Speculative Thinking in Mediaeval Music

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THAT music is bound up with speculative thinking is true not only of the Middle Ages, but of all periods of history with the single exception of modern times. Even during the last century, speculation about music was not extinct, yet it no longer occupied the central place which it had during previous epochs.

We hear of musical speculation as having already existed in the old Chinese and Sumerian civilizations. Here music through intellectual concepts was associated with astrology, quantitative measure, and numbers. Measure was regarded as a holy and venerable matter, and since the discovery that strings could be divided according to divine measures the music resulting from such a division of the strings was considered as a revelation of eternal laws. Music was thus a sensuous form of the all-embracing cosmic harmony, conceivable only through the intellect, and not perceivable by human senses. The correspondence between measure and music was taken to have divine significance, and as a result Chinese scholars sought various means of determining the proper length of strings and columns of air. What we do not know, however, is whether the music was actually affected by these cosmological speculations. If we understand that certain musical modes were related to certain planets, that the music had the same power over man as the corresponding planet was supposed to have, the question arises whether the music would have been of a different character if there had not been this philosophical speculation associated with it. We know of certain ancient speculation regarding the philosophical significance of the various modes. This connotation of Greek scales was called: *ethos*. But we do not know whether these ethical powers had a direct influence upon the musical style as such. Music obeys certain intrinsic laws to which speculation must be adapted. If this were not true it would be impossible for music to evolve principles incompatible with those of the *ethos*. One may take as example the famous passage of Plato's *Leges*[1] where he speaks with scorn of those musicians who mixed up the modes and offended against the laws of the *ethos*. If speculation really could completely determine the nature of music this would not have happened. On the other hand, we

[1] Plato, *Leges*, III, 700.

know that, although music broke through the limitations established by the *ethos,* it did not lose in power, but was able to attract numerous admirers, as we learn from contemporary reports. This was in terms of any standard hardly a desirable *ethos,* if any at all.

With the beginning of the Christian era the point of view from which music was regarded altered. A new type of speculation came into prevalence which did not consider music as a means of education but as an instrument of spiritual perfection. To the early Christians it was not clearly ascertained whether music was wicked or, on the contrary, agreeable to God. The use of music was once and for all limited by its consideration as a potential aid in securing eternal life.

Though the patristic philosophers suspected the whole body of music of being pagan with the exception of psalm-singing (which was not really regarded as music) they could not entirely exclude music from the church. This was particularly true when the early Christians aimed to include in their faith members of the upper classes who were educated and trained in the classics. Their narrow-minded attitude had then to give way to a broader point of view. Thus, the high esteem of music as expressed in the ancient philosophy, gradually forced an entrance into Christian thinking. As a matter of course the survivals of the classics had to be interpreted in the light of Christian thought. Augustine's writings on music concentrate upon this problem. Setting aside the question of whether the new interpretation was adequate or not, one feature deserves special attention, namely the abundant use of allegory which was applied to music and musical instruments. This predilection can be partly explained as a consequence of the necessity to offer a new interpretation of the significance of music in terms of the evolving Christian philosophy.

Nevertheless, there was one concept in the ancient speculation which hardly needed any new interpretation, that was the idea of the harmony of the spheres. This old Pythagorean thought was retained by the Christians without alteration. The only difference between the Greek and Christian interpretation lay in the causation of the universal harmony. For the Greeks the harmony of the universe pertained to natural science, whereas the Christians regarded it as the creation of the one personal God.

The question whether the celestial harmony actually created sound or was only to be understood intellectually, was frequently discussed by the Greek philosophers. The tradition of Pythagoras to which also Plato belongs maintained that sound could exist whether it was perceptible to human ears or not. Aristotle on the contrary argued for the purely intellectual concept of this harmony. The mediaeval thinkers followed the first opinion until the writings of Aristotle became known through the Arabian translators. Since Roger Bacon, Johannes de Grocheo, Walter Odington, the celestial harmony is regarded as a mere intellectual idea, and even a conservative writer, such as Jacobus of Liège, says *ad excusationem antiquorum,*[1] that they used the term harmony only in an allegorical sense (*metaphorica locutio*).

[1] Jacobus of Liége, *Speculum musicae,* in Walter Grossman, *Die einleitenden Kapitel des Speculum musicae* (Leipzig, 1924), p. 82. The treatise was until recently falsely ascribed to Johannes de Muris. Between the acceptance and the publication of this article, two important books have appeared that

We constantly find in mediaeval treatises reference to the harmony of the spheres as an integral part of the fundamental classification of music. Boethius was the first to classify music into *musica mundana, humana et instrumentalis*.[1] *Musica mundana* is the harmony of the macrocosm (celestial spheres), *musica humana* refers to the harmony of the microcosm (the human body and the relation between body and soul). *Musica instrumentalis* denotes music in the sense in which we use it today, namely music which actually sounds and is produced by both instrumental and vocal means.

The term *musica instrumentalis* has led some scholars[2] to the belief that vocal music was not taken into consideration by the mediaeval writers. But, since the voice was universally regarded as a musical instrument, vocal music was also included in the classification. This threefold classification was retained, along with others, throughout the middle ages until the Renaissance. It still appeared in the writings of Nicolaus Burtius, Pietro Aron and Franchino Gafori, although only in a scholarly sense. The historiographers of the Baroque period, such as Athanasius Kircher in his *Musurgia Universalis*, took it up again.

