model drawn from the observation of the musical cords. Significantly, Vitruvius did not use here the term *harmonia* – agreement of sounds, consonance, concord, harmony which existed in Latin (Lewis & Short, *A Latin Dictionary*)—even if he devoted a later chapter of his book to the theory of harmony according to Aristoxenus in order to explain how to build a theater where the voice of the actors could be easily heard (Book 5, Chap. 4). His aesthetic model was the human body which, according to him, naturally possesses appropriate proportions—*symmetria* or *eurhythmia*—between its parts.

> Thus in the human body the symmetry between forearm, foot, palm, finger, and other small parts constitutes a eurhythmic quality; and so it is with perfect buildings *[ut in hominis corpore e cubito, pede, palmo, digito ceterisque partibus symmetros est eurhythmiae qualitas ; sic est in operum perfectionibus.]* (*De architectura*, I, 2, 4, my trans.)

The appropriate proportions to be used by architects were those given by Nature to the human bodies.

> 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 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; from the middle of the breast to the summit of the crown is a fourth. If we take the height of the face itself, the distance from the bottom of the chin to the underside of the nostrils is one third of it; the nose from the underside of the nostrils to a line between the eyebrows is the same; from there to the lowest roots of the hair is also a third, comprising the forehead. The length of the foot is one sixth of the height of the body; of the forearm, one fourth; and the breadth of the breast is also one fourth. The other members, too, have their own symmetrical proportions, and it was by employing them that the famous painters and sculptors of antiquity attained to great and endless renown. Similarly, in the members of a temple there ought to be the greatest harmony in the symmetrical relations of the different parts to the general magnitude of the whole. (*De architectura*, III, 1, 2-3, trans. Morris Hicky Morgan)

In short, in Vitruvius, “eurhythmy” did not refer to the aesthetic quality of a temporal sequence as in poetic, musical or dance movements, but to that of an immobile building resulting from the appropriate proportions of its parts, observed in three dimensions, determined by comparison with the human body, and springing from a shared measure.

This quite innovative use of the concept of rhythm—although probably inspired by the Aristoxenian idea of generation of a whole out of one or several basic measure units—had been apparently very successful during the first centuries AD. In his *De musica* musicologist Aristides Quintilianus (late 3rd or early 4th century AD) alluded to this new meaning which by his days had been already apparently enlarged to sculpture, while underlining that the “proper sense” concerned only the voice (see vol. 1, p. 311 *sq*.). It was passed on to the Moderns during the Renaissance.

From *Eurhythmia* to *Concinnitas* (Alberti – 1452)

In 1452, Leon Battista Alberti (1404-1472) published his *De re aedificatoria – Ten Books on Architecture*, which was the first architectural treatise of the Renaissance and was to become exceptionally influential during the whole modern era, echoing still late into the 20th century as in Hans van der Laan’s work *Le Nombre Plastique: quinze Leçons sur l’Ordonnance architectonique* (1960) (for a study of the relation between Alberti and van der Laan see Proietti, 2015).

Since Rudolf Wittkower’s (1901-1971) groundbreaking essay “Alberti’s Approach on Antiquity” (1940), Alberti’s contribution has been repeatedly discussed. In 1985, Tavernor counted no less than 18 studies in the last thirty years that tried to give an account of Alberti’s aesthetic categories and ideas—and mainly disagreed about them (1985, p. 9-10). Even Wittkower’s views, which had dominated art history at least during three decades, have been since the 1980s the subject of much criticism. I won’t enter here into these fierce debates; my aim is only to understand what became of the concept of eurhythmy during the Renaissance.

At first glance, one might get the impression that the concept of eurhythmy disappeared with Alberti altogether. His *De re aedificatoria* was heavily inspired by Vitruvius’ book but it did not mention the concept of *eurythmia*. Let us note in passing that, as his predecessor, Alberti never used the term rhythm either to denote a succession of windows, columns, or ornaments. I could not find one single occurrence in any of the chapters 6, 7, 8, 9 where Alberti discusses the ornament to sacred, public and private buildings. Beauty was described, instead, as the result of *concinnitas.*

> Beauty results from the definite congruity of all parts in a whole, fitted together with such proportion *[Ut sit pulchritudo quidam certa cum ratione concinnitas universarum partium in eo cuius sint]*, that nothing could be added, diminished, or altered but for the worst. (Alberti, *Ten Books*, VI, 2, my trans.)

