THE THEORY AND PRACTICE OF MEASURE IN MEDIEVAL POLYPHONY TO THE ARS NOVA

by

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PREFACE

I first conceived this study as an investigation of tempo in the music of the Renaissance. Having been disturbed for some time by the very large discrepancies of tempo one often encounters in performances of the Renaissance repertory, I felt strongly that the range of tempi encountered in modern renditions of this music was considerably wider than could be justified historically. Was it not possible to establish the speed or range of speeds at which this music had been performed in its own time?

At first I was optimistic that information was readily accesible which would render the determination of historically authentic tempo ranges for particular pieces relatively easy. One read that, in the Renaissance, tempo was tied to a practical and theoretical phenomenon called the tactus, which was precisely described in contemporary sources and had been extensively studied by modern investigators. It was to these modern studies that I turned initially, but only to be confronted by a maze of conflicting statements and conclusions. It seemed plain that I could trust none of the information offered in this body of literature without myself consulting the primary sources on which these studies depended.

The principal modern studies of tactus are well known: thus I have decided to omit presenting a list of them here, together with my specific reservations to any of them individually, feeling that

doing so would serve no constructive purpose. I have found none of these works adequate to the solution of the tactus problem as I have perceived it. I nevertheless wish to acknowledge the continuing usefulness of Curt Sachs' Rhythm and Tempo, a pioneering work of great perspicacity.

There were, in my view, several distinct causes of the failure of previous studies of tactus, taken as a group, to reach a consensus:

1. Theoretical references frequently consisted of citations rather than quotations. Upon examination the cited originals could often not be found to say what they had been alleged to say.

2. Quotations from theoretical works, when they were presented, were many times too brief to allow the reader, or to compel the writer, to interpret them in their immediate context.

3. Quotations presented were sometimes not translated or were translated inaccurately, rendering them either valueless or misleading for anyone interested in the subject who was not possessed of a considerable arsenal of linguistic skills.

4. Some studies were too brief or too broadly conceived to be able to create a sufficient context of the available evidence.

5. The simple necessity of carefully observing the differences of early versus modern musical thought and practice was not always rigorously respected. The deficiency of historical perspective resulted in uncritical but nonetheless unwarranted assumptions that certain details of early thought or practice could be transliterated directly into modern terms.

It seemed likely that a research method designed to avoid those factors identified as deficiencies in earlier studies might enable a new study of tactus to reach more satisfactory conclusions than its predecessors. I thus undertook a study based directly on the primary theoretical sources (with the addition of some musical evidence) which would:

1. Quote, and not merely cite, important references;

2. Quote at a length sufficient to establish the immediate context of a reference;

3. Present all quotations in an English translation--usually new, since accurate translations of most sources into English do not exist (the translations would strive for a strenuous verbal accuracy rather than for idiomatic readability, with the original texts provided in a format permitting their immediate comparison with the translation);

4. Be of sufficient length to recreate a full context of the tactus, while focusing exclusively upon that; and, finally,

5. Strive rigorously to establish and maintain historical perspective, in order to comprehend earlier thought and practice so far as possible on its own terms.

After much research the time arrived to begin to write, to formulate and defend conclusions. But this proved impossible to do in a satisfactory manner, because while it seemed proper to begin the discussion of tactus at "the beginning," tactus could not properly be said to have a "beginning" in the clear and orderly way one would prefer. The appearance of the word "tactus" in the music

theory of the late fifteenth century was a largely semantic innovation, simply a new name for something not at all new--something the fifteenth-century sources also called mensura, or "measure." I became convinced that no study of tactus could be truly satisfactory without starting from "the beginning," and since in the early tactus sources tactus was the equivalent of mensura, that required beginning well back in Medieval times with the first codification of mensural polyphony, the practice of the "Notre Dame school."

The present study thus projects an examination of the concept and the practice of "measure" from the end of the twelfth century through the early fourteenth. This terminus was adopted as a practical necessity, though some conclusions are nevertheless advanced to connect the ars nova mensura with early Renaissance tactus. Excepting this change in the span of time to be covered, the goals and methods of the work remain the same as those projected above for the tactus study as originally undertaken. The work seeks to clarify the ways in which musical measure was conceived and practiced in the performance of polyphony during much of the later Middle Ages. The conclusions offered will hopefully be of interest to historians, theoreticians, transcribers and performers of this music.

A study of measure, however confined chronologically, is an ambitious undertaking. As profuse--at times, I fear, perhaps too profuse--as may be my quotations from the theoretical sources, I have no illusions of having included all possibly relevant

evidence, or having written the last word in its interpretation. What this study projects is a beginning towards an understanding of Medieval measure, and I hope that, as a beginning, it will suffice.

I should like to acknowledge and thank those who have been of assistance to me in this undertaking. I thank the members of my Committee, particularly its chairman, Professor Glenn E. Watkins, and Professors Gwynn S. McPeek and Richmond Browne, whose constructive criticisms have been very helpful. Thanks also to the staff of the Music Library of the University of Michigan, who have facilitated my access to valuable materials over a long period of time. And finally I wish to thank my wife Barbara, without whose moral support and substantial assistance the completion of this project would have been impossible.

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CHAPTER ONE

INTRODUCTION TO
THE CONCEPT OF MEASURE

Measure is a topic of exceptionally broad implications, and thus one requiring especially careful delineation and limitation in a study of moderate length. The topic is potentially so broad because measurement is an activity essential to language and thought. This is reflected in a recent dictionary of the English language in which "to measure" is broadly defined as "to judge or estimate" or "to view appraisingly." Thus such ordinary and essential activities as judging character, estimating size or quantity, or appraising the quality of something all involve measurement.[1]

Measurement proceeds by comparison; one of the more general definitions of "a measure" is "a basis of comparison."[2] Whenever such a basis of comparison becomes standardized (by becoming generally known and used) it is called a "standard of measure," and it is perhaps in connection with these standards that the use of the word "measure" is most familiar. If one thinks of "a measure" he generally thinks of such standards as a cup, an inch, a gallon or an acre.

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[1] Webster's Third New International Dictionary of the English Language Unabridged, ed.-in-chief Philip Babcock Gove; (Springfield, Mass.: G. & C. Merriam Company, Publishers, 1965), p. 1400.

[2] Ibid.

In the context of music the connotations of the word "measure" are very specific, and do not include the measurement of many of the measurable parameters of music. Pitch and volume are usually specified in more or less exactly measured ways, and such things as intonation and the general "spirit" of performances are usually expected to "measure up" to certain standards, but in treating of musical measure as the term is or has ordinarily been used it is not these things which are of concern. "Measure" in music has historically been restricted in its application to some--not all--aspects of the temporal organization of sound. Since the meaning of the term even in strictly musical contexts has changed substantially from the Middle Ages to more recent times, it is appropriate to draw certain distinctions between the Medieval senses of "measure" and its modern connotations in connection with traditional music literature before proceeding further.

"Measure" in Modern Terminology

"Measure" in a specifically musical sense is commonly defined as

> [4]c: a division or unit (as of time or stress) in a rhythmic sequence: as (1): a grouping of musical beats made by the regular recurrence of primary accents and located on the staff immediately following a vertical bar--called also bar.[1]

This identification of "measure" as a "grouping of musical beats" associated with "accents" is confirmed by a recent dictionary of more precisely musical terminology, which defines "measure" as:

> A group of beats (units of musical time), the first of which normally bears an accent. Such groups, in numbers

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[1] Webster's Third International, p. 1400.

> of two, three, four, or, occasionally, five or more, recur consistently throughout a composition and are marked off from one another by *bar lines. The basic scheme of note values within a measure is called *meter or time (duple, triple, 6/8 meter, etc.). Occasional deviations from the regularity of accent, e.g., *syncopation, emphasize rather than destroy the general scheme of measure and meter.[1]

"Measure" thus implies a large durational unit made up of a grouping of smaller durational units, called "beats," and associated with a definite accentual hierarchy among these smaller units. A "beat," of course, is similarly a musical unit of duration which is capable of subdivision into still smaller units, and often with the implication of an accentual hierarchy among these smaller beats. Thus one might well also call a "beat" a "measure." In this manner "6/8 meter" might be said to be composed of "measures" of three different sizes: the largest, the "measure" proper, which is divided into two principal "beats," each of these being further divided into three smaller.

The musical use of the word "measure" might with equal logic be applied to higher levels of temporal organization: to phrases, made up of groupings of "measures" proper; to sections, or groupings of phrases; to movements, made up of sections; and finally to an entire large work, comprised of several movements. Thus musical measure would be seen as the ordering of duration at any of a number of different levels. In this way it may be seen as comparable to many types of measure we ordinarily employ in our daily lives, as for example in the case of English linear measure, where

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[1]Willi Apel, Harvard Dictionary of Music (2nd ed., rev. and enlarged; Cambridge, Mass: The Belknap Press of Harvard University Press, 1969), p. 513.

we find that the measure of a yard is made up of three measures of a foot, these being in turn made up of twelve measures of an inch; and of course there are a number of similar measures of a higher order, extending to miles and beyond.

On the other hand musical measure is not like measures of the metric system, which depend for each type of measurement upon a primary standard of measure, a measure in terms of which all other values are numerically calculated, without any of its divisions or multiples acquiring the status of an independent "measure" on a different level of order. Thus linear measure by the metric system depends upon the meter, an arbitrary standard of length in terms of which all lengths are mathematically reckoned. Such "measures" as "five centimeters" or "twenty kilometers" are simply numerical expressions of length in terms of the prime measure, the meter. The meter is a true unit, a standard quantity indivisible as to its essence, which can truly be neither multiplied nor divided. Thus as the number "ten" signifies not an independent quantity, but "ten units," as "one-tenth" signifies "one-tenth of a unit,"[1] so "centimeters" and "kilometers" are computations based upon the meter, and not true divisions or multiples of it, at least not in any sense of constituting independent "measures" of a different order. It is important to grasp this distinction because it is to this latter numerical type of order that musical measure belonged during much of the Middle Ages and Renaissance, with the result that the attempts of many writers to compare early mensural practices directly with modern

[1]For a related Medieval discussion see infra, p. 120-121.

measure, which as noted above is multilevel rather than numerical, can be confusing. In the absence of such a distinction it is potentially misleading to speak of "the beat" or "the measure" in connection with Medieval and Renaissance music. While it is natural to try to comprehend the unfamiliar in familiar terms, it is best when dealing with an older practice to carefully define terminology so that apparently "familiar" words such as "measure" may be understood in the senses in which they were used by those who were contemporary to the music in question.

In modern practice both notation and measurement follow the multiple type of order, since notes may be multiplied or divided into larger or smaller values which have equal validity as "notes" on higher or lower levels of order, and the same applies to measurement--to beats and measures. But in earlier practice one must often distinguish the multiple quantities comprising the several values of notes from the single primary unit serving as the basis of mensural computation.

The term "measure," then, in modern musical usage, refers to that measure occupying the notational space between two successive bar-lines,[1] though the term in general might equally well be applied at any of a number of other levels of measurement. The word "measure" itself for this space between bar-lines is a legacy of the Medieval "measure" and its successor, the Renaissance tactus (which was often called "[illegible]sure," and which eventually came to be barred off in

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[1]Percy A. Scholes, The Concise Oxford Dictionary of Music, 2nd. edition ed. by John Owen Ward (London: Oxford University Press, 1964), p. 359.

scores). It is also this derivation which, because of subsequent changes in style, accounts for the accentual associations of our word "measure." The following excerpt from an encyclopedia article on the word "bar" expresses the course of this development, and the resulting accentual burden borne by the word "measure," particularly well:

> Bar. (1) Properly a vertical line drawn across one or more staves of music, now generally known in England as "bar-line"...The original purpose of the bar-line was to guide the eye when music was presented simultaneously on several staves or in TABLATURE. Hence it was used in 16th-cent. keyboard music but was not necessary for the separate parts of concerted music for voices or instruments. When concerted music began to appear in score at the end of the 16th cent. the bar-line was naturally employed there also, and it was found convenient to draw the lines at regular intervals [which intervals often corresponded to the tactus[1]]. The increasing rhythmical symmetry of the 17th cent., which became stereotyped in the 18th and 19th cent., led to a false association between the bar-line and ACCENT. As a result, when 20th-cent. composers came to abandon the regular rhythmical periods current in the 18th and 19th cent., they were supposed to be in revolt against the "tyranny of the bar-line." In fact, they submitted to the "tyranny" more wholeheartedly than their predecessors, since they found it necessary to change the length of the bars whenever the rhythm changed.[2]

Thus even though our term "measure" (as well as many another of our notational terms[3]) derived from the tactus (and, through it,

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[1] Or to the space of a breve--sometimes 1, sometimes 2 tactus. See Edward E. Lowinsky, "Early Scores in Manuscript," Journal of the American Musicological Society, XIII, 126-171.

[2] J. A. Westrup and F. Ll. Harrison, The New College Encyclopedia of Music (New York: W. W. Norton & Co., Inc., 1960), p. 52.

[3] E.g., under the signature "C" (called "common time") a semibreve was one full tactus, whence our "whole note" [1 tactus], "half note" [$\frac{1}{2}$ tactus], "quarter note" [$\frac{1}{4}$ tactus], etc.; "$\not C$" is called "alla breve" from placing of the tactus on the breve; "C" called "common time" because it was the basic, integral signature; and "duple time" and "triple time" derive from duple and triple

from the earliest polyphonic mensural practice), its meaning has been so transformed by developments since the Renaissance that it requires the most careful redefinition for an understanding of earlier mensural practice. It is the goal of this study to provide a proper understanding of the Medieval significance of "measure" in polyphonic musical contexts.

"Measure" in Medieval Terminology

The Latin word "mensura" ("measure") had almost precisely the same range of general meanings as our word "measure," but with certain important additions. For example, mensura signifies "measurement," i.e. the process or activity of measuring, as well as simply "measure." It was possible to specify this meaning by the use of another form, mensurando ("measuring" or "measurement"), but it was not necessary to do so, as it would be in English: in Latin, context is often nearly as important as the actual words and their grammatical inflections for determining the meaning. Latin has the capacity (depending upon the writer's style) of being much more compact than English. Thus where the Latin text might read, simply, "unitas est mensura numerorum," the full English equivalent should include in the translation of the word "mensura" the idea of a standard or unit, thus: "unity is the standard of measure of numbers." Likewise it could be misleading to render the title of a musical treatise called "Tractatus musicae mensurabilis" as "Treatise on Measurable Music" or, even worse, "Treatise

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tempus and also, probably, from proportio dupla and proportio tripla.

on Mensurable Music." The latter, let it be granted, does not misrepresent the meaning of the title, but neither does it render it into an English equivalent: it simply begs the question by transliterating the Latin rather than translating it. On the other hand the rendering "measurable music" is positively incorrect, since it entirely fails to convey the significance of the title. Treatises thus entitled are intended by writers of the time to be distinguished from treatises on plainsong. Plainsong is not and was not "unmeasurable": all music--indeed, anything that has finite bounds--is measurable, as Medieval theorists point out. The distinction that "mensurabilis" conveys is that the music treated is that which is measurable or measured by a standard of measure. The most exact translation would thus be something like "Treatise of Music Measurable by a Standard (or Standards) of Measure," and an alternate reading, "Treatise of Measured Music" is acceptable only if one understands that "Measured" involves measurement by a standard such as a note or notes of fixed, standard value, such as the long and breve. Likewise the word "immensurabilis" would be best rendered not as "unmeasured," or "unmeasureable" (which could have no meaning unless applied to a note of infinite duration) but as "not measured by a standard," "not precisely measured" or "freely measured, ad libitum."

"Measure" in Medieval terminology thus has several possible meanings: (1) measure as an abstract concept; proportion; balance; finite size; (2) the activity of measuring; measurement; or (3), a standard or unit of measure. It is this last sense that is most

commonly intended in Medieval references to polyphonic music, though the precise meaning varies with the context, and the understanding of "measure" was transformed to some degree by each generation of theorists as the mensural structure of music continued to evolve.[1]

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[1]Support for the distinctions of this section will be provided by subsequent chapters of this study.

CHAPTER TWO

INTRODUCTION TO PRACTICAL MEASUREMENT IN MEDIEVAL POLYPHONY

The practice of measure in a musical performance by several individuals requires coordination among the performers, and this coordination is usually achieved by conducting or some other form of musical direction. Direct evidence concerning the conducting of polyphonic music during the Medieval period has long been recognized to be very meager, if not nonexistent. Curt Sachs, for example, has said that "all medieval descriptions [of conducting] refer [not to polyphony but] to unaccompanied Gregorian chant and speak of 'depicting' the melody in what is known as cheironomy."[1] Yet it is also well known that the Renaissance has left profuse documentation concerning a method of conducting (called tactus, meaning a motion of touching, striking or beating) which, while it receives its first descriptions in the theory of the late fifteenth century,[2] does not appear to be a new phenomenon, but a

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[1] Rhythm and Tempo (New York: W. W. Norton & Company, Inc., 1953), p. 217.

[2] First use of word tactus: Adami de Fulda, Musica [1490], in Martin Gerbert, Scriptores ecclesiastici de musica sacra potissimum [1784]; Reprografischer Nachdruck der Ausgabe St. Blasien (Hildesheim: Georg Olms Verlagsbuchhandlung, 1963), III, 362; First Renaissance description of conducting motion: Bartholomé Ramis de Pareia, Musica practica [1482], reprint with intro. by Johannes Wolf, Publikationen

performance convention that one speculates must have roots in Medieval practice. Again, as Curt Sachs has expressed it, "there must have been a predecessor of the tactus."[1]

A Medieval conducting practice which appears to be the predecessor of the tactus may be traced with some certainty from the earliest measured polyphony. This method of conducting or direction is described in detail by the thirteenth-century French theorist Elias Salomon in connection with a type of polyphony. The relevant passage follows:

Caput XXX	CHAPTER THIRTY
Rubrica de notitia candandi in quatuor voces, & de quibusdam notabilibus debitis & honestis.	A CHAPTER ABOUT THE KNOWLEDGE OF SINGING IN FOUR VOICES, AND CONCERNING CERTAIN DUE AND WORTHY MATTERS OF NOTE.
Ad notitiam adquirendam & instructionem scientiae cantandi in quatuor voces, & eorum, quae in praesenti figura seu doctrina continentur, praenotandum est, quod quatuor, qui cantare debebunt habeant peritiam cantandi artificialiter, & quasi ex instructione naturae cum eis iteratae, & habeant instrumenta sive voces concordes. Item notandum, quod habeant voces conferentes hoc modo, quod unus habeat vocem magis grossam &	To obtain the knowledge and instruction of the skill of singing in four voices, and of those things which are contained in the present outline or teaching, it must be noted in advance that the four [persons] who are to sing should have the skill of singing according to art--and yet [of seeming to sing] as it were by the spontaneous promptings of nature; and [that] they should have harmonious instruments (or voices). Likewise note, that they should have voices matching in this way: that one should have a voice more deep and sonor-

der Internationalen Musikgesellschaft: Beihefte, Vol. II (Leipzig: Druck und Verlag von Breitkopf & Härtel, 1901), pp. 77-78; 83-84.

[1]Sachs, Rhythm and Tempo, p. 217.

sonoram, quam alii,
vel quasi, secundo
secundus,
tertio tertius,
quarto
quartus, ut
sane iutelligatur [sic]
de isto, ut valeat
altius quam alii
cantare. Item notandum,
quod inter se habeant
notitiam vocum
suarum, & quod alter
alterum viderit cantare.
Item notandum notabiliter
quod dato, quod
essent aeque boni
cantores quatuor, qui
cantare debent, necesse
est, quod regant
se per unum: &
ille, aut
etiam unus de quatuor,
qui debebunt cantare vel
non, si debet
ipse cantare
primam vocem, hoc est,
magis bassam, aut
secundam, aut tertiam, aut
quartam: si
quartam, tunc
tacito de sua,
primo ponet
primum in prima.
Et nota notabiliter, quod
iste primus tantum
expectabit in primo
puncto, quousque
posuerit secundum
in secunda voce: &
illi duo tantum exspec-
tabunt, quousque tertium
posuerit in tertia:
& ipsi tres
tantum expectabunt in
primo puncto firmiter, quo-
usque ipse fuerit in quarta
voce; nec se
movebunt de primo puncto,
quousque ille sumus [sic]
inceperit cantare
secundum punctum, ob-

ous than [all] the others,
and accordingly the second [will
be the] second-[most sonorous],
the third [will rank] third,
[and] the fourth [will be]
fourth, in order that he
[the fourth] may be well
understood, and may be well
able to sing higher than the
others. Again take note,
that they should mutually
have cognizance of their
voices, and that the one
should see the other sing.
Likewise note in particular
that, [even] granting that
the four may [all] be
equally good singers (who
are to sing), it is [still]
necessary that they rule
themselves by one. And
he ([for] either [he will]
also [be] one of the four
who are to sing, or [else
he will] not [be]), if he
is to be the one to sing
the first voice (that is,
the lowest), or [else] the
second, or the third, or
the fourth, [and] if, [then,
it is] the fourth, then
while he rests his own part,
he will first put the first
[singer] on the first [voice].
And note especially, that
the first [singer] will
continue to hold the first
note until [the director]
has put the second [singer]
on the second voice; and
these two will continue to
hold until he has put the
third [singer] on the third
[voice]; and these three
will wait steadfastly on
the first note until he
himself is on the fourth
voice; neither will they
move on from the first note
until he, the highest
[voice], has begun to sing
the second note, the first

temperatis primo
tantum tribus vocibus
cum sua voce.
Item notandum, quod in omnibus punctis illum
Rectorem quasi
primum incipere
permittere debent.
Item notandum, quod ipse
debet eos regere in omnibus
pausis, & post pausas
incipere debet,
qualemcumque ipse
cantaverit vocem.
Si autem ipse
Rector debet cantare
primam vocem, tunc debet
ponere illum, qui debet
cantare secundam vocem,
in prima, &
statim tacito
de secunda ponet
illum, qui debet cantare
tertiam vocem, in
tertia, & quartum
in quarta,
& statim
illum de prima ponere
in secundam,
& seipsum in
prima. Si ipse debet cantare secundam vocem, tunc
ponet primum
in prima, &
dimissa secunda
ponet tertium
in tertia, &
quartum in
quarta, & postea
resumet suam
vocem secundam.
Si autem debet cantare
tertiam vocem, tunc
ponet primum in
prima,
quartum in
quarta, &
secundum in
secunda,
dimissa tertia,
& postea
tertiam resumet.

[or tenor] as well as the [other] three voices being conformed to his voice. Likewise note, that on all the notes they are to permit this "Director" to make a beginning, just as [on the] first [note]. Again note, that he is to rule them in all rests, and after the rests is to [again] make the beginning [with] whatever voice he has been singing.

If, however, this Director is to sing the first voice, then he should put the one who is supposed to sing the second voice, on the first [voice], and immediately (while resting the second [voice]) put the one who is to sing the third voice on the third [voice], and the fourth [singer] on the fourth [voice], and immediately put the one from the first onto the second [voice], and put himself on the first. If he is to sing the second voice, then he will put the first [singer] on the first [voice], and passing over the second will put the third [singer] on the third [voice], and the fourth [singer] on the fourth [voice], and afterwards he will take up his own second voice again. And if he is to sing the third voice, then he will put the first [singer] on the first [voice], the fourth [singer] on the fourth [voice], and the second [singer] on the second [voice], while leaving out the third [voice], and afterwards he will again take up the third [voice].

Quae est ratio diversitatis, quod quando debet cantare secundam, nulli eam commendat, & quando debet cantare primam vel tertiam, eas commendat? Respondeo: necessitas est in cause; nam sine sonoritate primae, aliae tres non procedunt.[1] Item prima indiget tertia quia reddit sonoritatem & facit consonantiam cum illa. Item per quartum habetur secunda, quia secum applaudit, ut in figura apparebit. Ideo non est necesse illi, qui debet cantare secundam, quod alium impediat de ea, quod nihil aliud esset, quam totum impedire; & fortassis omnes quatuor impedirent, dato quod essent boni cantores.

Item si Rector iste non fuerit de quatuor, qui debent cantare in quatuor voces, tunc inspectis, quae dicta sunt de sonoritate vocum, ponet omnes ordinatim in suas voces, & faciet eis pausas cum manu sua

What is the reason for the contradiction, that when he is to sing the second voice, he entrusts it to no one, but when he is to sing the first or the third [voice], he does entrust them [to someone else]? I reply: Necessity is the cause; for without the sonority [pitch?] of the first [voice], the other three lack something.[1] Likewise the first [voice] stands in need of the third [voice], because [this] imitates its sonority and forms consonance with it. Likewise the second [voice] is recognized in the fourth [voice], because the latter strikes together with it, as will be discernible in the illustration. For this reason it is not necessary, for the [director] who is to sing the second [voice], to obstruct[2] another [singer] on its account, which would be nothing other than to obstruct the whole business; for probably [these two] would hinder all four, [even] granting that they be good singers.

Again, if this Director is not [one] of the four who are to sing in four voices, then (paying attention [to the things] which have been said concerning the sound of the voices) he will put each in orderly fashion on his own voice, and he will represent the rests to them while forming disyllables

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[1] read "are not valid."

[2] by diverting another singer momentarily to the second voice.

super librum honeste dissyllabando. Sed si quisquam parum aut minus rigide sonabit, aut posuerit vanos punctos, tunc dicet ad aurem cuiuslibet honeste: parum sonas, minus sonas, nimis rigide cantas, nimis figuraliter ponis punctos; & taliter, ne ab aliis agnoscatur: aut cantabit aliquotiens cum aliquo, prout erit magis & minus necesse; & tunc affirmabit totum cantum in debitam sonoritatem. Verum tamen vix habebit debitam & plenam sonoritatem cantus ille, nisi ductor de quatuor cantoribus existat; nisi alii quatuor essent praeelecti. Et notandum notabiliter, non decipiamini, quod non possunt, nec debent esse illi ultra quatuor, qui cantant aliquomodo, quin cedat ad confusionem & deturpationem totius cantus, qui cantatur; nec debet dici cantus quatuor, sed dirisio plurimorum, quanto plures erunt, non obstante, quod domini canonici de Lugduno, quando volunt cantare responsorium & Alleluia in magnis festivitatibus, decem vel tredecim ascendunt multum in altum, ornatis de optimis cappis; & tunc illorum iudicio plus laudatur, qui

in a fitting manner with his hand over the book. Now if anyone makes too little sound or [sings] less strictly, or uses idle notes, then [the director] will say inconspicuously into the ear of whomever he shall wish: "You make too little sound; you sound less [than the others]; you are singing too strictly; you are setting the notes with too much figuration;" and he will do this in such a way that the others do not realize it. Or he will even sing at times with someone, accordingly as it is more or less needful, and then he will confirm the whole song in the proper sonority. But nevertheless this song will scarcely have due and full sonority if the director does not come from the four singers, unless the other four are exceptionally good. And note most especially, (do not be misled) that these [singers] cannot be, nor ought they to be, more than four, who sing [in polyphony] of any sort. Five [singers] would result in the confusion and disfigurement of the whole song that is being sung; nor should it [then] be called a "song of four," but rather a "mockery of the multitude" (however many they be), notwithstanding that the Canon Lords of Lyons (when they wish to sing the Responsory and Alleluia on the great festivals) ascend, ten or thirteen, to a great height, being [all] adorned with the best caps; and then by their judgement [he] is more praised, who

maiori clangore
astra ferit, velut
possent sanctos
Angelos superius
excitare. Ordine
turbato succedo
burgare nato.[1]
Verum
religiosi,[2] quando
consueverunt cantare
in quatuor voces, &
constabit cuilibet,
quam vocem
cantare debeat, tunc
in adventu suo
quasi
omnes
simul,
primo de prima voce
tamen moderate
instigante, uno
ictu, non duobus,
in diversis vocibus
poterunt omnes incipere
post primum ictum.
Et notandum,
quod plura sunt
necesse ad hoc, ut
cantus habeat debitum
suum: primo
ut ille, qui cantat,
habeat notitiam illius,
quod cantat, nam
sicuti legere & non
intelligere, negligere est,
ita cantare & non intel-
ligere cantum nec
seipsum, deridere
est. Item quod
cantor habeat
sonoram vocem & concordem,
quantumcumque sciat

pushes the stars aside with
his greater din (as if they
could [thus] the better
startle the Holy Angels
awake). Disruption of the
[proper] order is the price
of having been born in a
city.[1] But [as for] the
monastics,[2] when they have
become accustomed to singing
in four voices, and it has
[already] been determined
for [each] one, which voice
he is to sing, then [each
makes] his own beginning
[in such fashion that] all
[of them sing] as it were
simultaneously, while the
singer of the first voice
urges [them] on (though
with moderation) by means
of one beat--not two; [and
thus] they can all begin
in the different voices
after the first beat.
And note that there
are [yet] more things
necessary to this, that
the song should have its
due, [of which] the first
[is] that he who sings
should have knowledge of
what he is singing, for
just as to read and not
understand is to neglect,
so to sing and not under-
stand the song, nor one's
own [part in it], is to
make a mockery. Also that
the singer should have
a full and harmonious voice,
no matter how much he may

[1]The remark probably indicates a dislike of the values of civic society in general, as well as of the described musical practice at Lyons. The relatively free society of the city at this time was very different from, and antagonistic to, the structure of society as a whole. Also involved in the remark may be a contempt of the monastic for the secular clergy.