The importance attached to musical classifications seems rather absurd to us now. Classifications of music were not created for the purpose of philosophical speculation, but were of practical concern. It really matters whether music is regarded as belonging to the seven liberal arts as was the case during the middle ages, or whether it is considered as a phase of the physical sciences as during the nineteenth century. In this regard we remember the significant, though futile attempt of Helmholtz to reduce the science of music to 'The Sensations of Tone.' The mediaeval classifications of music reveal the nature of the mediaeval mentality and explain why speculative thinking played such a prominent rôle in music. Music, both instrumental and vocal, was not regarded as an isolated means of expression to be judged according to its own precepts, but as an integral part of the universal harmony. Thus, music was located in the shadow of a greater whole. Actual music had no independent existence, but borrowed its meaning from the *musica mundana*. Speculation, therefore, could not be imposed on music, since it already belonged to it quite naturally.

Very revealing in this connection is the manner in which Boethius justified the very existence of the *musica instrumentalis*. It is the only music which man can create, but would be meaningless, were it not connected with the universal harmony. Boethius regards such music as man's imitation of the *musica mundana*. He considers music as a heavenly gift bestowed upon mankind, a gift through which we more nearly approach the image of God.[3] Thus, man may reflect the image of God in music as well as in other respects. This interpretation of earthly music is the basic allegory: *musica instrumentalis* stands in its entirety for the

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touch upon the subject: G. Reese, *Music in the Middle Ages* (New York, 1940), and P. H. Lang, *Music in Western Civilization* (New York, 1941).   [1] Boethius, *De musica*, I, 2.

[2] See Hermann Abert, *Die Musikanschauung des Mittelalters und ihre Grundlagen* (Halle, 1905), p. 165.

[3] Gerhard Pietzsch, *Die Klassifikationen der Musik von Boetius bis zu Ugolino von Orvieto* (Halle, 1929), p. 42.

non-perceptible *musica mundana*. Other interpretations of the special aspects of music are only subsidiary allegories.

The manner in which allegory was brought to bear upon music seems far fetched to us, but this was not so for the early Christian philosopher. As an illustration one mày point to the allegorical speculation of Hippolytos concerning the psalter.[1] In form the psalter was straight on all sides and thus allegorized the even way to God. The cithara, however, had a curved sound box, and in the language of allegory depicted the tortuous way to God. On the psalter the sound is produced on the upper part of the instrument and the tones are thus directed upwards, — in the cithara the sound goes downward. Therefore, the psalter represented the way of the spirit, while the cithara stood for the way of the flesh. The cithara also allegorized the incarnation of Christ, since the sound box and the strings formed together the sign of the cross. Thus, these two instruments represented the spiritual and the physical aspects of human aspiration towards God, the spirit going the smooth and direct way while the body was destined to follow the detours of earthly life.

Another version of the same allegory appears in the works of Prosper of Aquitaine.[2] He maintained that the psalter was appropriate for music conceived for the glorification of God, the cithara for music which reflected man's earthly life. Similarly Augustinus suggested that the psalter was suitable for chants praising the Lord, whereas the cithara was appropriate for penitential songs.[3]

In these allegories the obvious tendency is to impose a Christian view on an ancient concept of music and musical instruments in order to remove their pagan qualities. We do not know, however, whether the allegorical explanation had any bearing on musical practice itself. The cithara was used in the religious service as we know from early Christian mosaics, but it is not certain whether the use was restricted to penitential chants. If the cithara really did accompany penitential chants, was it due to the speculation of the patristic writers or did the writers plainly try to give a reasonable explanation of the established practice? It is difficult to ascertain which was the cause and which was the effect. Today we feel inclined to consider speculation as derived from practice, however, when applied to the Middle Ages this opinion often proves to be erroneous.

The examples thus far given, have dealt more or less with speculative thinking as reflected in writings about music. Let us now consider the influence of this speculation upon music itself. This influence can be most clearly seen in an analysis of the efforts made by the mediaeval composer in order to contribute to the body of existing church music. With the exception of the introduction of new saints for whom special offices were composed, there was practically no place in the service where the composer could display his creative activities. The Gregorian chant, collected and ordered according to the feasts of the year, represented a sacrosanct whole, at least after the eighth century and everybody who did not

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[1] Hippolytus, *Commentarii in psalmis*, II and VI, in Migne, *Patr. Gr.*, vol. X.

[2] Prosperus de Aquitania, *Psalmus 150*, in Migne, *Patr. Lat.*, vol. LI.

[3] Augustinus, *Enarratio in psalmis 150*, 3, in Migne, *Patr. Lat.* vol. XXXVII.

observe the Gregorian tradition was in danger of being excommunicated.[1] It was an accepted canon that nothing could be added nor taken away. The only loophole to this situation was addition through interpolation. This type of addition was something new in itself, but had no independent existence since it seemingly preserved the original forms to which it was applied. Thus the body of mediaeval church music consisted of the original plain chant and a significant literature of interpolated chant which cannot be considered as Gregorian chant in the strict sense.

A difficult question to answer was whether the intruder should receive official sanction or whether it should be treated as a parasite. In the course of time the catholic church chose to follow a middle road in the form of a compromise. It condemned a large part of the interpolations, but was forced to accept a smaller part which was so deeply rooted in tradition that it could not easily be eradicated.

