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Philippe de Vitry's "Ars Nova": A Translation

Author(s): Philippe de Vitry and Leo Plantinga

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Philippe de Vitry's Ars Nova: a Translation

By

The following translation is based on the single complete manuscript source of the Ars nova, Vatican Barberini 307.*1 A few variant readings, however, have been accepted from other sources, especially Paris, B.N. lat. 14741, Paris, B.N. lat. 18514,*2 and parallel passages in Lambert's Tractatus de musica.*3 All deviations from the text of the Vatican manuscript are noted.

The earlier portions of the Ars nova consist of an elliptical and often confused presentation of material plundered from various earlier sources. Many of these sources have been pointed out in an edition of the text prepared by Gilbert Reaney with the collaboration of Andre Gilles and Jean Maillard,*4 and as a rule are not mentioned again here. The present translation, believed to be the first published in English, follows directly.

LEONI PLANTINGA

There are three varieties of music: mundana, humana, and instrumentalis. Our concern here is with instrumentalis. Musica instrumentalis is the name for that which has to do with various instruments, such as the cithara, viella, or the monochord, of which we shall deal only with the last. The monochord is an instrument having one string, and produces its concords in three types of modes, namely diatonic, chromatic, and enharmonic. We shall be concerned only with the diatonic.

Diatonic is that which proceeds through two tones and a semitone. It has thirteen species. Of these, the first species is the unison in sound, which is equality in number, as one to one. The second is the octave in sound, which is the duple proportion in numbers, as two to one. The third is the fifth in

sound, which is the sesquialtera proportion in numbers, as three to two. The fourth is the fourth in sound, which is the sesquïtertia*5 proportion in numbers, as four to three. The fifth is the whole tone, which is the sesquioctava proportion, as 9:8. The sixth is the minor third, which is the proportion 32:27. The seventh is the major third, which is the proportion 81:64. The eighth is the semitone, which is the proportion 256:243*6. The ninth is the minor sixth, which is the proportion 128:81. The tenth is the major sixth, which is the proportion 54:32. The eleventh is the minor seventh, which is the proportion 16:9. The twelfth is the major seventh, which is the proportion 486:256*7. The thirteenth is the tritone, which is the proportion 729:512.

It must be understood that all inequality proceeds from equality. This is clear if three units, which are recognized as equal, are put together in one place. From this follows the rule: if the first unit is put into the first position, and then the first and second equal units are together put into the second position, and then the unit in the first position, the two equal ones in the second position, and the third equal unit are together put into the third position, there results a series of duples, which is the first species of multiples. This having been thus accomplished, the triples can be derived from the duples, and likewise the others: duples 1, 2, 4; triples 1, 3, 9; quadruples 1, 4, 16.*8 And in every instance, from the first to the last, all inequality proceeds from equality. And let this much about multiples suffice.

And it must be understood that from the duple multiples with terms in reverse order proceed the sesquialtera superparticulars, from the triple [multiples], the sesquitertia, and likewise the other species:

duples with terms reversed 4 2 1*9

sesquialtera 4 6 9

And it must be understood that from the sesquialtera superparticulars with terms in reverse order proceed the superbipartients, which are superpartients, and in the same way from the sesquitertias proceed the supertripartients, and likewise the others:

sesquialtera with terms reversed 9 6 4

superbipartient 9 15 25

And it must be understood that from the sesquialtera superparticulars*10, with their terms in normal order, proceed the duple sesquialteras which are multiple superparticulars, and in the same manner the others:

sesquialtera 4 6 9*11

duple sesquialtera 4 10 25

Likewise, it must be understood that from the superbipartients, which are superpartients, with their terms in normal order, proceed the duple superbipartients, which are multiple superpartients:*12

superbipartient 9 15 25

duple superbipartient 9 24 64*13

And it must be understood that if both terms of any proportion are multiplied by the same number, the identical proportion will always result:

sesquialtera 3 2

also sesquialtera 6*14 4

And it must be understood that if from one proportion you wish to make two, you must multiply the first term by itself, the second term by itself, and then the first term by the second, and you will have the middle term:

sesquialtera 9 4

middle 6

sesquialtera 3 2

And it must be observed that if you wish to find the difference between two proportions, write whatever proportions you wish, but in such a manner that the first term of one will be below the first term of the other, and the second terms likewise. And cross-multiply so that the first term above will go with the second one below, and the second term above with the first below, and you will have this:*15

tone 9 8

diapente 3 2

diatessaron 4 3

Concerning the division of the monochord

Now for the division of the monochord. If any string under tension*16 is shortened, its sound will be raised or elevated; *17 and it must be observed that every half of a string sounds similar to its whole. There are two propositions, namely that for similar sounds there are similar signs, for diverse sounds, diverse signs. And it must be understood that two fourths and a tone*18, or a fifth and a fourth make an octave. And it must be understood that a major third and a semitone make a fourth.