[2]"the religious."

de arte. Item quod
semper cantor congrue
vocem suam de puncto
in punctum exaltet
ad modum Gallicorum.
Laudem Dei
semper debemus
extollere & exaltare,
non supprimere,
nec voces
debilitare. Ideo
in regula istius artis
continetur, quod cantor
sive inceptor cantuum
moderata voce cantus
omnes incipere debet,
quod ipse &
quilibet alter voce idonea
ad ultimum punctum
attingere possit:
aliter cederet in
deturpationem cantus,
nec diceretur
cantus, sed clangor &
scandalum in plebe.
Et hoc fit, ut
semper voces exaltentur,
& qui altius
psallere possit
inter alios,
faciat debitam suum; sed
gravare mediocres
propter nimis altam
inchoationem, non potest
procedere de bono &
aequo. Item notandum,
quod quasi maior
pars eius
deturpatur
propter
defectum sonandi.

know of art. Also that
the singer should always
raise up his voice from
note to note harmoniously[1]
in the manner of the French.
The praise of God [is some-
thing] we ought always to
lift up and raise on high,
not weigh down and suppress,
nor render [our] voices
powerless. Therefore it
is contained in the rule
of this art that the singer
or beginner of the songs
ought to start all songs
in a moderate voice,[2] [such]
that [both] he himself and
anyone else should be able
to reach to the most distant
note in a suitable voice:
otherwise it would yield
to disfigurement of the song;
nor would it [then] be called
"song," but a braying and
an offense to the people.
And so it happens that
the voices are continually
raised up, and that he who
is able to chant higher
among the others is [thereby]
doing his duty; but burdening
the singers of middle range[3]
on account of beginning too
high cannot proceed from
[that which is] good and
equal. And take note,
that as it were the greater
part of this [polyphonic
singing] is disfigured on
account of [some such]
deficiency of the sounding.

---

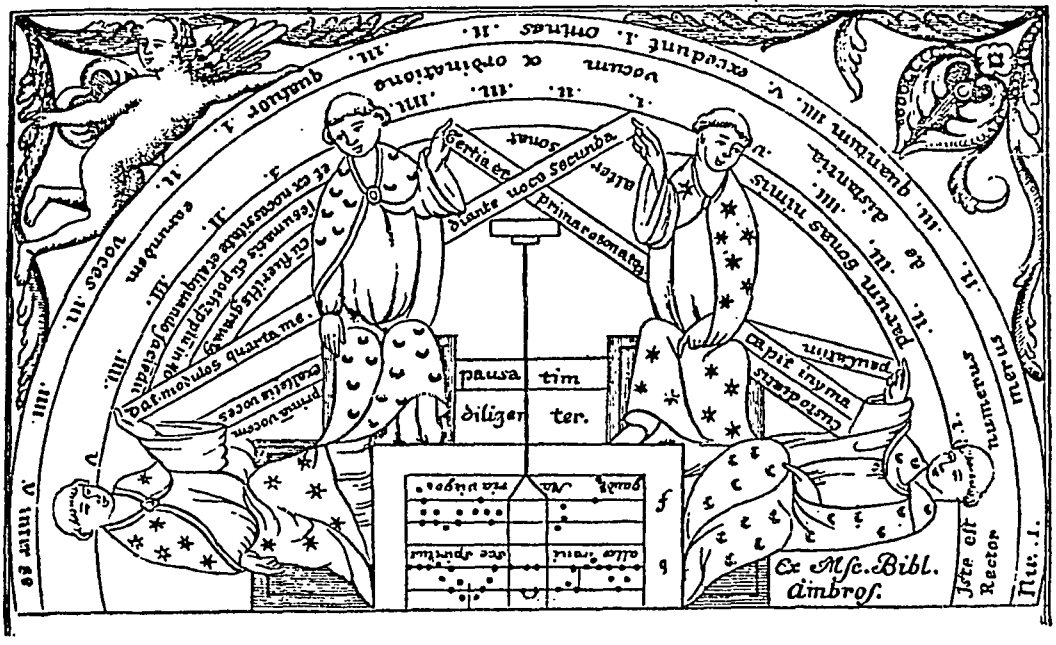
[1] harmoniously: in conjunct or congruent fashion; coincident with the other singers.

[2] or, "at a moderate pitch."

[3] "the middle ones."

Item quod tractim
& pausatim
cantetur. Item
quod unus
exspectet alium.
Item quod ab
omnibus quasi
simul fiat pausa
& resumtio
cantus. Sunt quidam,
qui quando reincipiunt
cantus, saliunt
novem punctos in tertia voce
ad modum laicorum,
quando debent esse contenti
quatuor punctis vel quinque:
& hoc cedit in gravamen
priorum de choro, &
procedit, ut videtur,
ex artis imperitia,
& quia confidunt
de instrumentis
suis.

Also that it should be
sung little by little slowly,
and with pauses. Also
that one should anticipate
and wait for the other.
Also that a rest and the
[subsequent] resumption of
the song should be made as
it were simultaneously by
all. There are certain
people who, when they resume
a song, spring up (or leap)
nine notes in the third voice
after the manner of laymen,
when they should be content
[with] four or five notes:
and this leads to the ear-
lier lowering of the chorus,
and proceeds, as it seems,
from ignorance of the art,
and because they are con-
fident of their own instru-
ments [i.e., voices].



His tactis ad explanationem circumferentiarum figurae habeatur accessus. Et est sciendum, quod in prima circumferentia figurae continetur numerus duodecim punctorum, qui est necessarius ad complementum cantus quatuor vocum. In secunda circumferentia continetur, per quot punctos una vox artificialiter differt ab alia. Et est sciendum, quod secunda vox differt a prima per quinque punctos, tertia a secunda differt quatuor punctos, quarta a tertia quinque.

Quid est hoc? nonne bis quinque & quatuor sunt quatuordecim? & in prima circumferentia continetur, quod non sunt nisi duodecim in quatuor voces? Respondeo: totum verum est, sed quintus punctus de primo puncto recompensatur iterum pro primo puncto in numero quatuor. Similiter quartus punctus de numero quatuor ponitur pro primo in ultimo computo de numero quinque: & sic, ut dictum est, quaelibet circumferentia continet veritatem.

Sed quare voces non distant aequali numero punctorum? Respondeo: consonantia vocum, neque natura cantus artificialis nec naturalis hoc permittit; & si fieret, turpem

Having touched on these matters, let us go on to an explanation of the circumferences of the diagram. And one should know that in the first circumference of the diagram the number of twelve notes is contained, which [number] is necessary for completing a song of four voices. In the second circumference it is contained, by how many notes one voice differs from another in [the practice of the] art. And one should know that the second voice differs from the first by five notes, the third differs from the second by four notes, and the fourth from the third by five.

What is this? Are not two times five plus four [equal to] fourteen? And is it not contained in the first circumference, that there are only twelve in four voices? I reply: the sum is correct. But the fifth note [counting from] the first note is recompensed again for the first note in the number four. Similarly, the fourth note from [this] "number four" is given the place of the first [note] in the final computation of the number five; and thus, as has been said, each circumference contains the truth.

But why are not the voices an equal number of notes apart? I reply: neither the consonance of the voices, nor the nature of artificial or natural song permits this; and if it were to be done, it

sonoritatem generaret. Et ita artificialiter & ordinabiliter positum est in figura, & habet veritatem, aliter non haberet. Et est sciendum, quod cantus laicorum a natura infixus eisdem ut in pluribus & instrumentorum ligneorum appetit illud idem, non tamen cantus Lombardorum, qui ululant ad modum luporum. Quod manifeste patet; nam si unus laicus audiret alium laicum cantare in prima bassa voce, bene saliret recta in tertia, non autem aliquo modo in secunda; vel e contrario de tertia in prima, sed nunquam in secunda.

would generate an ugly sound. And consequently it has been put, artfully and in good order, in a diagram, and [so] it has truth; otherwise it would not have [it]. And one should know that the song of laymen [is also] firmly settled by nature in these things as [it is] in others (and in particular [as] it craves the very same stringed instruments), though [this does] not [include] the song of the Lombards, who howl like wolves. Which is manifestly apparent; for if one layman were to hear another layman sing in the first voice (the bass), he might well leap straight into the third, but not by any means into the second [voice]; or if you like, on the other hand, [he might leap] from the third into the first [voice], but never into the second.

Quare numerus punctorum & ordinatio vocum non exprimitur per ut, re, mi, fa, sol, la, cum hic agatur de punctis & cantu? Respondeo: ille, qui edidit praesentem doctrinam, nolebat turbare addiscentes, sed potius instruere. Nam si inciperet per ut, prima, ut facere debet, volentes addiscere fortassis turbarentur, si semper illa, quae vellent in quatuor vocibus cantare, nisi in ut primam vocem fundarent. Nam

Why is the number of notes and the orderly arrangement of the voices not expressed by ut, re, mi, fa, sol, la, since it has to do here with notes and with song? I respond: he who promulgated the present teaching did not wish [thereby] to confuse students, but rather to instruct [them]. For if he were to begin with ut first (as he is supposed to do), [then] those wishing to learn would probably be thrown into confusion if those [songs] which they would wish to sing in four voices did not always base the first voice on ut.

quantum est de
natura eiusdem artis
cantandi in quatuor voces,
ipsa ars non causat,
quod primus punctus super
uno puncto magis
quam super alio fundetur:
& ideo praesens
doctrina, nec
figura per nomina
punctorum ordinem suum
non expresserunt
verum; sed
litterae, quae infra
rotam continentur, ordin-
atae sunt secundum
quod Rector & unus-
quisque corrigit
alium, & sibi
notificat debitum
suum. Item notandum
notabiliter, quod
doctrina, quae
data est de quatuor
vocibus, data est
de tribus, & de
duobus & de quinque,
supple, si
fas esset cantare.
Sed ultra
non generaret
nisi turpem sonori-
tatem, & saperet
naturam ac
si collegium
cantaret. Nec
etiam permittitur, quod
duo cantent in eadem
voce, nisi
in prima
causaliter, si esset
tam bassa prima, ne
posset a
circumstantibus
audiri.

Quare figura non est
rotunda ex omni parte, vel
quadrata, cum constet ex
quatuor? Respondeo: ita
fieri debet ad modum
lunae, quae habet duo
capita. Nonne sunt

For as far as it concerns
the nature of this same art
of singing in four voices,
this art does not require
that the first note should
be based upon one note
more than upon another:
and for this reason the
present teaching and its
diagram do not express the
correct arrangement of
the notes by the names
of the notes. But the
letters which are included
below the circle have been
arranged according to
how the Director and each
one individually corrects
the other, and calls to
his own attention what he
should himself do. Again
note particularly, that
the teaching which has
been offered concerning
four voices has been given
[as well] for three, or for
two, or [even] for five--
supposing, [that is], that
it were lawful to sing [five
voices]. But indeed, more
than four [voices] would
generate nothing but an
ugly sound, nor would it
sweeten nature, particularly
if the [entire] assembly
were to sing [it]. It is
also not permitted that
two should sing on the same
voice, unless it should be
upon the first [voice] for
the reason that it be such
a low bass, that it might
[otherwise] not be capable
of being heard by those
standing by.

Why is not the diagram
round on every side, or
square, since it is composed
of four? I reply: It ought
to be made so, like the
moon, which has two heads.
Have they not been ar-

ordinati illi quatuor, qui cantant, ac si respicerent ad librum? Item primus per se facit unum caput, ita quod vox sua non tangit aliquid, post se habet reliquas tres. Quartus similiter facit aliud caput, cum non habeat alium superiorem; & sic debet fieri ad modum lunae & ad modum rotae in parte: nam ars cantandi ita est ad descensum sicuti ad ascensum, & e converso. Et est notandum, quod quatuor voces ita annexae sunt inter se, ut in versibus continetur:

ranged, these four who are singing, as if they were directing their gaze towards the book? Likewise the first by himself represents one head in this manner, that his own voice does not border on anything; and after himself he has the other three. The fourth similarly represents the other head, since he does not have another above [him]; and thus [the diagram] should be made like the moon and like part of a wheel: for the art of singing is like that on the low side just as it is on the high side, and vice versa. And note that the four voices are connected among themselves in the manner that is contained in [these] verses:

Tertia cum prima
resonat,
quia capit
in ima,
Dat modulos
quarta
mediante
voce secunda.

"The third sounds in resonance with the first,
because it contains
[it] in a likeness;
"It utters the basic notes,
while the fourth holds
a middle position
with the second voice."

Et licet sint ordinati debito modo in figura, nihilominus ille, qui cantabit tertiam vocem, debet esse in secundo loco iuxta primum: ille, qui cantabit secundam vocem, debet esse in tertio loco iuxta quartum; & ita gerunt cappas eiusdem coloris.[1]

And although they may have been arranged in the proper way in the diagram, nonetheless the one who will sing the third voice should be in the second place next to the first, [and] the one who will sing the second voice should be in the third place next to the fourth; and thus they wear caps of the same color.[1] The

[1] Gerbert explains (Scriptores, III, 61) that the caps of the first and second are violet, the third and fourth red.

	Ratio est, quia	reason is, because the
	vox unius vocem	voice of the one will
535	alterius certificabit,	certify the voice of the
	& illustrabit,	other, and will illuminate
	maxime dum cantabunt,	[it] very much while they
	& ita	sing, and in this manner
	docet eos	[it] will teach them [how]
540	intellectus versuum	to set in order the meaning
	ordinare. Et est	of the verses. And it is
	tenendum notabiliter,	most particularly to be
	quod totus	remembered, that the whole
	chorus, quando resumet	chorus, when it shall resume
545	cantum, quem quatuor	the song which the four
	cantant, debet	are singing, ought to
	resumere in tertia	resume [it] in the third
	voce, quam ipsi quatuor	voice that the four are
	cantant; quod nisi	singing. If the chorus
550	fecerit chorus, &	does not do this, and if
	dicti quatuor si	the aforesaid four [sub-
	cantum resumserint,	sequently] resume the song,
	erunt turbati,	they will have become con-
	nisi quatuor	fused unless they have
555	valde prospexerint	looked ahead, carefully and
	sibi custodiendo	firmly preserving to them-
	primam vocem;	selves the first voice;
	& si voces amiserint,	and if they have lost the
	necesse est iterum	pitch they will have to
560	innovare voces.	start the voices over again.
	Item si contigerit	Again, if it has fallen to
	primum reincipere	the first [singer] to start
	post primum cantus	up again, after the initial
	inchoationem, &	beginning of the song, and
565	fuerit nimis bassus,	he has [sung] too low,
	tunc quatuor poterunt	then the four can [just]
	omnino innovare,	make an entirely new be-
	ut dictum est,	ginning on their voices,
	voces suas.[1]	as has [already] been said.[1]

The type of polyphony Elias Salomon describes is clearly a four-voiced improvisation over a chant (cantus supra librum) sung by soloists alternatim with sections of plainchant sung by a choir. The tenor or "first voice" sings the chant, but at the octave below the pitch at which the choir has been singing it (supra, ll. 541-549), and the other three voices appear to sing above this at the fifth,

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[1]Gerbert, Scriptores, III ("Scientia artis musicae"), 57-61.

octave and twelfth. Consequently it has been suggested[1] that the description refers to a thirteenth-century survival of parallel organum, but there is some reason to doubt that it requires such an interpretation.[2] For while it may be true that neophytes, for whom the directions are principally intended, might well be reduced to singing unadorned or "plain" parallel intervals because of a lack of experience, the more skilled and practised monastic singers, whose performance is pointedly contrasted with that of those who have less skill or taste (ll. 231-245), and who sing with a seemingly "natural" artfulness (ll. 8-14), might well sing a much more complex counterpoint. Since the general applicability of the method of musical direction described by Elias Salomon will depend to a substantial degree upon whether the type of polyphony he describes was an ordinary or an exceptional one, it will be important to establish with some certainty just what sort of polyphony he is referring to. This will require several lengthy digressions from the continuing analysis of Elias' discussion.

Figuration

One of the ways in which the counterpoint improvised by the singers might have been more complex than simple parallel organum is in the use of some kind of ornamentation. Indeed, "figuration" is

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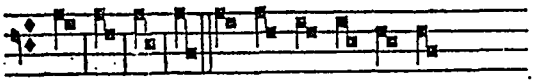
[1] Gustave Reese, Music in the Middle Ages (New York: W. W. Norton & Co., 1940), p. 270.

[2] Ernst Ferand ("The 'Howling in Seconds' of the Lombards," The Musical Quarterly, XXV [1939], 313-324), in dealing with Elias Salomon's reference (ll. 397-400) to the singing of the Lombards, suggests on grounds similar to some of those adduced here that Elias is describing an early form of discant.

specifically referred to as one of the aspects of the performance to be guided by the director, who says to one singer "You are singing too strictly," and to another "You are setting the notes with too much figuration" (ll. 182-185). What was this "figuration"?

Several Medieval theorists discuss the practice of "figuration" or "diminution." Johannes de Garlandia (in his De musica mensurabili positio) shows, for example, how to ornament or "figure" the melodic interval of a fifth:



1

The use of such ornamentation apparently was not limited to written polyphonic music because an anonymous discant treatise[2] gives specific directions for improvising over a chant, singing in one circumstance a plain interval, and in another a "diminished" (i.e., ornamented) version of it. An example follows:

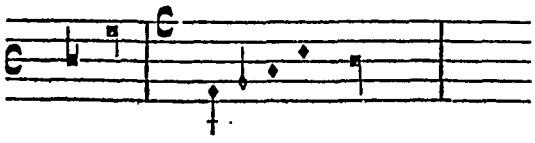
Si autem ascendat ad quartum gradum pausando ibi, que raro accedit, ascendere debes ad quintum frangendo, et postea ab illo quinto descendere ad secundum,	But if [the plainsong] were to ascend by the step of a fourth, resting there (which rarely happens), you should ascend a fifth in diminished notes, and afterwards from this fifth descend by a second, as

[1]E. de Coussemaker, Scriptorum de musica medii aevi, (Paris: A. Durand, 1864), I, 115.

[2]Anonymus V, "De discantu," in Coussemaker, Scriptores, I, 367.

ut patet hic:

appears here:

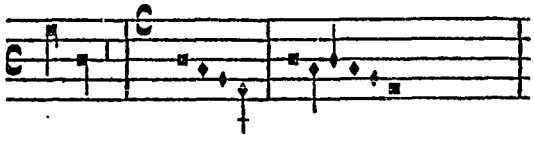


In the musical example the chant interval is given first, followed by the discant. Note that while the discant essentially moves in a parallel octave with the chant, this parallel movement has been greatly altered by the figuration.

Another example from the same treatise offers a choice of <u>two</u> diminished versions:

Item si descendat ad quartum pausando ibi, descendere debes ad secundum plane, et postea in illo secundo incipies frangere ad tertium descendendo, ut patet hic:

Again, if [the plainsong] were to descend by a fourth, resting there, you should descend by a second plainly, and afterwards you should begin upon that second to diminish towards the third below, as appears here:



Si autem non pauset ibi, descendendum est ad secundum, non ulterius frangendo.[1]

But if [the plainsong] does not rest there, one should descend by a second, and not further by diminution.[1]

Note that in this second example the movement of the discant is again essentially parallel to the chant, and that this parallel motion has

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[1]Anonymus V, "De discantu," in Coussemaker, Scriptores, I, 367.

been substantially elaborated by the diminutions.

Another source specifies a different treatment for the upper voices in the application of diminution than for the tenor:

Sciendum est, secundum Curiam Romanum et Francigenos et omnes musicales cantores, quod tenor, qui discantum tenet,[1] integre et solide[1] pronunciari debet in mensura ne supra discantantes dissonantiam incurrant. Et hoc ratio exigit, nam sicut super instabile fundamentum stabile edificium construi non potest, sic per instabilem tenorem vix sine dissonantia discantus pronunciari potest. In motetis quippe et rondellis ac etiam in aliis cantilenis, tenor, prout figuratur, pronunciari debet. Tamen non est contradicendum tenorem pronuncianti, pulchras ascensiones et descensiones facienti, quando sentit se discantu non impediri, sed potius commendandum. Hoc enim oportet tam ex usu quam ex scientia.[2]	One should know (according to the Roman and French Curia and all musical singers) that the tenor, which "holds" the discant, ought to be performed integrally and undiminished[1] in the measure, lest those [who are] discanting above [it] should run into dissonance. And reason requires this, for just as a stable building cannot be constructed on an unstable foundation, so discant can scarcely be performed without dissonance on an unstable tenor. In fact the tenor (in motets, rondelli and also in other songs) ought to be performed exactly as written. But yet let it not be denied to the one performing the tenor [to be] making beautiful ascendings and descendings whenever he feels that he is not being held back, but rather being commended, by the discant. Surely this ought to be, as much out of custom as because of knowledge.[2]

A different source[3] concludes the discussion thus:

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[1] literally, "wholly, entirely, solidly."

[2] Anonymous I, "De musica antiqua et nova," in Coussemaker, Scriptores [CS], III, 362. See also CS, IV, 295, and note 3 below.

[3] The passage is printed by Coussemaker in two different versions (see note 2 above), neither of which is perfect. The first portion of the passage (that presented on this page) is clearer in the CS III version, but then becomes garbled, so that CS IV is better.

Sunt itaque nonnulli cantores in aliquibus mundi partibus, qui musicae naturam pervertunt, facientes de acumine fundum; hoc namque faciunt pronuntiando triplum in tenoris voce, et hoc tam in motetis quam in discantu.

In reputatione autem illorum nullus videtur scire tenorem cantare, qui eum non frangat et dilacerat.[2] Isti non sunt cantores musicales, qui secundum artem et rationem modulantur, sed potius dici possunt cantores ministrales, qui non secundum artem, sed usum canunt.[4]

And in this connection there are not a few singers in some parts of the world who pervert the nature of music, making of a high [voice] a bass; for they do this by performing the triplum in the register[1] of the tenor, and [they do] this in motets as well as in discant.

Also, when you think about it, none of them seems to know [how] to sing a tenor, who does not demolish it with excessive ornamentations.[2] These are not musical singers, who [sing in] proper measure according to art and reason, but can rather be called minstrel[3] singers, who sing by custom,[4] not by art.

This discussion (including both quotations) suggests that the practice of diminution, in improvised discant as well as in performances of written polyphony, was limited almost entirely to the upper parts. One should, for the most part, sing the tenor "exactly as written." The way in which the point is argued clearly suggests that the treatment thus accorded to the tenor of a composition is an exceptional one, and that, in general, one does not sing the written notes "exactly as written." Improvised diminution of a polyphonic part or of a discant is presumed; it is the normal procedure. Thus the excessive diminutions used in the tenor by some

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[1] "voice."

[2] lit., "who does not break it up and rip it to shreds."

[3] My italics.

[4] From the treatise attributed to Simon Tunstede, "Quatuor principalia musicae," in Coussemaker, Scriptores, IV, 295.

"minstrel" singers must be deplored, and even a good singer is allowed occasionally to use diminutions in the tenor, a concession made "as much out of custom as because of knowledge." In spite of this concession, the rule remains that one should sing the tenor "integrally and undiminished in the measure."

That this rule of "Anonymous I" was genuine Medieval practice may be observed in the "Faenza Codex,"[1] a manuscript preserving ornamented versions[2] of a repertory from the fourteenth century, apparently intended for keyboard performance.[3] The diminished versions include both ornamentations of written polyphonic compositions (as in figure 1) and chants set with a diminished counterpoint (fig. 2). (The latter is simply the instrumental equivalent of diminished improvised discant). Note that in each case the notation presents very much the same aspect, the chief difference being that the upper voice of the first example--the polyphonic composition--reveals the presence of an original melodic structure, whereas in the second example--the discant--the diminished line is free to run its own course. But both examples embody the

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[1] An Early Fifteenth-Century Italian Source of Keyboard Music: The Codex Faenza, Biblioteca Comunale, 117: A Facsimile Edition, presented by Armen Carapetyan, Musicological Studies and Documents, Vol. X(American Institute of Musicology, 1961), hereinafter referred to as Faenza.

[2] Calling these versions "arrangements" can, I believe, be misleading, for often the diminutions they present, notated for the convenience of the performer (as was to become usual for keyboard instruments), probably differ in no significant way from those that a singer or the player of a different instrument ordinarily may have performed extempore.

[3] Dragan Plamenac, "Keyboard Music of the 14th Century in Codex Faenza 117," Journal of the American Musicological Society, IV(1950), 185-186.

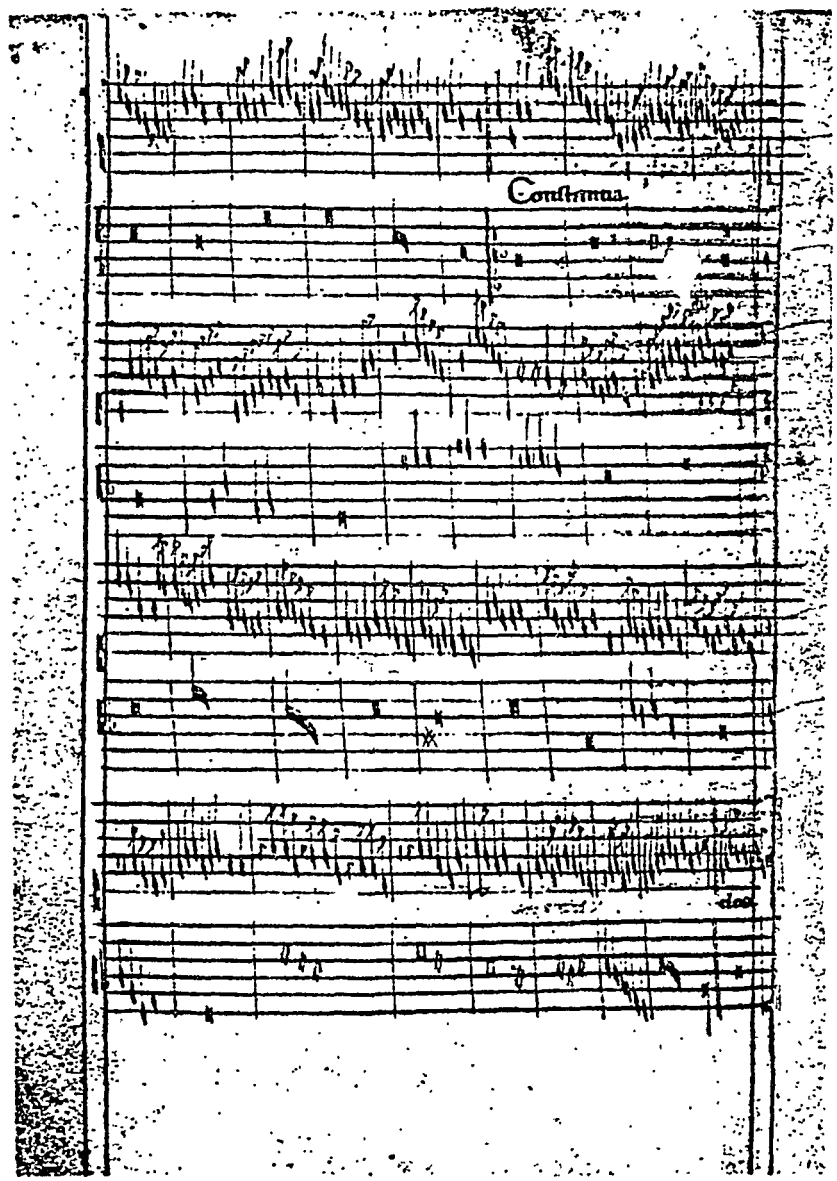

Fig. 1. -- Ornamented version of a written polyphonic composition (from the Faenza Codex, p. 27).