The dogma that Gregorian chant was perfect and unalterable was supposedly established with the reign of Gregory the Great (d. 604). The practical purpose of such a dogma was that of unification. Originally each country employed its own music in the service. For example the Gallican service in France and the Mozarabic service in Spain were distinctly different from the Roman use. The attempt at unification through a standardized literature encountered difficulties which had to be overcome by actual force. The active part Charlemagne took in these efforts is well known. It took, however, centuries before the Gregorian tradition was finally established. During the Middle Ages the cantus Gregorianus maintained a flexibility intolerable from the modern orthodox point of view. That it was the Roman version of the chant and no other which became standardized is in line with the aim at centralization of the church.

In the ninth century a legend was profferred according to which Gregory the Great received the chant from the Holy Ghost who in form of a dove whispered the melodies into his ears.[2] Thus the chant came directly from God and must be regarded as perfect. Although the establishment of a universal chant had a political purpose and the legend provided a later justification, the fact remained that the chant was regarded as unchangeable. This was taken for granted and was the point of departure for all future creative activities.

The earliest interpolations began as textual insertions. Already Gregory the Great himself (or his *Schola Cantorum*) is said to have added a textual interpolation to the Alleluia of the Mass, namely a *Versus*.[3] The melody of the Alleluia was highly melismatic and lent itself easily to additional words. These early interpolations were taken from the psalms. Since the chant was modified through interpolation at the time of Gregory the procedure seems to have been accorded recognition although it was Gregory who established the dogma of the inflexibility of the chant. While the Alleluia *Versus* was officially acknowledged at once, later interpolations were only occasionally accepted. In the ninth century an extensive

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[1] Peter Wagner, *Einführung in die gregorianischen Melodien* (Leipzig, 1910), I, 197.

[2] The dove inevitably appears in pictures of Gregory the Great, cf. Carl Nordenfalk, 'An Early Mediaeval Shorthand Alphabet,' SPECULUM, XIV (1939), plate I, between p. 442 and 443.

[3] Peter Wagner, *op. cit.*, I, 92 and (1921), III, 397.

literature evolved in which, on the one hand, melismatic chants were supplied with new words and, on the other hand, new melodic sections were interpolated with or without additional texts. Such musical or textual insertions were called *tropes*.

One of the favorite texts subjected to a 'tropic treatment' was the *Benedicamus domino*, the two final words of the mass. A number of poems exist which begin with the word *Benedicamus*, followed by a number of stanzas, the last word of the last strophe being *domino*. A poem such as this was regarded as a rich and orna-mented form of the original text, as a substitute that could be sung instead of the two basic words at solemn occasions. Sometimes these words appear at the very end of the last strophe as in the following example:[1]

> Congaudeant Catholici
> Letentur cives celici
> Die ista
>
> Clerus pulchris carminibus
> studeat atque contibus
> Die ista
>
> Haec est dies laudabilis
> Divina luce nobilis
> Die ista
>
> Ergo caventi termino
> *Benedicamus domino*
> Die ista

The musical treatment of this trope might either consist of a simple arrangement of the Gregorian melody or of an entirely new composition. 'Congaudeant' is ac-tually a new composition and is not even based on the chant. Examples such as the quoted one have transcended their original intentions and have become com-plete and independent works of poetry and music. It must be kept in mind, how-ever, that the tropes never ceased to be considered as a solemn and elaborate ornamentation of the chant to be sung only on holidays and high feasts of the year.

A trope frequently used in the Gloria of the Mass: *Spiritus et alme* deserves special attention. It is interpolated into the Gloria as follows:

> Gloria in excelsis et in terra pax . . .
> Domini Fili unigenite, Jesu Christe.
>   *Spiritus et alme orphanorum Paraclite.*
> Domine Deus, Agnus Dei, Filius Patris:
>   *Primogenitus Mariae, virginis Matris.*
> Qui tollis . . . deprecationem nostram,
>   *ad Mariae gloriam . . .*
> Quoniam tu solus sanctus,
>   *Mariam sanctificans.*

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[1] The music of this trope is recorded in the collection *2000 Years of Music* (Decca 20157 B), edited by Curt Sachs.

> Tu solus Dominus,
>> *Mariam gubernans,*
> Tu solus altissimus,
>> *Mariam coronans,*
> Jesu Christe.

Such troped forms later became even more extensive and complex. The Gloria trope was so frequently employed that it finally became as firmly established as a mass-text itself. New words were then interpolated in the trope so that the result was a trope within a trope. To show the various possibilities of this multiple trope, the beginning of a Spiritus-paraphrase in prose and the end of a rhymed version follow. The primary trope is indicated by italics:

> *Spiritus* procedens a patre venis mundo regnans per aera
> orphanorum paraclite . . .