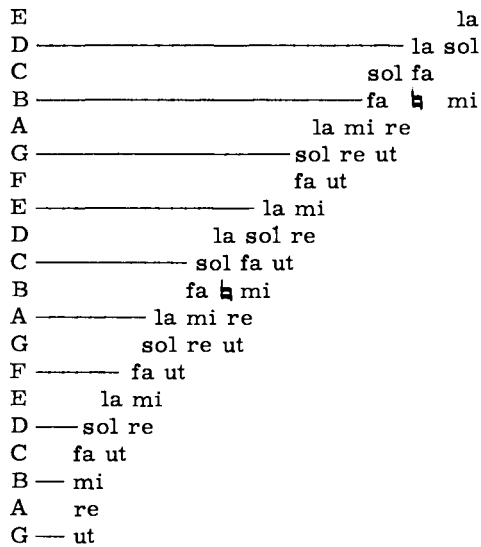
Likewise, it must be understood that, if you wish to construct on a given string all the kinds of musical proportions of the diatonic genus, first a tone must be laid out, then another tone, and thereafter a semitone, from low G to its twelfth, D;*19 then from the octave, G, to its twelfth, D, in the manner described above, then from the fifteenth, G, to the twentieth, and beyond if it be possible for the voice, though this does not conform to our practice; in order that this may be made clearer, it appears in a figure thus:*20

t t s t t s t t s t't s t t s t t s t't s t t s t t s t't s t t s
G a b c d e f G a b♮ c d e f G a b♮ c d e f G a b♮ c d e

Concerning the operation of the monochord

Now what follows concerns the division of the monochord according to its operation. Let there be a string, whose entire length is G, whose half is another G, the half thereof being the third G. Now of the first low G, let three parts be C,*21 whose half is another C, whose half is in turn the third C. Again, of the first C, let three parts yield F, half thereof the second F, and half of that, in turn, the third F. Again, from the low G, two parts are D, and its half another D, and its half the third D. Again, the first D is divided by three, and one third is added to it in the direction of the first G, yielding the first A, whose half is the second A, its half, in turn, being the third A. Again, two parts of the first A give the first E, whose half is the second E, whose half is the third E. Again, the first E is divided by three, and a third part of it is added toward the first G, giving the first B♮, whose half is also B♮, its half, in turn, being the third B♮. Again, from the first F three parts give the first B^b, of which the half is the second B^b, and its half, in turn, the third B^b.

Of these signs, the first eight*22 are called grave, because they represent low song, that is, very low; the next seven are called acute, because they represent high song; the rest indeed, are called superacute, as they are placed above the acute, or because they represent superacute, i.e., very high sounds. Now the previously mentioned seven signs of the monochord, G, A, B, C, D, E, F can be repeated infinitely. *23 But according to our practice, the names of the sounds are six, namely ut, re, mi, fa, sol, la. And they are superimposed on the previously mentioned signs, as ut is placed on any of these, G, C, or F, and the following sounds on the following signs. And in this way the scale is put together. The scale is, then, nothing other than the combination of the signs of the monochord and the sounds; this will appear more clearly in the following figure:



Concerning the parts of music

It must be observed that there are four principal parts of music or of the scale. Thus the first part concerns the signs and the names of the pitches, the second concerns the lines and spaces, the third the proprieties, the fourth the mutations.

Having dealt with signs and pitches, we must now treat the lines and spaces. Line and space, as they are used here, are

nothing other than even and odd. Thus every note on a line is called odd; that which is in a space is called even, or equal. Therefore any sign corresponding with an odd number is on a line, and every one with an even number is in a space. From thence it follows, according to the nature of numbers, that if the first sign be on a line, the following one*24 will be in a space, and in this sense every fourth and eighth tone is opposed to the first; for the eighth, however, the same sign is used. Therefore, if the first pitch is on a line, the other will be in a space and vice versa. And these two*25 rules hold in connection with a staff governed by the same clef.