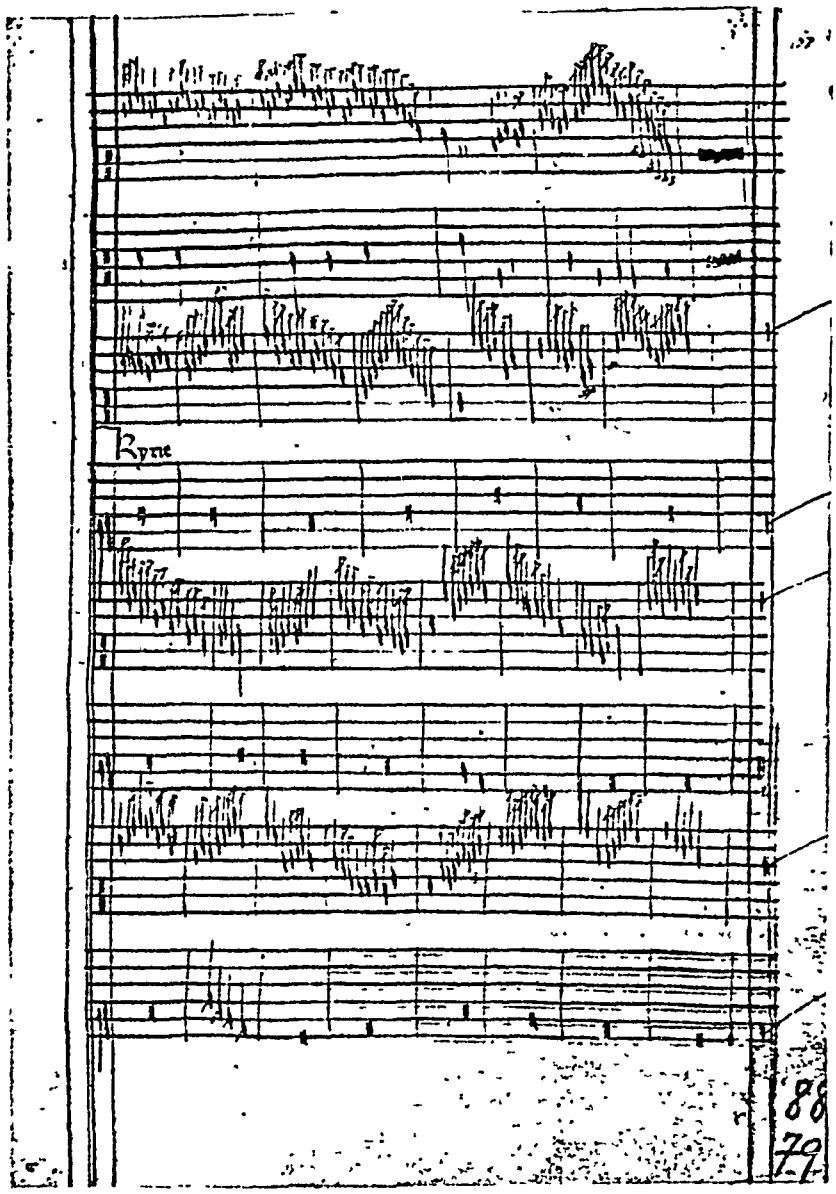

Fig. 2. -- Improvisatory ornamentation (or "discant") over a chant (from the Faenza Codex, p. 83).

Jour mour lanie
(Jour a jour la vie)
Faenza 117, f. 64r-64v, 51r-51v

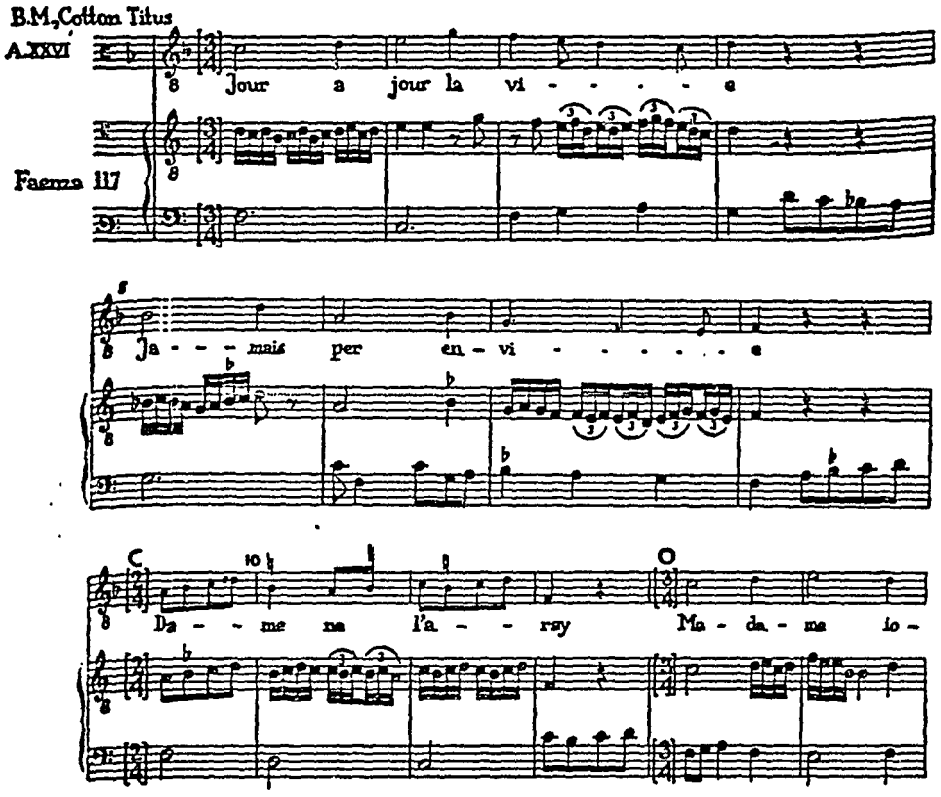

Fig. 3, p. 1. -- Comparison of a Faenza ornamentation with the original polyphonic upper part (from Plamenac, "Keyboard," pp. 190 - 192).

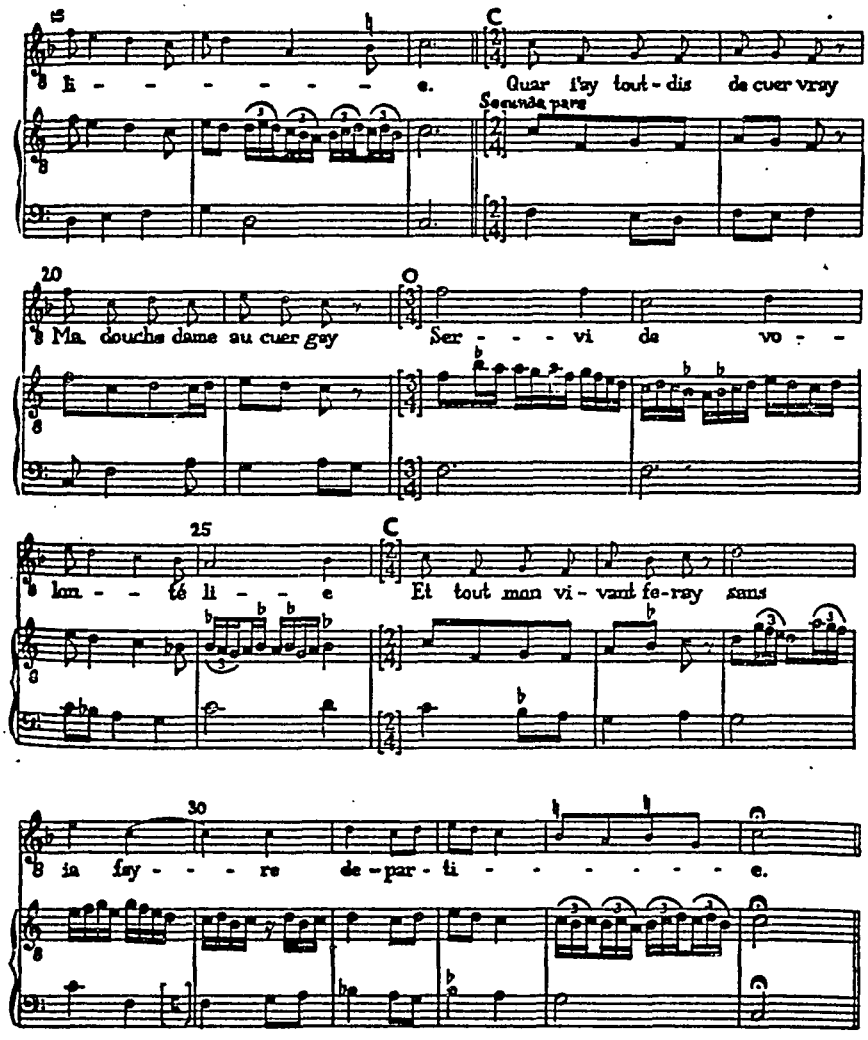
15
li - - - - - - - e.
C
Quar i'ay tout - dis de cuer vray
Secunda pars
20
O
Ma douche dame au cuer gay
Ser - - - vi de vo - -
25
C
lon - - té li - - e
Et tout mon vi - vant fe-ray sans
30
ia fay - - - re de - par - ti - - - - - - - e.

Fig. 3, p. 2.

suggested principle[1] of keeping the tenor integral and undiminished, as does the Faenza repertory as a whole.

In addition to confirming this special treatment of the tenor voice in Medieval diminution practice, the Faenza manuscript provides almost the sole opportunity for observing in actual musical examples just how diminution was applied to written melodies in the upper parts of Medieval music. A comparison of a Faenza ornamentation with the original undiminished upper voice (fig. 3) shows the degree to which later Renaissance diminution practice is forecast. Notes are sometimes diminished, sometimes not. In this the musical evidence accords completely with the theoretical,[2] which suggests one should sing sometimes plainly, sometimes by diminution, depending on the polyphonic context.

Having examined the nature of Medieval diminution practice at some length, we may return to our consideration (supra, pp. 23-24) of the passage from Elias Salomon with a much more exact understanding of what sort of "complex counterpoint" is implied when the director says to one singer, "You are singing too strictly," or to another singer, "You are setting the notes with too much figuration" (ll. 182-185). We have seen that the performance of a piece of Medieval polyphony, be it composed or improvised, would ordinarily present the lowest voice (or tenor) in plain, undiminished notes, while the upper voices would bear ornamental figuration according to the taste and skill of the performers.

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[1] supra, p. 29.

[2] supra, p. 26.

Thus Elias' "first voice," or tenor, would probably be sung in plain notes, while the other three parts would be diminished to a varying degree. This figuration alone would preclude their moving in strict parallel motion with the tenor. But there is further evidence that Elias' description need not imply a parallel organum.

Discant

What Elias Salomon says about the disposition of the voices accords better with other Medieval sources if one interprets his directions for the spacing of the voices (at the fifth, octave and twelfth) as specifying the initial and cadential intervals only, and calling for a specific range or tessitura for each voice rather than for parallel motion. The upper parts of discant were commonly discussed (especially in the so-called "English-Discant" treatises of the fifteenth century) in terms of ranges of discant, called "degrees" in the English terminology. To illustrate the point, excerpts from two fifteenth-century discant treatises are here presented in a collated format:

Here begynnes a short tretys of the reule of discant...

Ferthermore hit is to witt that ther ben three degrees of discant syght, that is to say the meyne syght, the trebill syght and the quatrebill syght.

The meyn shall begyn his discant a 5 abowne the plainsong in vo[i]ce and with the plainsong in sight. the trebill shall beginn his discant a 8 abowe the plainsong

Here folwith a litil tretise acording to the ferst tretise of the sight of descant...

Also it is to wete that there be 3 degris of Descant, sc. [i.e., "namely"] the Quatreble sight, and the Treble sight and the Mene sight.

The Mene beginnyth in a 5 above the plainsong in vois and with the plainsong in sighte. the Trebil beginnyth in a 8 above in voise and with the plainsong in sight. the Quatreble begins

in voce and with the plainsong in sight. the quatrebil shall begynn his discant in a 12 abowe the plainsong in voce and with the plainsong in sight.

Also it is to witt that [to] the mene longeth properly fyfe acordis of discant, that is to say: the unison, the 3, the 5, the 6, and the 8.

to the trebill longeth fyfe acordys of discant, that is to say: the 5, the 6, the 8, the 10 and the 12. to the quatrebill longeth fyfe acordes of discant, that is to say: the 8, the 10, the 12, the 13 and the 15...

Also it is skylfull that every discantor begin his discant in a perfite [a]corde and ende in a perfite acorde. the meyne degre of discant shal ende in a fifte having next afore a therd, if the plainsong descende... the trebill degre of discant sall ende in the 8 having next afore a sext, if the plainsong descende... the quatrebill degre of discant sall ende in the 12 having next afore a 10, if the plainsong descende, as I said before.[2]

in a 12 above in voise and with the plainsong in sight.

To the mene longith properli 5 acordis, sc.: the unisoun, 3, 5, 6, and 8.

To the Treble longith properli 5 acordis, sc. 5, 6, 8, 10 and 12.

To the Quatreble longith properli 5 acordis, sc.: 8, 10, 12, 13 and 15.[1]

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[1] from "Br. Mus. Lansdowne Ms. 763, No. 16," in Manfred Bukofzer, Geschichte des englischen Diskants und des Fauxbourdons nach den theoretischen Quellen (Strassburg: Heitz & Co., 1936), pp. 146-147.

[2] from "Cambridge, Corpus Christi College, Ms. 410, II," in Bukofzer, Geschichte, pp. 143-146.

If one accepts the thesis suggested above (p. 35), that the technique of Elias Salomon involves spacing of the voices at the fifth, octave, and twelfth at points of beginning and of cadence (but not always between), the resemblance to the English discant practice is unmistakable. Thus Elias's "second voice" corresponds to the "mene," his "third voice" to the "Treble" and his "fourth voice" to the "Quatreble." The techniques seem to be historically connected, if not substantially the same. Indeed, is it not likely that the "sights" which had been devised by the fifteenth century (at the latest) involved transposition to the fifth, octave, and twelfth above precisely because these marked the preferred initial and cadential intervals for each of the respective three upper parts in traditional four-voiced discant?[1]

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[1]Concerning discant see also Sylvia W. Kenney, "'English Discant' and Discant in England," The Musical Quarterly, XLV (1959), 26-48. The view of discant presented here differs from that in Ms. Kenney's important contribution to the reinterpretation of discant in two respects. Ms. Kenney has suggested that, first, discant theory deals with only one voice at a time against a tenor, and that consequently the terms "mene," "treble" and "quatreble" designate different "sights," not different polyphonic voices. Thus in her view these terms are not to be equated with "motetus," "triplum" and "quadruplum." The second point of difference concerns Ms. Kenney's view that Medieval authors carefully reserved the term "discant" in the strict sense to refer only to a note-against-note style, and not to cantus fractibile or so-called "melismatic discant" with its addition to the basic counterpoint of several short, nonessential tones against one note of the tenor, and her conclusion that it is accordingly not appropriate to apply the term "discant" to such a melismatic style.

Concerning the first point, in my opinion the terms "mene," "treble" and "quatreble" are properly voice names, and are called "sights" in the treatises only by derivation. That is, "the treble sight" means "the transposition sight of the treble voice." Thus "treble" is a range of discant, a voice part with its own tessitura and its own set of consonant intervals over the tenor. As such it corresponds to the term triplum, from which "treble" probably derives, just as "quatreble" would from quadruplum. These two sets of terms likewise correspond to, and have the same

That a four-voiced discant with three distinct ranges for the upper parts was practiced already in the thirteenth century (as the suggested interpretation of Elias Salomon would require) is clearly confirmed by the well-known theorist

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meanings as, the "third voice" and "fourth voice" of Elias Salomon. And this voice-part terminology, which presumably was applicable to discant in general, clearly implies a four-voiced texture as the ideal or "norm" for discant. That is not to say that discant was always, or even most of the time, four-voiced, for (in the words of Elias Salomon), "the teaching which has been offered concerning four voices has been given [as well] for three, or for two" (supra, p. 21). Indeed, the terminology suggests that the three-voiced texture (clearly favored over other textures in written polyphony during most of the Medieval period), while not the fullest texture possible, was perhaps the more usual. In the English terminology the second voice (the motetus of written polyphony) is called "mene," which means "half," "mean" or "midpoint." The voice could only have acquired such a designation in the context of a typical three-voiced texture, for in such a context the second voice would indeed form a mean or midpoint between the first and third voices. In any case it would seem that, despite the fact that discant treatises provide rules only for setting a single counterpoint against a tenor, usually neglecting any mention of the possibility of several simultaneously discanting voices, there often were several discanting voices which, while sometimes permitted to be dissonant with each other, were in their mutual relationships not left entirely to chance. Since each voice was in a different range of discant the voices were limited in the extent to which they could conflict with each other. It must be precisely for this reason that Elias Salomon so firmly rejects having more than four singers. With more than four singers at least one of the ranges would necessarily be duplicated, and the adjacent dissonances that would result from singers independently improvising in the same range were considered offensive (supra, p. 21, ll. 463-469). (This prohibition is further evidence that Elias Salomon is not describing a parallel organum, for if the voices simply moved in parallel fifths and octaves, the doubling of additional singers would alter little but the volume of sound. But Elias Salomon allows only the tenor [sung as written, without diminution] to be doubled for additional volume [supra, p. 21, ll. 469-478]).

Regarding the second point, it is true that the term "discant" in its original thirteenth-century usage, as well as in the "strict" sense in the fourteenth and fifteenth centuries, referred to the note-against-note (punctus contra punctum, or "counterpoint") style. However, strict discant may have been to a large extent a theoretical abstraction. The upper parts of polyphonic music usually moved in shorter notes than did the tenor, even in their written form; they

"Anonymous IV":

> It should be noted that the real discantores have three ways of composing a melody. The first method makes use of the neighboring consonances, that is the lower fourth and fifth. The other method employs the more remote intervals, which include the lower octave along with the others. The third method utilises the most distant intervals, such as the lower 12th and 15th, or even larger ones.[1]

In view of these descriptions of discant it seems clear that it is a discant performance to which Elias Salomon is referring, the same type of discant commonly practiced throughout the Middle Ages, which was often so ornamented as to greatly resemble the written music of the time. Just how sophisticated the discant would be depended only on the skill and experience of the singers, but, whether strict or ornamented, it was discant, and consequently

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certainly moved in shorter notes if one considers that they were usually ornamented in performance, while the tenor was usually not. Theorists speak of a note-against-note style because they usually ignore diminution, which was the concern of the performer rather than the theorist or composer, the cantor rather than the musicus. Ignoring diminution may to some extent also have been a matter of theoretical convenience, since the principles of polyphonic improvisation or composition are undeniably easier to codify, teach and comprehend if one considers only the essential tones. In the earliest discant little more than these essential notes was written down, resulting in (at least on paper) a note-against-note style. But as time passed composers began increasingly to write down some of the shorter, nonessential notes performers were using, so that the written form of the music became an increasingly melismatic discant, presenting several notes in the upper parts to each note of the tenor. Only after this stage of development had been reached did some theorists distinguish two kinds of discant, and insist that the "strict" note-against-note discant was the only true discant. But it is likely that in actual music, both improvised and written, diminution was customarily added to the upper parts (at least by any singers skillful enough to do so), so that the "strict" style would have been largely a theoretical abstraction or a pedagogical device for beginners. In expert practice it was probably exceptional.

[1] Anonymous IV, trans. and ed. by Luther Dittmer, Musical Theorists in Translation, Vol. I (Brooklyn, N. Y.: Institute of Mediaeval Music, 1959), p. 59.

one may suppose that the way in which it was conducted would be generally applicable to the polyphony of the time, whether improvised or written.[1]

The Conducting of Medieval Polyphony

Elias Salomon seems, throughout the passage quoted at the beginning of this chapter, almost inordinately concerned with the seemingly elementary problems of achieving simultaneity, of keeping the singers together. He painstakingly describes how the director gives the pitch to each voice individually, each singer holding the pitch until the director too is singing, and how they all watch him carefully and move on only when he does, following his lead in pauses, taking great care so that they may all move, in so far as possible, simultaneously. Perhaps simple coordination is so much emphasized because this sort of informal direction, without the assistance of time-beating, was inherently imprecise. However that may be, this "direction by example" was the only thing holding the singers together when the director was one of the singers.[2] We find the same method of direction described contemporaneously for plainsong, as the second among five rules for singers of chant:

Secundum est, ut quantumcumque sint omnes aequaliter boni cantores, unum tamen praecentorem et directorem	The second is that, however much they may all be equally good singers, they should nevertheless set up one precentor and

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[1] cf. Anonymous IV, p. 59, on discantors of varying skills.

[2] cf. Fratris Walteri Odingtoni, "De speculatione musice," in Coussemaker, Scriptores, I, 250.

sui constituant, ad quem diligentissime attendant, et non aliud quam ipse sive in notis sive etiam in pausis dicant. Hoc enim est pulcherrimum.[1]	director for themselves, to whom they should most diligently attend, and should articulate no other than he [does], in either notes or rests. For this is most beautiful.[1]

But the conducting practice described by Elias Salomon goes beyond mere direction by example. Note (supra, esp. pp. 12-16) that not only does the director serve to keep the singers together, but regulates many other aspects of the performance. And sometimes (ll. 161-173; 231-248) a certain kind of hand signal or beat is employed, described as the director's "forming disyllables in a fitting manner with his hand over the book" (ll. 171-173). What can "forming disyllables" refer to?

Forming Disyllables

William Waite has argued convincingly,[2] albeit almost entirely on indirect or "circumstantial" evidence, that modal polyphony was metrically organized on the model of classical metrics, probably as expounded in the De musica of Augustine, a work that was available in European libraries and known to scholars in the twelfth century. According to Waite's theory, modal music was conducted by an adaptation of the plausus of classical metrics. The system is based upon a division of the

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[1] Hieronymus de Moravia, Tractatus de musica, ed. by Simon M. Cserba, Freiburger Studien zur Musikwissenschaft (Regensburg: Verlag Friedrich Pustet, 1935), cap. 25, p. 188.

[2] William G. Waite, The Rhythm of Twelfth-Century Polyphony: Its Theory and Practice (New Haven: Yale University Press, 1954), pp. 19-49. Only a brief summary is here presented of Waite's discussion.

metrical foot into two parts,

> and these two parts are represented by motions of the hand, a practice known in metrics as the plausus. The plausus is the beating of the time of the metrical foot with an upward motion of the hand (levatio) and a downward motion (positio)... The trochee would have a levatio of two tempora [a tempus being the length of a short syllable] and a positio of one tempus, while the iamb would on the contrary have a levatio of one tempus and a positio of two tempora.
>
> In combining feet to create a verse it is necessary that the feet contain the same number of tempora and have the same levatio and positio.[1]

The plausus as used in modal music, Waite suggests, was always equal to a total of three tempora (i.e., a "perfection"), even though some of the modes, the musical equivalent of the metrical feet, were twice this long, containing a total of six tempora:

> In practice the plausus is restricted to only two varieties, corresponding either to the first mode [i.e. the plausus of the trochee, giving the levatio the length of a long, and the positio the length of a breve] or the second mode [i.e. the plausus of the iamb, giving the levatio a breve and the positio a long]. The other four modes will all be beaten in one of these two manners.[2]

Thus those modes containing six tempora are beaten to two plausus patterns. The music confirms this practice, he says, in that only those modes having the same plausus pattern are used together. "The first mode may be combined only with the fifth and sixth modes; any of the other five modes may be combined with each other."[3]

In developing his theory of the plausus Waite depended on the example of classical metrics, strong evidence for a cor-

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[1] Waite, Rhythm, pp. 31-32.

[2] Ibid., p. 49. The interpolations in brackets are mine.

[3] Ibid.

responding practice in chant before the twelfth century, and the "tacit evidence" of "the music and the modal theory itself." His statement that "the plausus is not mentioned by the thirteenth-century [musical] theorists"[1] is, however, not quite correct. Walter Odington, a thirteenth-century theorist who bases his discussion of modal music on an extensive exposition of classical metrics, clearly describes the plausus.

Metrical feet, Odington says, are made up of the long and short times of long and short syllables.

Accidit autem unicuique pedi arsis et thesis, id est elevatio et depositio que sunt tempore mensurante. Et secundum inequalitatem temporum accidit inequalitas habitudinis elevationis comparante ad depositionem.[2]	Moreover there occur in each individual foot arsis and thesis, that is elevation [levatio] and deposition [positio], which are for measuring time. And according to the inequality of times there occurs the condition of inequality of the elevation compared to the deposition.[2]

And even though Odington admittedly does not unequivocally say that music was beaten in this way, that confirmation is to be found in Elias Salomon's description of conducting by "forming disyllables...with [one's] hand over the book" (supra, pp. 14-15, ll. 171-173). The plausus as described by Waite would always be a representation with the hand of a disyllabic pattern, either long/short or short/long, and would thus quite properly be called "forming disyllables." Accordingly, based on Elias' description,

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[1]Waite, Rhythm, pp. 44-45.

[2]Odington, "De speculatione," Coussemaker, Scriptores, I, 211.

it seems likely that Medieval polyphony, at least during the later twelfth and earlier thirteenth centuries, was conducted by an up/down motion of the hand analogous to the plausus of classical metrics, with the two hand motions being unequal in duple proportion, either long/short or short/long, depending upon the mode, with the shorter motion being equal in time to a tempus or proper breve, and the total motion equal in time to a perfection. It may further be hypothesized--no more--that conducting by the plausus continued throughout the Middle Ages and right on into the Renaissance, when it became the practice known as tactus.[1]

What note values were conducted, what were their durations, and what was the basis of the mensural organization of polyphonic music as the notations and styles of the Middle Ages continued their evolution? These are questions which the subsequent chapters will consider.

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[1]The tactus in the sixteenth century was conducted with precisely the same motion (for certain triple times) as has been described here and called plausus, the one difference being that the ternary motion was always long/short, and not short/long. Of course the majority of signatures called for a duple tactus in which the up/down motions were of equal duration. That adaptation of the plausus motion to duple time was probably developed when duple time became common in the Medieval style.

A discussion in Gioseffo Zarlino, The Art of Counterpoint [Part Three of Le Istitutioni Harmoniche, 1558], trans. by Guy A Marco and Claude V. Palisca, Music Theory Translation Series (New Haven: Yale University Press, 1968), pp. 116-117 reveals that Zarlino fully understood the plausus and strongly implies its continuity with the Renaissance tactus (or, as the Italians call it, misura). I believe this discussion strengthens my hypothesis that the conducting motion remained essentially the same from the modal period through the Renaissance.

CHAPTER THREE

MEASURE IN THE ARS ANTIQUA

The polyphonic music of the ars antiqua is often divided into two phases or periods--the modal and mensural--according to the notation used, but when transcribed into modern notation the music of these periods appears much the same, especially in regards to its time organization or metrics. Yet despite this apparent similarity the conceptions of "measure" in the two periods were quite different.

Modal Measure

All music has measure, as previously discussed,[1] but polyphonic music seems first to have acquired a consistently-applied scheme of temporal control and organization towards the end of the twelfth century, and the means of achieving this control (which means continued in use well into the following century) is generally known as "modal rhythm" or "the rhythmic modes." The conception of "measure" involved in this system of temporal order is fundamental to the subsequent development of the term as applied to music, but it can be obscured by the use of related terms which are often used with too little regard for their precise meanings, even in treatises of the time. Thus it

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[1] Supra, p. 8.

will be necessary to carefully distinguish some of these terms before proceeding.

Rhythm, Measure and Meter

Just what is "modal rhythm" or just what are "the rhythmic modes"? Leaving aside for the moment the significance of "modal" or "modes," what is rhythm?

"Rhythm" is, as Curt Sachs has observed,[1] a much-abused term, a word that is often used in ill-defined, conflicting and confusing senses, but that situation does not (as he comes close to suggesting) render it meaningless. A perusal of the definitions of "rhythm" listed in the Third International Dictionary[2] quickly reveals a common element among nearly all definitions--the element

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[1] Rhythm and Tempo, pp. 11-16.