> *Mariam* matrem gratie
> rex regis regni glorie
> Christe cuncta vivificans
> matrem pie *sanctificans.*
> *Mariam* sine crimine
> omni plena dulcedine
> virgo matrem semper vernans
> matrem filio *gubernans.*
> *Mariam* laudent infera
> colunt tellus et ethera
> per quem crimina condonet
> Christe atque nos *coronans.*

Another special type of the trope is the so-called *sequence,* one of the most important branches of mediaeval Latin poetry. The sequence is associated with the Alleluia and its *Versus.*[1] It originated in the practice of setting to every note of the melody one syllable of a new text. Very often this new text also began with Alleluia. All verses ended with the vowel *a,* thus indicating that the place of interpolation was the melisma on *a* in the Allelui-a. Later this link was dropped and new free sequences were composed in which only the form of the earlier models was retained. The characteristic form of the sequence consists of a double versicle with a specific melody of its own. We give as an example the beginning of the sequence *Nato canunt,*[2] which still retains in every line the *a* as a final vowel.

> 1a Nato canunt omni*a* / Domino pia agmin*a.*
> b Syllabatim neumat*a* / perstringendo organic*a.*
> 2a Hac die sacrat*a*   / in qua nova sunt gaudi*a* / mundo plena dedit*a.*
> b Hac nocte praecels*a* / intonuit et gloria   / in voce angelic*a.*

Several sequences were similarly in such vogue that they in turn were troped and enlarged by interpolations in the same way as the above mentioned trope *Spiritus et alme.* The sequence *Virgini Mariae laudes* paraphrases the sequence for Easter: *Victimae paschali laudes* by picking up a few words or syllables and ar-

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[1] Friedrich Gennrich, *Grundriss. einer Formenlehre des mittelalterlichen Liedes* (Halle, 1932), p. 107, where the latest literature is quoted and discussed.   [2] Peter Wagner, *op. cit.* III, 488.

ranging them as a new poem. *Victimae paschali laudes* is one of the five sequences which still enjoy official approval today. It begins like this:

1   Victimae paschali laudes immolent Christiani.
2a Agnus redemit oves, Christus innocens parit reconciliavit peccatores.
 b Mors et vita duello conflixere mirando, dux vitae mortuus regnat vivus.
3a Dic nobis Maria, quid vidisti in via? . . .
 b Angelicos testes, sudarium et vestes. etc.

In the troped version the borrowed words are indicated by italics:

1   *Vi*rgini Mariae *laudes* concinant *Christiani*.
2a Eva tristis abstulit, sed Maria protulit natum, qui redemit *peccatores*.
 b Jus et virtus modulo convenere *mirando*, Mariae filius *regnat* D*eus*.
3a *Dic nobis Maria*, virgo clemens et p*ia*;
 b *Angel*us est *testis*, ad me missus coele*stis*. etc.

The examples given so far refer to text rather than to music. But we cannot separate the words from the music. These texts were always sung, and were either given a new melody or were simply adapted to a pre-existing one. But we also find tropes which were purely musical tropes. For instance the trope *Spiritus et alme*, dealt with above, is preserved in a composition where one observes the traditional melody of the trope used at the beginning and at the end, the middle part being a free interpolation by the composer. This new music, however, has not been supplied with new words and is thus an illustration of a strictly musical trope.

The artists of the middle ages were always anxious to maintain a link between the old and the new. The additions were generally in the nature of commentaries upon the original, and if these commentaries were themselves subjected to inter-polation, the additions became comments on the commentary. This procedure could be repeated an infinite number of times. The connoisseur of mediaeval manuscript writing will be reminded of the manner in which the commentary was added to the mediaeval tracts in form of glosses: the basic text written in large letters occupied only a small part of the page. The commentary written in small letters covered the rest of the page or was even inserted in between the lines of the original text. The commentary in turn was itself commented upon in the margin. The result was a page of which the accompanying illustration is an example (see opposite plate). In music and poetry as well as in mediaeval philosophy the same attitude prevailed, nearly all important contributions to these fields were presented in the form of commentaries upon the patristic writings or upon the traditional music.

The accumulated mass of tropes and sequences constituted a literature which was even larger than the original stock of melodies. The inner urge to create was as strong as ever in the middle ages, but in order to satisfy this urge it was necessary to disguise the product because of the firm belief in the *auctoritas* of the traditional writings and music. This belief did not necessarily imply that the older books were superior. But these older writings never ceased to be valid for the later commentator, and the only way for him to modify previous ideas was by way of explaining and interpreting his sources. In this connection the trope

obviously is the corresponding form for creative activity in music. It is at once something new and something old, since it preserves the old, and yet transforms both text and music. Also the 'progressive' interpolation resulting in the multiple or troped trope corresponded exactly to the devices used in mediaeval manuscripts.

We have dealt thus far with the origin of such musical forms as the trope and the sequence both of which are monodic in texture (for one voice). The same thoughts which were responsible for the evolution of tropes also prevailed in polyphonic music, and even in a more pronounced fashion than in monody. As a matter of fact, the history of the *motet* is the story of a certain type of musical and textual interpolation.

