

THE CONCEPT OF THE MASS FORM WITHIN THE CONTEXT OF VISUAL ART AND ARCHITECTURE OF THE ITALIAN RENAISSANCE

Irina Guletsky

Address: The Hebrew University of Jerusalem

In a letter to Baldassare Castiglione, Raphael once wrote: "In order to paint a beauty, I have to see many beauties, on the condition that Your Worship is beside me to help me make the best choice. However, due to the shortage in both good judges and beautiful women, I am applying a certain idea that has crossed my mind. Whether it contains within itself any artistic perfection, I do not know, but I am striving very hard to achieve it." (Golzio 1936, p. 31)

This certain idea conceived by Raphael is a type of ideal beauty that is the cherished goal of any artist, and that he attempts to realise above all on the level of composition.

Unity of artistic, aesthetic, philosophical and religious ideals of the times determines the corresponding homogeneity and similarity of structural planes and geometric patterns of different works of art, among various artists, and even in various art forms.

In this context, the era of the Italian Renaissance provides ample material for comparative analysis and search for various types of interconnections, material that has been widely consulted by numerous art experts. It would appear that in this area no paths have been left untrodden. That is definitely true in respect to visual arts - painting and architecture - whose compositional planes are easily accessible to the eye, and consequently to understanding and comprehension. These art forms are initially connected through geometry. As far as music is concerned, however, we will always sense a certain metaphorical, subjective element in making such comparisons, until the musical form as a process has been translated into a geometrical plane, into a crystal-like form.

Thus the large-scale musical form of the Italian Renaissance – its emergence, its distinctive features, its relation to the ideals of the time, finally its similarity (or dissimilarity) to the contemporary forms of art and architecture – these are the main issues I have raised in this study.

At the outset, it is important to note that during the time of Leonardo da Vinci, a scientific subject like the theory of musical composition or of musical form was non-existent. Whereas architects and artists had the benefit of dozens of voluminous treatises as well as simple manuals devoted to the issues of perspective, art composition, building design, nothing of the kind was produced in the field of music theory. In this respect, music found itself in the position of a “poor relative” as it were. At the same time, as paradoxical as it may sound, music was the “ruling mistress”, setting the laws, occupying a privileged position; in other words, it was one of the “liberal arts”, while painting and architecture were considered professions. In the minds of the Renaissance man, music was identified with mathematics and imbued with a divine spirit. After all, according to the Pythagorean doctrine and Plato’s *Timaeus*, the proportions of musical consonances are the cornerstones of the universe. The theory of musical proportion was so popular among artists and art experts that it largely set the tone for the main developments in these fields (Wittkower 1949).

At the same time, the theory of musical proportions primarily referred to intervals and rhythm. The musical form, the laws of inner structure, compositional technique – these “holy of holies” of musical art were hidden from the uninitiated, setting music apart and veiling it in a cloak of mystery.

The first attempts to shed light on the problem of the form-making principles of Renaissance cyclical works only took place towards the middle of the present century. These works are few in number. Among the most important, I will cite the study by Marcus van Crevel of the secret structure of two *Marienmasses* by J. Obrecht, as well as Marianna Henze’s book on masses by J. Ockeghem (van Crevel 1959, 1964; Henze 1968).

The secret structure of masses by 15th century composers was analysed by these scholars only from the point of view of proportions applied to the duration of *cantus firmus* – the main voice of the choral score.

However, the study of architectonics is essentially the study of all, or at least of the key composition structures, followed by combination and comparison of the yielded results - blueprints for a sort of recreation of the overall design. Only in this case do we obtain a complete picture of the musical form and an opportunity to conduct an objective comparison between music and visual arts.

I developed and applied this method in the analysis of masses by G. P. da Palestrina, a prominent 16th-century composer and leader of the Roman school.

Palestrina's 104 masses are but the quantitative contribution made by the composer to the development of the genre. 91 of them, as well as numerous works by the master's contemporaries and predecessors, make up the material on the basis of which I build the overall concept of the form of 16th-century mass in the period of its "classical" maturity.

The music form is realised in nine structures, each of them having a semantic aspect of its own. These are:

1. The cycle's overall structure (related to the text)
2. Mathematical structure - proportions
3. Ensemble-choral structure
4. Polyphonic¹
5. Textural
6. Mode-cadence
7. Motif-thematic
8. Functional
9. Form as symbol – as a result of the manifested idea.

In addition, the cycle contains:

1. The composition's main level (two versions)
2. The macro-level (two versions)
3. The sub-level (three versions)

¹ Polyphony, mode, texture and thematism represent primarily elements of the musical language, and may be studied as separate disciplines and key aspects of the composer's style. At the same time, in a musical composition they often acquire formative constructive functions as well. Their role within the composition may be likened to the vital systems of a living organism in which, while being autonomous, they act only in conjunction with each other.

Let us examine some of the structures.