[2] p. 1950. For example: "2 a: an ordered recurrent alternation of strong and weak elements in the flow of sound and silence in speech including the grouping of weaker elements around stronger, the distribution and relative disposition of strong and weak elements, and the general quantitative relations of these elements and their combinations"; "3 a: the forward movement of music: the temporal pattern produced by the grouping and balancing of varying stresses and tone lengths in relation to an underlying steady and persisting succession of beats: the aspect of music comprising all the elements (as accent, meter, time, tempo) that relate to forward movement as contrasted with pitch sequence or tone combinations"; "4 a: the regular recurrence of similar features in a literary, musical, or artistic composition"; "an ordered sequence of harmonious or related compositional elements"; "5 a: harmonious or orderly movement, fluctuation, or variation with recurrences of action or situation at fairly regular intervals"; "8: the repetition in a literary work at varying intervals and in an altered form or under changed circumstances of phrase, incident, character type, or symbol." "RHYTHM is wider in its use than CADENCE or METER. It is applicable to sound in poetry and music and also to any recurrent sound, movement, arrangement, or condition in virtually any sphere. Sometimes the word connotes little more than regular alternation...Often it suggests subtlety and variation in recurrence...Often it suggests a recurrence pattern too varied to be easily grasped."

of repetition. The repetition may be regular or irregular, real or apparent, in time or in space, but it is the essential element, the perception of similarity and dissimilarity that enables us to conceive relationship and order.[1] Accordingly, "rhythm" might be defined as "the perceived order of things." Such a definition will equally accomodate such diverse uses of the word as "musical rhythm," "the rhythm of words," "the rhythm of a building," "the rhythm of a painting," "the rhythm of life." Thus "rhythm" is a very broad term which needs to be qualified and restricted if it is to be useful in any specific sense. This is often achieved in ordinary usage by attaching to the word "rhythm" the idea of a standard, a standard which is often implicit.

If the expression "bad rhythm," for example, is not qualified by a standard for judging[2] what is to be considered "good" or "bad" about order, it is quite without meaning. The word "unrhythmical" similarly reflects a judgment, a judgment based on a standard not inherent in the word, for the human mind perceives and conceives in terms of rhythm or order, so that nothing perceived can be "unrhythmical" or "disordered." When a person refers to a room as "disordered" he does not mean that it lacks any order or arrangement at all but that it lacks regularity, that is, accustomed or standard order. The use of "disordered" in such a sense indicates

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[1] A sense of "repetition" depends upon the perception of a relationship or similarity between one thing and another, and "order" could be called a sense of the similarities and differences--or simply the relationships--among things.

[2] Cf. p. 1 supra where "to measure" is broadly defined as "to judge"; in their most general senses "rhythm" and "measure" are very similar.

a confusion of the idea of order with a pattern of regular, preferred or customary [i.e., standard] order, which is quite another thing from simple order itself. In the same way the use of "bad rhythm" or "unrhythmical" (in connection with music or poetry) involves a confusion of rhythm with measurement or meter, and reflects a judgment that what is described does not conform to a regular pattern of order. Yet rhythm can properly be simply order; it need not be regular nor conform to any standard to qualify as "rhythm."

Measure in and of itself need not be rhythm, for measure (in a strict sense) can be static: it can be a unit, one unique thing, and order requires more than one thing: it requires extension in time, space or some other dimension, so that there may be separation, and thus relationship.[1] But when measure is dynamic, when it is extended (by the activity of measurement) in space or time, it becomes meter, the regular repetition of a unit or pattern, a kind (but only one specific kind) of rhythm.

In summary, then, to distinguish the terms "measure," "meter" and "rhythm" let us say that measure is finite or standard quantity, meter the extension of measure (or a pattern of measures) in time, and that rhythm (musically speaking) includes meter but refers to all perception of temporal order, whether regular (i.e., metrical) or not. In these terms the so-called "rhythmic" modes are more specifically meters, i.e. patterns of regular measurement: rhythms, to be sure, but only regular patterns of rhythm, from which

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[1]This is reflected in the derivation of our word "order" from Latin ordo, "row, series, succession."

the actual rhythm of the music may from time to time depart. It seems preferable to this writer to reserve the term "rhythm" for this latter element, the actual rhythm of the music, except where it is specifically used in another sense in one of the theoretical sources.

Mode

Our word "mode" has the general meaning of "manner" or "method," but in its Latin form, modus, it also referred to "measure, a standard of measure; rhythmical movement, time; limit; regulation, rule." The transliteration of Latin modus into "mode" in connection with the "rhythmic modes" is thus of little help in understanding what the modes were. But definitions of modus by thirteenth-century theorists can be very helpful, especially as some of these use other Latin words as the equivalent of modus.

Modus vel maneries vel temporis consideratio est cognitio longitudinis et brevitatis meli sonique.[1]	Mode (or manner, or the examination of time) is the recognition of length and brevity of song and sound.[1]

Maneries here means "manner, mode, kind," and consideratio is "examination" in the sense of "a close and careful inspection." Cognitio also is not merely "knowledge" (as it is often rendered); it is "knowledge" only in the sense that we "know" (that is, recognize) a person or a place; cerebral knowledge is scientia. Now modal notation did not primarily distinguish the time values of notes by their shapes, but depended instead upon a repetitive pattern of

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[1]Fritz Reckow, ed., Der Musiktraktat des Anonymus 4 (Wiesbaden: Franz Steiner Verlag GMBH, 1967), I, 22.

value to establish the values of individual notes; the performer had to be able to recognize the way in which the notes fit into the pattern in order to know their values.[1] Both this pattern and the manner of applying it to the notes were "mode." Thus the above passage might be rendered as follows:

> "Mode" (or "manner" or "the examination of time") is the means by which one recognizes and determines, by a careful inspection of the notes, which of the notes of the song are to be sung or sounded long and which are to be short.

Accordingly mode is a pattern of measurement or a meter, and one which operates upon the notes by rule[2] because the individual note itself gives little clue by its shape to its value. Thus the modes are also called "measures"[3] (in the sense of "patterns of measurement" or "meters").

The Two "Measures"

While in reference to modal music the word "measure" was occasionally applied to the metrical pattern (as the equivalent of "mode"), it had a more specific use as the name for the two quantities forming the basis of all measurement:

Omnes autem notae discantus sunt mensurabiles per directam brevem et directam longam.[4]	But all the notes of discant are measured by the proper breve and proper long.[4]

These two musical measures are similar to (and probably derived

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[1] Waite, Rhythm, pp. 16-19.

[2] Note (supra, p. 49) the sense of modus as "rule."

[3] As for example by Anonymus 4, I, 22.

[4] From the "Discantus positio vulgaris" in Hieronymus de Moravia, Tractatus, pp. 190-191.

from[1]) the long and short times of grammar or metrics, for

	musica mensurabilis	"measured music" is
	dicitur a mensura	named after "measure"
	sicut gramatica,	just as, in grammar,
	metrica	"metrical" [is named]
5	a metros, quod est	after meter (which is
	mensura, que inquam	"measure"), which (let
	gramatica, duas	me say) in grammar marks
	mensuras accentuum	out and implies two
	desi[g]net et importat	measures of accentuations,
10	scilicet longum et brevem,	namely, long and breve [i.e.,
	quorum longus est	short], of which the long is
	duorum temporum,	of two time units [and the]
	breuis unius. Et sic	breve of one. And thus,
	sub illis duobus accent-	under these two accentu-
15	ibus inter quos non	ations (between which, it
	tale medium	is said, such a [thing as a]
	recte mensurari	midpoint cannot be correctly
	dicitur et perfecte,	and perfectly measured out),
	sic rectam musice mensuram	thus, we say that correct and
20	reperiri dicimus et	perfect musical measure is
	perfectam [sub	to be found--[that is], under
	illis duobus accentibus,	these two accentuations,
	inter quos nullum medium	between which no midpoint
	fit repertum].[2]	is found.[2]

These long and short times (the long and breve) are, in metrics, the durations of a long and a short syllable. "Time" is defined in syllabic terms:

Tempus quidem	Time, to be sure, is
est mensura	the measure of the
motus syllabe.[3]	motion of syllables.[3]

The plausus, described above[4] as the conducting motion used for modal music, consisted of two contrary motions, up and

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[1]Waite, Rhythm, passim.

[2]Heinrich Sowa, ed., Ein anonymer glossierter Mensuraltraktat 1279 (Kassel: Bärenreiter-Verlag, 1930), pp. 25-26.

[3]Walter Odington, "De speculatione musice," in Coussemaker, Scriptores, I, 211.

[4]See "Chapter Two," particularly pp. 40-44.

down, which marked durations unequal in duple proportion--either 1:2 or 2:1--and together comprised a metrical pattern of three time units. Each of the two plausus motions, then, would be identified with one of the two recognized, standard "measures" for music, the long or the breve. In this way the plausus marked out in time both the metrical pattern of three time units and the two distinct measures, long and breve, which were its additive constituents.

Other values than the proper long and proper breve were known and in common use, but these were not recognized as "measures," as a certain curious terminology makes quite clear. The terminology arises in many thirteenth-century discussions of the modes, such as the following by Johannes de Garlandia:

Discantus est aliquorum cantuum sonantia secundum modum et secundum equipollentis sui equipollentiam. Sed quia in huius modi discantu consistit maneries sive modus, et de speciebus ipsius modi vel maneriei, et igitur huius modi maneriei ac specierum ejus plura videbimus.	Discant is the sounding together of certain songs according to mode, and according to the equivalence of the equivalent values of each [song]. But we shall see that manner or mode operates in discant of this sort, and [shall treat] of the species of this mode or manner, and therefore [we shall present] more concerning this sort of manner and its species.
Maneries ejus appellatur quidquid mensuratione temporis, videlicet per longas, vel per breves concurrit. Sunt ergo sex species ejus maneriei, quarum tres dicuntur mensurabiles; tres	The "manner" of [discant] is the name given to whatever runs along in the measurement [or measures] of time, namely by longs or by breves. There are, therefore, six species of this manner, of which three are called "measurable" [i.e. "measured"][1]; however, [there

[1]Note the distinction, as discussed supra, pp. 7-8.

vero ultra mensuram se habentes. Iste vero dicuntur mensurabiles, scilicet prima et secunda et sexta. Iste autem ultra mensurabiles, videlicet tertia, quarta et quinta.

are] three in a situation of being "beyond the measure." These are the ones that are called "measured," namely the first, and the second and the sixth. And these [are] "beyond the measure,"[1] namely the third, fourth and fifth.

Prima enim procedit ex una longa et alia brevi, et altera longa, et sic usque in infinitum.

Now the first proceeds by a long and a breve, and [then] another long, and so on indefinitely.

Secunda fit e converso, videlicet ex una brevi et alia longa, et altera brevi.

The second is made in the opposite way, namely by a breve and a long, and [then] another breve, [etc.].

Tertia ex una longa et duabus brevibus, et una longa.

The third [is made] by one long and two breves, and [then] a long, [etc.].

Quarta ex duabus brevibus et una longa, et duabus brevibus.

The fourth [is made] by two breves and one long, and [then] two breves, [etc.].

Quinta ex omnibus longis.

The fifth [is made] of all longs.

Sexta ex omnibus brevibus.

The sixth [is made] of all breves.

Gratia horum trium modorum qui sunt in recto modo, videndum est quid sit rectus modus et recta mensura.

Because of the three modes which are in "proper mode," we ought to observe what "proper mode" and "proper measure" are.

Recta mensura appellatur quidquid per rectam mensuram recte longe vel recte brevis profertur. Unde, ne in ambiguum procedamus, videndum est quid appellatur recta longa, vel recta brevis. Ad quod dicendum quod recta longa appellatur illa que continet duas rectas breves tantum. Recta vero brevis est que unum solum continet tempus.

"Proper measure" is the name given to whatever is extended by the correct measure of proper long or proper breve. Whence, lest we should proceed into ambiguity, we should observe what [it is that] is called a proper long or a proper breve. To which let us say that that is called a proper long which contains the value of two proper breves. And a proper breve is that which contains a single time unit.

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[1] Or "beyond that which is measured," but not "beyond measurement."

	Propter hoc	On account of this we
75	posset fieri,	should be able to establish
	quomodo quid appellatur	how [it is that] this is
	unum solum tempus.	called one single time unit.
	Dicendum quod unum solum	Let us say that one single
	tempus, prout hic	time unit, as it is taken
80	sumitur, est illud	here, is that [time span]
	in quo recta brevis	in which a proper breve
	vult fieri. Unde	wants to be made. Whence
	recta brevis vult	a proper breve wants [to be
	in tempore tali quod	made] in such a time as
85	sit indivisibile;	would be indivisible;
	sed hoc tempus habet	but this time unit has
	fieri tripliciter.	to be made in three ways:
	Aliquando enim	sometimes by proper [i.e.
	per rectam	"regular" or "straight"]
90	vocem, aliquando per	voice, sometimes by
	vocem	hollow (or "boxed") voice
	cassam,	[i.e. that of an instrument],
	aliquando per vocem	and sometimes by omitted
	omissam. Unde recta	voice. Whence the proper
95	brevis habet fieri in	breve has to be made in
	primo tempore, videlicet	the first time, namely
	per vocem rectam. Sciendum	by proper voice. We should
	est autem quod huius	know, moreover, that in this
	modi due tales breves	fashion two such breves
100	que ita formantur, faciant	(which are formed in this
	unam rectam longam.	manner) make one proper long.
	Denique accedendum est	Finally we should take
	ad alias tres species,	up the other three species,
	que dicuntur ultra	which are called "beyond
105	mensuram. Unde	the measure." Whence
	ultra mensuram,	"beyond the measure,"
	prout hic sumitur,	as it is taken here,
	dicitur esse illud quod	is said to be that which
	ultra mensuram	is extended beyond the
110	recte longe, vel	measure of the proper long
	recte brevis profertur.[1]	or the proper breve.[1]

The "curious terminology" here is the phrase ultra mensuram, which I have rendered as "beyond the measure." (The phrase has often been translated as "beyond measurement," a concept which could only apply to infinity. It is abundantly clear, however, that thirteenth-century writers do not regard the ultra mensuram modes

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[1] Johannis de Garlandia, "De musica mensurabili," in Coussemaker, Scriptores, I, 175-176.

or notes to be of an infinite duration).[1] This terminology is common to nearly all thirteenth-century writings on polyphonic music, and is applied to the three modes which, being twice the length of the three "proper" modes, require two plausus patterns for their measurement. Thus "beyond the measure,"[2] when applied to a mode, would mean simply "a mode extending beyond one plausus pattern."

The same terminology is also applied to notes; all values other than the long of two time units and the breve of one time unit are called "beyond the measure," whether these values be larger or smaller:

Mensurabile est, quod mensura unius temporis vel plurium mensuratur. Ultra mensuram sunt, quae minus quam uno tempore et ampliori quam duobus mensurantur, ut semibreves... et longa, quam longa subsequitur.[4]	"Measurable" [i.e. "measured"] is whatever is measured by a measure of one or of more than one time unit. "Beyond the measure" are whatever [values] have a measure of less than one or[3] greater than two time units (like semibreves... or[3] a long which is followed by a long).[4]

William Waite suggests that this concept of a note "beyond the measure" originated in the following context:

> In themselves the notes of the tenor, usually written in the form of a longa, have no explicit temporal value. They derive their value from the number of notes placed above

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[1] Supra, pp. 7-8.

[2] "Beyond" or "more than one measurement," i.e. "more than one metrical pattern."

[3] Read "and."

[4] "Discantus positio vulgaris," in Moravia, Tractatus, p. 190.

> them in the duplum. In the sections where each foot of a rhythmic pattern is matched with a single note of the tenor, the individual note of the tenor will naturally be equivalent to the total value of the foot. The tenor note will thus have an exact value of either three tempora or six tempora, depending upon whether it is equivalent to a foot of a modus rectus or a modus in ultra mensuram. Since, however, the duplum in the organa of the earliest version of the Magnus liber, contained in fascicles 3 and 4 of W1, is almost invariably in the first mode, it is obvious that these more rapid tenor sections will most commonly be measured in values of three tempora if the individual notes of the tenor are equivalent to a single foot of the upper part, or six tempora if the note is equivalent to two feet of the other part. It is in this phenomenon that the longa ultra mensuram came into existence. These notes of three tempora in the tenor are certainly long notes, but they are not the normal longa of the duplum rhythm. Therefore they are said to be long notes beyond the measure of a normal long.[1]

This to be sure may be the origin of the term "beyond the measure," but the designation holds an even greater significance. In the way it is used by thirteenth-century theorists it indicates that measurement proceeded by, and was always considered in terms of, the three time values marked out by the plausus, that is the proper breve (represented by the shorter motion), the proper long (represented by the longer motion--longer in time) and the proper mode (represented by the entire plausus motion, both arsis and thesis). Even though the relationship between long and breve was precisely defined in terms of a unit of time (as a 2:1 ratio), this time unit was not called "measure," nor was it the basis of measurement. Even though the long was defined as the equivalent of two breves it was not measured in terms of breves, but constituted an independent measure in its own right, like the yard with respect to the

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[1] Waite, Rhythm, p. 46.

foot.[1] The measures of modal music were the quantitative measures adapted from quantitative verse: thus a proper mode was conducted (or measured) by a pattern of a long motion and a breve motion (or the reverse), and a mode "beyond the measure" was conducted (or measured) by two such patterns. It was this pattern or meter that was properly called "mode," and thus "measure," as distinguished from "mode," was of two quantities: long and breve.

Finally there is a further, a linguistic, connection between direction by the plausus and the proper breve, proper long, and the proper modes. The word "proper" has become the standard translation in this context of the Latin word rectus (taken as an adjective meaning "straight, kept or drawn in a straight line; upright; right, correct, appropriate; plain, straightforward, unaffected"), which is a derivative of the verb regere, "to guide or conduct." As the past participle of regere, however, rectus would mean "kept or led in a straight line or in the proper course; guided, conducted, directed; marked out; controlled, ruled, governed." And note that Elias Salomon calls our "conductor"--he who "guides" a performance of music--by the name rector (another form of regere), the name for the person or agency that directs, that is, "director, conductor."

In one of the passages quoted above[2] the word directus is used in place of rectus:

Omnes autem notae discantus But all the notes of discant

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[1] Cf. supra, pp. 3-5.

[2] p. 50.

sunt mensurabiles per directam brevem et directam longam.	are measured by the proper breve and proper long.

Directus is the past participle of dirigere (or derigere), a more intensive form of regere (or at least one more sharply delineated in meaning). Directus lacks many of the more general connotations of rectus; it means, quite simply, "directed," that is, "put into line or order by arranging the parts; arranged; directed, aimed, regulated." Thus directus does not really mean "proper," but "directed," and its use (in at least this one source) in place of rectus implies that the meaning "directed" or "regulated" should be equally acceptable in contexts where rectus is used. In consequence the term "proper" (i.e. "regular" or "ordinary") for the proper breve, proper long and proper modes is uninformative and potentially misleading, serving merely as a convenient terminology--as a name, but not a significant name in the way that the terms rectus and directus are significant. If "proper" were a significant and correct term one would expect that its opposite would also be appropriate, so that if the rectus values and modes are "proper," the ultra mensuram values and modes--which are clearly in some sense their opposites--would be "improper." But that is not the point of the distinction; as has already been demonstrated, the distinction is that rectus values and modes are those which exactly coincide with the measures (or with the mensural pattern of their combination), while ultra mensuram values and modes are neither out of the ordinary, unusual nor in any sense "improper," but simply do not coincide with the established measures and metrical patterns.

The so-called "proper" values and modes are the directed quantities (rectam or directam), the arranged or regulated measures, whether these be physically represented by a director (rector) beating the plausus (who will "represent the rests to [the singers] while forming dissylables in a fitting manner with his hand over the book[1]) or whether, in the absence of a director, they are conceptually present in the minds of the performers. And these directed quantities or regulated measures are distinguished from those values or meters which are "beyond[2] the [directed] measure" (ultra mensuram) in being either larger or smaller than the metrical pattern or its constituent measures.

Thus, in summary, "measure" in the modal period carried a number of connotations on different levels. In general it denoted mode, that is, any of a number of defined metrical patterns. More properly it referred to only those modes of three time units, called "directed" (rectus) in that they coincided with one of the two plausus patterns, breve/long or long/breve. And most properly "measure" referred to these two constituent values or movements of the plausus, the directed long of two time units and the directed breve of one time unit. But in spite of the description of these "measures" in terms of units of time, measurement proceeded not by any unit but by these three interrelated yet independently conceived measures or standards of quantity. Quantities or meters were divided into two classes: those which were measured or

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[1] supra, pp. 14-15, ll. 170-173.

[2] i.e., "besides," "other than" or "outside of" the directed measures.

directed (exactly coinciding with the plausus pattern or one of its constituent motions) and those called "beyond the measure" (requiring for their measurement the mental multiplication or division of the plausus pattern or its constituents). Thus modal measure was, like modern measure,[1] of the multilevel type of order.

"Mensural" or Franconian Measure

At some time near the middle of the thirteenth century Franco of Cologne, in his "Ars cantus mensurabilis," codified the polyphonic notation--now called "mensural" or mensurabilis. All subsequent generations of theorists (at least well into the Renaissance) regarded Franco as the father of measured music, and his work was a classic, frequently quoted and used as a point of departure or a source of authoritative corroboration or explanation by later writers on measured music. His work is thus perhaps the most crucially important of all those presented and analyzed in the course of this study.

After a brief introduction, Franco begins his work as follows:

	Mensurabilis musica est cantus longis brevibusque [temporibus] mensuratus. Gratia huius	Measurable [i.e., "measured"] music is song measured in long and short times. In view of this definition
5	definitionis videndum est, quid sit mensura, et quid tempus. Mensura est habitudo quantitatem, longitudinem et brevi-	we should see what "measure" and "time" are [considered to be]. "Measure" is the condition revealing the quantity (length and brevity) of any particular
10	tatem cuiuslibet	

[1] Supra, pp. 3-5.

	cantus mensurabilis manifestans. Mensurabilis dico, quia in plana musica non attenditur talis	"measurable" song. I say "measurable" because in plainsong there is no attention given to "measure"
15	mensura. Tempus est mensura tam vocis prolatae quam eius contrarii, scilicet vocis amisse, que pausa communiter appellatur.	of this sort. "Time" is the measure, both of extended voice and of its opposite, namely omitted voice (which is commonly called a "rest").
20	Dico autem pausam tempore mensurari, quia aliter duo cantus diversi quorum unus cum pausis, alius	Moreover, I say that the rest is measured by the unit of time because otherwise two diverse voices (of which one is taken with rests,
25	sine [pausis] sumeretur, non possent proportionaliter ad invicem coequari.[1]	[but] the other without them) would not be able to be mutually coordinated in the right proportion.[1]

Much of this description of measure and of time is very like that used by the "modal" theorists.[2] That is, both this description and his subsequent definition of "mode" suggest that there are two time spans, long and breve, which constitute the measures of music:

Modus est cognitio soni longis brevibusque temporibus mensurati.[3]	"Mode" is the recognition of sound measured in long and short time spans.[3]

This is almost precisely the definition of "mode"[4] offered by Anonymous IV, and accords very well with what has been said here

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[1] Coussemaker, Scriptores, I, 118, and Gerbert, Scriptores, III, 2.

[2] Practically all the first descriptions of modal practice date from Franco's own generation, and thus are retrospective in their discussion of the modes. Most thirteenth-century theorists discuss both modal and early mensural practice, and the modal discussions are often contaminated to a lesser or greater degree with mensuralist ideas. See Waite, Rhythm, pp. 10-11.

[3] Coussemaker, Scriptores, I, 118, and Gerbert, Scriptores, III, 3.

[4] Supra, p. 49.

concerning modal measure. But somewhat further on an important new concept makes its appearance:

Figurarum alie simplices, alie composite. Composite sunt ligature. Simplicium tres sunt species, scilicet longa, brevis et semibrevis. Quarum prima in tres dividitur; in longam perfectam, imperfectam et [in] duplicem longam.	Of figures some [are] simple, others composite. Composite [figures] are ligatures. Of simple [figures] there are three kinds, namely long, breve and semibreve. The first of these is divided into three: into the perfect long, imperfect [long] and double long.
Longa [perfecta] prima dicitur et principalis; nam in ea omnes alie includuntur, [&] ad eam [etiam omnes alie] reducuntur. Perfecta dicitur, eo quod tribus temporibus mensuratur. Est enim ternarius numerus inter numeros perfectissimus, pro eo quod a summa Trinitate, que vera est *pura* [or *& summa*] perfectio, nomen *sumpsit* [or *assumsit*]...	The perfect long is called prime and principal; for in it all others are included, and to it all others are also reduced. It is called "perfect" from this, that it is measured for *three* time units. For the ternary number is among numbers the most perfect, for this, that it takes its name from the most high Trinity, which is the true and highest perfection...
Longa vero imperfecta sub figuratione perfecta [est,] duo tantum tempora *significat* [or *valet*]. *Imperfecta quidam pro tanto dicitur* [or *& pro tanto dicitur imperfecta*], quia sine adjutorio brevis precedentis vel [sub]sequentis nullatenus invenitur. Ex quo *sequitur* [or *patet*], quod illi peccant qui eam rectam appellant, cum illud quod rectum [& perfectum], est, possit per se stare.[1]	But the imperfect long, notated just like the perfect, represents a value of two time units. And it is called "imperfect" for this reason, that it is by no means found without the help of a preceding or a following breve. From this it follows that they are in error who call this [long] "proper," since that which is "proper" (and perfect) can stand by itself.[1]

[1] Coussemaker, Scriptores, I, 119, and Gerbert, Scriptores, III, 3-4. Brackets present something lacking in one of the sources; brackets and italics present alternate readings.

The significant new idea here is the notational concept of "perfection," a measure of three time units which replaces the "proper mode" (which Franco does not discuss) as the largest mensural unit, and which is assigned to the long as its normal value (in place of the two-time units' duration that was previously, in modal notation, its normal or "proper" value). The perfection as a duration of three time units is said to be called "perfect" after the Trinity, though this may be fully as much analogy as cause. Just as the syllabic basis of modal measure appears to have been modelled on classical ideas of metrics, perhaps as transmitted through St. Augustine's "De musica,"[1] so in that same work there is to be found a discussion of the "perfection" of the number three for purposes of counting which does not appeal to theology for support. In other words, Medieval thinkers had ample precedent for calling the number three "perfect" on purely numerical grounds.

Augustine's treatise, cast in the form of a dialogue, begins the discussion of the perfection of the number three as follows:

M. Ergo ut totum aliquid sit principio et medio et fine constat.	Teacher: Therefore, according as something makes up a whole, it consists of a beginning, middle and end.
D. Ita videtur.	Student: So it seems.
M. Dic itaque nunc, principium, medium et finis, quo numero tibi contineri videantur.	T: Then tell me now: beginning, middle and end--in which number do you suppose they are contained?
D. Arbitror ternarium	S: I imagine that you want

[1] Supra, pp. 41-43. See also Waite, Rhythm, pp. 29-39.

numerum te velle ut respondeam: tria enim quaedam sunt, de quibus quaeris.

me to reply, "the ternary number," for it is of three particular things that you ask.

M. Recte arbitraris. Quare in ternario numero quamdam esse perfectionem vides, quia totus est: habet enim principium, medium et finem.

T: You imagine correctly. Wherefore you see that there is a certain perfection in the ternary number, because it makes up a whole: for it has beginning, middle and end.

The central point thus far is that in order truly to constitute a whole, a complete entity, something must have beginning, middle and end. There is a distinction, then, between "one," the beginning of all number, and "three," the first complete number, for the unit is not considered complete:

M..videbis profecto ideo unum non habere medium et finem, quia tantum principium est; vel ideo esse principium, quia medio et fine caret.

T: Surely you will see, therefore, that "one" does not have a middle and an end, because it is nothing more than a beginning; or, therefore, that it is the beginning, because it lacks middle and end.

D. Manifestum est.

S: That is clear.

M. Quid ergo dicemus de duobus? Nam possumus in eis intelligere principium et medium, cum medium esse non possit, nisi ubi finis est; aut principium et finem, cum ad finem nisi per medium non queat perveniri?

T: So then what shall we say of "two"? For can we understand in it a beginning and a middle, seeing that there can be no middle, unless there is an end; or [can we understand] a beginning and an end, seeing that it is impossible to arrive at an end except through a middle?

The number "two" presents a problem, since it clearly has a beginning, but it cannot be said, in terms of Augustine's reasoning, to have either middle or end. He thus calls it a second sort of beginning.

M...Num si medio
caret et fine...
quid restat,
nisi ut sit
hoc quoque
principium?
...nunc autem hoc
alterum principium
de illo primo
est, ut
illud
a nullo
sit, hoc
vero ab
illo: unum enim et
unum duo sunt, et principia ita sunt ambo,
ut omnes numeri quidem
ab uno sint...
Fit ut illud
primum principium
a quo
numeri omnes;
hoc autem alterum
per quod numeri omnes,
esse inveniantur.