Concerning the proprieties of music

That which follows concerns the proprieties. A propriety is nothing other than a differentia. There are three kinds, namely B♮, natural, and B♭. Thus B♮, with a square ♮ before it, is said to be a tone from A; B♭, with a round ♭ before it, is said to be a semitone from A; music without any B's is called natural, i.e., without differentiae.*26 From thence comes the rule: whenever ut is on G, it and the following pitches are governed by B♮, and when on C, by the natural state, and when on F, by B♭. Hence the verse:

C naturam dat, F b molle tibi signat,

G quoque ♮ durum facit te esse caniturum.*27

And so much for the proprieties of music.

Concerning the mutations

That which follows concerns the mutations. Now mutation is nothing other than the substitution of one tone for another which has the same sound and the same sign. Thus it follows that at whatever degree a mutation is made, it is necessary that at that degree there be at least two syllables.*28 But at gamut, A re, B mi, and E la there is only one syllable, and thus here there can be no mutation. Nor, similarly, at ♮ mi ♭ fa, because here there are different signs and different sounds. Because they are not put under the same sign, neither do they have the same sound. And for this reason no modulation can be made there, because this would violate the definition. If, in fact, they had the same sound, it would have had to be called B fa mi;*29 and, that all may understand this more clearly, let them look again at the monochord.

It must be observed that where there are two syllables, there are two mutations, as at F fa ut, where one can say fa-ut [or ut-fa]. Now wherever there are three syllables, there are six mutations, as at G sol re ut, and the others. Where there are two syllables, the first is changed to the second and vice versa, and where there are three, the first is changed to the second and vice versa, and the first to the last and vice versa, and the second to the last, and vice versa. And by reason of that, where there are two syllables, their number is not doubled to make four mutations, as three syllables are doubled to make six. Hence the rule that every mutation arriving at ut, re, or mi is called ascending, because it allows for more ascent than descent, and every mutation ending with fa, sol, or la is called descending, because it allows for more descent than ascent.*30 A mutation is undertaken to accommodate ascent or descent, as is clear in the case of C fa ut. For, if at this tone anyone should choose fa, he would be able to ascend as far as the third pitch. But should he wish to go to the fourth pitch, it would be necessary to choose ut of this same C fa ut, which is the mutation from fa to ut.*31 And descent is to be accomplished in the same way. Let this suffice.

Observe that music is the knowledge of accurate singing, or an easy means of achieving perfection in singing.*32 And its name is derived from moys,*33 which is water, and ycos, knowledge, because it was invented according to water. And it has 13 species, namely unison, tone, semitone, etc.

The unison is whatever is accommodated by a single line or single space, wherever it may occur in the scale, that is, under whatever sign of the scale, or at whatever pitch. And its name is derived from unus and sonus, as it has one pitch which is the same both according to figure and sound. Likewise, in another sense unison means the sound of a single pitch, from which no progression is possible, as it must always remain on the same line or in the same space. If, indeed, a progression is made from any pitch to a neighboring one, then at times a tone will result, at times a semitone. However, it must be recognized that the unison is not in itself a consonance, but is the origin of the other consonances; without the unison no consonance is possible.

What is the unison? The unison is the sound by means of which we first begin to sing. And this sound neither ascends nor descends, and according to the ability of the singer, is located either at a high or low pitch. And it is placed in whatever clef that might be required.

Concerning the semitone

The semitone is the interval between two unisons, which in the human voice is incapable of, and will not admit of, division or the interpolation of a middle sound. And between B♮ and C, or E and F, or A and Bb it occurs naturally, i.e., according to the character of the pitches, for between F and E there is a major seventh. But in the case of mi-fa, there is between these names of pitches the same interval as would result from the addition of a sign to any note; this is assumed. Thus there is a semitone between mi and fa.*34

Now semitone is not, as some believe, derived from semi, which means half, because it is less than half of a tone, as appears clearly in the arrangement of the monochord. It is rather derived from semus, meaning imperfect, as an imperfect sound.

The semitone, as Bernardus said, is the sugar and spice of all music, and without it song is corrupted, altered, and destroyed. Now Boethius calculates the proportion of the semitone by solving a certain problem.