But in classical Latin *concinnitas* generally meant “a neat, elegant, or skilful joining of several things,” and more specifically in rhetoric, “a beauty of style, produced by a skilful connection of words and clauses” (e.g. Cicero, *Orator*. 44, 149) (Lewis & Short, *A Latin Dictionary*). It was the aesthetic and poetic result of “*compositio* – a proper connection in style and position of words, arrangement, disposition” (Lewis & Short, *A Latin Dictionary*).

Thus, much like Vitruvius' *eurhythmia*, *concinnitas* was defined by Alberti as resulting from *correspondentia* – correspondence, *consensus* – sympathy, or *conspiratio partium* – consonance between the various parts of a building. As a matter of fact, Alberti sometimes substituted for it Italian expressions such as *consenso*, *concordanza*. And it was eventually translated into Italian most often as *concerto* (Petsch ed., 1974, p. 82).

> It is the task and aim of [congruity] *[concinnitatis]* to compose parts [differing from each other in their natures], according to some precise rule, so that they correspond to one another in appearance. (Alberti, *Ten Books*, IX, 5, trans. Joseph Rykwert, Neil Leach, & Robert Tavernor, my mod.)

Another argument may also be put forward. As one may know, Wittkower has proposed a very famous—and bitterly discussed (e.g. Tavernor, 1985; Selzer, 2017)—analysis of the façade of the church S. Maria Novella in Florence. But whatever the accuracy of the measurements he used to prove his case, he significantly concluded his description by suggesting that Alberti provided with this façade "the first great Renaissance example of classical *eurhythmia*."

> The whole façade of S. Maria Novella can be exactly circumscribed by a square. A square of half the side of the large square defines the relationship of the two stories. The main storey can be divided into two such squares, while one encloses the upper storey. In others words, the whole building is related to its main parts in the proportions of one to two, which is in musical terms an octave, and this proportion is repeated in the ratio of the width of the upper storey to that of the lower storey. The same ratio of one to two recurs in the sub-units of the single stories. [...] Finally the dark square incrustations of the attic are one third of the height of the attic, and these squares are related to the diameter of the columns as 2:1. Thus the whole façade is geometrically built up of a progressive duplication or, alternatively, a progressive halving of ratios. It is clear that Alberti's theoretical precept that the same proportion be kept throughout the building has here been fulfilled. It is the strict application of an unbroken series of ratios that marks the unmedieval character of this pseudo-Proto-Renaissance façade and makes it the first great Renaissance example of classical *eurhythmia*. (Wittkower, 1971, p. 46-47)

Concinnitas is clearly quite close to *eurhythmia*. However, in his writings, instead of referring this aesthetic quality only to natural appropriate proportions springing from a shared standard, Alberti related it with three requisites engaging *numerus*, *finitio*, and *collocatio*, rendered in the most recent translation into English as number, outline, and position (Joseph Rykwert, Neil Leach, & Robert Tavernor, 1988), or better yet, number, measured outline, and form (1988 – Glossary, p. 422).

> Let us conclude as follows. Beauty is a form of sympathy and consonance of the parts *[quendam consensum et conspirationem partium]* within a body, according to definite number, outline, and position *[ad certum numerum finitionem collocationem]*, as dictated by [congruity] *[concinnitas]*, the absolute and fundamental rule in Nature. This is the main object of the art of building, and the source of her dignity, charm, authority, and worth. (Alberti, *Ten Books*, IX, 5, trans. Joseph Rykwert, Neil Leach, & Robert Tavernor, my mod.)