T: Now if the middle is lacking and [also] the end...what remains, except that this, [the number "two"], should also be a beginning?
...but now this other beginning takes its existence from that first [beginning] (just as that [i.e., the number "one"] depends upon nothing else [for its identity], this [i.e. "two"] does depend on that: for "one" and "one" are "two," and so both are beginnings) just as, to be sure, all numbers come from "one"...
It turns out that this first beginning is found to be [the one] from which all numbers [come], but this other to be [the one] through which all numbers [come].

In view of this conception of numbering it is perhaps easier to understand the logic behind a system of measure such as the modal, which, while defining the long (or "two") as two breves (or "one plus one"), nevertheless conceives the two as distinct measures--distinct (though related) "beginnings" of measuring or counting.

But Augustine presents the number "three" as more than a mere beginning, but a complete and perfect number exhibiting such internal harmony that it becomes a new, higher "unity" on a higher level. The dialogue continues:

M...Quocirca quaero,
uni duo juncta
quid faciunt?
D. Tria.
M. Ergo haec duo
principia numerorum
sibimet copulata,
totum numerum faciunt

T:...For this reason I ask, "What do 'one' and 'two' make [when] joined"?
S: "Three."
T: Therefore these two beginnings of numbers, [being] mutually joined, make up a whole and

atque perfectum.
D. Ita est.
M. Quid? in numerando post unum et duo quem numerum ponimus?
D. Eadem tria.

perfect number.
S: That's right.
T: What? In counting, what number do we put after "one" and "two"?
S: The same one: "Three."

Augustine goes on to point out how, in counting, there is no other pair of contiguous numbers which, when added, form the next member of the numerical series as their sum. For example, while "one" and "two" make "three," "two" and "three" add up to "five"--not "four," which is the next term of the numerical series. Thus "three" is unique; nowhere among the numbers is this relationship duplicated.

M. Magna haec ergo concordia est in prioribus tribus numeris: unum enim et duo et tria dicimus, quibus nihil interponi potest:[1] unum autem et duo, ipsa sunt tria.
D. Magna prorsus.

T: Therefore great is this harmony in the first three numbers; for we say, "one, two, three," and nothing can be put between[1] these: moreover "one" and "two," these are three.
S: [that's] very straightforward.

M. Quid? illud nullane consideratione dignum putas, quod ista concordia quanto est arctior atque conjunctior, tanto magis in unitatem quamdam tendit, et unum quiddam de pluribus efficit?
D. Imo maxima, et nescio quomodo, et miror, et amo istam quam commendas unitatem.
M. Multum probo; sed certe quaelibet

T: What? Don't you think it worthy of consideration that, the nearer and closer this harmony becomes, the more it tends to a certain unity, and makes a kind of oneness out of several [distinct things]?
S: Indeed [I do] very much, and I know not how [this comes about], and I marvel; and I love this unity of which you speak [so] highly.
T: I heartily approve; but certainly, no matter

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[1] Cf. supra p. 51, ll. 15-25.

rerum copulatio atque connexio tunc maxime unum quiddam efficit, cum et media extremis, et mediis extrema consentiunt.	what this joining and connection of things [may be], it does very successfully achieve a certain unity when they are in harmony (both the middles with the extremes, and the extremes with the middles),[1]
D. Ita certe oportet.[1]	S: That is certainly right.[1]

Thus there was, as has already been suggested,[2] sufficient precedent in the traditional literature avaliable to Medieval musicians for regarding "three" as a "perfection," a perfectly-ordered number forging a unity of its constituent parts.

The measure of three time units (the "perfection") was, for Franco, the cornerstone of a system of notation and measurement dependent upon the division of perfections into smaller fractional (and therefore incomplete and "imperfect") values. If the note shape[3] called a "long" were followed by the note shape called a "breve," the perfection would be divided into two parts, one with a value of two time units (or 2/3 perfection) and one with a value of one (or 1/3 perfection). This of course would be precisely the same set of values that would have been called for in the first mode of modal notation by a grouping of two note

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[1]Aurelius Augustinus, "De musica," in Sancti Aurelii Augustini, Hipponensis episcopi, Opera omnia, Tomus Primus, Vol. XXXII of J. P. Migne, Patrologia latina (Parisiis: Apud Garnier Fratres, Editores et J. P. Migne Successores, 1877), col. 1095-1096 [Liber Primus, Caput XII, 22].

[2]Supra, p. 63.

[3]Since the essence of Franconian, as of all other, mensural notation was the representation of each note name by a particular note shape or ligature position.

figures, to which figures (according to the modal pattern) would be assigned the values of the proper long and a proper breve. The three time units of the resulting proper mode would, however, be merely the grouping of the additive measures of long and breve, constituting a pattern[1] of smaller measures. By contrast, the three time units of the perfection are defined (partly for philosophical, but perhaps more for notational reasons) as <u>making up a unit, not a pattern</u>, a unit subject to division into fractional parts, not an association of additive quantities. It is this change that required the abandonment of the term "proper" for the long of two time units, and the substitution of the designation "imperfect,"[2] for this value was no longer regarded as an independent "measure" but as only a fractional part, not even capable of <u>notational</u> independence, being "by no means found without the help of a preceding or following breve."[3]

This change in the status of the long is likewise related by Walter Odington:

Longa autem apud priores organistas duo tantum habuit tempora, sic in metris; sed postea ad perfectionem dicitur, ut sit trium temporum ad similitudinem beatissime trinitatis que	Now the long among the earlier singers of organum had a value of two time units, as in [poetic] meters; but afterwards it is named after "perfection," since it is of three time units in a likeness of the most blessed Trinity, which

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[1] Waite, <u>Rhythm</u>, pp. 16-19.

[2] <u>Supra</u>, p. 62, l. 33.

[3] <u>Supra</u>, p. 62, ll. 35-38.

est summa perfectio, diciturque longa huiusmodi perfecta. Illa vero que tantum duo habet tempora, dicitur imperfecta.[1]	is the height of perfection, and the long of this sort is called "perfect." But that [long] which has a value of two time units is [now] called "imperfect."[1]

Because the new notation operated on the principle of the "perfection,"[2] the idea of perfection--that is, of a tripartite unit--came also to be applied to the breve. Semibreves, which had apparently been duple (i.e., half of a breve) in modal notation, were now triple[3] (whence, since the breve was called "one time," came the term "triple time"). Odington also relates this change in the status of the breve:

Brevis vero apud priores resoluta est in duas semibreves; apud modernos, aliquando in tres, aliquando in duas. Cum autem in duas dicitur prima minor et secunda major, quia duas minores continet.[4]	But the breve among earlier [singers] was resolved into two semibreves, but with moderns, sometimes into three, and sometimes into two. But [now] when it [is resolved] into two, the first is called a "minor," and the second a "major" [semibreve], because it contains two "minor" [semibreves].[4]

Although Franco rejected the name "proper" for the long, he continues to apply it to the breve in the sense of "regular" or "ordinary" to distinguish it from the "other breve" or "altered

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[1] Walter Odington, "De speculatione musice," in Coussemaker, Scriptores, I, 235.

[2] It was upon the concept of perfection that the principles of imperfection and alteration of notes, which were essential for the notation of the desired values with the existing note forms, depended.

[3] Waite, Rhythm, pp. 84-85.

[4] Odington, "De speculatione," CS I, 235.

breve" (brevis altera or alterata) of two time units. This "proper" breve was, as in modal notation, assigned a duration of one time unit, a duration of a moderate length, as described by Anonymous IV:

Sonus sub uno tempore [acceptus] potest dici sonus acceptus sub tempore non minimo, non maximo, sed medio legittimo breviter sumpto, quod possit frangi veloci motu in duobus, tribus vel quatuor, [ad] plus in voce humana,[1] quamvis in instrumentis possit aliter fieri.[2]	Sound received under one time unit can be called sound received under neither a maximum nor a minimum [time span], but taken quickly [under a] moderate and appropriate [span of time], which may be broken (in rapid motion) into two, three or four [parts], and [not] more in vocal music, although in instruments it can be done otherwise.[2]

At this point in the development of music theory the time unit (tempus) becomes the primary focus of this study, because Franco and his contemporaries, in abandoning the proper long as an independent measure, assign the strict application of mensura (as opposed to its more general connotations) solely to the proper breve of one time unit. The perfection, to be sure, functions as a meter, as a means of measurement, and therefore--as we have defined the terminology--as a "measure" of sorts. But perhaps the most important and significant thing for understanding "measure" in a Franconian context is to note that the perfection was not called a "measure" by those who describe the

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[1] Cf. Anonymus IV, I, 45, ll. 5-8: "Consimili modo si quatuor currentes pro una brevi ordinetur, sed hoc raro solebat contingere. Ulterius vero non in voce humana, sed in instrumentis cordarum possunt ordinari."

[2] Ibid., I, 23.

practice. One might speak of "a measure of one perfection," for example, but this would represent the use of mensura in the general sense. Mensura in the strict sense (i.e.,"the measure") referred now only to the breve, the unit of time, the tempus.

We have seen from Anonymous IV's description that the time unit was of moderate duration, since it was not (as the statement[1] of Johannis de Garlandia would imply) the shortest time span used in music. Garlandia called the unit of time "indivisible" because it was philosophically necessary (for reasons that have already been outlined here[2]) to consider that measure proceeded from an ultimate, indivisible quantity. This quantity was represented in speech by the shortest of syllables, defined in metrics as a brevis, and thence adapted to the modal notation of measured polyphonic music. Indeed, Garlandia's requirement that the proper breve be indivisible in "proper voice," not in the time values of rests or those playable on instruments,[3] is highly reminiscent of the speech origins of the breve, which (defined in speech terms) would be the shortest (or "indivisible") sound or syllable that could be pronounced by someone speaking in a regular or "proper" voice.

Thus Franco was presented with a substantial obstacle to a satisfactory definition of the measure or time unit, for here was a unit of moderate duration, divisible (in Franco's own practice) into three parts, which yet for philosophical reasons needed to be

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[1] Supra, p. 54, ll. 78-85.

[2] See supra, p. 4, the discussion of measure based on an "indivisible" unit.

[3] Supra, p. 54, ll. 94-97.

considered an indivisible unit. His solution to this problem was at once ingenious, historically sound, and enduring, and it was to prove capable of remarkable flexibility in the hands of future generations.

Recta brevis est, quae unum [solum] tempus continet... Unum tempus adpellatur, [illud] quod est minimum in plenitudine vocis.[1]	The "proper breve" is that which comprises one single unit of time... "One time unit" is the name given to that which is minimum in fullness of voice.[1]

By this definition the unit of time or measure[2] is well marked out as a moderate duration: it cannot be too large, since it is a "minimum" thing, nor can it be too small, since it requires a "fullness of voice." The result is a narrowly-circumscribed middle ground between the philosophical requirement that the measure be a minimum or smallest thing and the practical advantage of a description of the time unit that is sufficiently accomodated to the requirements of performance to be believable. And the definition even accords with the syllabic origins of musical measure, since the wording is eminently suited to describing the breve as a short syllable--as the "minimum" (i.e. "shortest") "fullness of voice" (i.e. "complete sound, syllable").

In conclusion, then, let us briefly consider how these concepts may have been applied in mensural practice. The principal

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[1]Franco, "Ars cantus mensurabilis," in Coussemaker, Scriptores, I, 120, and Gerbert, Scriptores, III, 4-5.

[2]Franco identifies time and measure, supra, p. 61, ll. 15-16.

change between the modal and Franconian periods was in the form and the *modus operandi* of the notation, not in the prevailing note values or their metrical organization. Thus while it may be impossible to demonstrate conclusively, it seems likely that conducting by the *plausus* continued during the Franconian period. But since the mensural notation represented values by note shapes, it might now be possible to have a long/breve rhythm occur *against* a breve/long *plausus* pattern. This kind of clash was, according to Waite,[1] strictly avoided in modal music, so that, for example, modes one and two could not be combined or superimposed: perhaps (as the terms "directed long" and "directed breve" might suggest)[2] the singers may have relied to a significant degree upon the conducting of the *plausus* pattern for guidance as to which notes were long and which short. By Franco's time, however, note forms were sufficiently indicative of value to permit the adoption of notation in separate parts rather than in score, and this same circumstance might have allowed singers to perform values in conflict with the directed values of the *plausus* without becoming confused and losing their parts. However, a cursory examination[3] of music roughly contemporaneous with Franco reveals no such shift in rhythmic style: cross-rhythms such as a breve/long pattern in one voice against

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[1] Waite, *Rhythm*, p. 49; treated *supra*, p. 42.

[2] *Supra*, pp. 56-59.

[3] An exhaustive survey of the music of this period, which might more definitively establish the point in question one way or the other, is beyond the scope of this study.

a long/breve pattern in another seem uncommon at best.[1]

It also is conceivable, as Waite suggests,[2] that by Franco's time conducting had already shifted the plausus pattern from the perfection to the brevis. Surely such a shift would explain the change from duple to triple division of the breve, but the shift nevertheless seems unlikely. Franco clearly limits the division of the breve in vocal music to three necessarily quite short notes--notes which would have required an unseemly haste in conducting a plausus at the level of the breve, but which would not have slowed the breve to the point where it would have been inconvenient to measure it by the third part of a moderately-paced plausus on the perfection.

To summarize, measurement according to Franco proceeded very much like a modern 3/4 meter, with the modern "measure" corresponding to the perfection and the modern "beat" to the mensura--Franco's "measure," the unit of time, the minimum fullness of voice. Both the perfection and the time unit functioned as "measurements" or "meters" on different levels, but "the measure" was reserved solely to the breve, the unit of time.

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[1]Such rhythmic clashes as are found in modern transcriptions often result from interpretation of a plica as a long/breve rhythm against a notated breve/long pattern in another voice.

[2]Rhythm, p. 45. He suggests that the change to the breve as a conducting unit occurred ca. 1225, and that later theorists refer to time beating by the breve, but not by the plausus. I, however, have found no explicit reference to "time beating" by the breve during the entire thirteenth century, and many references (such as have been developed here) which strongly imply beating by the plausus on the proper mode (for modal notation) or the perfection (for Franconian mensural notation).

This terminological distinction prevailed despite the fact that, in modern terms, both "perfection" and "the measure" were "measures."

Thus while modal measure was based on three measures (the proper mode, proper long and proper breve) which were, in strict terminology, reduced to just two (the proper long and proper breve), Franconian measure was based on two measures which were, in strict terminology, reduced to just one (the unit of time). But in practice both systems of measure were multilevel--admitting of measure on more than one level of order.

CHAPTER FOUR

TRANSITION TO THE ARS NOVA: THE "THREE TEMPI"

The transition from ars antiqua to ars nova, extending from the later thirteenth century until nearly 1320, was marked by the appearance in theoretical literature of references to three different speeds for music. These speeds or tempi have been noted in modern studies in a manner that is often confusing, as in the following reference:

> In the Ars Nova another shift of the beat to a smaller note value took place, a fact noted by contemporary writers such as Jacob of Liége, who stated that the S had now the same speed as the (perfect) B had previously...Studies of the writings of medieval theorists have established the fact that the general tempo for the beat (or "tactus") remained about M.M. 80, but that three different speeds were recognized--quick, moderate, and slow. These speeds were referred to by various terms, as: cita, media, and morosa; velociter, medie, and tractim; lascivo, mediocre, and longo; and minimum, medium, and maius. Jacob stated that even though music was performed in these different ways, "the notation remains the same in each case" (Speculum musicae, CS, II, 400).[1]

The implication is that the early fourteenth century used three different shadings of tempo--slow, medium and fast, and that these tempi could be applied indiscriminately to any piece of music, or, at best, that the most appropriate tempo in any given case could not be determined from the notation. Neither of these inferences

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[1]Carl Parrish, The Notation of Medieval Music (New York: W. W. Norton & Co., Inc., 1959), pp. 142-143.

is correct, as will be demonstrated.

The Development of the Three Tempi

Jacobus of Liége[1] discusses the three tempi in the context of their development by "the ancients" during the latter part of the thirteenth century, together with references to the existence of at least two different tempi as far back as the time of Franco. The passage begins:

Ad majorem antiquorum excusationem et dictorum suorum intelligentiam, notandum est duplicem vel triplicem esse notularum musicalium longe, brevis et semibrevis mensurationem, citam scilicet, morosam et mediam; et hoc moderni testantur. Dicit enim unus sic: tripliciter modulamur: aut tractim, aut velociter, aut medie; et quocunque modo fiat, non est mutanda maneries notandi. Alius autem hec ascribens tempori perfecto, sic ait: sciendum tempus perfectum esse triplex: minimum, medium et majus. Dicendum igitur quod ubi dixerunt antiqui tempus perfectum non esse divisibile in plures semibreves quam tres, intelligunt de cita mensuratione, et hoc approbat quidam modernus doctor de Francone.[2]	For the greater defending of the ancients and understanding of their sayings, one should take note that the measurement of musical notes (long, breve and semibreve) is twofold, or rather, threefold, namely fast, slow, and medium; and to this the moderns testify. For one says as follows: "We regulate the measure in three ways: either slow, or fast, or medium; and in whichever way it is done, the manner of writing the notes need not be changed." And another (assigning this to perfect time) says this: "You should know that perfect time is of three kinds: minimum, medium and major." Let us say therefore that when the ancients said that perfect time was not divisible into more than three semibreves, they were thinking of the fast measurement, and this is the opinion of a certain modern doctor concerning Franco.[2]

[1] In the passage referred to above (p. 76) by Parrish.

[2] Jacobi Leodiensis, "Speculum musicae," in Coussemaker,

Jacobus continues, further on:

35	Item cum dicerent antiqui brevem perfectam in tres semibreves, et non in plures esse divisibilem, refere-	Again, when the ancients said that the perfect breve was divisible into three semibreves, and not into more, they were refer-
40	bant se ad illud quod communius fiebat et regular- ius, in motetis specialiter. Hoc est quod pro tempore perfecto due inequales	ring to what was the more commonly and more regularly done, especially in motets. This is because two unequal semibreves (or three
45	semibreves vel tres equales et non plures ponerentur. Dixi in motetis, quia, se de hoketis loquimur,	equal) were set to a perfect time unit, and not more. I said "in motets" because, if we were to speak of hockets
50	duplicibus et contra duplicibus et aliis quibusdam mensuratis cantibus brevis perfecta ita citam, secundum	(of double and counter- double [hockets], and of certain other measured songs) the perfect breve has such a fast measure-
55	antiquos, habet mensuram, ut non bene vel leviter pro ea tres semibreves dici possunt. Unde	ment, according to the ancients, that three semibreves cannot easily or well be performed in place of it. Whence
60	quantum ad longas et breves per quas tales cantus notebantur, non jam ibi locum habere videtur cita	(in regard to the longs and breves, in which such songs were notated) this place [i.e., hockets] does not yet seem to have the fast
65	mensuratio, sed citissima, ut non plus teneatur ibi brevis perfecta quam nunc semibrevis minima.	measurement, but the very fast, so that the perfect breve would be held there no longer than a minim [would be held]
70	Sed moderni nunc morosa multum utuntur mensura; tantum enim apud modernos valet nunc brevis perfecta tertia	now. But the moderns now make much use of the slow measurement; for now among the moderns the third part of a perfect breve is worth
75	pars quam apud antiquos brevis perfecta, quia tam morose mensuratur ut illa,	as much as a [complete] perfect breve among the ancients (because it is measured so much more slowly than the latter),
80	et tantum brevis perfecta quantum	and the [complete] perfect breve [now] as much as

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Scriptores, II, 400 (and attributed by Coussemaker to Johannis de Muris).

	apud veteres longa	a perfect long among
	perfecta. Inde est	the old ones. It is
	ut semibrevi,	from this that they
85	que tertia pars est	"perfectly" ascribe to the
	brevis, perfecte ascribant	semibreve (which is the
	quod brevis	third part of a breve)
	est, id est,	that which pertains to the
	quod sit	breve, that is, that it
90	divisibilis, et	should be divisible (and
	alia multa que ei	many other [things] which
	non competunt;	are not suitable to it)--
	secundum illos qui	according to those who
	sibi primitus signifi-	originally set up for
95	cationem imposuerunt,	themselves this inter-
	quamvis	pretation, regardless of
	autem antiqui	the fact that the ancients
	cita mensuratione brevium	commonly used the fast
	in motetis communiter	measurement of breves
100	vel citissima in hoketis	in motets, or the <u>very</u>
	duplicibus usi sint.	<u>fast</u> in double hockets.
	Quandoque tamen ad	But sometimes [the ancients]
	morosam et	extended themselves to
	mediam se	the slow and the medium
105	extenderunt, etsi	[measurement], although
	raro, in qua	rarely, in which [measure-
	plures semibreves	ments] they put more than
	quam tres pro perfecto	three semibreves for the
	posuerunt tempore.[1]	perfect time unit.[1]

In these passages Jacobus outlines the practice of measurement both of his contemporaries (of the early fourteenth century) and of the past (chiefly of the middle thirteenth century). The "moderns" employ three different measurements of the time unit, but this coexistence of tempi is not a new phenomenon. Franco and his contemporaries used the common or regular measurement of time for most music, and in this--which is currently called the "fast" measurement--the breve was divisible into three parts. But the Franconians also knew another tempo--a "very fast" measurement used for certain pieces, chiefly hockets--and this proceeded principally

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[1]Jacobi Leodiensis, "Speculum musicae," in Coussemaker, <u>Scriptores</u>, II, 400-401.

by longs and breves, for it was so swift that it would be very difficult to sing as many as three semibreves in the space of a breve (ll. 47-59). In this "very fast" measurement the breve was ordinarily the shortest note, and would occupy approximately the same span of time as a minim (semibrevis minima)[1] of the moderns (ll. 64-70).

These two different tempi for the Franconian period are confirmed by Franco's own testimony. He specifically discusses such a faster-than-normal speed, although it is in connection with copula rather than hocket:

Copula est velox discantus ad invicem copulatus.[2]	Copula is fast discant joined to itself.[2]

The copula is notated like second mode, Franco continues, but performed differently:

In proferendo etiam differt copula a secundo modo, quia secundus [modus] profertur ex recta brevi et longa imperfecta, sed copula ista velociter profertur, quasi semibrevis et brevis, usque ad finem.[3]	Copula also differs from the second mode in performance, because the second mode is performed by the proper breve and imperfect long; but copula is performed faster by such [an amount that it is] as if it were [notated with] semibreve and breve, [at least] up until the end.[3]

The description above has been that of "bound" or "ligated" copula. There is also another kind of copula, called "unbound"

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[1]Meaning "shortest semibreve," "shortest note."

[2]Franco, "Ars cantus mensurabilis," in Coussemaker, Scriptores, I, 133, and Gerbert, Scriptores, III, 14.

[3]Ibid.

or "not ligated," which is notated similarly to the fifth mode, but like the other copula is performed differently:

In proferendo differt etiam a quinto, quod quintus ex rectis brevibus profertur, copula vero velocius proferendo copulatur.[1]	[This copula] also differs from the fifth [mode] in performance, because the fifth [mode] is performed by proper breves, but copula is conjoined by a faster performance.[1]

Thus there was in the Franconian period a certain kind of piece requiring just the sort of "very fast" tempo specified by Jacobus, in which the breve would be capable of very little subdivision, and would move at a speed two or even three times as fast as that for a normal, "proper" breve. The breve in this "very fast" tempo would accordingly be approximately equal to the ordinary perfect long of the normal measurement--the one called "fast" by Jacobus.

As previously outlined above,[2] at the speed of the "normal" measurement the breve was of a moderate duration. and capable of division into three parts. These three semibreve divisions were ordinarily grouped together over one syllable of text in motets, but sometimes (as illustrated in figure 4 and the corresponding manuscript facsimile, fig. 5) semibreves were set individually to single syllables of text. This setting of syllables to single semibreves would clearly restrict the tempo to a somewhat slower speed than would be possible for semibreves without such syllabic

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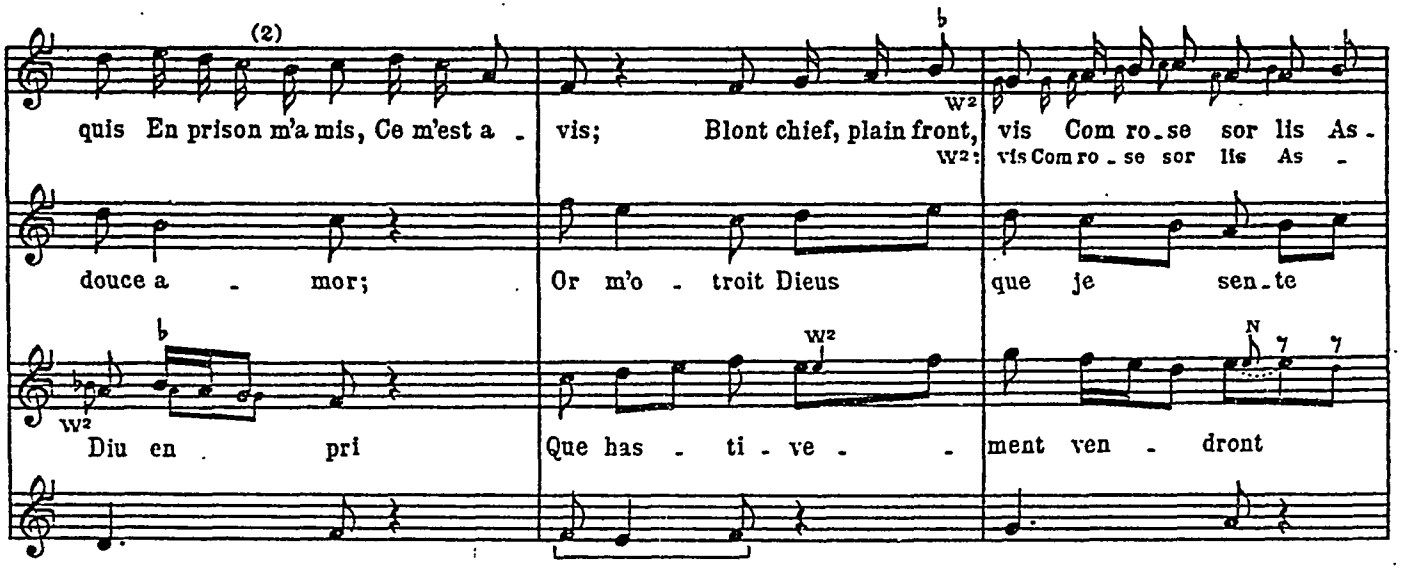
[1]Franco, "Ars cantus mensurabilis," in Coussemaker, Scriptores, I, 134, and Gerbert, Scriptores, III, 14.

[2]Supra, pp. 70-72.



(1) Mo *et* N *portent un* do. *Le* la *est dans* W² *et dans* Ba. *Les* ♭ *ajoutés aux* si *de ce morceau sont également dans* W² *et* Ba.
(2) *Ms:* do *et* si .

O.L. 51

Fig. 4. -- Excerpt from a "Franconian" motet showing semibreves, here sixteenth-notes, set to individual text syllables (from Rokseth, Polyphonies, II., 62).