Now by means of musica falsa we occasionally make a semitone where there ought not to be one. For in measured music we see that when the tenor*35 of a motet or rondellus has a B, which is sung as B♮, while its discant has the fifth above, it is necessary to sing the high F, or mi by means of musica falsa. For to make a fifth from mi to fa does not produce a good concord, because the interval from that B♮ to the F above is two tones and two semitones, the combination of which by no means makes a concord. And it is necessary that where a fifth separates one sound from another, there must be a good and true consonance.

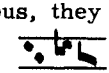
And from this, clearly, arises the question of what occasions the necessity in regular music of musica falsa, or of false mutation, when nothing governed by rule ought to accept that which is false, but rather the true. To this it is to be answered that false mutation or musica falsa is not useless; indeed it is necessary in order that good sounds may be achieved, and bad ones avoided. For, as has been observed, if we wish to have a fifth, by necessity we must have three tones and a semitone. Thus, if one note is on ♭ fa ♮ mi, and the natural form is indicated, and the other is on the F♮ above, no consonance is formed because there are not three tones and a semitone, but only two tones and two semitones. Nevertheless,

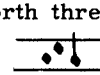
it can be made into a consonance by that which we call musica falsa, that is, when we make a semitone into a tone, or vice versa. This is not, however, false, but only irregular.

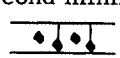
Now it must be observed that ♭ fa ♮ mi*36 is not governed by the same principle as the other keys. Instead it is recognized by means of the exceptional addition of the sign ♮ or ♭, just as we sing mi for the F above when it has the sign ♮; or if we attach the sign ♭ to ♭ fa ♮ mi (or to equivalent notes), so that there results the proportion of a tone, the fifth then formed will be consonant. And for this reason musica falsa is sometimes necessary, in order that all consonance or melody, however notated, may be made perfect.

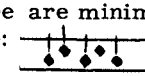
Therefore, you ought to know, as has been indicated, that musica falsa has two signs, namely round ♭ and that other figure ♮. And they have such a property as, in the case of round ♭, to make of a descending semitone a tone, and of an ascending tone,*37 a semitone.*38 And that other figure ♮, effects the reverse; that is, of a descending tone it makes a semitone, and of an ascending semitone, a tone. Nevertheless, in those places where these signs are required, they are, as has been indicated above, not false, but true and necessary. For no motet or rondellus can be sung without them; therefore they are true. Now that which is false is that which is not true; this is therefore not false.*39

Concerning imperfect tempus

Six minims can be put in place of an imperfect tempus. Thus it must be noted that when two semibreves without tails are substituted for an imperfect tempus, they are equal, each being worth three minims, as here: 

When there are three, the first is worth three minims, the second two, and the third one, as here: 

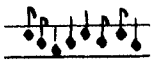
When there are four, the first is minor, the second minimum, the third minor, the fourth minimum, as here: 

When there are five, the first three are minimum, the fourth minor, the fifth minimum, as here: 

When there are six, all will be equal minims, as here:

And all semibreves without tails must be realized in this

fashion in either perfect or imperfect tempus, while if they have tails, they must be interpreted accordingly. And it must be observed that more than six notes may not be substituted for an imperfect tempus unless semiminims are involved, as here:

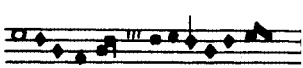


It must be recognized that various names are allotted according to the various values of these semibreves. Thus the semibreve which is worth six minims is called major. The semibreve which is worth five or four, is called semimajor, from semus,*40 that is, imperfect. That which is worth three minims, is called a correct, or true semibreve, while in a general sense, all oblique figures may be called semibreves. That which is worth two minims, is called minor, as has been mentioned earlier; that which is worth only one is called minimum. That which is worth half a minim is called a semiminim. The minims and semiminims, like the other semibreves which have been given names, are designated according to the degree of division. Thus they can be given supplementary names, as the minim is called semiminor, and semiminimum.*41

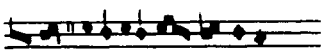
It must be recognized that according to the moderns, just as the minim may be diminished, so may it be augmented. Thus it must be observed that when two minims in a ternary division are put between two semibreves or breves, the second minim is worth two minims, and is called an altered minim. Just so, when two semibreves are put between two ternary*42 breves, the second, which has the value of six minims, is said to be altered, as has been indicated earlier.