Before we come to the point of dealing with the motet let us look first at the origin of polyphony. The Gregorian chant is entirely monodic, that is: one melodic line sung by a soloist or a chorus. To add a second and simultaneous voice to a plain chant melody was a new and important device. We do not yet exactly know why and how the additional voice came into being. The earliest theorists themselves were not certain whether a second voice would be permissible or not. The unknown author of the *Musica enchiriadis* (ca 860) justifies the new polyphony as being an ornamentation of church music (pro ornatu ecclesiasticorum carminum.)[1] We can actually consider the second voice as a trope to the Gregorian melody.[2] In contradistinction to the regular trope which is, as it were, a horizontal interpolation, a second voice superimposed upon a cantus firmus is a kind of vertical interpolation and in that sense a new form of trope. The coexistence of two or more different elements forming together one self-contained art work is a distinguishing quality of music. In the earliest stage of development the text of the added voice followed that of the main voice, Later the 'vertical trope' bore a secondary text of its own. While the tropes of the Gregorian melodies started as textual additions to a pre-existing melody and were supplied in a later stage with new music, the process in polyphony is just reverse. Here the vertical trope is at the outset, merely a musical one and textual additions represent a later stage of development.

There is another point that puzzled the composer of early polyphony, namely the fact that certain intervals sounded well together while certain others did not. Here speculation comes in again to proffer a possible explanation. The author of the *Musica enchiriadis* explicitly asks the question why certain tones give a 'sweet mixture' and others give a harsh one. The answer is that human intellect cannot understand this secret, there must be 'a deeper and divine reason that lies hidden in the remotest recesses of nature.'[3] The reader of the *Musica enchiriadis*

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[1] Martin Gerbert, *Scriptores ecclesiastici de musica medii aevi* (St Blasien, 1784), i, 171.

[2] See Friedrich Ludwig's contribution to *Handbuch der Musikgeschichte* (ed. Guido Adler, Berlin: 1930), i, 158 and Jacques Handschin, 'The Two Winchester Tropers,' *Journal of Theological Studies*, xxxvii (1936), 36.

[3] Martin Gerbert, *loc. cit.*, i, 171–172, 'Cur namque aliqua tam dulci ad invicem commixtione consentiant, alii vero soni sibi misceri nolentes, insuaviter discrepent, profundioris divinaeque est rationis et in aliquis inter abditissima naturae latentis.'

will not be amazed to find right after this passage the following reference to the harmony of the spheres: 'There are several writings of the ancients in which it is convincingly shown . . . that the same numerical proportions by which different tones sound together in consonance also determine the way of life, the behavior of the human body and the harmony of the universe.'[1]

While the patristic writers interpreted music in a vague manner as an imitation of the *musica mundana* the *Musica enchiriadis* argues in a more convincing way. The comparison of polyphony with the universal harmony is more consistent, since on both sides real harmony is implied, *viz.*, tones sounding simultaneously. Polyphony deserves to be called the image of universal harmony rather than monody.

The mystical belief that man will never be able to penetrate the intrinsic secrets of music as expressed by the author of the *Musica enchiriadis* can be demonstrated by the very ingenious interpretation of the Orpheus myth. According to the *Musica enchiriadis* Eurydice embodies the deep wisdom of music. (Profunda diiudicatio) not attainable by mortals, Orpheus represents the expert singer (cantor peritus), and Aristeus is the plain good man (bonus vir). Aristeus tries to follow Eurydice, but divine providence does not want him to understand the secrets allegorized by Eurydice. Thus she is caused to die from a serpent's sting. Then Orpheus calls her back from the dead by the power of his music, but on the condition that he is not allowed to look back at her on the way to the upper world. As soon as Orpheus tries to look at Eurydice she vanishes before his eyes. Thus, the author goes on, man can never entirely penetrate the secrets of music, they will always continue to be enigmatic.[2] This interpretation of the Orpheus myth reverses the original meaning, but it emphasizes the new Christian outlook that we never are able to attain full knowledge in the short span of earthly life.

The same interpretation of the Orpheus myth appears in a musical treatise of Regino of Prüm (d. 915) *Epistola*[3] which might have been written a little later than the *Musica enchiriadis*. Regino, however, has not copied the passage from the *Musica enchiriadis*. This is obvious since the wording differs so markedly. The two-fold occurrence of the same story seems to be no mere coincidence. Both the *Muscia enchiriadis* and Regino go back to the same source, namely the *Mythologiae* of Fulgentius (fl. fifth century).[4] The literal concordance between

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[1] Martin Gerbert, *loc. cit.*, I, 172.

[2] Martin Gerbert, *loc. cit.*, I, 172: 'Fictum est ab antiquis, Aristeum Eurydicem nympham Orphei conjugem adamasse, quemque dum illa se sequentem fugeret, a serpente extincta sit. Orpheum, cuius nomen Oreophone, id est, optima vox, sonat, in cantore perito seu dulcisono cantu intelligimus, cuius Eurydicen, id est, profundam diiudicationem, si quis vir bonus, quod Aristeus interpretatur, amando sequitur, ne penitus teneri possi, quasi per serpentem divina intercipitur prudentia. Sed dum rursus per Orpheum, id est, per optimum cantilenae sonum, a secretis suis ac si ab inferis evocatur, imaginaris perducitur usque in auras huius vitae, dumque videri videtur, amittitur. Scilicet quia inter cetera quae adhuc *ex parte et in aenigmate cernimus, haec etiam disciplina haud ad plenum habet rationem in hac vita penetrabilem.*'   [3] Martin Gerbert, *loc. cit.*, I, 246.

[4] Fulgentius, *Mythologiae*, III, 10 (ed. R. Helm, Leipzig: 1898). See also the same text in the writings of the so-called *Mythographus Vaticanus III* (Albericus), VIII, 20, in Angelo Mai, *Classicorum Auctorum e Vaticanis codicibus* (Rome, 1831), III.