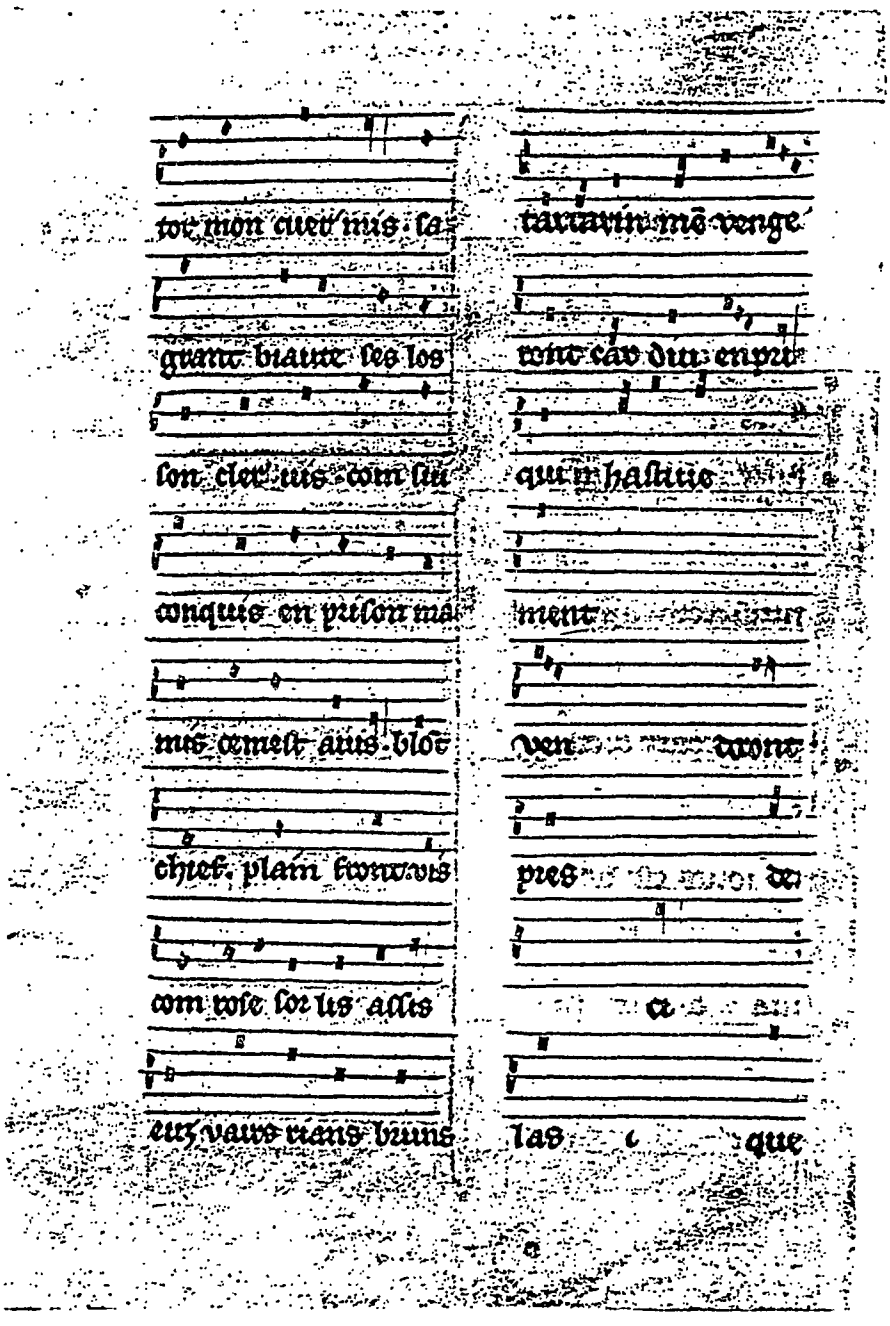


Fig. 5. -- "Franconian" motet: facsimile of Quadruplum and Duplum of fig. 4. (from Mo., fol. 42vo.).

text setting, and would also invite a further division of these semibreves (by improvised diminution) in performance. The smaller divisions of the breve thus created would then become a part of the notated music, and would in due time be set by composers to their own individual syllables of text. And finally these smaller divisions, having originated in improvised diminutions, would, as written notes bearing single text syllables, be subject to further improvised diminution in their turn. In the course of time some of these still smaller, originally ornamental divisions would also become a part of the notated music, so that the breve, originally the shortest note, was now a long note often divided into twelve or even more parts. The middle stages of this course of development are illustrated in the motets of Petrus de Cruce[1] (and in other pieces in this so-called "Petronian" notation) in which the breve may be divided into from four to nine parts. Figures six and seven illustrate this style with the beginning of a motet by Petrus de Cruce in which the breve is divided into six parts or semibreves, which in the triplum are individually set with text syllables. Figure eight illustrates the ultimate extent to which the division of the breve was ordinarily carried at the onset of the ars nova, the Italian duodenaria or division into twelve semibreves. (In fig. 8 each measure of the transcription represents the value of one breve).

Clearly such division of the breve required that its

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[1]Discussed extensively by Jacobus just after the passages quoted above (pp. 77-79) from the "Speculum musicae."

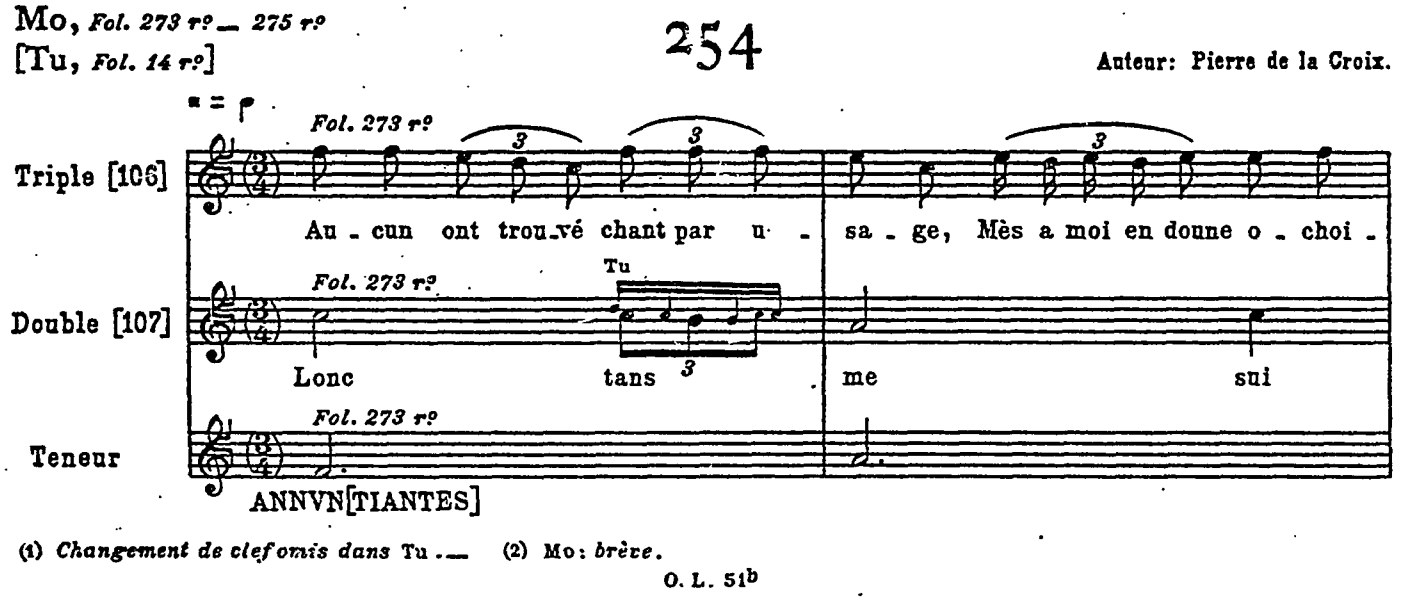

Fig. 6. -- Division into six semibreves, here sixteenth notes, set to individual text syllables (from Rokseth, Polyphonies, III, 81).

Fig. 7. -- Facsimile for fig. 6 (from Mo., fol. 273ro.).

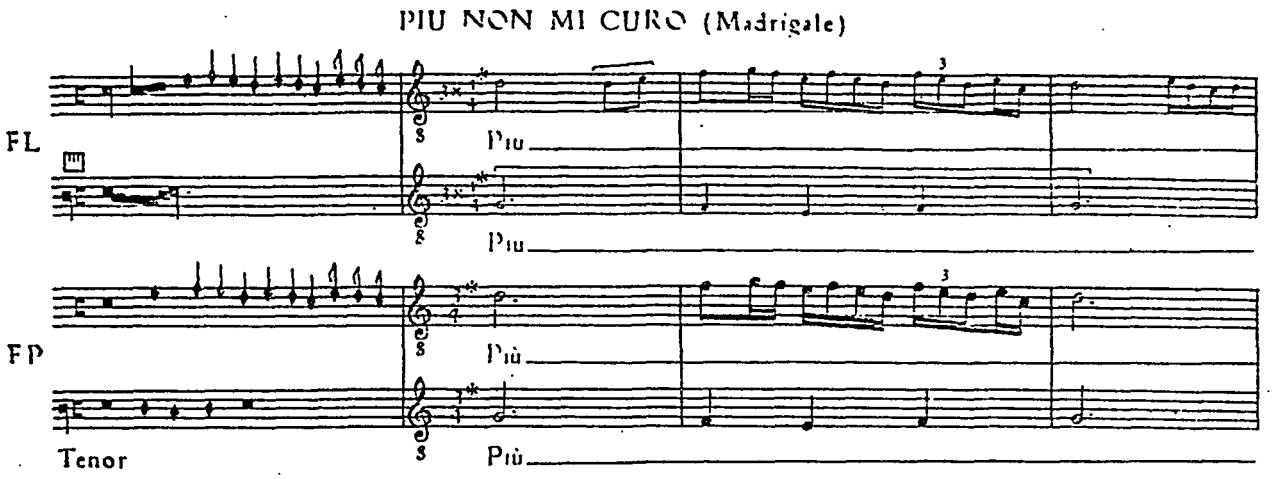

Fig. 8. -- Italian ars nova duodenaria division into twelve semi-breves (from Pirotta, The Music of Fourteenth Century Italy, I, 35).

tempo be proportionately slowed to make performance possible, and just as clearly the slow breve tempo required to set twelve divisions in a duodenaria would be far too slow for a Franconian piece notated with only three semibreves (at most) to the breve, or, surely, for a hocket or copula set in breves and longs, with scarcely any division of the breve. Yet both the comments of theorists (such as Anonymous IV[1] and Jacobus) and the fact that many manuscripts of thirteenth-century music date from the fourteenth century indicate that much of this older music, in an older style of notation without extensive division of the breve, was still known and sometimes performed in the fourteenth century. It is this circumstance that explains the "three" (or four) tempi, which are different speeds for the breve produced by the performance of pieces differing widely in the extent to which the breve was divided. Each distinct division of the breve (i.e., into three, four, six, eight, nine or twelve semibreves) actually represented a different notation or what we would call a different "mensuration," and so the meaning of the comment quoted by Jacobus (saying that for the different tempi "the manner of writing the notes need not be changed"--ll. 16-18) is not that there is no difference in the notation, but that the breve is written in the same form, regardless of how many semibreves it contains.[2]

---

[1]Anonymous IV, writing in the later thirteenth century, says for example of the Notre Dame repertory that "for the most part, this art has been continued to be used in its entirity." Dittmer, Anonymous IV, p. 66.

[2]Or rather that the notes in general have the same form for each of the measurements. Cf. the similar comment of Hanboys,

Descriptions of the Three Tempi

In order to determine more exactly just how the three tempi were applied to the different divisions or mensurations, and to discover the implications of this practice of measurement for the concept of "measure," it seems important to present fully the principal discussions of the three tempi as found in the theory of the early fourteenth century. Of these discussions one, that of Jacobus de Liége, has already been presented.

An English writer, Robert de Handlo, describes the three tempi as follows:

> Petrus le Viser: A. The longae, semilongae, breves and semibreves are really performed in three different ways in vocal music, namely in mos longus [the slow manner], mos mediocris [the medium manner], and mos lascivus [the fast or "lascivious" manner].
>
> B. In mos longus [the slow manner], an unlimited number of semibreves may be offered and represented with longae, semilongae and breves.
>
> C. In mos mediocris [the medium manner], three, four or five semibreves may be offered for a brevis together with semilongae and breves and occasionally with longae: in such a case, the semibreves should always be conjoined and never presented disjunct, and if they be disjunct, they may be divided into three and no more.

For Robert de Handlo, who is describing a practice divergent in some respects from continental, either French or Italian, the "medium manner" will always be imperfect time:

> D. In mos mediocris [the medium manner], two semibreves are equal in durational value; three are unequal, four again equal and five unequal. In mos longus [the slow manner], all of the afore-mentioned rules, concerning the equality or inequality of semibreves, [i.e., the ordinary rules of alteration, for triple division] are pertinent; in mos mediocris [the medium manner], however, they are never pertinent.

CS I, 428, concerning note forms: "Hodie non differunt de forma, tamen differunt de valore" ("Today they do not differ in form, nevertheless they are different in value").

> E. In mos lascivus [the "lascivious" or fast manner], longae, semilongae and breves and occasionally even longae duplices are offered together with the smaller and larger semibrevis, which may consist of individual notes, ligated or oblique figures; however, [so many as] three, four or five semibreves may not occur in mos lascivus [the fast manner], unless the longae and semilongae are not used. When longae and semilongae are omitted, only breves and semibreves are offered, in which case two or three semibreves may be used for a brevis, but never more.
>
> F. Many lascivious [fast] hockets utilise semibreves in this manner, in which case the second maxim of the third rule of this rubric has validity.[1]

The relevant parts of the passage to which Handlo refers back at this point read as follows:

> Franco: If four semibreves should occur between two longae or breves, they are always counted in twos, and each group is equal to a brevis recta [proper breve]...
> Handlo: The afore-mentioned rule of Franco's, the third one of this fourth rubric, has validity whenever the brevis does not provide the beat, except when groups of three semibreves are formed [this is incorrect: read, rather, "whenever the value of the breve runs only to the proportion of three semibreves"[2]], as in hockets and in many motets.[3]

In other words, in hockets and motets in the "fast manner," in which the breve often contains only two semibreves, larger groups of semibreves should be read in sets of two to the breve and given iambic rhythm (because of the implicit triple division of the breve) according to the usual rules of alteration, rules which were not applicable to the "medium manner" because of its duple division.

---

[1] Luther Dittmer, ed., Robert de Handlo ["Rules"--1326], Vol. II of Musical Theorists in Translation (Brooklyn, N. Y.: Institute of Mediaeval Music, 1959), pp. 14-15.

[2] "Quando valor brevis non currit, nisi ad proportionem trium semibrevium," CS, I, 387.

[3] Dittmer, Robert de Handlo, p. 13.

The information offered by Robert de Handlo concerning the three tempi is summarized in the following chart:

fast manner:	employs a maximum of two unequal (or, at the very most, three equal) semibreves per breve, and often proceeds mainly in longer notes, including some double longs.
	Many hockets are written in this manner, but without the longer notes, and with a maximum of two semibreves per breve. [This would be the "very fast" tempo of Jacobus, but written in breves and semibreves rather than longs and breves, so that the faster tempo is built-in in the notation, and does not require a faster speed for the breve, as specified by Jacobus and Franco].
medium manner:	employs from two to five semibreves in imperfect division of the breve, together with breves and some imperfect longs. A somewhat faster tempo is implied if longer notes are used than if they are not, since in the former case it is specified that division be limited to three semibreves, and that if the breve is divided further than this when longer notes are present the semibreves must be conjunct [i.e., proceed by stepwise motion only, as fast ornamental tones].
	There are thus two shades of tempo for the medium manner, depending on the proportion of longer notes used.
slow manner:	employs a large ("unlimited") number of semibreves to the breve, which follow triple subdivision. Because the medium manner uses from two to five semibreves, the slow manner would by implication use six or more.

These details immediately suggest two conclusions concerning the three tempi: the terms "slow," "medium" and "fast" refer to the speed of the breve rather than that of the smallest

notes, and indicate that tempo (and thus, perhaps, measure) was thought of in terms of it; and the smallest notes, the semibreves, tend to be taken at a relatively constant speed (being the maximum convenient speed), and determine the tempo of the larger notes additively, by the number of "minimum" notes they contain. These conclusions are, as we shall see, confirmed by theoretical discussions of "measure" and of the "minimum note."

The second discussion of the three tempi to be presented in this section is from the Ars nova of Philippe de Vitry:

> Concerning the names of perfect time
>
> While above we competently treated tempus [i.e., "time"] 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 [i.e. "time unit"], 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 [i.e., "that which is minimum in fullness of voice," supra, p. 72]. 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 ["Old Style"], 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 semibreves, 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.

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, [my italics] 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 perfect tempus.[1]

The salient points of de Vitry's discussion of the three tempi and their mutual relationships may be sumarized as follows:

fast times:	minimum perfect (a la Franco) three minims.	equals three of the minims of major perfect.
	minimum imperfect [mensural sign: C] four minims.	
medium times:	medium perfect [mensural sign: O] six minims.	A time of six undifferentiated S may be sung to maj. perf. [via alteration].
slow times:	major imperfect [mensural sign: C] six minims.	Is similar in value to medium perfect, above.[2]
	major perfect [mensural sign: O] nine minims.	contains the value of three minimum perfect times.

De Vitry seems here not merely to imply, but precisely specify, minim equivalence between each of the measurements of time. Thus the major perfect time (of nine minims) is said to contain three minimum perfect times (of three minims each), and the medium

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[1] Leon Plantinga, "Philippe de Vitry's Ars Nova: A Translation," Journal of Music Theory, V (1961), 218-220.

[2] Amend Plantinga's translation (ll. 77-78) to read, "And it must be noted that the major imperfect time is in just [the same] situation as the medium perfect time" ("Et est notandum quod maius tempus imperfectum se habet sicut medium tempus perfectum," Philippi de Vitriaco, Ars Nova, ed. Gilbert Reany et al., American Institute of Musicology, 1964; p. 31).

perfect time (of six minims; sign: "O") is equated, in Plantinga's translation, with the value of the major imperfect time (likewise of six minims; sign: "C"). This latter point may be misleading, however, for the sentence in question (ll. 77-78) says nothing at all about "value" or duration, but says simply (see note two of the previous page) that the two measurements "are in just [the same] situation." It is by no means self-evident that the "situation" referred to is temporal duration. The one immediately obvious connection between the two measurements is that both contain six minims to the breve; thus their notation would always be similar, and might often be identical. But this notational identity need not necessarily imply identity of duration. Indeed, there is evidence[1] that the durations of these two measurements, while they might be theoretically identical, were often different in practice.[2] Even de Vitry's name for the imperfect time in question, "major," implies that it was slower than the perfect time to which it is likened, which is called "medium."

The concise description of the French system of measurement offered by de Vitry also makes it possible to relate certain comments of Jacobus of Liége quoted above[3] to specific measurements. Thus when Jacobus says concerning the "slow measurement" that "among

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[1]Further evidence on this point will be offered in the analysis of the "Rubricae breves" and in the conclusions to this chapter.

[2]Perhaps the only circumstance in which the durations of the two measures might be identical in practice is the simultaneous use of the two in different polyphonic parts.

[3]Supra, pp. 77-79.

the moderns the third part of a perfect breve is worth as much as a [complete] perfect breve among the ancients" (ll. 71-77), he is comparing the "major perfect" or "⊙" mensuration (of nine minims) to the mensuration of Franco, the "minimum perfect" (of three minims), and his conclusion confirms de Vitry's statement that the modern slow perfect time contains three of the earlier fast perfect times, which are three times faster than it. Likewise the "very fast" time of Jacobus (which he equates to a single minim of modern measurement--l. 69), would be a proportio tripla of the fast measurement, three times faster than it. This accords completely with Franco's statement that the "copula" (or "very fast" measurement) was notated with long and breve, but performed as if it were written breve and semibreve (supra, p. 80).

The third description of the three tempi to be presented here is perhaps the most interesting of the sources, the "Rubricae breves," an anonymous fourteenth-century guide to the different measurements in the form of a short set of "Rules for breves" for both Italian and French notations. It has been published in two versions which are here presented collated and furnished with a translation and "gloss." The "gloss" added alongside the translation is intended to facilitate the comparison of the discussion of the different measurements, and to identify them by their French mensural signs and their verbal Italian designations. The translation draws on both versions of the source.

[RUBRICAE BREVES]

(Gerbert III, 188)

Tempus perfectum recte in quo ponitur, duodecim scribitur pro tempore, quae vocantur minimae, si autem rarius sique plures quam duodecim ponerentur, diceretur plusquamperfectum. Sex autem vocantur minores semibreves. Tres vero maiores naturales, & sic una duarum duas partes habet temporis, & vocatur maior artificialis; & talis modus cantandi Italicus est potior quam Gallicus.

(Coussemaker III, 9-11)

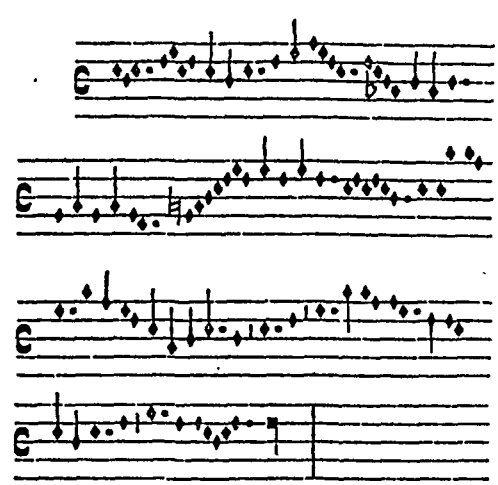
TEMPUS PERFECTUM RECTE DIVISUM IN DUODECIM.

Tempus perfectum recte est illud in quo ponuntur duodecim semibreves que vocantur minimae.

Si autem velocius cantaretur sic quod plures quam duodecim ponerentur, diceretur plus quam perfectum.

Sex vero vocantur minores semibreves; tres autem majores naturales et sic una duarum duas partes habet temporis que vocatur major artificialis.

Et talis modus cantandi Italicus est, ut hic patet:



[A GUIDE TO BREVES[1]]

Translation[2] Gloss[3]

THE REGULAR PERFECT TIME,
OF TWELVE DIVISIONS. [Duodenaria]

The regular perfect time
is that in which there are placed,
within one time unit, twelve
semibreves (which are called "minims"). [Breve: 12 minims]
But if this be sung
diminished further (so that more
than twelve divisions are made),
it will be called the [Plusquamperfectum]
"more-than-perfect" time.
The divisions of six semibreves
then are called "minor semibreves"; the [2 minims]
divisions of three are called "major naturals" [4 minims]
and, consequently, one of the two parts (which,
when there are just two divisions, has two parts of the time
unit) is called a "major artificial" semibreve. [8 minims]
And this manner of singing is
Italian more than French, as is
shown here:

---

[1]Lit., "Breve Rubrics" or "Breve Directions."

[2]The translation in the case of this particular source is less strictly literal than the others presented in this work.

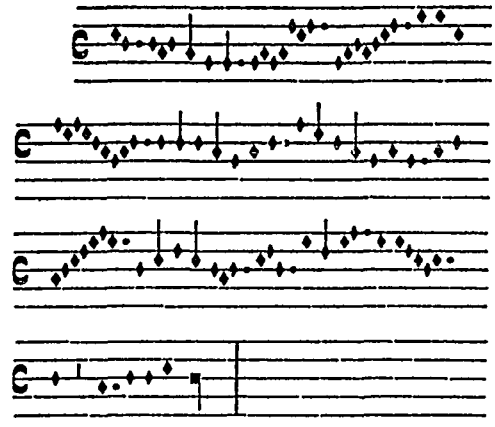
[3]The comments under the "Gloss," enclosed in brackets, are my own additions.

[Rubricae breves--2]

Item idem tempus
quantitate ubi tres
ponuntur pro tempore,
& vocantur maiores,
& dividuntur in novem,
& non in duodecim, quae
quidem vocantur minimae;
& talis modus cantandi
Gallicus est potius
quam Italicus: &
multis aliis modis possunt
diversificari per artem,
ut alibi patet.

ITEM TEMPUS DIVISUM IN NOVEM.

Item idem tempus in
quantitate, ubi tres
semibreves vocantur
ut supra dictum est;
sed dividimus
in novem
que vocantur minime.
Et talis modus cantandi
Gallicus est potius
quam Italicus, ut hic
patet:



Tempus autem perfectum
quantum ad divisionem,
quod dividitur in tres,
& postea in sex,

TEMPUS PERFECTUM MINUS DIVISUM IN SEX.

Tempus hoc perfectum
est quantum ad divisionem,
quia dividitur in tres
partes et postea in sex

[A Guide to Breves--2]

THE SAME (REGULAR PERFECT) TIME, OF NINE DIVISIONS.

[Novenaria]
[Mensural sign: ⊙]

This is again the same time unit in quantity (i.e. where three semibreves are put for one time unit, and are called "major semibreves"), but divided into nine parts, and not twelve, and these again are called "minims."

[Same quantity as duodenaria]

[3 minims]

[Breve: 9 minims]

And this manner of singing is French more than Italian, and is illustrated below. (And these divisions can be varied by art in many other ways, as may be seen elsewhere).

THE SMALLER PERFECT TIME, OF SIX DIVISIONS.

[Senaria perfecta]
[Mensural sign: ⊙]

This time is perfect with respect to division, because it is divided into three parts, and afterwards into six

[Breve: six minims]

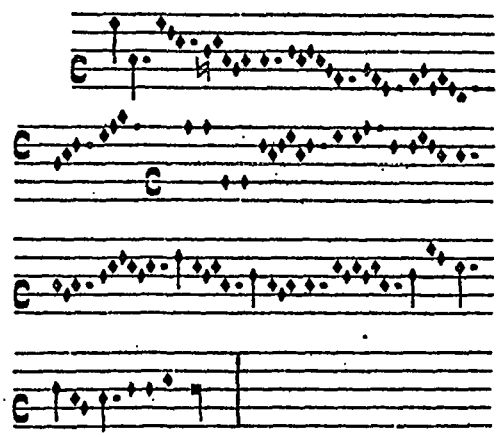
[Rubricae breves--3]

& non ultra, propter
suam voluntatem [sic]
modi cantandi, sed
quantum ad quantitatem,
est pro mediate
temporis superioris
perfecti divisi in duodecim,
& dicitur hoc tempus
perfectum minus.

Si autem illud tempus
cantaretur sic, quod
aliquando possunt poni septem
vel octo semibreves in
ipso tempore, & non
perficere duodecimam,
diceretur quod sit
maior perfecto maiori [sic],
sicut supra dictum est
de plusquamperfecto.

et non ultra, propter
suam velocitatem
modi cantandi, sed
quantum ad quantitatem
est pro medietate
temporis superioris
perfecti in duodecim;
et dicitur tempus hoc
minus perfectum.

Si istud tempus
cantaretur rarius, sicque
aliquando possunt septem
vel octo semibreves poni
pro ipso et non
perficere duodecim,
diceretur quod esset
majus perfecto minori,
sicut supra dicitur
de plus quam perfecto,
ut hic patet:



TEMPUS PERFECTUM MINUS
DIVISUM IN TRIBUS.

Tempus hoc perfectum est
quantum ad divisionem,
quod dividitur in tres

Tempus hoc perfectum est
quantum ad divisionem,
quia dividitur in tres

[A Guide to Breves--3]

and not beyond, because of
the speed of its
manner of singing. But
with respect to quantity
it is one-half
of the above perfect time ["O" or senaria perfecta
of twelve divisions, and is $\frac{1}{2}$ of a duodenaria]
this time is called
the "smaller perfect" time.
If this time is
sometimes sung so that
seven or eight semibreves
can be put within
this time unit, but yet [But with further diminution
not complete twelve semibreves, of values the "O" will be
it is said to be a somewhat slower]
"major smaller perfect" time,
just as has been related above
regarding the "more-than-perfect" time,
as may be seen here:

THE SMALLER PERFECT TIME, [Ternaria]
OF THREE DIVISIONS. [A Franconian <u>tempus</u>]

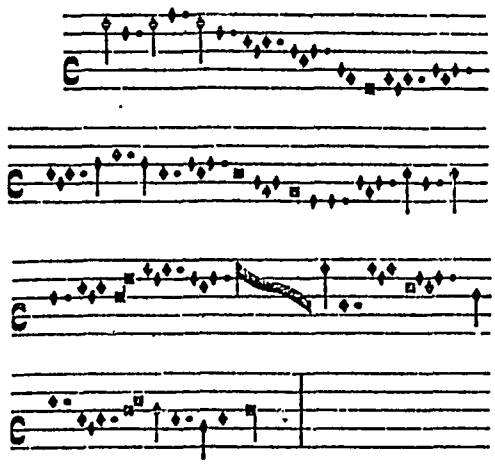
This time is perfect
with respect to division
because it is divided into three parts, [Breve: 3 minims]

[Rubricae breves--4]

& non ultra, propter
suam velocitatem: sed
quantum ad quantitatem sui,
est pro tertia parte
temporis superioris perfecti
in novem, &
de ipso modo cantandi:
& vocatur istud tempus
perfectum minimum.
Est autem illud tempus
pro medietate temporis imper-
fecti divisi in sex,
quod dicitur senarius
Gallicus & de modo
Gallico in quantitate
Si autem istud tempus
cantaretur rarius, diceretur
maius perfecto minimo:
tres autem semibreves huius
temporis vocantur minimae,
si una duarum caudaretur,
duas partes habet
ipsius temporis praelibati,
& vocatur minor.

et non ultra, propter
suam velocitatem; sed
quantum ad quantitatem
est pro tertia parte
temporis perfecti superius
divisum in novem, et
de ipso modo cantandi,
et vocatur istud tempus
perfectum minimum.
Est etiam istud tempus
pro medietate imperfecti
de modo Galico in
quantitate.