Concerning the signs for perfect and imperfect tempus

Now that the breves, semibreves, minims, and semiminims and their values have been treated, we must speak of the signs of perfect and imperfect tempus. It is to be understood that a circular figure is used to designate perfect tempus, because the circle is perfect. But some use three oblique strokes; these indications means the same thing, as here illustrated:*43



In order to explain the partition of each breve*44 into three equal parts in a ternary passage, it must be said that wherever such a circle or three strokes are found without a point of division, perfection is indicated, that is, the tempus is in itself perfect, or properly disposed for division into three equal parts. That this is perfect is thus proven: that which has a beginning, middle, and end is perfect;*45 this is thus composed; therefore, etc. And conversely, that which is without these parts, or one of them, is imperfect; the imperfect is so; therefore, etc. The greater is assumed; the lesser is specified. Now the imperfect tempus is divided into only two semibreves, and thus lacks one of them, etc. Thus, to indicate its imperfection, a semicircle or two strokes are affixed:

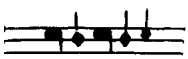
c 

Concerning the variations of perfect and imperfect modus

The signs denoting change of tempus having been treated, it must be pointed out, since modern singers vary both modus and tempus, that there are some songs which are perfect in modus and tempus, others imperfect, others perfect in modus, but not in tempus, others vice versa, and others partly perfect, partly imperfect in modus as well as in tempus.

In order that we may be perfectly familiar with the varieties of modus as well as tempus, we propose to give signs denoting perfect and imperfect modus.*46 But first we must take note of the various modifications of songs.

When there are three tempora, either perfect or imperfect, in any perfection, the modus is said to be perfect; when two, the modus is imperfect. Thus in perfect modus, a long before a long is equal in value to three tempora, unless it is imperfected by a single preceding or following breve. A duplex long is worth six tempora. But in imperfect modus, a simple long is worth two tempora, nor can it ever be worth more, unless a point is added. A duplex [long is worth] four, and can be neither augmented nor diminuted, except by one or two minims, as in this example:



Now in perfect modus, as has been seen, a duplex long is imperfected in two ways, by a single breve, in which case it can be worth only five [tempora], or by two, in which case it will have the value of only four. It can be imperfected as well by minims, in the same way as the duplex imperfect long. Moreover, in perfect modus, the second of two breves between two longs is altered. In imperfect modus, however, it cannot be altered.

Now wherever there are found a number of rests of three tempora represented in single figures, the modus is perfect, as in Orbis orbatus.*47 Where two or more successive rests of two tempora each are found, the modus is imperfect, as in Adesto sancta trinitas.*48

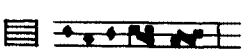
Perfect*49 modus and perfect tempus appear simultaneously in [the motet] which is called Deus iudex fortis. The modus is perfect because every perfection has the value of three tempora. The tempus is perfect because each tempus is divided into three equal semibreves.

Imperfect modus and imperfect tempus appear in Adesto, because here each perfection has the value of two tempora, and because every tempus is divided but into two equal semibreves.

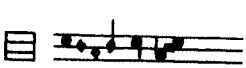
Perfect modus and imperfect tempus appear in Bona condit. Why the modus is perfect and the tempus imperfect has been seen above.*50

Perfect tempus and imperfect modus appear in Marie preconio.*51 Partly perfect and partly imperfect tempus as well as modus appear in Garison.

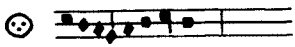
According to some, a square containing three long strokes is used to denote perfect modus, as in this example:



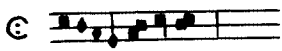
To denote imperfect modus, a square containing two long strokes is used, as in this example:



To denote both perfect modus and perfect tempus, [a circle] containing three strokes is used, the circle indicating perfect tempus, the three strokes, modus, as in this example:



To signify imperfect modus and imperfect tempus, a semicircle containing two strokes is used, as in this example:



But that we may be able to change only the modus, without altering the tempus, we must make use of the sign which, as has been seen, is proper to it alone, namely the square.