Regino and Fulgentius is very close, much closer than that between the *Musica enchiriadis* and Fulgentius.

The appearance of a passage taken from Fulgentius is noteworthy in itself, but in addition to that might throw some light on the discussion of where and by whom the *Musica enchiriadis* was written. The knowledge of Fulgentius was supplied by the mediation of Johannes Scotus and his pupil Remigius of Auxerre.[1] This circumstance seems to confirm the assumption, first made by Jacques Handschin[2] that the *Musica enchiriadis* might have been written by a Scotch author. The recently published commentary of Johannes Scotus on Martianus Capella[3] not only shows that Scotus was familiar with Fulgentius's explanation of the Orpheus myth, but, in addition, contains some important references to music.

Let us return now to the motet. As we have already said the motet originated through the addition of a second voice to the Gregorian melody. As long as both voices followed the same words this purely musical trope was called *Organum*. In the next stage a new text closely connected with the original words was adapted to the second voice. The new text commented upon the biblical words in the typical manner of the trope retaining at the beginning and at the end the first word of the basic text. As an illustration of an organum that by addition of a new text became a motet we refer to the four part arrangement of the Christmas Gradual by Perotin. Originally all voices had the same words: *Viderunt omnes*. In a later manuscript the same music is preserved, but now as a motet. The tenor retains *Viderunt* while the motetus (second voice) runs like this:

Vide prophetice / finem adimplete
Fugit umbra die / quia lux prophete . . .
Solem sydere, procedere, fulgere, *vide* . . .
stella preside, viam preside quam pro*vide*
magi pro*viderunt* . . .[4]

The second voice with the troped text was called *motetus*. This term is derived from the French 'mot' = word, and the diminutive form 'motetus' (little word) points to the secondary rôle of the commenting text. At first the word motet denoted only the one voice supplied with a new text, but later on became the generic term for a type of composition in which additional words appeared.

In passing I mention that in a subsequent stage the Latin motetus text was replaced by one in the vernacular, usually in French.[5] These texts no longer showed any relations to the liturgical purpose of the composition. The secular motets are

[1] For the history of myths *see* Otto Gruppe, *Geschichte der klassischen Mythologie und Religionsgeschichte* (Leipzig, 1921).

[2] Jacques Handschin, 'Die Musikanschauung des Johannes Scotus,' *Deutsche Vierteljahrsschrift für Literaturwissenschaft und Geistesgeschichte*, v (1927), 316.

[3] Cora A. Lutz, ed., *Johannes Scottus: Annotationes in Marcianum* (Cambridge: Mediaeval Academy, 1939), p. 480, 19, Scotus' definition of harmony: 'Armonia interpretatur adunatis dissimilium videlicet vocum ratis proportionibus coniunctarum (10, 22)' implies polyphony or, at least, heterophony.

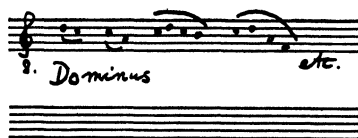[4] See Friedrich Ludwig, in *Handbuch der Musikgeschichte* (ed. Guido Adler, Berlin, 1929), i, 229–232.

[5] For the earliest motet with English text, cf. M. Bukofzer, 'The First motet with English Words,' *Music and Letters*, xvii (1936), 225.

as far as we know the earliest examples of secular polyphonic composition. The motet was a form which grew in importance until it actually became the most popular type of composition in the late thirteenth century.

Although the secular motet of this time no longer commented on the basic words its origin was 'the spirit of interpolation' that prevailed in all mediaeval arts. This intellectual conception was also responsible for the strange feature of the motet characterized by simultaneous use of Latin and French texts (or any other vernacular). The various peculiarities of the motet offer, thus, obvious examples of the capacity of speculative thinking to affect the creation of musical forms.
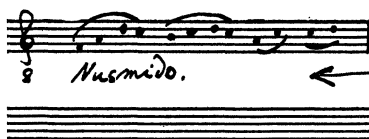
Still more striking are the next few instances with which we are now to deal. One strange example rather unusual for the thirteenth century is the tenor of a *clausula* (part of an Organum). The Gregorian melody bears the word *Dominus*.[1] But the word appears in the manuscript in the reversed order of syllables as *Nusmido* and also the melody is notated in cancrizans motion from back to front instead of the usual straight form as preserved several times in other manuscripts.

Ex. 1: Dominus

This tenor runs:

Ex. 2: Nusmido

Obviously, the reversed order of the melody cannot be justified on musical grounds, and must therefore have some intellectual reason. In this particular case no reason for such an inversion is indicated. Most likely intellectual pleasure had something to do with it. In the fourteenth century we find several compositions where either cancrizans motion or crab canon is applied. These devices can be explained only by assuming that intellectual satisfaction was derived from the solution of such enigmas. The retrograde movement is used sometimes as a means of allegorizing the text. For instance, in the motet 'Amicum quaerit' the singer has to 'seek the friend' and finds his voice by retrograde reading of the given part. Another famous example is the *rondeau* 'Ma fin est mon commencement' by Machaut the form of which literally carries out what the words of the

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[1] Friedrich Ludwig, *Repertorium Organorum* (Halle, 1910), p. 80 and 'Die mehrstimmige Musik des 14. Jahrhunderts,' *Sammelbände der internationalen Musikgesellschaft*, ɪᴠ (1903), 30.