The example given by Vitruvius for *eurhythmy*—"when the members of a work are of a height suited to their breadth, of a breadth suited to their length"—was now given by Alberti to illustrate only one of the three subcriteria of *concinnitas*: *finitio* – measured outline—a quite correct translation, in my opinion, since *finis* means limit, boundary (Tavernor also draws attention to the calibrated measuring tool recommended by Alberti for sculptors called the *finitorium*, 1985, p. 5).

> For us, the outline is a certain correspondence *[correspondentia]* between the lines that define the dimensions; one dimension being length, another breadth, and the third height. (Alberti, *Ten Books*, IX, 5, trans. Joseph Rykwert, Neil Leach, & Robert Tavernor)

The theory of *concinnitas* was therefore designed as an improvement of Vitruvius' aesthetic theory by the addition of two new categories. *Collocatio* – position or form does not raise major difficulties: it related to decisions that determine the arrangement of a building and was closed to the outlining of *finitio*.

> Arrangement *[collocatio]* concerns the site and position of the parts. It is easier to sense when it is badly done than to understand how to do it reasonably. For it relies to a large extent on the judgment Nature instilled in the minds of men, and also has much in common with rules for outlines. (Alberti, *Ten Books*, IX, 7, trans. Joseph Rykwert, Neil Leach, & Robert Tavernor)

But the third subcriterion, *numerus*, was less transparent. As far as I know, Alberti's *numerus* has always been translated as number and modern readers, after Wittkower, have usually associated it with quantity. Indeed, Alberti himself defined number as the correct or appropriate quantity of elements based on correspondences to what is found in nature. Animals, for example, move on an even number of feet and have an uneven number of apertures; a building, therefore, should have an even number of supports and an uneven number of entrances and exists.

> [Our ancestors] realized that numbers were either odd or even; they employed both, but the even in some places, the odd in others. Taking their example from Nature, they never made the bones of the building, meaning the columns, angles, and so on, odd in number—for you will not find a single animal that stands or moves upon an odd number of feet. Conversely, they never made openings even in number; this they evidently learned form Nature: to animals she has given ears, eyes, and nostrils matching on either side, but in the center, single and obvious, she has set the mouth. (Alberti, *Ten Books*, IX, 5, trans. Joseph Rykwert, Neil Leach, & Robert Tavernor)

However, some critics, have argued—quite unjustly in my opinion—that Wittkower laid too much emphasis on the sheer mathematical nature of numbers, especially their proportionality, without paying enough heed to their symbolic meaning. Conversely, these critics set out to show that the numbers that Humanists used were adopted for their Pythagorean qualities, and were not "mere quantities" (Tavernor, 1985, p. 4 – see for instance Hersey, 1976, p. 6-7).

Others, while recalling Wittkower's own reflection on "The Changing Concept of Proportion" (1960),

have underlined the dual status of mathematics in Alberti.

> When Alberti speaks of mathematics, he means either something eminently practical, like precise measurement—a requirement for accurate representation and structural stability—or something generally valid, such as scale, proportion and analogy, which he associates with order, beauty and perfection in both nature and art. (Aiken, 1980, p. 70)

In the entry "Measures: antique and modern" of the glossary they provide at the end of their translation, the translators of the last English edition (1988) notice that "sometimes the actual number of units is as important for [Alberti's] account as the overall absolute size." Number here clearly means mathematical number. But they also refer the reader to the entry "*Concinnitas*" where the former can read this: "N*umerus*/number means quantity and also quality—in the Pythagorean-Platonic sense and as interpreted through various Christian commentaries, such as Augustine's *City of God* (see Alberti 9.5 and 9.6)" (1988, p. 422).

As most of his contemporaries, especially Florentine artists and architects, such as Ghiberti and Brunelleschi, Alberti advocated the imitation of Nature: buildings should compare with the corporeality of natural creations, therefore their builders should strive to understand and reflect the laws of Nature. And these laws were to be grasped from a humanist perspective that mixed the natural philosophy of Antiquity (known through Plato, neo-Platonists and Boethius) with Christian theology (translated through early commentaries such as Augustine's). In Book 9, chapter 7, for instance, following Augustine closely, Alberti compared the proportions of a man with the biblical description of Noah's Ark.