Concerning red notes, Chapter I

We must briefly investigate the reasons for using red notes in motets. It must be observed, thus, that they are used principally for two reasons. For instance, red notes are sometimes performed in a mensuration different from that of the black notes, as in Thoma tibi obsequia, where the red notes in the tenor are sung in perfect tempus and imperfect modus, the black notes vice versa. Or they are sometimes used to indicate some sort of reduction of their values, as in the motet In arboris. In the tenor of this motet, three tempora of red notes, but only two of black ones constitute a perfection. Red notes are occasionally used here and there in ballades, rondelli, and motets to indicate that the notes have been rearranged in order that they might be fitted in alternation with those of other perfections, as in Plures errores.*52

[Concerning red notes] Chapter II

Red notes are used in a second way, to indicate that they are sung an octave from the pitch at which they appear, as in Gratia miseri and in the motet called Quant amors. In the tenors of these motets, thus, all the red notes are sung at the octave. Sometimes red notes are used to differentiate the proper chant, i.e., the simple or plainsong, because it is indistinguishable from that which is not plainsong or proper

chant, as in Claerburg. Red notes are sometimes used to indicate that a long before a long is not worth three tempora, or that the second of two breves situated between longs is not altered, as in the tenor of In nova fert animus.*53 Or, they are also used in order that a long before a long may be worth three tempora, and a breve before a breve, three semibreves, as in In arboris. Red notes are also used occasionally to indicate change of tempus and modus, as in the tenor of Garison. In the tenor of this motet the black longs are worth three perfect tempora, the red ones, two imperfect tempora. And occasionally the converse is true, as in the tenor of the motet called Plures errores sunt.

Concerning the names of perfect time

While above we competently treated tempus and prolation according to the division into six or nine minims, in order that we may not appear to have investigated insufficiently the division of the tempus, we wish to deal with it now more precisely. Now it must be understood that there are three kinds of perfect tempus, namely minimum, medium, and major. Franco postulated the minimum tempus. Thus it must be observed that according to Magister Franco, and as has been seen above, the minimum tempus contains but three semibreves, which are indeed so short that they cannot be further divided, unless they be divided by semiminims. And it must be observed that in any song in perfect tempus, where the tempus contains but three semibreves, these semibreves must be performed according to minimum tempus. If there are four, the first two are semiminims, unless otherwise indicated.

Likewise, it must be understood that when two semibreves take the place of this minimum tempus, the first ought to be major, and never the second, unless it is so designated; but we have proven above that according to the Ars vetus, the second ought to be major. The reason for this is that these semibreves in minimum tempus are the same as three minims in major tempus. For when two semibreves are substituted for three minims, the first is worth two minims, the second but one minim, unless there is indication to the contrary, as has been observed above.

Concerning medium perfect tempus

The medium tempus is that which contains three equal semi-

breves, each of which is equal, or ought to be equal to two minims; the medium perfect tempus contains but six minims. And if four notes are substituted for that tempus, two must be minims; if five, four must be made minims; if six, all are equal minims. And any division of these minims results in semiminims, each minim being divided into two semiminims. Therefore, when we see that the tempus is not divided into more than six smaller values, we must sing these values according to medium perfect tempus. We can, however, sing them according to major tempus, when not more than six take the place of a tempus, and these are not differentiated with tails. For if they are differentiated, they must be performed in accordance therewith.

Concerning major perfect tempus

It must be understood that it contains three semibreves, of which each has the value of three minims; and thus the major perfect tempus contains nine minims, and it cannot have more, unless it be divided into semiminims. Thus, when there are (in a single tempus) more than six semibreves, it is necessarily a major perfect tempus; and thus the major perfect tempus is equal to three minimum [perfect] tempora.*54

Concerning minimum imperfect tempus

Now it must be understood that just as there are three kinds of perfect tempus, namely minimum, medium, and major, as has already been observed, there are two kinds of imperfect tempus, namely minimum and major.

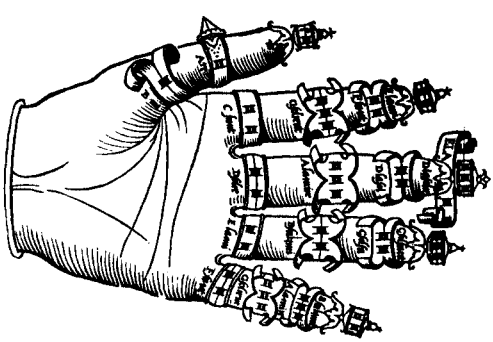
The minimum tempus is that which contains two semibreves, each having the value of two minims; thus the minimum imperfect tempus can only have the value of four minims, unless it be divided into semiminims.