The form of the mass (not the entire liturgy but only its permanent music part – the so-called *Ordinarium missae* represented a composition made up of five parts: *Kyrie*, *Gloria*, *Credo*, *Sanctus*, and *Agnus Dei* (Diagram 1). The second, six-part version was formed when the *Benedictus* section of *Sanctus* was singled out and treated as an independent part. The macro-level is formed by the fusing of extreme paired parts into macro-parts, which is due to the arrangement of the *Ordinarium* parts in the liturgy.

Correspondingly, *Kyrie* and *Gloria* on one side, *Sanctus* and *Agnus Dei* on the other form macro-sections. The result is a three-part (instead of five-part) structure.

Also common since the 15th century was the two-part macro-structure, formed as a result of the cycle being treated as a six-part structure. In this case the cycle was divided into two macro-parts: the *Gebetsmesse*, made up of *Kyrie*, *Gloria* and *Credo*, and the *Opfermesse*, consisting of *Sanctus*, *Benedictus*, and *Agnus Dei*². Thus the two macro-structures as it were merged together.

The semantics of the overall structure is as follows:

Parts 1 and 5 - *Kyrie* - *Agnus Dei* - prayer

Parts 2 and 4 - *Gloria* - *Sanctus* - glorification

Part 3 - *Credo* - benediction, symbol of faith.

Graphically, what distinguished the semantics of the overall structure is that the cycle is formed hierarchically, with each part placed according to the level of its importance; thus the most important is the *Credo* - the central part, followed by the glorification sections, and finally the prayer sections. The central part of the *Credo* consists of three sub-sections - *Patrem*, *Crucifixus* and *Et in Spiritum* - symbolising the Holy Trinity.

The second structure is mathematical, related to proportions, to scale correlations, i.e. to the duration of parts in relation to each other and the entire structure. This is the first architectonic plane of the form.

² *Gebetsmesse* - the prayer part of the mass; *Opfermesse* - the sacrifice.

Mass. The structures.

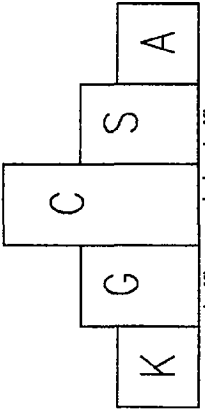
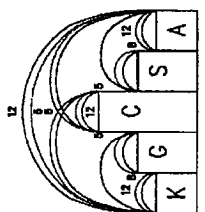
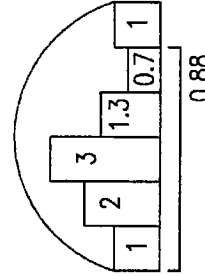
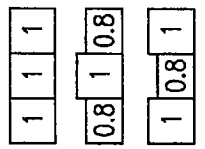
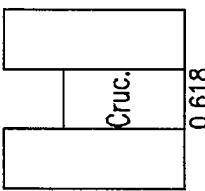
№	Name of structure	Main level		Macro—level		Culmination zone
		5-part cycle	6-part cycle	3-part cycle	2-part cycle	
1	Overall structure	K G C S A	K G C S B A	KG C SA	KGCSBA	Pat. Cruc. Et in Sp.
	semantic aspect					Holy Trinity
	Mathematical structure (proportions)					
2	semantic aspect	supreme harmony music of the spheres			Holy Trinity	

Diagram 1

Thus what we have before us is an absolutely symmetrical composition constructed in accordance with the supreme laws of musical consonances – octaves (the ratio of 1:2) and fifths (the ratio of 2:3), combined with a sequence of golden sections (Diagram 2).

The semantics of such a structure is supreme harmony, music of the spheres. Furthermore, the number 5 (the total number of parts) is open to a variety of Christian and neo-Platonic interpretation, symbolising both Christ and the Virgin, as well as being the perfect Pythagorean number (Bossuyt 1994; Elders 1967, 1969; Timmers 1974).

In the six-part cycle the *Sanctus*, breaking up into two parts no longer corresponds to *Gloria*; consequently the structure loses its perfect symmetry, retaining only a partial one in the *Kyrie - Agnus* correlation (Diagram 1).

The (three-part) macro-level yields three schematic versions. In the first case, we can see that all the macro-parts are equal, i.e., the ration is 1:1:1. This equally balanced interval – the most perfect of consonances – symbolises the Trinity in the given context. The remaining two schemes indicate that the extreme parts are larger or smaller than the middle part by the ratio of 0.88 to 1. The number 888 is known to be the numerological equivalent of the name of Christ.

The *Credo* structure demonstrates a mirror-symmetry and a golden section correlation between the *Crucifixus* and the extreme sections.

The mass sub-level is related to the separation of mass parts into sub-sections, whose total number is usually 13-15. However, regardless of how many sections the cycle contains, it exhibits fascinating regularities. In the mathematical sense, practically all three versions represent the Fibonacci series (Diagram 3)³. Thus 13 sections yield the main sequence: 1, 1, 2, 3, 5, 8, 13.