text imply.[1] The devices of retrograde movement, canon and crab-canon are further means by which the composes could seemingly retain the original form of the music, yet introduce completely new elements and variety. To be sure, the melody attained by reversion has musically no similarity to the original one and nobody can ascertain by ear that the one melody is nothing but the reversed form of the other. The human ear is capable of hearing neither music nor language in retrograde direction. The ear will not observe that, for instance, the word 'drawer' actually reverses the order of letters of the word 'reward.' A melody resulting from cancrizans motion has nothing more in common with the original melody than "drawer" has with 'reward.' The intellect is the sole link between such two forms of a single melody, there can be no intuitive recognition whatever of such reversion. One must know in advance how the different melodies are interrelated in order to enjoy their sophistication.

The last two examples of speculative thinking in mediaeval music refer to musical rhythm. In early mediaeval music rhythm was not expressed in the notation, it was preserved through oral tradition. With the beginning of polyphony, especially when more than two different voices were sung together the necessity for a notated rhythm made itself felt. The problem was how best to indicate the rhythm through the form of the notes. The mediaeval composer availed himself of the classic meters such as iambic and trochaic and indicated by certain rules of notation when these respective meters were to be applied. The basic unit was a measure of three beats. This ternary rhythmic structure suddenly emerged after 1150, but we do not know exactly how it came into existence. The fact is even more puzzling since certain theorists inform us that formerly the structures were binary. The only explanation proposed by mediaeval writers is that the ternary grouping corresponds to the trinity. The two most usual note values in the musical notation of this time were the *longa* and the *brevis* and according to the rule, one *longa* was equal to three *breves*. The measure could be occupied by either one *longa perfecta*, or by one *longa imperfecta* and one *brevis*, or by three *breves*. The point was that, in contrast to the older usage the measure must contain three beats. We quote in the following some writers who explained the law of ternary rhythmic grouping by reference to the trinity.

Lambertus Aristoteles (about 1255) justified the ternary division of the *longa* as follows: 'Et ideo non immerito ad summam refertur trinitatem, quia res qualibet naturalis *ad similitudinem divine nature* ex tribus constare invenitur ... sic omnis cantus mensurabilis ad similitudinem divine nature ex tribus constare invenitur.'[2] Here the conception that music is an image of the *musica mundana* recurs, but is now applied to the special question of musical rhythm.

The famous Franco of Cologne, a contemporary of Lambertus Aristoteles, put the question in a somewhat different way. Franco discussed the *longa perfecta* and *imperfecta*, but declined to accept as synonymous the terms *longa obliqua* and *longa recta*. Since the *longa perfecta* contained three notes and three is an odd number, the *longa perfecta* was also called, quite reasonably, *longa obliqua*. Since, on

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[1] Published by Johannes Wolf, *Geschichte der Mensuralnotation* (Leipzig: 1902), II, 40.

[2] Edmond de Coussemaker, *Scriptorum de musica medii aevi nova series* (Paris, 1864), I, 270–271.

the other hand the *longa imperfecta* contained only two time-values it was called sometimes *longa recta*, viz. a *longa* containing an even number of beats. In his argument, however, Franco did not accept the term *longa recta* because he understood *rectus* not as 'even,' but as 'right.' He confused 'even' with 'right' and, consequently, 'right *longa*' was for him a term attributable only to the *longa perfecta*. This turns out to be rather a pun than an argument. It shows, however, that in mediaeval music nomenclature was considered as important as was musical classification. 'Longa perfecta prima dicitur et principalis. . . . Perfecta dicitur eo quod tribus temporibus mensuratur; est enim ternarius numerus inter numeros perfectissimus, pro eo quod a summa trinitate que vera est perfectio nomen sumpsit. Longa imperfecta sine adjutorio brevis . . . nullatenus invenitur. Ex quo sequitur quod illi peccant qui eam rectam appellant, cum illud quod rectum est, possit per se stare.'[1]

The punning argumentation of Franco obviously shows a nominalistic tendency, very characteristic also for later scholastic writers of musical theory such as Jacobus of Liège. Franco's reference to the trinity does not substantially differ from that of Lambertus Aristoteles. Walter Odington, an English theorist about 1300, informs us of the important fact that 'formerly' the longa was binary. Besides that the passage gives no further evidence of the relation between the trinity and a ternary rhythm. 'Longa autem apud priores organistas duo tantum habuit tempora . . . sed postea ad perfectionem dicitur, ut sit trium temporum ad similitudinem beatissime trinitatis, que est summa perfectio, diciturque longa huius modi perfecta. Illa vero que tantum duo habet tempora dicitur imperfecta.'[2]

The three cited passages demonstrate speculative thinking as applied to musical rhythm. It is an established fact that all notated church music about 1200 must be transcribed in ternary rhythm. The passage of Odington which is comparatively late (*ca* 1300) implies that a deliberate change of rhythm took place when the *longa* became ternary. At any rate, there is no evidence that the change in music occurred at an earlier date than the speculation. Both appear to have emerged at approximately the same time, and, as yet, we have not been able to prove that speculation caused the change from binary to ternary division or that speculation was only a later added justification. A theorist of 1326, Robert de Handlo,[3] reports that one considered the *longa* as binary in secular music (*more lascivo*), but we do not know whether this statement had any bearing upon the music composed 125 years before, although Handlo is known to have been an ultra-conservative writer. If it had, the ternary rhythm of church music would be an indication of a specific style of music in the Gothic period which very likely was actually brought about by speculation.