Concerning major imperfect tempus

The major imperfect tempus contains two equal semibreves, each of which has the value of three minims; thus the major imperfect tempus contains six minims. Therefore, when we see that more than four minims take the place of an imperfect tempus, we must sing them according to major imperfect tempus. And thus it is apparent that, just as the perfect

[tempus] is divided into three semibreves, so it also has three manners of performance. The imperfect tempus has two, minimum and major, just as it is divided into two semibreves. And it must be observed that the major imperfect tempus has the same value as the medium*55 perfect tempus.

Here ends the Ars nova of Magister Phillipe de Vetri



references

1 Hereafter cited as V.

2 A list of variants appears in Musica Disciplina XI (1957), unnumbered leaf between p. 12 and p. 13.

3 In Scriptorum de musica medii aevi nova series, E. de Coussemaker, ed., 1864-67 (hereafter cited as CS) I, 251-81.

4 G. Reaney, A. Gilles, J. Maillard, ed., Ars nova magistri Philippi de Vitriaco (hereafter cited as RGM). In: Musica Disciplina X (1956) 13-31.

5 V has sexquialterum.

6 The sentence in V is incomplete: ...super-13-partiens 243 ut 25# ad.

7 The sentence in V is incomplete: ...quod est super-230.

8 As noted in RGM, 14, the ultimate source of this passage is Boethius, De institutione arithmetica, bk. I, and De institutione musica, bk. II (G. Freidlein, ed., Leipzig, 1867). In the footnotes to this section and the following one, RGM gives numerous references to the first book of the Speculum musicae of Jacques of Liège, where the same material is systematically treated. If these early sections of the Ars nova are in fact a part of the original treatise, however, the Speculum musicae is almost surely of too late a date to be considered as a source for them.

In De arithmetica, p. 67-68, it is explained that the duple multiples are derived from a series of unities, the triple multiples from the duples, etc., in the following fashion: the first number of the series being derived is equal to the first number of the series from which it is derived; the second number is obtained by adding together the first two numbers of the original series; the third is derived by adding the first number, the double of the second number, and the third number of the original series, thus:

1	1	1	
1	2	4	1, 1+1, 1+2+1
1	3	9	1, 1+2, 1+4+4
1	4	16	1, 1+3, 1+6+9

9 There is an irrelevant interpolation between the two lines of this example in V: sexquialterum 96444.

10 V has superpartienti.

11 V omits the 6.

12 All these demonstrations of the derivation of simple and multiple superparticulars and superpartients are again found in the De arithmetica of Boethius, p. 69-71. The method of derivation is in each case exactly similar to that of deriving the multiples.

13 V has 84 instead of 64.

14 V has Eadem sexquialterum 6 4. Both the text and footnote in RGM are mistaken at this point.

15 This sentence is somewhat confused in V: Et multiplica per crucem, ita quod prima b superior in secundum a inferior, et ultima inferior in prima in prima inferiori, et hababis propositum.

16 V seems to have intensitate rather than in trinitate given by RGM, 16.

17 elongatur.

18 V has semitonio.

19 No attempt has been made to translate or emend the following clause: quod finis dicitur diatessaron propter confusionem differentiarum.

20 V assigns the letter names A-G to the notes without any differentiation of octaves. RGM, 16, has emended the letter names to correspond to the more usual medieval system given by Guido (Guidonis Aretini Micrologus. J. Smits van Waesberghe, ed. (1955) 93-95). Because of the demands of the test, the system appearing in the Vatican manuscript is used here. The translation of this passage has taken into account the reading of Paris, B.N. 18514, as given by the editors of RGM in Musica Disciplina XI (1957) 15.

21 V has: Ergo est autem partes primi G gravis sit [C].

22 Following Paris B.N. 18514, as given in Musica Disciplina XI, unnumbered leaf between p.12 and p.13.

23 V has ...et etiam in infinitum potentia (not ponuntur, as given in RGM, 17).

24 reliquum.

25 Adopting the reading of the parallel passage in Lambert, CS I, 255b.

26 Ibid.

27 "C indicates the natural state; F signifies for you Bb, and with G, you must sing Bb."