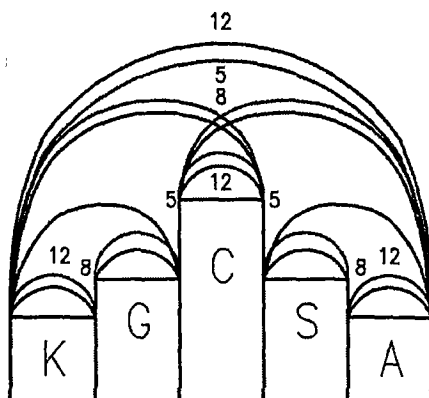
14 sections are the sequence of the Evangelist - 7, 7, 14.

15 sections go as far as to represent two sequences moving towards each other. From left to right is the main Fibonacci series (the first 7 numbers), while from right to the left is the Evangelist series - 2, 5, 7, 12 (Math. 14:15, M. 6:38; L. 9:12; I. 6).

³ About Fibonacci series and their manifestations in Renaissance music, see N. Powell's article "Fibonacci and Golden Mean...", 1979.

Palestrina. Mass "Sacerdotes Domini"

(perfect consonances)



$$\frac{K}{G} = \frac{A}{S} = \frac{1}{2}; \quad \frac{G}{C} = \frac{S}{C} = \frac{2}{3};$$

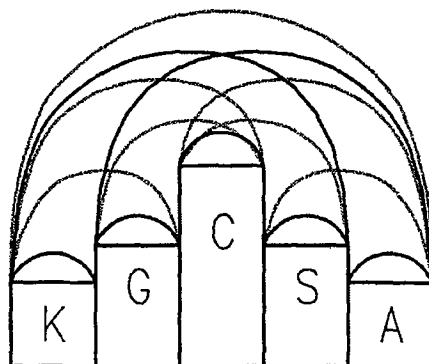
$$\frac{K+G}{C+S+A} = \frac{S+A}{K+G+C} = \frac{1}{2};$$

$$\frac{K+G+C}{M} = \frac{C+S+A}{M} = \frac{2}{3};$$

$$\frac{K}{C} = \frac{A}{C} = \frac{C}{M} = \frac{1}{3}$$

Mass "Pater noster"

(golden section)



$$\frac{K}{G} = \frac{G}{C} = \frac{S}{C} = \frac{A}{S}$$

$$\frac{G}{K+G} = \frac{C}{G+C} = \frac{C}{C+S} = \frac{S}{S+A}$$

$$\frac{K+G}{G+C} = \frac{K+G}{C+S} = \frac{S+A}{G+C} = \frac{S+A}{C+S}$$

$$\frac{G+C}{K+G+C+S} = \frac{G+C}{G+C+S+A} = \frac{C+S}{K+G+C+S} = \frac{C+S}{G+C+S+A}$$

$$\frac{K+G+C}{M} = \frac{C+S+A}{M}$$

$$= 0.618$$

Diagram 2

Mass. The structures.

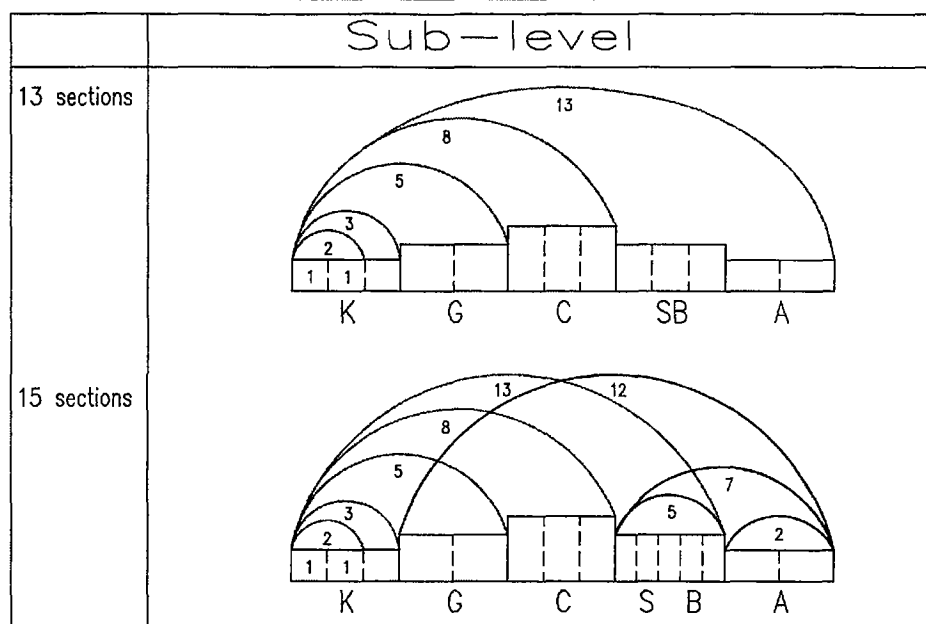


Diagram 3

The semantics of these added series and numbers is obviously an illustration of the Biblical episode of Jesus feeding the 5,000 and 4,000 - the miracle of bread and fishes containing profound esoteric meaning. It is also a symbol of the Creator and the Creation.

The *Kabbala* interprets the number 13 as the One, as well as Love - the creative energy that sustains the universe. The Christian reading is that of Jesus and the 12 disciples (the Last Supper composition).