Let us turn to the second example of speculative thinking as applied to rhythm. The motet of the fourteenth century displayed a very strange technique that can be justified only by the mediation of speculation. The musical form was contrived upon a rhythmical pattern which was retained throughout the piece. The best way of explaining this highly complicated procedure is to give an example. Let us take the beginning of a motet by Dunstable.

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[1] Edmond de Coussemaker, *loc. cit.*, I, 119.   [2] *Ibid.*, I, 235.   [3] *Ibid.*, I, 388 and 402.
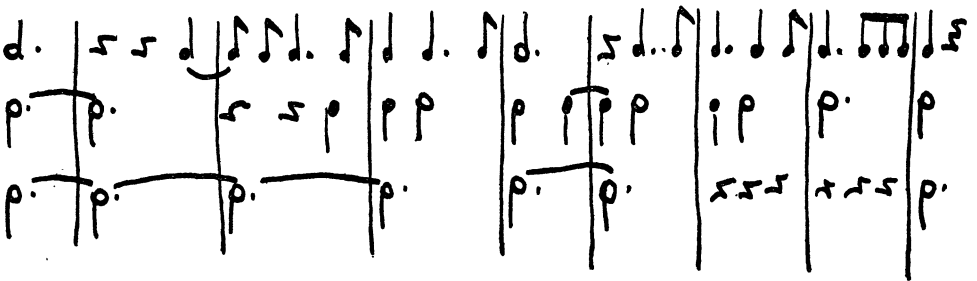
Ex. 3

In the following example the parallel section of the next period is given.

Ex. 4

In the corresponding measures each voice runs in identical rhythmic motion, that is to say, the time-values of the corresponding notes are unchanged although the pitches do vary. When we write down the time-values of the parts alone without considering their pitch, identical rhythmic schemes result.

Ex. 5

This pattern represents the rhythmic skeleton of the composition. The melody, as it were, the flesh that covers the bones, varies with each repetition of the rhythmic scheme. The melodic change in Ex. 3 and 4, however, results in an impression of two different sections in spite of the fact that both are identical in rhythm. The uninitiated hearer does not observe that the same mensural pattern recurs repeatedly, but hears a new section of music. A listener who knows all about this sophisticated device will be able to recognize identity of the rhythm in the repetition after some training and experience, but since in every period melody and harmony change and the element of rhythm alone is retained, even for the connoisseur it is difficult to recognize the invariable pattern. The sections with the same rhythmic

scheme are called 'isorhythmic periods' by modern writers. There exists also a mediaeval term: *talea*, which means incision or section. The mediaeval theorists simply described the isorhythmic device and gave no hint as to the intellectual foundations of it. However, the reason for the application of the isorhythmic device does not seem to lie too far afield. Above all, it is obvious that an abstract idea must have participated in its creation. The underlying thought was the close relation of rhythm to numbers. The time-values of the different notes could be expressed by integers.

To retain a certain rhythmic scheme in the various parts of a composition actually meant to keep the same numerical proportion. The musical composition was outlined according to the same rules as was mediaeval architecture. The ground plan of a cathedral obeyed certain laws of proportion, the secrets of which were anxiously guarded by the craftschools. The consideration of numerical proportion was not an outgrowth of esthetic experience. It belonged to the Pythagorean conviction that numbers form the essence of all things, a conviction still held to be valid for the philosophers of the fourteenth century since also the Bible, their main authority, acknowledged the tremendous importance imputed to numbers by the sentence 'Deus omnia in mensura, pondere et numero disposuit.' This passage from the *Liber Sapientiae* xi, 21 was, significantly enough, quoted over and over again by musical theorists. Numerical proportion supplied, as it were, the formula of the universe, comprehensible to the intellect alone. The human senses such as the eye and the ear perceive things as unrelated to each other, but the intellect provides the unifying reduction to numerical proportions. The isorhythmic motet, thus, corresponds to human experience in life: the single isorhythmic periods seem different for the ear though they are based on an identical numerical scheme. Thus, the motet represented another device allegorizing the universe. It is in this sense that we have to understand what seems to be an overstatement of the *Speculum musicae* 'Musica generaliter sumpta objective quasi ad omnia se extendit' (I, 1).

As we have seen, there are three main currents of speculative thinking in mediaeval music:

(1) the idea of music as an image of the world or as an imitation of the *musica mundana*,

(2) the Pythagorean doctrine of numerical proportions,

(3) the tendency towards interpolation as a commentary.

These ideas are interrelated. The mediaeval classification of music is as much dependent upon the first idea as the justification of polyphony is upon the second. The trope, the sequence and the motet are based mainly upon the third premise. In the isorhythmic motet all three ideas are united into a single work of art. The basic concepts remained unchanged through the whole period, but the manner in which speculative thinking was reflected in music altered. The different possibilities of realization ranged from the musical allegory of the Roman period to the intellectual devices of the isorhythmic motet in which speculative thinking was actually responsible for the formal outline of the composition.

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