We know that in his *De musica* as well as in *City of God*, Augustine developed a full-fledged theology of *numerus*/rhythm on both neo-Platonic and Christian grounds (see vol. 1, chap. 9). Yet, we also know how Ambrose's and Augustine's neo-Platonic interpretations of the *numeri* were finally turned by Boethius, who was more of a mathematician than a poet or a rhetorician, into a generalized neo-Pythagorean worldview which cut loose from poetic and rhetoric. Due to Boethius' tremendous influence in the Middle Ages, the whole universe was to be considered for centuries, from a sheer Idealist perspective, as having been generated "according to the system of numbers." This new philosophical framework explained why musical and poetic rhythms were entirely dissolved in more abstract celestial rhythms equated with the periods and cycles proper to the "music of the spheres" (see vol. 1, p. 390 *sq*.)

The influence of Boethius's late Pythagoreanism was certainly stronger on Alberti than that of Augustine's Christianized neo-Platonism. Although *concinnitas* was a concept borrowed from rhetoric, it was indeed first specified according to criteria belonging to the theory of music, which in the 15th century, precisely due to Boethius' long-lasting influence, was still equated with geometry and arithmetic. This Idealist trend was then strengthened in the second half of the 15th century by the rediscovery, translation and comment of Plato's works, especially the *Timaeus*, by Marsilio Ficino (1433-1499) and the Florentine Platonists.

> I affirm with Pythagoras: it is absolutely certain that Nature is wholly consistent. That is how

> things stand. The very same numbers that cause sounds to have that [congruity] *[concinnitas],* pleasing to the ears, can also fill the eyes and mind with wondrous delight. From musicians therefore who have already examined such numbers thoroughly, or from those objects in which Nature has displayed some evident and noble quality, the whole method of outlining is derived. (Alberti, *Ten Books*, IX, 5, trans. Joseph Rykwert, Neil Leach, & Robert Tavernor, my mod.)

Whereas Vitruvius clearly contrasted *eurhythmia* and *symmetria*, which denoted timeless phenomena as architecture, and *harmonia*, which conversely concerned temporal phenomena as music, Alberti thus directly compared *concinnitas* with *harmonia*, taking by the same token music in an atemporal sense.

> We define harmony *[harmoniam]* as that consonance of sounds which is pleasant to the ears. Sounds may be low- or high-pitched. The lower-pitched a sound, the longer the string that emits it; the higher-pitched, the shorter the string. From the different contrasts between these sounds arise the varying harmonies which the ancients have classified into set numbers corresponding to the relationships between the consonant strings. […] To sum up, then, the musical numbers are one, two, three, and four; there is also *tonus*, as I mentioned, where the longer string is one eighth more than the lesser. (Alberti, *Ten Books*, IX, 5, trans. Joseph Rykwert, Neil Leach, & Robert Tavernor)

These harmonies were in fact only reflections on earth of superior harmonies occurring in the heavens. Nature itself had been created according to divine proportions and numbers such as three, seven, five and ten.

> That Nature is composed of threes all philosophers agree. And as for the number five, when I consider the many varied and wonderful things that either themselves relate to that number or are produced by something that contains it—such as the human hand—I do not think it wrong that it should be called divine, and rightly be dedicated to the gods of the arts, and Mercury in particular. And as for the number seven, it is clear that the great maker of all things, God, is particularly delighted by it, in that he made seven planets to wander the heavens, and so regulated man, his favorite creature, that conception, formation, adolescence, maturity, and so on, all these stages he has made reducible to seven. […] Aristotle thought the tenth the most perfect number of all; perhaps, as some interpret, because its square equals the cube of four consecutive numbers. (Alberti, *Ten Books*, IX, 5, trans. Joseph Rykwert, Neil Leach, & Robert Tavernor, my mod.)

For architects the best proportions and the most beautiful arrangements were thus to be found in the numerical examples provided by “musicians,” i.e. theoreticians of music. Most interestingly, Alberti came back at the end of the chapter 5 to the congruity of the three dimensions that was precisely the basis of Vitruvius’ *eurhythmy*, but this time it was to be determined by ratios drawn directly from musical harmony.