The number 14, made up of $7 + 7$, symbolises mourning, agony – the seven words spoken by Jesus on the cross, the 14 stations of the Via Dolorosa (Bossuyt, Elders).

Finally 15 sections, broken up into $7 + 8$, are, according to Plato's *Timaeus*, the 1st and 2nd stages of the emanation of the universal soul, as well as Death and Resurrection. As we can see, the sub-level's mathematical structure provides a rather fruitful ground for interpretations.

The ensemble-choral structure shows a reduction in the number of choral voices in *Crucifixus* and *Benedictus*, and a possible increase in the *Agnes Dei* (Diagram 4). This scheme is asymmetrical, acting as it were for the benefit of the asymmetrical six-part structure. On the whole, the reduction in voices in *Crucifixus* and *Benedictus* creates a lightening effect in these sections, something that is related to a certain theological dogma, *Deus est lumen purus*⁴ and the light doctrine of a leading neo-Platonist and Christian mystic Pseudo-Dionissius.

The scheme of the textural structure enables us to trace the most general plane of the sequence of imitative-polyphonic and chordal-harmonic sections, and to observe the increasing importance of the “vertical” towards the *Credo*, as well as the reversion to the linear at the end of the cycle. The linear and the vertical have a rather concrete meaning, symbolising the heavenly (–) and the militant earthly (!) church. Combined, they form a cross.

Thus the textural plane forms 5 signs – 3 crosses and two H’s (*Crucifixus* and *Benedictus*). This structure has a dual nature, combining both symmetry and asymmetry.

The symmetrically enclosed cadence-harmonic structure (Diagram 5) demonstrates intensifying cadence-harmonic development towards the center and the appearance of a new cadence in the *Crucifixus*, which emphasises this section by means of a new harmonic illumination. Thus the *Credo*, possessing the most vivid contrasts of texture, harmony, choral ensemble, and, as we will see later, theme, constitutes the emotional-semantic and structural axis of the composition.

The motif-thematic structure of the mass (Diagram 5) is the most “material” structure.

The foundation of a thematic structure is the thematic complex (TC) consisting of 4 to 5 motifs taken from the original source. The entire or almost the entire TC is presented in the *Kyrie*, and from there distributed throughout the remaining parts, transforming and changing the order of sequence. Those parts of the form that contain themes represent a sort of tectonic milestones of the composition, forming melodic arches linking the sections.

⁴ “God is light, and in Him is no darkness at all.” (John, 1:5)

Mass. The structures.

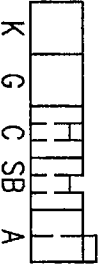
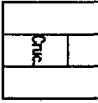
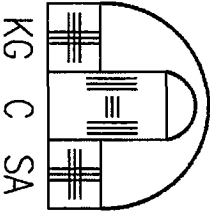
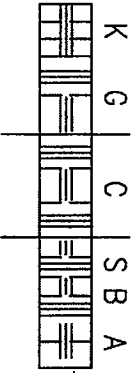
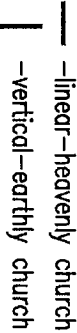
№	Name of structure	Main level	Macro-level	Culmination zone	
		6-part cycle	3-part cycle	Credo	
3	Ensemble-choral structure				
	semantic aspect	The light doctrine- Deus est lumen purus			
5	Textural structure				
	semantic aspect				

Diagram 4

Mass. The structures.

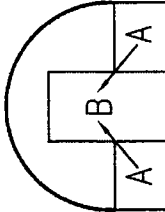
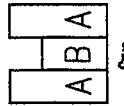
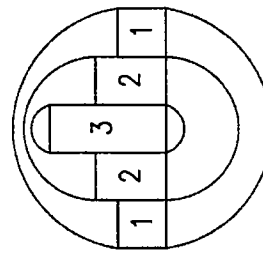
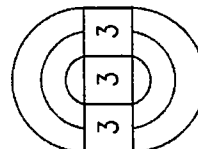
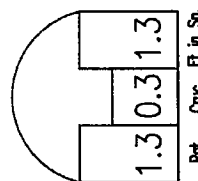
N ^o	Name of structure	Main level		Macro—level 3-part cycle	Culmination zone Credo
		5-part cycle	6-part cycle		
6	Mode— cadence structure				
	semantic aspect	a new harmonic illumination in the Credo (Crucifixus)			
7	Motif— thematic structure				
	semantic aspect	Virgin Mary — the Queen of Heaven Heavenly Kingdom without end		The nine angelic hierarchies	