Si rarius cantatur hoc
tempus, dicetur
majus perfecto minimo,
tres semibreves
vocantur minimae,
si una duarum caudaretur
duas partes habet
et vocatur minor, ut
hic patet:



[A Guide to Breves--4]

and not beyond, because of
its speed; but
with respect to its quantity
it is one-third of the
above perfect time [ternaria is 1/3 novenaria]
of nine divisions, and
of its manner of singing;
and this time is called the
"minimum perfect" time. ["minimum perfect"]
This time is also
one-half of the imperfect time
of six divisions, [ternaria is $\frac{1}{2}$ of senaria imperfecta, i.e.: G]
which is called the French
senaria, and of the French
manner in regard to quantity.
If this time is sung
diminished further, it is called
the "larger minimum perfect" time.
Moreover the three semibreves of this
time unit are called "minims,"
and if one of just two has a tail
it has two of the three parts of this
time, and is called "minor semibreve,"[1] [2 minims]
as may be seen here:

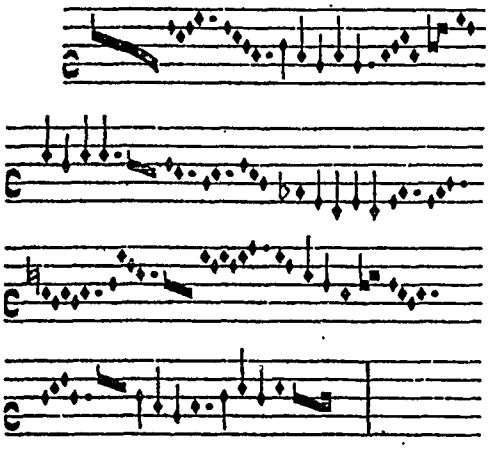
[1]Note that this differs from Franconian terminology.

[Rubricae breves--5]

Tempus hoc dicitur imperfectum, quia dividitur in duas partes aequales: hoc tempus deficit a perfecto superiori diviso in duodecim in tertia parte, octo autem scribitur, vocantur minimae, quatuor autem minores, & duo vocantur maiores naturales: & multis aliis modis possunt diversificari per artem, ut alibi patet.

TEMPUS IMPERFECTUM RECTE MODI ITALICI DIVISUM.

Hoc tempus dicitur imperfectum, quia dividitur in duas partes aequales.
Hoc tempus deficit a perfecto superiori diviso in duodecim in tertia parte; octo semibreves vocantur minime; quatuor minores, et due majores naturales, ut hic:



[absit]

TEMPUS IMPERFECTUM MINUS.

Tempus hoc imperfectum dicitur minus, quia dividitur in duas partes aequales, post hec in

[A Guide to Breves--5]

REGULAR IMPERFECT TIME ACCORDING TO THE ITALIAN DIVISION. [Octonaria]

This time is called imperfect, because it is divided into two equal parts.

This time is less than the above perfect time of twelve divisions by a third; [Octonaria is 2/3 duodenaria]
for [this time] eight semibreves are written, [Breve: 8 minims]
called minims; and the division of four called "minor semibreves," [2 minims]
and that of two called "major natural," [4 minims]
as shown below. And many other manners can be varied by art, as may be seen elsewhere.

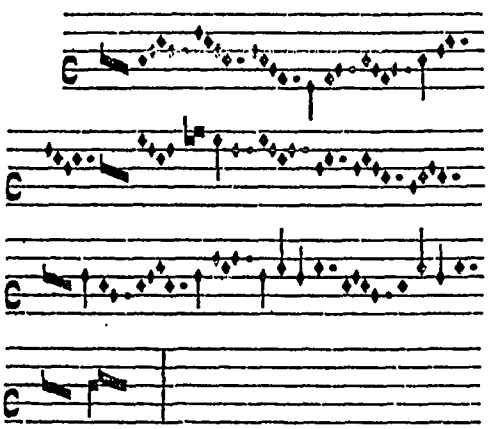
THE SMALLER IMPERFECT TIME. [Quaternaria] [mensural sign: C]

This imperfect time is called "smaller" because it is divided into two equal parts, and after that into

[Rubricae breves--6]

[absit]

quatuor. Et propter suam velocitatem non possunt poni octo, sed bene pars ipsarum octo aliquando, ut hic patet:



TEMPUS IMPERFECTUM MODI GALLICI.

Hoc autem tempus dicitur imperfectum, recte potest etiam velocius cantari, et tunc dicitur tempus imperfectum minus & rarius, & dicetur maius imperfecto recto. Hoc autem tempus imperfectum deficit a perfecto superius diviso in novem in tertia parte, dividitur autem istud primo in duas semibreves aequales,

Tempus hoc dicitur imperfectum recte. Potest etiam velocius cantari; et tunc dicitur imperfectum minus, et rarius dicitur majus imperfecto recte. Hoc tempus imperfectum deficit a perfecto superiori diviso in novem in tertia parte. Dividitur autem in duas semibreves aequales

[A Guide to Breves--6]

four. And eight notes [Breve: 4 minims]
cannot be set because of
its speed; yet it is indeed true
that sometimes it does partly use
eight, as is seen here:

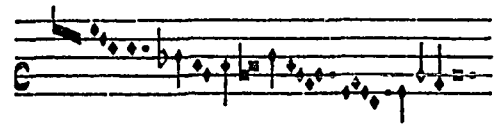
THE IMPERFECT TIME OF THE
FRENCH MANNER. [Mensural sign: ⊄]

This time is called [French senaria;
the "regular imperfect." senaria imperfecta]
It may also be sung further diminished [literally "faster"],
and then it is called the "smaller
imperfect time," and more rarely
is called the "larger regular imperfect"
time. And this imperfect time
is less than the perfect [⊄ : 2/3 novenaria]
time above (of the nine divisions)
by a third part.
Now this time is divided first
into two equal semibreves

[Rubricae breves--7]

quas dicimus maiores naturales: & illae duae postea dividuntur in sex semibreves, quae dicuntur minimae.[1]

que dicuntur majores naturales: et ille due postea dividuntur in sex que dicuntur minime, ut hic patet exemplum:[2]



[1]Gerbert, Scriptores, III, 188. The "Rubrica [sic] breves" is in this source ascribed to Marchettus de Padua, but it is not generally considered to have been written by him. See Giuseppe Vecchi, "Su la composizione del Pomerium di Marchetto da Padova e la Brevis compilatio" [including an edition of the latter], Quadrivium, I (1956), 153-205, particularly p. 153, note 1, and p. 168, note 1.

[2]Coussemaker, Scriptores, III, 9-11.

[A Guide to Breves--7]

which are called "major
natural" semibreves; and these two
are subsequently divided into
six semibreves, which are called [Breve: 6 minims]
"minims." This is illustrated in
the following example:

The mensural situation depicted in the "Rubricae breves" confirms the conclusions already offered concerning the three tempi--namely, that the measurements take their names from the division and the speed of the breve, and that the smallest notes[1] tend to have a relatively constant speed in all the measurements. Nevertheless a closer examination of the exact relationships of quantity specified in the "Rubricae breves" confirms the suggestion made above[2] that the imperfect time of perfect prolation, containing six minims, might be taken more slowly than the perfect time of imperfect prolation, which also contains six minims. Indeed, the quantitative relationships offered in the "Rubricae breves," if taken literally, would require that both perfect prolations be slower with respect to the speed of the minim than the imperfect prolations.[3]

A numerical calculation (see fig. 9) of the quantities of the measurements discussed in the "Rubricae breves" may be initiated by arbitrarily assigning to the first measurement discussed, the duodenaria, a value of "twelve," since that is the number of minims (or minimum semibreves) it contains (ll. 3-4). From that point all the other measurements may be assigned quantities according to the quantitative relationships given.

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[1] I.e., the smallest "semibreves" in Italian terminology, or the "minims" in French terminology.

[2] As implied by de Vitry's use of the name "major" for "G" as opposed to "medium" for "C"; supra, p. 95.

[3] There may be further confirmation in the fact that a slower speed for perfect prolations, while perhaps somewhat conjectural for the fourteenth century, is demonstrable beyond question for the fifteenth.

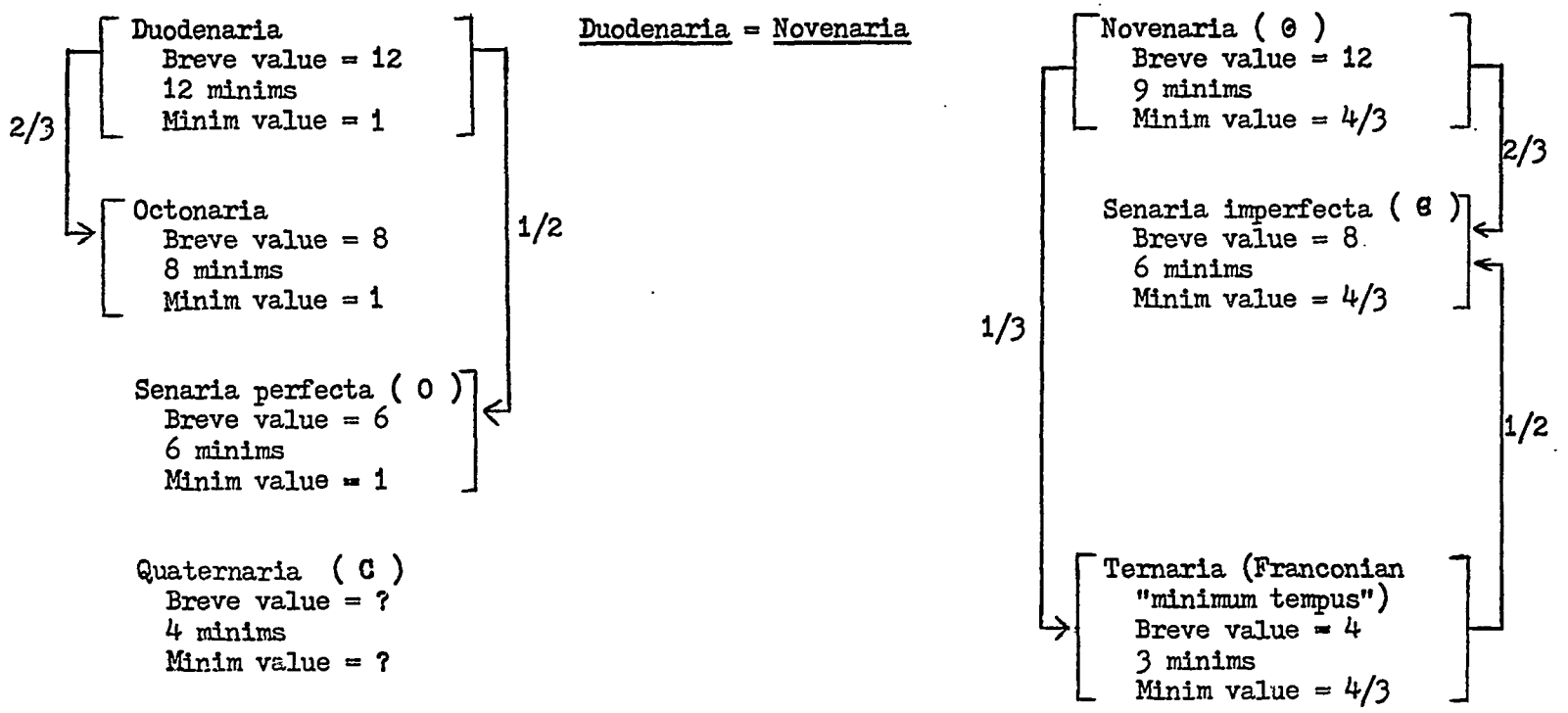

Fig. 9. -- Quantitative relationships between different measurements as specified in the "Rubricae breves."

The first of these relationships is that a novenaria has the same value, i.e. "twelve," for its nine minims as the duodenaria has for its twelve minims (ll. 19-25). Thus minims in novenaria would be slower, having a value of "4/3" compared to a value of "unity" for minims in duodenaria. The next relationship specified is that the senaria perfecta (or "O") has half the value of a duodenaria (ll. 38-42), i.e. "six," for its six minims, so that each minim has a value of "unity." Then we find that the ternaria (or "minimum perfect time," as of Franco) has a value of 1/3 of a novenaria (ll. 60-65), or "four," for its three minims, producing once again minims with a value of "4/3." The ternaria (ll. 68-73) is also $\frac{1}{2}$ of a senaria imperfecta (or "G"), so that the latter will have a value of "eight" for its six minims, again giving the minims a value of "4/3." This relationship is confirmed by the statement (ll. 111-114) that this senaria imperfecta (or "G") is 2/3 of a novenaria (or "O"), again a value of "eight," or of "4/3" for the minim.

The quantitative relationships of the remaining imperfect times are, unfortunately, less completely specified. The octonaria, an almost exclusively Italian notation, has a value of 2/3 of a duodenaria (ll. 86-90), or "eight," for its eight minims, producing a value of "unity" for the minim. But the relationship of the most important imperfect time, the quaternaria (or "C"), is not specified.

The value of the quaternaria may nevertheless be hypothesized with a fair degree of certainty based on the relationships among the other measurements. If this time were to have half the value of an

octonaria, or "four," the minim would be "unity," and this measurement would then accord (see fig. 10) with the innumerable statements of theorists that require that imperfect time should be less than perfect time (the corresponding perfect time in this case being the senaria perfecta, or "O") by a third part. Such a relationship by a factor of 2/3 would also fulfill the expectation created by the relationship between the other corresponding imperfect and perfect times, namely the "regular imperfect" time or octonaria (which is 2/3 of the "regular perfect" time, the duodenaria) and the "imperfect time of the French manner," the "C" (which is 2/3 of the "regular perfect time" of the French manner, or "O").

These calculations reveal that the "Rubricae breves" describes two different tempi for the minim, thus producing an actual difference of pace for different measurements, unlike the apparently different tempi suggested by the so-called "three tempi" comprising the topic of this chapter (i.e., the designations "slow," "medium" and "fast," terms which do not refer to any change of the tempo of the smallest notes but which only describe the pace of the theoretical time unit, the measure, the breve note). This actual difference of tempo specifies that the two perfect prolations and the ternaria be slower (with respect to the pace of the minim) than the other measurements by a ratio of four to three. This slower speed for the perfect prolations is found in a more exaggerated form in the fifteenth century, so that near the end of that century perfect prolation has become (when used against an imperfect prolation in another voice) an augmentation by a factor of two, or a

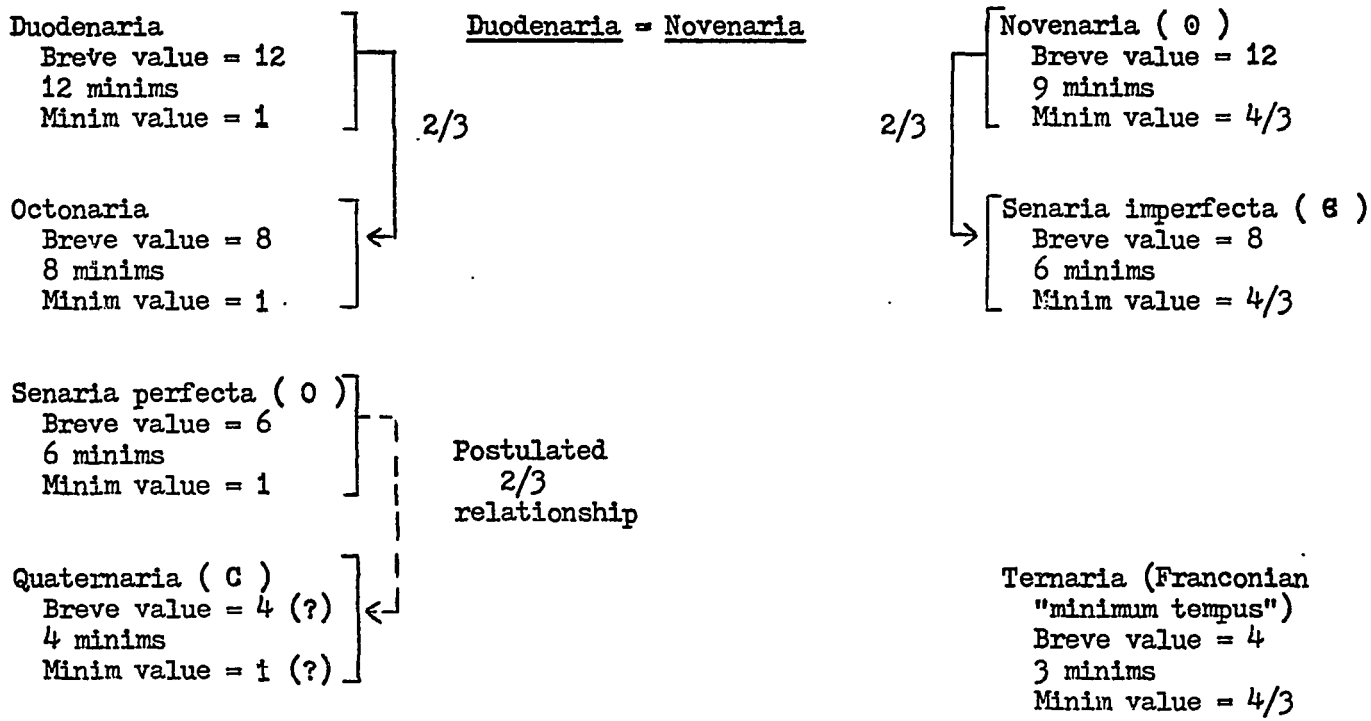

Fig. 10. -- Deduction of the value of
the Quaternaria from the Senaria perfecta by comparison
with other corresponding sets of perfect and imperfect times.

subdupla proportion. Thus both Adam de Fulda and Ramis de Pareia assigned the tactus to the minim in perfect prolation, while for imperfect prolation it was put on the semibreve.[1]

One other source, the "Liber de musica" of Johannis Verulus de Anagnia,[2] discusses the tempo relationships among the different measurements in detail. It is not presented here because of its great length, because the sources so far adduced seem sufficient to clarify what the "three tempi" were, and, finally, because Verulus' statements, taken at face value, require a tempo far slower than the music appears to demand, and far slower than would accord with the rule implied by the other sources that the smallest notes tend to go at the maximum convenient speed.

Verulus discusses the order of musical notes in a direct comparison with diurnal time, thus deriving a precise time value or metronomic speed for each note in the various measurements. His conclusions agree with those of other French sources in that he assigns a basically unvarying duration to the minim, but they are baffling in that this time value works out to M.M. 72, which is apparently too slow by a factor of three. Curt Sachs avers that Verulus was simply mistaken,[3] and more recently Salvatore

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[1]Adami de Fulda, Musica, in Gerbert, Scriptores, III, 362; Ramis, Musica practica, p. 84.

[2]In Coussemaker, Scriptores, III, 129-177; especially pp. 130ff.

[3]Rhythm and Tempo, pp. 187-188.

Gullo[1] has presented arguments to justify a reading of Verulus which would permit an adjustment by this factor of three, thus giving the minim a speed of M.M. 216.[2] But although Verulus' tempo seems convincing enough when modified by this factor of three, the arguments advanced by Gullo to justify that interpretation of Verulus seem less convincing.[3] Perhaps Verulus' discussion must be read as an analogy, as a comparison between the divisions of musical time and the divisions of diurnal time, just as Renaissance statements linking the tactus to the heartbeat may be seen as analogies--as comparisons with a philosophical significance rather than attempts to suggest a precise metronomic tempo.[4]

Conclusions: Implications of the Three Tempi for "Measure"

The three tempi are not different speeds to be applied indiscriminately to the music of the late thirteenth and early fourteenth century. Rather they are descriptive terms ("slow," "medium" and "fast") referring to the relative speed of the breve in several different measurements--measurements which differ in the number of minims into which the breve is divided. The

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[1] Das Tempo in der Musik des XIII. und XIV. Jahrhunderts (Publikationen der Schweizerischen Musikforschenden Gesellschaft, Verlag Paul Haupt, Bern: 1964), pp. 69-76.

[2] This speed seems sufficiently fast, yet not so fast as to distort the harmonic rhythm or to preclude the use of improvised diminutions by an exceptionally facile performer.

[3] Gullo similarly deduces nine different shadings of tempo from Anonymous IV on grounds that are, at best, highly conjectural (Gullo, pp. 25-29).

[4] Renaissance heartbeat analogies are the subject of an article currently in preparation.

breve has a different speed in the several measurements because the pace of the minim is relatively unvarying.

The significance of these tempo names is thus that tempo was conceived in terms of the breve. This suggests strongly that the idea of measurement was attached to the breve in musical practice, and that conducting (if conducting by the plausus continued throughout the later Middle Ages, which is our suggested hypothesis) by the beginning of the ars nova had shifted from the perfect long to the perfect or imperfect breve. The speed of conducting or other measurement applied to the breve would have to change with the extent of its division in order to maintain the relatively constant speed of the minim, and it is in this way that the tempo terms make sense. Thus the breve with few divisions would be "fast," with a moderate number of divisions would be "medium," and with a large number of divisions would be "slow."

The speed of the minim has been described here as "relatively constant" because the evidence indicates that, far from being absolutely unvarying, it had two recognized shadings of tempo that were applicable in specific mensurations. Thus it is suggested that the minim was slower (by a factor of 4/3) in the perfect prolations than in the other measurements, producing a divergence of tempo that became more pronounced in the fifteenth century.

CHAPTER FIVE

MEASURE IN THE ARS NOVA

The preceding chapter, concerning the "three tempi," dealt with the evolution of practical measurement from Franco to the ars nova. The present chapter concludes the chronological survey of Medieval polyphonic measure with a consideration of two very different formulations of the concept of measure at the inception of the ars nova--the Italian and the French.

Much music theory of the high ars nova is, as the reader will discover, the sort of abstruse scholastic philosophy for which the later Middle Ages is so well known. It nevertheless has a significance for this study that transcends its purely philosophic or epistemological interest because of the close interdependence--even in the ars nova--of musical theory and practice. In even the most speculative theory, concepts are often molded and adjusted (within the limits of the given philosophical framework) so as to conform with and to justify details of practice, and in the conduct of musical practice it is inevitable that the way in which music is mentally conceived is likely to have some influence. Often enough musical theory will also reflect details of practice in a negative fashion, for the exigencies of logical consistency occasionally lead theorists to reject and inveigh against certain practices whose existence can be deduced from no other source.

It is chiefly for the sake of insight into musical practice that the theoretical details presented in this chapter are offered and analyzed.

As already noted, the conceptions of measure in the French and in the Italian ars nova theoretical systems are quite different. We begin our discussion with an examination of the Italian view of measure.

Measure in Italian Theory

The fourteenth-century Italian system of notation received its classic theoretical explication at the hands of Marchettus de Padua, who wrote contemporaneously with the first advocates of the French ars nova, Philippe de Vitry and Johannes de Muris. His conception of "time" and "measure" is a direct extension of Franco's definition of "measure" as "that which is minimum in fullness of voice,"[1] but infused with the philosophy of Aristotle.

After treating of time in general, Marchettus begins his discussion of musical time (or measure) thus:

Quid sit ipsum tempus musicum.	What musical time may be said to be.
Quantum ad primum, dicimus secundum magistrum Franconem quod musice loquendo tempus est id quod est minimum in plenitudine vocis; et hanc diffinitionem sic probamus. Unumquodque perficitur minimo sui generis (per Philosophum decimo Metaphysicae), et hoc est clarum. Nam unitas quae est minimum et principium	As the first point, we [shall] say after Master Franco that a unit of time, musically speaking, is that which is minimum in fullness of voice, and we [shall] analyze this definition as follows. Every thing is completed by the minimum thing of its kind, as the Philosopher [Aristotle] says in Metaphysics X, and [the truth of] this is evident. For unity, which is the minimum and the beginning

numeri perficit totum
ipsum numerum;
nam dicere decem est dicere
10 unitates, et dicere
viginti est dicere 20
unitates, et sic de omnibus,
scilicet quod primum
et minimum
in unoquoque genere
est perfectio et mensura
prima omnium quae sunt in
ipso genere. Cum
igitur mensura ipsius
cantus sive notarum
consistat in ipso
tempore, ut est dictum,
concluditur
quod minimum tempus quod
est reperiri in ipsa
musica sit causa et per-
fectio mensurandi. Sed
quia tempus, ut
tempus abstractum
ab omni materia,
esset divisibile in
infinitum, sicut linea
separata
esset divisibilis in
infinitum, ideo,
cum nostra consideratio
non sit de tali tempore
(quia sic non esset
dare primum tempus),
sed sit de tempore
prout in musica
accipitur, ideo
dicimus quod non omne
minimum tempus est perfec-
tio & prima mensura
cantus, sed
tempus musicum.
Id ergo quod est
minimum tempus musicum
est prima mensura et
ratio mensurandi
totum ipsum cantum.
Hoc autem
est illud
minimum tempus in quo

of number, completes
all the numbers; for to
say "ten" is to say "ten
unities," and to say
"twenty" is to say "twenty
unities." And this holds
for everything, namely that
the first and minimum [thing],
for each kind of thing,
is the completion and prime
measure of all the things
of that kind. Since
therefore the measurement
of song or of notes
ought to depend upon the unit
of time (as already stated),
we reach this conclusion:
that minimum time that
is to be found in music
is the basis and completion
of measurement. But
because time (considered
in the abstract rather than
in any specific connection)
would be infinitely divi-
sible, just as a line con-
sidered all by itself
would be infinitely
divisible, for this reason
(since our examination
is not of that sort of
time--because it does not
yield any primary unit of
time--but concerns time
as it is understood in
music), for this reason
we say that not every
minimum time is the
completion and prime measure
of song, but only [the
minimum] musical time.
So that which is the
minimum musical time
is the prime measure and
underlying principle of
measurement for all of
song. But this [minimum
musical time] is that
minimum time in which a

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[1] Supra, p. 72.

potest formari plenitudo vocis, propter quod magister Franco, postquam dixit: Tempus musicum est minimum, addit statim: Non quodcunque minimum tempus, sed quod est minimum in plenitudine vocis; quasi dicet: Illud tempus minimum, in quo potest formari plenitudo vocis, est ipsum primum tempus et ratio mensurandi omnia quae in musica continentur.

Sed dicet aliquis: Da mihi illud. Tunc sic dicimus: Dictum est alibi in musica plana quot sunt instrumenta necessaria ad vocem formandum.

Quando ergo plene dicta instrumenta concurrunt ad formationem vocis et decenter, non nimis nec parum, tunc fiet plenitudo vocis. Et istud fiet cum canna pulmonis seriose et decenter impleta anhelitu cum decenti inflatione ventris ad hoc exprimendum, emittit anhelitus feritque sic auditum quod ad plenum percipit,

fullness of voice can be formed, which is why Master Franco says further on [that] musical time is the minimum [time], but adds immediately, not whatever minimum time is possible, but what is minimum in fullness of voice; as if to say, "That minimum time in which a fullness of voice can be formed is the prime unit of time and the fundamental principle of measurement [for] everything that is contained in music."

But if someone should say, "Show me this [minimum time]," then we say as follows: We have already treated elsewhere (in Musica plana)[1] how many instruments[2] are necessary to forming a "voice."

When, therefore, fully commanded instruments[2] concur in forming a "voice" (and in a becoming fashion, neither too much nor too little), then the "fullness of voice" occurs. And this happens when the windpipe, having been duly and becomingly filled with breath, expels [the air] with a restrained swelling of the belly that forces the breath out, and thus causes [whatever sound is] heard. [The "fullness of voice"] fully takes in this [breath]

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[1] Marcheti de Padua "Musica, seu lucidarium in arte musicae planae," in Gerbert, Scriptores, III, 64-121.

[2] Meaning the organs of the body instrumental in producing sounds.

	proferens hunc prolatum	making the actual sound[1]
110	sonum sive vocem in sui	or voice, whether this is
	ipsius seu in alterius	uttered in one's own or
	proferentis pectore ceu	in another's breast, or
	in quodam tintinnabulo	in the ringing of some
	resonare. Illud ergo	kind of a bell. So that
115	minimum tempus in quo	"minimum time" in which
	potest plenitudo vocis	a fullness of voice can
	formari, modo	be formed (in the manner
	superius declarato, est	described above) is the
	primum tempus a quo	primary time unit by which
120	tota musica mensuratur	all music is measured
	secundum magistrum Fran-	according to Master Franco.
	conem.[2] Et hoc de	And so much for the first
	primo.	point.[2]

Marchettus' discussion of the measure (or, as he expresses it by way of distinction from the idea of measure in general, his discussion of the prime measure) takes its point of departure, as already noted, from Franco's definition: the "minimum in fullness of voice." But Marchettus' discussion is an extension and development of Franco's philosophical concept of measure, without any real understanding of Franconian practice.