> Architects employ all these numbers in the most convenient manner possible: they use them in

> pairs, as in laying out a forum, place, or open space, where only two dimensions are considered, width and length; and they use them also in threes, such as in public sitting room, senate house, hall, and so on, when width relates to length, and they want the height to relate harmoniously to both *[volunt ad harmoniam correspondere]*. (Alberti, *Ten Books*, IX, 5, trans. Joseph Rykwert, Neil Leach, & Robert Tavernor)

Unsurprisingly, given the equivalence between music, geometry and arithmetic in the 15th century, Alberti thus considered, in the next chapter, arithmetic as valuable source for architectural proportions.

> When working in three dimensions, we should combine the universal dimensions, as it were, of the body with numbers naturally harmonic in themselves *[qui aut cum ipsis harmoniis innati sunt]*, or ones selected from elsewhere by some sure and true method. Numbers naturally harmonic *[In harmoniis enim insunt numeri]* include those whose ratios form proportions such as double, triple, quadruple, and so on. […] In establishing dimensions, there are certain natural relationships that cannot be defined as numbers, but that may be obtained through roots [square roots] and powers [squares]. (Alberti, *Ten Books*, IX, 6, trans. Joseph Rykwert, Neil Leach, & Robert Tavernor)

Then he surveyed the three available Pythagorean numerical methods for the composition of the outline, "principally for establishing the vertical dimension" respectively to the two other dimensions: the "arithmetical," ; the "geometrical," ; and the last one, which was significantly called the "musical": (Wittkower, 1962, p. 112, n. 3). The example given for this last method was 30, 40, 60—40 being "the desired musical mean, its distance from the greatest number being double that from the shortest, the same proportion as that which we proposed between the greatest and smallest extremes."

> Rules for the composition of outlines in three dimensions may be derived form other sources, apart from harmonies and bodies; these we must now discuss. There are several methods of three-dimensional composition that are particularly suitable; these are not only drawn from music and geometry but also arithmetic, and should be now examined. […] Of the three "means" [*mediocritates* = three number *a b c* in a series, of which the middle one is the "mean" of those on either side] principally favored by philosophers, the easiest to find is that which they call the arithmetical *[arithmetica]*. […] Another type is the geometrical one *[geometrica]* […] The third mean, called "musical" *[musica]*, is a little more laborious than the arithmetical, yet numbers define it perfectly. Here the proportion between the shortest and longest dimensions is the same as that between the shortest and the middle, and again the same as that between the middle one and the longest, as in the following example. Let the shorter number be thirty, and the longer sixty; one is double the other. Take the smallest possible numbers in the double: the first is one, and the other two; add them together to make three. Then take the difference between the longest number, sixty, and the shortest thirty, and divide it into three equal parts; each of these parts will be ten; and so add one such part to the shorter limit; this equals forty. Such is the desired musical mean, its distance from the greatest number being double that from the shortest, the same proportion as that which we proposed between the greatest and smallest extremes. By using means like these, whether in the whole building of within its parts, architects have achieved many notable results, too lengthy to mention. And they have employed them principally in

> establishing the vertical dimension. (Alberti, *Ten Books*, IX, 6, trans. Joseph Rykwert, Neil Leach, & Robert Tavernor)

This is not to say that "this conformity of ratios and correspondence of all the parts, this organic geometry," as Wittkower put it, expressed irreligious thoughts or were the illustration of a new secular spirit. On the contrary, "it should be observed in every building but above all in churches" because "without that organic geometrical equilibrium where all parts are harmonically related like the members of a body, divinity cannot reveal itself." According to a renewed neo-Platonic understanding of Christianity, "this man-created harmony was a visible echo of a celestial and universally valid harmony" (Wittkower, 1971, p. 7-8).