Diagram 5

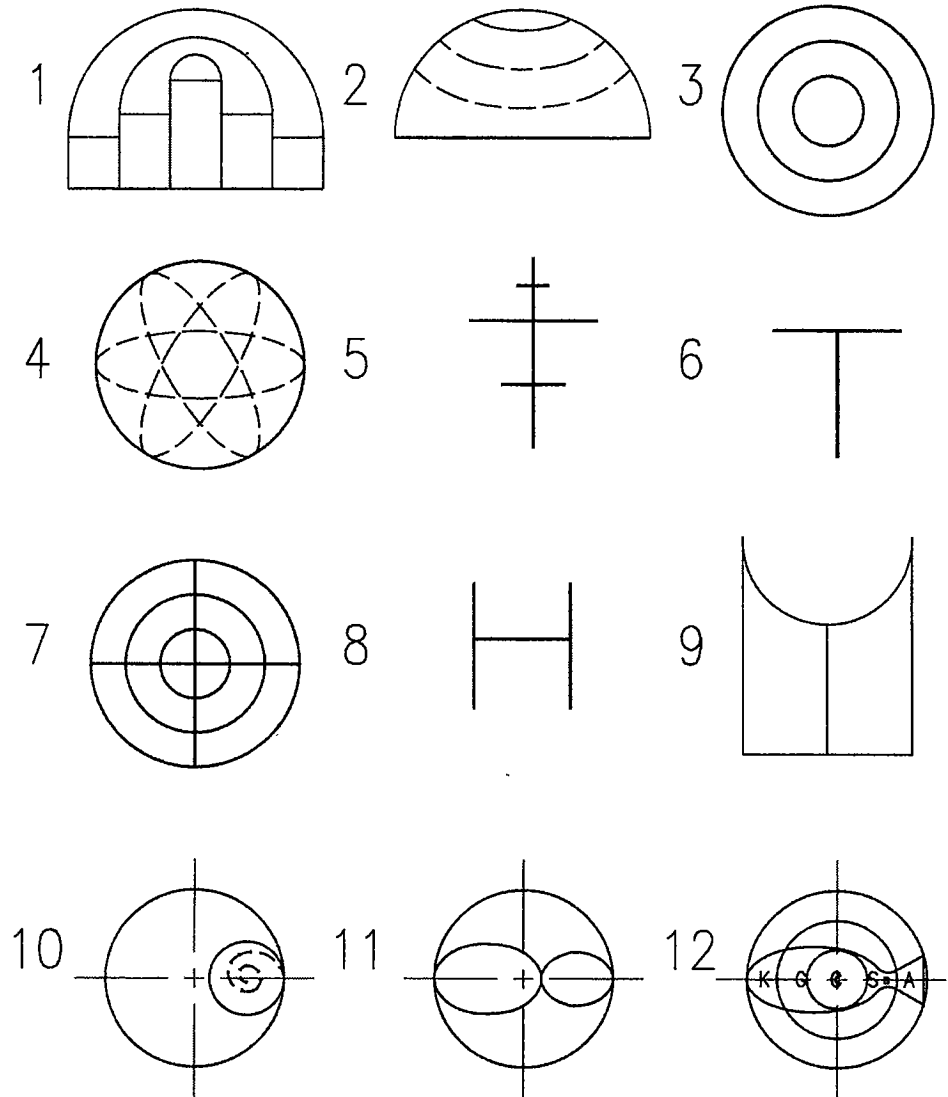
The numbers signify the number of times the TC is presented in each part; i.e., in *Kyrie* and *Agnus Dei* it appears once, twice in *Gloria* and *Sanctus*, and three times in *Credo*. The result is a perfectly symmetrical form that fuses not only parts that correspond in relation to the center, but all of the parts as a whole. In its schematic expression, such a form represents a concentric *mandala* made up of 9 circles, and at the same time a sphere (any two points can be joined). The semantics of this structure: the nine heavenly circles (nine angelic hierarchies), Virgin Mary the Queen of Heaven, and the Heavenly Kingdom without end (Timmers).

The thematic structure of a six-part cycle forms a separate pattern which corresponds to its asymmetrical proportional structure.

Before embarking on the final, summing-up stage of the form-symbol, we must compare and contrast all the resulting structures, to – as it were – juxtapose them against each other.

Having compared thus all the structures of the 3–5-part composition, we can see that all of them, with the exception of the ensemble structure, represent a single, strictly symmetrical form that can be expressed by the following schematic symbols (Diagram 6):

1. a 3–5-nave cathedral
2. a dome
3. a concentric *mandala* made up of 3 or 9 circles
4. a sphere
5. the Latin cross (*crux immissa*)
6. and the cross of St. Anthony (*crux comissa*)
7. the Greek cross inserted in three concentric circles
8. the letter H
9. a cup

Mass. Symbols of form.**Diagram 6**

The first four symbols were vividly demonstrated in the preceding diagrams. As for the others, let us examine the way they are produced.

The Latin cross is produced if we imagine the *Credo* as the vertical axis of the composition, which conforms with its overall structural position and semantic function as the center of the cycle and of the entire liturgy. This is tangibly confirmed by quantitative and qualitative characteristics of the *Credo* in all the structures. The remaining parts represent a horizontal temporal axis of the composition, reflecting its evolution. Moreover, if we mark along the vertical *Credo* axis the proportional, textural and thematic levels of the development of each of the corresponding pairs:

Kyrie - Agnus, Gloria - Sanctus

we will receive two transverse crossbars. The third one is formed by the symmetrical structure of the *Credo* itself, with the *Crucifixus* (the crucifixion) at its center. A similar process leads to the formation of the cross of St. Anthony in the macro-structure, in the case where all the three parts are equal. The depiction of a cross within a circle is quite justified as well, since a combination of these two symbols provides a yet fuller reflection of the overall construction.