28 voces. This word is used to mean both tones, and functions or syllables.

29 Following Lambert, loc. cit., 256a. This entire section on mutations is a garbled rehash of the corresponding passage in Lambert.

30 Following Lambert, loc. cit., 256b.

31 Corrections made from ibid.

32 Nota quod musica est scientia veraciter canendi, vel facilis ad canendi perfectionem via. RGM, 20, indicates that this definition also occurs in the Dialogus of Odo (of Cluny?) GS I, 252. Lambert's similar definition of musica harmonica (CSI, 252a) might be a more immediate source for the passage. RGM, 8, further states that this definition "goes back through Isidore to Augustine and even further." Isidore, however, defines music as "peritia modulationis sono cantuque consistens" (Etymologiarum. W. Lindsay, ed. (Oxford, 1911) Lib. III, cap. 15), and Augustine, as "scientia bene modulandi" (De musica. G. Finaert, ed. (Paris, 1947) 24). The latter (op. cit., 24-26) makes it clear that modulandi is not to be equated with canendi.

33 Cf. Johannis Affligemensis De musica cum tonario (J. Smits van Waesberghe, ed. (Amsterdam, 1950) 55) and Hieronymus de Moravia Tractatus de Musica (Cserba, ed. (Regensburg, 1935) 12).

34 The following sentences have been deleted to avoid a contradiction and to bring the passage into agreement with Lambert, loc. cit., 257b-258a: Et dicatur a semis, quod est dimidium, et tonus, quod habens dimidium tonum, ut patet figura. Ita dicatur autem semitonium, quasi imperfectus tonus.

35 V has tenor sive biscantus.

36 V has be molle.

37 V has semitonio.

38 V has tonum.

39 An unrelated and incomprehensible marginal note in V at this point reads:

Note about the minor third: it is observed that it should contain two tones and a half rather than one and a half, as the major third contains in itself two tones. Therefore, if one be added, it is seen that there are formed two tones and a half, or semitone. This is to be explained by the following rule: when in the formation of numbers, the smaller number precedes the larger (as 14, 1 before 4), a single unit is subtracted from the larger number; this also applies to the minor third.

For a partial explanation of this passage, cf. Musica Disciplina XI (1957) 21-22, f.n. 5.

40 V has semis in the body of the text, semus in a marginal addition.

41 Following Paris B.N. lat. 7378A in Musica Disciplina X (1956) 48. Cf. also ibid., 37.

42 in modo perfecto.

43 Vel secundum aliquos obliqui apponuntur tractuli tres, et unum est, ut hic. The words uterque and tempus added by RGM, 24, completely alter the meaning of the sentence. The word tempus is inappropriate anyway, as the three lines (which are not distinguishable in the example of RGM, but appear clearly in V) could hardly have the value of one tempus each, since they signify the division of the tempus. V errs only in calling the lines oblique. The parallel passage in the anonymous Compendium artis mensurabilis tam veteris quam novae (CS III, 379a) omits this word.

44 V has semibrevis.

45 Cf. Augustine, op.cit., 70.

46 V has: Et ubi notitiam tam de modo quam temporis variationem habeamus perfectionem, signa aliud modum perfectum aliud modum imperfectum notitiam dare affectamus. Emendations have been made in accordance with Paris B.N. lat. 14741: ut for ubi, denotantia for the second notitiam.

47 V has Orbis orbatur.

48 V has Adesto vetus.

49 V has imperfectus. The following sentence and the reading of Paris B.N. lat. 14741 suggest that perfectus is correct.

50 Following Paris B.N. lat. 14741.

51 Following Paris B.N. lat 738A, Musica Disciplina X (1956) 50.

52 Cf. Musica Disciplina XI (1957) 27, f.n. 10.

53 V has In nova sit animus.

54 V has: et sic maius tempus perfectum tria minima tempora in se continet. The substitution of pro tempore for tempora in RGM, 30, is misleading. The meaning here is clear: the major perfect tempus, which can be divided ultimately into nine minims, is three times as long as the minimum perfect tempus, which, as has been stated above, can be divided into but three semibreves (cf. Franco's Ars cantus mensurabilis, CS I, 122a). There is here a strong suggestion throughout that the minim (or in the case of Franco's minimum perfect tempus, the semibreve) has a constant value.

55 V has maius.