Let us sum up. The reinterpretation by Alberti of the ancient Vitruvian concept of *eurythmia* as *concinnitas* did not make the former disappear—quite the contrary. It adapted it to the religious and philosophical concerns of the artists and theoreticians of the Quattrocento, and transmitted it to the Moderns. In his book, first published in 1949, *Architectural Principles in the Ages of Humanism* (I will quote the 1962 revised and expanded edition republished in 1971), Wittkower emphasized the crucial contribution of Alberti for setting the aesthetic and theoretical standards of Renaissance architecture, which were continuously imitated during the following centuries, at least until the 19th century when "the harmonic mathematical conception of architecture was philosophically overthrown […] and disappeared from the practical handling of proportions" (Wittkower 1971, p. 162).

In fact, Alberti's early contribution prompted a series of new research on Vitruvius which was intensively studied by Donato Bramante (1444-1514), Leonardo da Vinci (1452-1519), Michelangelo (1475-1564) and Baldassare Peruzzi (1481-1536). The first known Latin printed edition of *De architectura* was published by Fra Giovanni Sulpitius in Rome in 1486. Numerous translations followed in Italian (Cesare Cesariano, 1521), French (Ian Martin, 1547), German (Walther Hermann Ryff, 1575), Spanish (Juan Gracián, 1582), and English (Henry Wotton, 1624).

Through those new editions and translations, the Moderns had direct access to the concept of *eurhythmy* and it is of no surprise, as a brief survey shows, if the term was introduced during the 16th century into most European languages: *eurythmia* in Italian by Cesare Cesariano (1521), *eurythmie* in French by Ian Martin (1547), *Eurythmia* in German by Walther Hermann Ryff (1575), *eurythmia* in Spanish by Juan Gracián (1582), and *eurythmia* in English by Henry Wotton (1624) before being rapidly anglicized as *eurythmy* (according to the *Oxford English Dictionary*).

However, the imprint given by Alberti's innovating reading made itself felt in its following interpretations and uses. The aesthetic model still indexed on practicality and human sensibility, which had been developed from the concepts of *eurythmia* and *symmetria* by Vitruvius, did not disappear but it was wrapped into new abstract, geometrical and mathematical concerns. In short, as far as rhythm was concerned, the influence of Aristotle (see vol. 1, p. 247 *sq*.) was largely overcome by those of Plato and Boethius (see vol. 1, p. 390 *sq*.).

This move had consequences of various range: it first gave a strong Idealist and Pythagorean overtone to part of Renaissance rhythmology which was in tune with the general trend that

developed in a number of disciplines at the end of the Middle Ages until the end of the 16th century (for medicine see vol. 2, chap. 1). As Wittkower put it,

> Renaissance artists firmly adhered to the Pythagorean concept "All is Number" and, guided by Plato and the neo-Platonists and supported by a long chain of theologians from Augustine onwards, they were convinced of the mathematical and harmonic structure of the universe and all creation. (Wittkower, 1971, p. 27)

It also resulted in a remarkable rhythmological split within the fine arts which lasted at least until the middle of the 19th century when cross-influences between the two sides of the divide and the resurgence of other rhythmic paradigms began to fill in the gap. Contrary to poetry, music, and dance, which remained faithful to the traditional metric concept of rhythm, architecture, sculpture and painting discarded it and developed a newer and concurrent acceptation based on the concept of musical, geometrical and arithmetical harmony. In other words, while the *Democritean physical* and the *Aristotelian poetic paradigms* continued to be ignored, the *Platonic metric paradigm* underwent a surprising division. The rhythmological tradition descending from the *Laws* (see vol. 1, chap. 2) was now challenged by another one descending from Plato's *Timeaus* and Boethius' *De musica* (see vol. 1, chap. 9).

For the next three centuries most of the artists and theoreticians concerned with architecture, sculpture and painting, endorsed the Vitruvian model either directly from the Latin text or through the interpretations that had been developed in the wake of Alberti's decisive contribution. In this part of the fine arts, the concept of rhythm was entirely emptied of temporal content and transformed into a spatial principle based on a "system of appropriate proportions." The rhythm of a building, a statue or a painting was determined by its set of proportions, sometimes as a multiplication of a common module, sometimes not, and the piece considered as beautiful when this set was respecting a series of arithmetical norms related with musical harmony.

Next chapter