The letter H is among the most significant Christian symbols, especially during the Middle Ages. This letter stands in the center of Christ's initials, JHS - *Jesus Hominem Salvator*, translated as Jesus the Savior of Mankind. It also stands for Helios - the Sun - the abode of the star spirit and the astrological sign of the Pisces. Fish is a known symbol for purity and depth of spirit, and was widely used by the early Christians. The Greek word for fish - *ichtis* - is an anagram deciphered as "Jesus Christ the Son of God the Savior" (Timmers, p. 53).

The H-shape is assumed in almost all structures by the *Credo*, and in several cases by the cycle's three-part macro-structure.

The second interpretation of the form of the *Credo* is a "cup" – the cup of sorrow referring to Christ's agony and prayer in the New Testament.

Having once given my thought to the perfection and obvious wholeness of the five-part composition, I asked myself the following natural questions:

1. What accounts for the additional treatment of the cycle as six-part?
2. Why was the emphasis placed on the Benedictus as opposed to some other section?

Only after comparing all the resulting structures did I realise that the strange shape that had emerged is some of them was the shape of a fish, that same fish whose image recurs in all canonical texts and repeatedly appears on all the levels in the mass. What brought this concept about was the almost total identity between the second half of the word *Benedictus* – *ictus* – and the Greek *ichtis* mentioned above. After that everything fell into place, with all the elements balanced in an amazing harmony: the contents of this section, where a joyous chorus of disciples greets Jesus as he rides into Jerusalem (*Benedictus qui venit in nomine Domine, Osanna*); the reduction in the number of voices in the choral ensemble – an illumination (the same as in the *Crucifixus*); the second H appearing in the textural scheme (I assume that the first H appeared in the *Crucifixus*); the golden section proportions; the number 0.88 that emerges here; even the linearity of imitative polyphony common for this section (once again, similar to the *Crucifixus*), creating the feeling of fluidity, is associated with the image of water.

The two sections form two semantic centers – the first for the entire cycle, the second for the small cycle of *Opfermesse*.

Thus we obtain another two symbols belonging to the macro-level of the form (Diagram 6):

10. an egg – a spiral (meaning a small cycle within a large one)
11. an inverted figure eight within a circle (i.e., *Gebetsmesse* and *Opfermesse*).

The former is known to be the most effective structure for storing information; the latter is the symbol of em – eternity.

Thus the composition of the mass is a combination – conjunction of two totally different, even opposing concepts: a perfect circle (or concentric circles) and a fish. Of these two, the former is explicit, i.e., *fabula*, *involucra*, while the latter is concealed. Together they are the “spiritual bread”, which is what the mass means for every Christian.

The 12th key symbol of the mass is a fish within a circle. The mysterious duality and uniqueness of this symbol are amazing. On the one hand, its sights are strongly set on the future, since it contains the embryonic elements of all the forms to come: the fugue, the variations, the sonata-symphonic cycle, etc. (after all, it is no accident that its 10th sign is the embryonic egg!). On the other hand, as symbolised by the fish swimming

against the current, it is firmly rooted in the past traditions, as if struggling against the inexorable time to save the indestructible spiritual values for the future generations. Externally, this form represents the perfect symmetry of the circle symbolising tranquillity; while internally it contains the dynamic energy of great tension and force, since the fish and the water element which it inhabits strive to overcome and destroy structure as such.

The 12 symbols of the mass that have been discovered are the quintessence of the experience of comprehending the world and G-d, of esoteric knowledge originating in the ancient past. Their deciphering provides the key to understanding form and its semantic meanings in all their shades: both as musical form proper and form as a genre, in perspective and retrospective, and in various contexts: religious, philosophical, ethical, aesthetic, artistic, and so on.

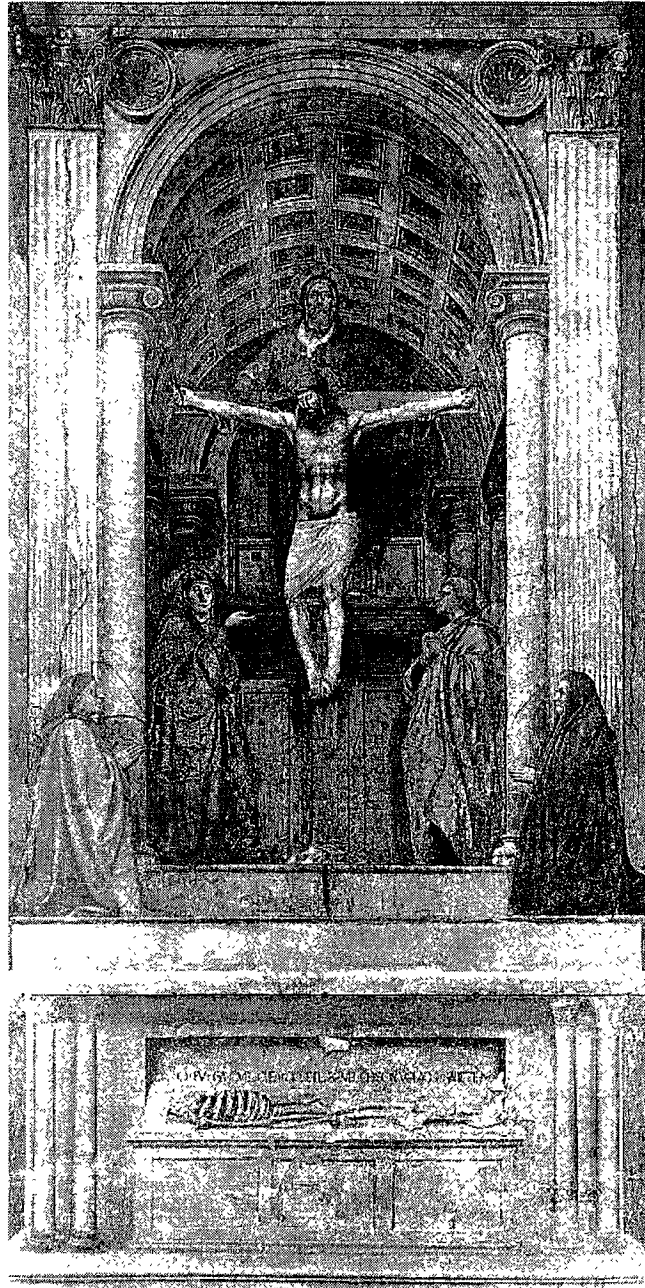
We have now reached the stage where it would be appropriate to draw certain analogies and comparisons between mass forms, visual art and architecture, i.e., to tackle the very task we had posed at the start of this paper.

The compositional commonality between various art forms that emerged during the Renaissance was much more pronounced than in any other periods. Thus, architecture and painting borrowed from music the proportions of perfect consonances (Alberti 1985; Wittkower), which accounted for the unique lucidity and pure harmony of Renaissance forms. In its turn music, obviously under the influence of visual art and especially architecture, evolved the laws of compositional symmetry and strict tectonics of the form.

The history of music knows no other form that would embrace to such a glorious extent the principles of other art forms.

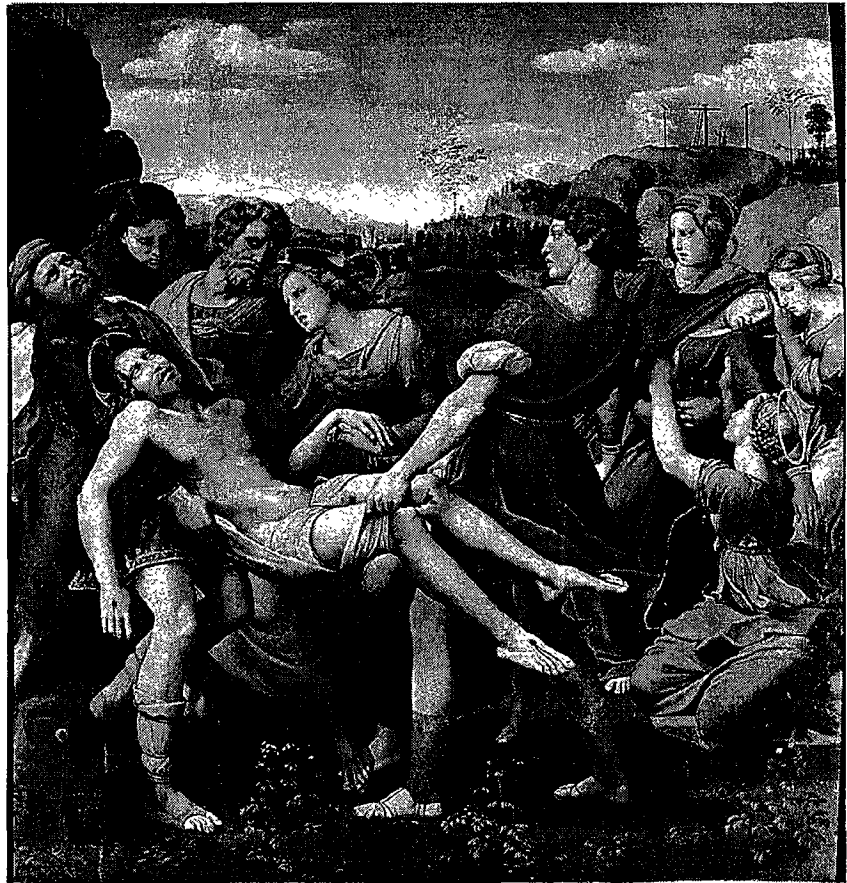
I will permit myself to present several examples.

Thus, the 3–5-part mass form corresponds to the design of a 3–5-nave cathedral, as to the art composition of the “revelation” inherited by the Renaissance from the medieval altar triptych. The strict symmetry and semantic hierarchy of mass parts are analogous to the hierarchical arrangement of figures in a painting in relation to the central figure of Madonna or Christ. For example, in Masaccio’s *Trinity* the crucifix corresponds to the location of the *Credo*, the flanking saints to the *Gloria* and *Sanctus*, and the praying good givers to the prayer sections of *Kyrie* and *Agnus Dei*.



Masaccio, *The Trinity*, c. 1425-28, Fresco, 667-317 cm, Florence, Santa Maria Novella
[from Toman, R., ed. (1995) *The Art of the Italian Renaissance*, Konemann.]

The cross and the circle are probably the most frequently recurring shapes used by artists and architects of the Renaissance. If the shape of the cross appearing in 15th–16th-century cathedrals had its origins in the Middle Ages, the circular forms of the churches enthusiastically acclaimed and springing up in great numbers during the late 15th – early 16th centuries, the magnificent domes erected over Roman basilicas and medieval cathedrals (recall the famous Brunelleschi dome over the Santa Maria del Fiore) are undoubtedly owed to the Renaissance. Speaking of circular compositions, we cannot avoid mentioning the numerous *tondi* that emerged during that period – the Madonnas by Perugino, Raphael, Michelangelo and others. For a Renaissance artist, the idea of the circle spanned a range of associations – neo-Platonic, Christian, aesthetic – that was probably unequalled in its popularity.



Raphael, Deposition [from B. Santi Raffaello (1991) Raffaello, Scala, Firenze.]

The symbol of the cup was reflected in compositional ideas of Lamentation, Deposition, and Crucifixion. In Raphael's Deposition, the shape of the cup formed by the group of people surrounding Christ's body, is highlighted by the landscape relief enhancing the emotional charge and the mourning atmosphere.

The letter H is encountered quite frequently in Renaissance Annunciation compositions, but in others as well. We may see it appear in most facades of Gothic cathedrals. The depiction of fishes is featured occasionally in the interiors of medieval churches.

In conclusion, summing up all of the above, I would like to stress once again that the link between various art forms is made primarily through compositional unity of forms which, though present in every period, achieved its highest force and conviction during the Renaissance. The unity of forms is the unity of ideas, the powerful field of human consciousness that foments creativity. The world of the Renaissance, resounding through all the subsequent periods all the way to this day, is a world of harmony and creativity, of divine artistic endeavour, a world of unity, of complete fusion between the universe and a flower.

However, a discussion of the link between various arts of the period – which is the subject matter of so many studies – cannot be complete without an understanding of the role of music among these art forms, of the common features it shares with them, while maintaining its unique and separate nature. The duality of composition we have discovered to exist in the mass, the two primal forces inherent in it – the symmetrical, the rational, the explicit – and the asymmetrical, the irrational, the transcendental – these forces are the clear indicators of the planes containing the links in question, and of the borderline which defines the music and sets it infinitely apart from other art forms, as an art that had reached the highest summits of the spirit.

REFERENCES

- Aaron, P. (1969) *Thoscanello de la musica*, New York, (printed by facs. of the 1523 Venice edition).
 Alberti, L. B. (1985) *L'architettura*, Bologna, (orig. *De re aedificatoria* promulgated in 1452, published in 1485, Florence).
 Busse Berger, A. M. (1990) Musical Proportions and Arithmetic in the Late Middle Ages and Renaissance, *MD*, 44, 89-118.
 Bossuyt, J. (1994) *De Vlaamse Polyfonie*, Leuven, pp. 41-44, 63-67.
 Crevel, M. van (1959, 1964) *Jacobus Obrecht: Opera Omnia, Missae*, vi and vii, ed. Crevel, M. van, Vereniging voor Nederlandse Musiekgeschiedenis, Amsterdam.
 Evdokimova, Y. (1989) *Istoriya poliphonii*, vol 2, Moscow.
 Elders, W. (1969) Das Symbol in der Musik von Josquin des Prez, *AM*, vol. 41, 164-185.
 Elders, W. (1967) *Studien zur Symbolik in der Musik der alten Niederländer*. Bilthoven

- Fellerer, K. G. (1982) *Palestrina-Studien*, Baden-Baden.
- Golzio, V. (1936) *Rafaello nei documenti, nelle testimonianze dei contemporanei e nella letteratura del suo secolo*, Città del Vaticano.
- Henze, M. (1968) *Studien zu den Messenkompositionen J. Ockeghems*. Berlin
- Pacioli, L. (1974) "Divina Proportione" in *Quellenschriften für Kunstgeschichte und Kunsttechnik des Mittelalters und der Neuzeit*, vol. 2, transl. and ed. by Winterberg, C., New York, (orig. Leonardo Lauterano, Venice, 1509)
- Plato (1994) *Collected Works*, vol. 3, Moscow, pp. 437-438, 440-442.
- Powell, N. W. (1979) Fibonacci and the Golden Mean: Rabbits, Rumbas and Rondcoux, *JMT*, 23(2), 227-273
- Timmers, J. J. M. (1974) *Christelijke symboliek en iconografie*, Bussum, pp. 217-221.
- Tinctoris, J. (1979) *Proportions in Music*, New York, (Proportionate Musics, ca. 1473-74)
- Wittkower, R. (1949) *Architectural Principles in the Age of Humanism*, New York.