It seems clear that Marchettus, unlike French writers such as Jacobus of Liége, was simply not familiar with the practice of French music of the ars antiqua, even though he knew Franco as a theorist and a prime "authority" for measured music. This lack of understanding of Franconian practice is quite evident, for example, in the course of Marchettus' discussion of "rests":

Et quia antiqui	And because those of former
non curaverunt	times did not make any
tradere	effort to pass on a
ulterius divisionem	division of time beyond

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[1]Meaning instrumental sound as opposed to the human voice.

[2]Marcheti de Padva, Pomerium, ed. Joseph Vecchi (American Institute of Musicology, 1961), pp. 77-79.

temporis nisi in tres semibreves, ideo non oportuit quod ipsas pausas dividerent, nisi in tres partes spatii. Quare autem non tranctaverunt nec scripserunt? Ut eis in omnibus deferamus, sicut decet deferre doctoribus, dicendum est quod hoc facere non curaverunt ex grossitudine audientium et non ex ignorantia instruentiam musicam praelibatam.[1]	that into three semibreves, it was therefore unnecessary to divide the rests either, except into three fractions of a space. But why didn't they draw or write [a further division of time]? So that we may show deference to them in all things (just as one ought to show deference to the Doctors) let us say that they did not bother to do this because of a great capacity for hearing, and not out of ignorance of how to make the aforementioned music [i.e., music dividing the time unit into more than three parts].[1]

Marchettus attributes to Franco (or to "the Doctors") a "great capacity for hearing" because he does not understand the "fast measurement," one of the "three tempi" discussed in the previous chapter. Thus he knows the breve only as a fairly long note, one which would, if divided into only three parts, produce slow and dull music. He attempts to explain away this deficiency of the "Doctors" by saying that we should defer to their authority in this as in other matters, and so he concludes that they divided the breve into only three parts because they had a taste for very slow music ("a great capacity for hearing"), and not because they did not know enough to divide the breve further and produce music sufficiently interesting to satisfy "modern" ears.

Marchettus' use of Franco as a point of departure in

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[1]Marchettus, Pomerium, p. 57.

defining musical time or measure is thus philosophical rather than practical; Franco is cited not because the Italian mensural practice is necessarily related to him but because he is regarded as the founder of measured music. And his definition of musical time or measure as "that which is minimum in fullness of voice" is, conveniently, a very flexible expression, so that the language Franco intended to describe a rather short time value (the breve divisible into at most three parts) is applied by Marchettus to a note four times as long (since his prime measure is intended to refer to the breve divisible into twelve parts).

The length of this prime measure is described as a full breath's duration in singing (supra, p. 122, ll. 91-110), as this is what Marchettus means by a "fullness of voice." One can hardly determine any precise metronomic value for the breve from this description, nor is the latter intended to be scientifically precise. It is simply an approximation of a long note value (which a breve of twelve divisions would be), and is compared to the length of a human breath because of a philosophical desire for a "natural" standard.

The function of the prime measure as a minimum, presented by Franco without explanation, is developed by Marchettus in conformity with the philosophy of Aristotle, according to which the measure of any kind of thing must be the smallest thing of that kind (ll. 8-12; 21-27). The measurement of music is based on the system of numbers,[1] which accepts the unit (i.e. the number "one")

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[1] Cf. the introductory discussion of numerical measure supra, pp. 4-5.

as prime measure (ll. 14-21). Now musical measure depends on time, and since time is infinitely divisible it is not possible to deduce a unit or prime measure from it. One must therefore arbitrarily define a particular musical time-span as the unit, though this selection is not completely arbitrary in that one gives consideration to what might legitimately be considered the shortest or minimum musical time (ll. 62-66).

From this point (l. 66) on Marchettus' references to Franco are logical expansion and commentary, not quotation. Thus he uses Franco's "minimum in fullness of voice" (with the emphasis on fullness) to reject the smallest possible musical time--i.e. the shortest note (ll. 70-72)--as the prime measure, because the smallest possible musical time is not in "fullness of voice" as Marchettus has defined it. This is most significant in that French theory, as will be shown, used the same authoritative bases and similar logic to reach quite the opposite conclusion, namely that the prime measure must be the minimum musical time, i.e. the shortest note. But the Italian system of notation, unlike the French, was based on the breve or unit of time as the measure, and the theory of Marchettus reflects this.

Marchettus' discussion of musical time continues[1] as follows:

Quomodo ipsum tempus est distinguibile in musica.	How this same unit of time is distinguishable in music.
Quantum ad secundum,	As the second point

[1]From where it was interrupted, supra p. 123.

dicimus quod praedicta diffinitio est temporis perfecti in musica; nam, ut dictum est superius, unumquodque mensuratur primo et perfecto sui generis, sicut exemplificatum est in numeris; sed tempus musicum superius diffinitum est primum, quia minimum, et est perfectum, quia est in plenitudine vocis; praedicta ergo diffinitio est temporis perfecti in musica, et non imperfecti, cum tale tempus sit mensura omnium aliorum. Quod autem in aliquo minimo discrepat a perfecto, de necessitate est imperfectum; nam quodcunque minimum desit sibi, facit ipsum imperfectum. Omne igitur tempus quodcunque sit illud quod non sit minimum in plenitudine vocis sed plus quam minimum, non est perfectum, sed plusquamperfectum; et illud quod est minimum et non in plenitudine vocis, non est perfectum, sed de perfectione plenitudinis vocis deest sibi, et sic est imperfectum. Patet igitur diffinitio temporis musici, quoniam aliud est plusquamperfectum, aliud perfectum et aliud imperfectum. Utrum autem inter ista cadet medium, infra patebit. Et haec de secundo.

we say that the aforesaid definition is of perfect time in music; for, as was discussed above, everything that exists is measured by the prime and perfect of its kind, just as was exemplified by the numbers. But indeed, the musical time defined above is prime, because [it is] minimum, and it is perfect, because it is in fullness of voice. Thus the aforesaid definition is of perfect time in music, and not of imperfect, since such a time should be the measure of all other [times]. Moreover, whatever differs by some least thing from the perfect, is of necessity imperfect; for the least possible thing in which it might be lacking makes it imperfect. Therefore every time (whatever it may be) which is not minimum in fullness of voice but more than minimum, is not "perfect" but [is] "more-than-perfect;" and that which is minimum but [is] not in fullness of voice is not "perfect," but is lacking in the perfection of fullness of voice, and thus is imperfect. This, then, clarifies the definition of musical time, seeing that one kind is "more-than-perfect," one "perfect" and one "imperfect." And whether or not there can be any half-way condition among these will be clarified below. And so much for the second point.

Capitulum tertium

Reprobatur Quorundam

Chapter three

The rejection of a certain

Opinio Tam Circa Diffinitionem Temporis Quam Circa Distinctionem Eiusdem.

opinion concerning both the definition of time and the differentiation of it.

Quantum ad tertium, dicunt quidam contra praedictam diffinitionem temporis musici multipliciter, et primo sic: Tu dicis, tempus musicum est quod est minimum in plenitudine vocis, quam dicis formari decenter per instrumenta, et dicis hoc tempus esse mensuram cantus. Sed contra ego possum mensurare et tempus formare sine ipsa voce vel solum cum sono vel cum instrumentis vel breviter cantando organice vel rhithimice vel solum cum imaginatione mea; ergo tale tempus, quod tu dicis, non est mensura et primum omnium aliorum.

As the third point, certain people speak in opposition to the aforesaid multiple definition of musical time, [saying] first as follows: "You say that musical time is that which is minimum in fullness of voice, which you say is formed in a becoming fashion by the 'instruments' [of the human body], and you say that this time unit is the measure of song. But against this [I say that] I can measure and form a time unit without any 'voice'--either with sound[1] or with [artificial] instruments [playing quickly on winds or on string and percussion instruments), or simply with my imagination. Therefore such a time unit as you describe is not the measure and prime basis of all others."

Respondemus: Primum ordine naturae est illud quod est naturale quam illud quod fit ad similitudinem eius, sicut prius est exemplum quam exemplificatum. Sed ad exemplum et similitudinem temporis praedicti, quod est primum in musica armonica, ipsa

We reply: In the order of nature that which is natural is prior to that which is made in its likeness, just as a model is prior to that which is modelled after it. But according to the model and in the likeness of the aforesaid time unit (which is the prime time of vocal music), according to this

[1]Meaning the sound of an instrument as opposed to that of the human voice.

musica
organica et
rhithimica et
ommis nostra imaginatio
mensurat quicquid
mensuratur in cantu,
ut patet quoniam dicimus:
in tanto tempore
tuba tot semibreves
fecit ad similitudinem
temporis in quo voces
formantur; ergo tale
tempus, scilicet
armonicum, quod est
minimum in plenitudine
vocis, est prius
ordine naturae quam
omnia tempora quae in
aliis musicis duabus
considerantur, cum ad
similitudinem ipsius tem-
poris armonici mensurentur.
Item contra praedictam
diffinitionem ipsius
temporis, applicando
ipsum aliter quam debent,
dicunt quidam asserentes
ipsam esse dif-
finitionem temporis
imperfecti in musica
et non perfecti;
et hoc asserunt fuisse
de intentione magistri
Franconis, et rationem
assignant talem: Illud
quod est primum tempus
in musica est mensura
omnium aliorum
temporum, et prius
debet per consequens
diffiniri: sed tale
est tempus imperfectum quod
est in semibrevibus, quoniam
est primum eo quod
minimum; igitur
tale tempus debet esse
mensura omnium aliorum
et per consequens primo
debuit diffiniri.
Sed ipsum est tempus
imperfectum; ergo talis
diffinitio primo data

[time unit] wind instrument
music, string and percus-
sion instrument music, and
even our imagination
measures out whatever
is measured in song.
This is evident when we
say, "In 'X' time the
tuba plays 'Y' semibreves
after the manner of the
time in which voices are
formed." Therefore such
a time span, namely that
for vocal music, which is
the minimum in fullness
of voice, is prior in
the order of nature to
all times which are of
consideration in the
other two kinds of music,
since they are measured
by this vocal time unit.
Likewise certain ones
speak against the afore-
said definition of this
time unit (applying [the
definition] otherwise than
they ought), asserting
that it is the definition
of imperfect time in
music, and not of perfect.
They assert that this
was the intent of Master
Franco, and they set down
the following reasoning:
"That which is the prime
unit of time in music is
the measure of all other
time spans, and conse-
quently should be defined
as primary. But then this
is imperfect time, which
is in semibreves, since
it is first in this: that
it is minimum. Therefore
such time should be the
measure of all others,
and consequently it ought
to be defined as primary.
But this [time] is imperfect
time; therefore that
definition of time given

de tempore per magistrum Franconem debet intelligi fuisse temporis imperfecti et non perfecti.

Et sic in duobus contradicunt rationibus supradictis; primum est quia videntur dicere quod tempus minimum quod fit in semibrevibus sit mensura temporis perfecti. Et sic, secundum eos, imperfectum erit mensura perfecti, quia ipsi dicunt quod sit prius eo.

Sed sic respondemus: Scientia est de rebus, alias non esset scientia nisi fantastica. Sed in rebus ita est quod semper ordine naturae perfectum est prius imperfecto, sicut prius est pater filio imperfecto qui generatur, et ad mensuram sive ad comparationem perfecti semper mensuratur imperfectum. Nam dicimus: Haec res est imperfecta, quia non habet tantum de perfectione quantum habet perfecta, propter quod Philosophus in Metaphysica, ut supra dictum est, dixit quod primum quod est in unoquoque genere est mensura; et est illud perfectum quo omnia quae sunt illius generis mensurantur. Sed, secundum eos, diffinitio dicta de tempore est diffinitio illius temporis quod mensur-

first by Master Franco ought to be understood to have been of imperfect time and not of perfect."

And thus in two things they contradict themselves by the above reasoning. The first is that they seem to say that the minimum time (which occurs in semibreves) is the measure of perfect time. And thus, according to them, the imperfect will be the measure of the perfect, because they say that [the imperfect] is prior to it.

But we reply thus: Knowledge concerns things, or else it would not be knowledge, but fancy. But it is the case, with things, that in the order of nature the perfect is always prior to the imperfect (just as the father is prior to the imperfect son who is begotten), and the imperfect is always measured according to the measure of, and by comparison to, the perfect. For we say: "This thing is imperfect," because it does not have as much of perfection as does the perfect. Because of this the Philosopher (in Metaphysics, as was noted above) said that the first (or prime) thing that there is in each single species [of thing] is the "measure" [of it]; and it is this perfect thing by which all things which are of that kind are measured. But according to them, the given definition of time is the definition of that time which measures

at alia tempora; ergo oportet quod tempus sic diffinitum sit prius ordine naturae, et per consequens perfectum, quod possit mensurare in musica omnia alia tempora imperfecta; et sic erit diffinitio temporis perfecti et non imperfecti.

Praeterea nos dicimus: Tempus quo mensurantur semibreves est tempus imperfectum. Et quare? Quia non habet tantum de perfectione quantum habet perfectum: ergo tempus semibrevium mensuratur tempore imperfecto, et non e contrario. Diffinitio ergo praedicti magistri Franconis, cum sit de minimo et primo tempore quo omnia in musica mensurantur, est diffinitio temporis perfecti, quod habet rationem mensurae primo, et non imperfecti, quod habet rationem mensurati.

Et sic solutum est secundum, scilicet quod praedicta diffinitio sit temporis perfecti et non imperfecti.

Praeterea solvimus istud: tu dicis: Praedicta diffinitio est temporis imperfecti, quia est de tempore minimo in quo potest formari plenitudo vocis; sed istud potest fieri in tempore semibrevium. Quod non probatur

other times; therefore it is fitting that time thus defined should be prior in the order of nature, and consequently [be] perfect [time], which should be able to measure all the other, imperfect, times in music. And thus the definition will be of perfect time, and not of imperfect.

Besides this we say: The time by which semibreves are measured is imperfect time. And why? Because it does not have as much of perfection as perfect [time] has: therefore the time of semibreves is measured in imperfect time, and not [perfect]. Therefore the aforesaid definition of Master Franco, since it concerns the minimum and prime time by which all things in music are measured, is the definition of perfect time (which concerns the reckoning by the prime basis of measure), and not of imperfect [time] (which concerns the reckoning [according] to a measured thing).

This, them, is the second matter disposed of, namely that the aforesaid definition is of perfect time and not of imperfect.

We further dispose of this: you say, "The aforesaid is the definition of imperfect time, because it concerns the minimum time in which a fullness of voice can be formed; but indeed the latter can be made in the time of semibreves." [Now] this is an unproved

et nos negamus;
immo dicimus quod,
dummodo fiat plenitudo
vocis in quocunque
minimo tempore, illa nota
sive ille cantus nunquam
erit cantus semibrevium,
si fiat in plenitudine
vocis, modo
superius declarato.
Praeterea solutio
ad duo
praedicta:
tu dicis: Tempus
minimum et imperfectum
est mensura
aliorum; sed hoc
contradicit omnibus philo-
sophis et auctoribus
philosophiae naturalis, qui-
bus non est credibile quod
contradicat musica, cum
sit inventa ab homine per
viam naturae,
et maxime
Philosopho in
libro Metaphysicae,
ut superius dictum est.
Ergo tua opinio falsa
est cum suo
motivo.
Reprobata opinione
circa diffinitionem
temporis musici, repro-
bamus opinionem
quorundam circa
distinctionem ipsius
temporis, qui dicunt
quod inter tempus
musicum perfectum
et imperfectum est dare
medium; sed quod hoc sit
impossibile, respondemus.
Certum est musicam
esse de notis, et
ipsae notae sunt de
numeris; ita erit
ergo de tempore
applicato ipsis
notis, sicut
erit de

[assertion] and we deny it.
We say on the contrary that,
whenever a fullness of
voice is made in the minimum
possible time, that note
or that song will never
be a song of semibreves,
if it is made in fullness
of voice in the manner
described above.
[And here is] a further
disposition of the two
above [assertions]:
You say: "The time [that
is] both minimum and im-
perfect is the measure of
other [times]." But this
contradicts all the phil-
osophers and authors of
natural philosophy, whom it
is incredible that music
should contradict, since
[music] was discovered by
man by the agency of nature.
And [this] particularly
[contradicts] the Philosopher
in the book Metaphysics,
as noted above. Therefore
your opinion is false,
together with the reasoning
behind it.
Having disproved the
opinion about the definition
of musical time, let us
disprove an opinion of
certain people about the
differentiation of this
"time." These people
say that there is a halfway
condition between perfect
and imperfect musical
time; but we reply that
this is impossible. It is
certain that music is
taken from notes, and
these notes are taken
from numbers. In this
manner therefore will [music]
be taken from the time
applied to these notes,
just as it will be taken

numeris. Sed in
numeris ita est,
quod inter ternarium
et quaternarium
non est dare
medium, cum differunt
secundum magis
et minus et
secundum perfectionem
essentialem; et inter
ternarium et binarium
non est dare medium,
ratione praedicta. Sicut
igitur quaternarius
excedit ternarium,
quia dicit unam
perfectionem plus
quam ipsum, et binar-
ius deficit a
ternario, quia
dicit unam
perfectionem minus
eo, nec inter ista
est dare medium;
sic omne
quod excedit
tempus perfectum dicit
unam perfectionem vel plures
plus quam ipsum, et
sic est plusquamperfectum.
Et tempus
quod deficit
a perfecto dicit
unam perfectionem minus
ipsum, et
sic est imperfectum;
nec inter
ista est dare
medium.

Praeterea perfectum
et imperfectum appon-
untur contradictorie
(per Philosophum,
quinto Metaphysicae),
quia impossibile est
quod aliquid simul
et in eodem tempore
et secundum idem
possit esse perfectum
et imperfectum
sed inter contradictoria
nunquam est

from numbers. But in the
numbers the situation is
such that there can be
no midpoint between the
ternary and the quater-
nary, since they differ
according to greater and
lesser [quantity] and
according to essential
perfection; and there can
be no midpoint between
ternary and binary for
the same reason. Just as
therefore the quaternary
exceeds the ternary,
because it specifies a
perfection [that is] more
than itself, and [as] the
binary falls short of
the ternary, because it
specifies a perfection
[that is] less than itself,
and [just as] there can
be no midpoint between
these: in like manner
anything that exceeds
perfect time specifies a
perfection (or several [such])
[that is] more than itself,
and thus is "more-than-
perfect" [or "pluperfect"].
And a time that falls short
of the perfect specifies
a perfection [that is] less
[than] itself, and thus is
"imperfect;" and there can
be no midpoint between these
[i.e. imperfect, perfect and
pluperfect].

Besides this the perfect
and the imperfect are
situated contradictorily
(according to the Philos-
opher, Metaphysics V),
because it is impossible
that something at once
(both at the same time
and according to the same
[quality]) could be both
perfect and imperfect.
But indeed, there can never
be a midpoint between

dare medium, secundum omnem philosophiam; ergo inter tempus perfectum et imperfectum non est dare medium loquendo essentialiter et intrinsece et per se de natura temporis perfecti et imperfecti.[1]

contradictory things, according to all philosophy, and for this reason there can be no midpoint between perfect and imperfect time (speaking essentially, intrinsically and per se of the nature of perfect and imperfect time).[1]

In a subsequent section of the Pomerium Marchettus explains his conception of the measure of imperfect time:

Quid Sit Tempus Imperfectum Musice Loquendo

What imperfect time is, musically speaking.

Quantum ad primum, dicimus quod tempus imperfectum musicum mensuratum est illud quod est minimum, non in plenitudine, sed in semiplenitudine vocis. Et hanc diffinitionem sic probamus: certum est enim quod, sicut perfectum est cui nihil deest, ita imperfectum est cui aliquid deest; sed est certum, per diffinitionem superius probatum de tempore perfecto, quod tempus perfectum est illud quod est minimum in plenitudine integra vocis, modo ibi declarato; oportet ergo quod tempus imperfectum, cum deficiat a perfecto, sit non in integra plenitudine vocis.

As the first point, we say that the imperfect measured musical time unit is that which is minimum, not in fullness, but in semi-fullness of voice. And we prove this definition as follows: it is indeed certain that, just as the perfect is that which lacks nothing, so the imperfect is that which lacks something. But it is certain, by the definition of perfect time proved above, that perfect time is that which is minimum in integral fullness of voice, in the way explained there; Consequently it is [only] proper that imperfect time, since it falls short of the perfect, should not be in integral fullness of voice.

Sed dicet aliquis: Non debetis deficientiam temporis imperfecti a perfecto

But someone will say: "You ought not to assume [that] the deficiency of imperfect from perfect

[1] Marchettus, Pomerium, pp. 79-84.

sumere a plenitudine vocis, sed a minoritate temporis; unde debetis dicere: untrumque tempus, tam perfectum quam imperfectum est in plenitudine vocis, sed ipsa plenitudo vocis fit in minori tempore quando fit in tempore imperfecto, quam quando fit in tempore perfecto. Unde, secundum eos, illud minimum quod fit in plenitudine vocis est tempus imperfectum et non perfectum.

Sed ad hoc sic respondemus quod esse in plenitudine vocis et esse minimum de necessitate est tempus perfectum musicum, quia tempus perfectum musicum est prima mensura omnium, propter quod etiam mensura temporis imperfecti sumitur respective ad perfectum, subtrahendo partem ab eo, sicut statim dicetur. Cum igitur minimum in unoquoque genere sit mensura aliorum, ut supra dictum est, concluditur quod minimum tempus semper de se sit perfectum dummodo fiat in plenitudine vocis; sed subtrahendo a plenitudine vocis, statim subtrahimus a quantitate temporis perfecti, et constituimus per consequens imperfectum. Et sic patet quod diffinire tempus per pleni-

time [lies] in fullness of voice, but rather in a lesser quantity of time On account of this you ought to say [that] each of the two [kinds of] time, the imperfect as well as the perfect, is in fullness of voice, but [that] this fullness of voice is made in less time when it occurs in imperfect time than when it occurs in perfect time." Whence, according to them, that minimum which occurs in fullness of voice is imperfect time and not perfect.

But to this we respond thus, that [whatever] is [both] minimum and is in fullness of voice is of necessity perfect musical time, because perfect musical time is the prime measure of all, and because of this even the measure of imperfect time is taken in relation to the perfect (by subtracting a part from it, as will presently be discussed). Since therefore the minimum thing, for each kind [of thing], is the measure of the other [things of that kind] (as was discussed above), it is established that the minimum time should always in itself be perfect, provided that it is made in fullness of voice; but by taking [anything] away from fullness of voice we immediately remove [something] from the quantity of perfect time, and consequently set up imperfect [time]. And thus it is apparent that to define "time" by

	tudinem vocis est idem quod diffinire ipsum per maioritatem	"fullness of voice" is the same as to define it by "essential greater
575	et minoritatem essentialem. Stat ergo praedicta diffinitio, scilicet quod tempus imperfectum est illud quod	quantity and lesser quantity". The aforesaid definition therefore stands, namely that imperfect time is that which is
580	est minimum, non in plenitudine, sed in semiplenitudine vocis. Et hoc de primo.[1]	minimum, not in fullness, but in semi-fullness of voice. And so much for the first point.[1]

In these passages Marchettus further defines the concept of measure. His initial exposition of musical measure[2] had established that music will be measured by a prime measure according to the Aristotelian principle that everything is measured by the minimum thing of its kind. Since music is sound prolonged in time, it must be measured according to time. But time can be divided infinitely, and Aristotle's concept of measurement requires that there be a finite minimum thing which may serve as the prime basis of measure. Such a finite time may be found in music by the application of Franco's definition of measure as "that which is minimum in fullness of voice." The "fullness of voice" is fixed by Marchettus to a natural standard, a full human breath, and this finite time is taken as the Aristotelian minimum time and prime measure of music.

The next development given by Marchettus[3] to Franco's

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[1] Marchettus, Pomerium, pp. 158-159.

[2] Supra, pp. 120-123.

[3] Supra, pp. 126ff.

definition of measure as "that which is minimum in fullness of voice" is that this prime measure is also perfect (l. 130). The logic of this is apparent in that the idea of perfection is implicit in the very word "fullness," which specifies completeness or perfection. Thus the prime measure of music is the minimum perfect time (ll. 133-137). It is prime because it is the measure of all other times (ll. 141-143), and, since "fullness" describes that which is complete or perfect, it is distinguished from whatever is either more or less. Thus time greater than a fullness of voice is "more-than-perfect" ("pluperfect," or plusquamperfectum--referred to in the "Rubricae breves"[1]), and that time less than fullness of voice is "imperfect" (ll. 150-167).

Marchettus' definition of measure is then explained and defended philosophically. The objection is posited that one can have measure without any voice, so that the "fullness of voice" definition becomes meaningless. For measure is present in the sound of instruments or even simply in the mind[2] (ll. 193-202). But Marchettus replies, in Aristotelian fashion, that whatever is natural is primary, and that both artificial things and mental images are derived from that which is natural; thus the human voice, being more natural, is prior to other sounds or to mental images, and the definition according to "fullness of voice" stands. Other

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[1] Supra, p. 98, ll. 5-9.

[2] This refers to the three "kinds" of time unit or measure referred to by many other theorists (such as Johannes de Garlandia, supra p. 54): one for the human voice, one for instrumental sound, and one for rests (or "imagination").

music is to be measured according to the time of vocal music (ll. 231-241).[1] It is this philosophical assertion of the primacy of the natural that suggests to Marchettus a full human breath as the prime standard of measure. The primacy of the natural is an explicit governing principle throughout the Pomerium, being used (often by way of the most fantastic analogies to the human body) to explain and justify much of the practice of musical art; for, as Marchettus says, quoting Aristotle:

Ars imitatur naturam in quantum potest (per Philosophum, secundo Physicorum).[2]	"Art imitates nature insofar as it can" (from the Philosopher, Physics II).[2]

The second objection posited to Marchettus' definition of measure is that the prime measure according to Franco should be that which is minimum, and that since imperfect time (or, even more so, the time of a single semibreve) is less than perfect time it must be the minimum time, and should therefore be defined as the prime measure. (This is no doubt Marchettus' representation of the position of the French, who define the prime musical measure not as the minimum in fullness of voice but as the absolute minimum musical time--i.e., the minim note). To this Marchettus replies that the imperfect cannot be the measure of the perfect, because in nature the perfect is always prior to the imperfect (ll. 290-298). He insists that, according to nature, the Aristotelian "minimum" must be perfect (an interpretation of the Aristotelian definition of "measure" that the French did not feel

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[1] Cf. Garlandia, supra p. 54, l. 97.

[2] Marchettus, Pomerium, p. 50.

necessary), and thus imperfect time, while of lesser quantity of time than perfect, is not the minimum that forms the prime measure, but is a measured thing, an imperfect part that is measured with respect to the perfect whole, that is, perfect time (ll. 353-360). (Thus imperfect time, being a part, is not integral, and cannot be sung in an integral fullness of voice [ll. 503-515]).

At this point in the discussion the objection is interposed that Marchettus' "minimum fullness of voice" need not be perfect time, but can equally well apply to imperfect time "in semibreves" (ll. 366-375). Marchettus simply denies this, saying that a minimum fullness of voice, i.e., a natural full breath, will always occupy a full perfect breve, and cannot be made in the "time of semibreves." And, finally, Marchettus alleges that it is philosophically inconceivable, according to natural philosophy, that imperfect time could be the prime measure of music (ll. 387-407).

Even though in the course of this discussion Marchettus referred to imperfect time not as the measure but as "a measured thing" (ll. 357-360), he does recognize it as a measure. The point is simply that imperfect time is derivative from, and measured by comparison to, the prime measure taken as perfect time. Thus imperfect time is "that which is minimum, not in fullness, but in semi-fullness of voice" (ll. 493-495), and is less than perfect time by a third part.[1] Against this the objection is presented (again probably as Marchettus' representation of the French position)

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[1]"Tempus autem imperfectum deficit a perfecta in tertia parte sui ad minus..." Marchettus, Pomerium, p. 161.

that both perfect and imperfect time are integral measures[1] and of equal standing, and that the difference between them lies in the quantity of time, and not in fullness of voice. But Marchettus denies imperfect time equal status with the perfect, at least on a philosophical level, insisting upon the essential difference (that is, a difference of essence) between imperfection and perfection, and upon the natural priority of the latter. Thus imperfect time cannot, because of its imperfection, occur in fullness of voice, which is by nature perfect: consequently it is defined as less than, and derivative from, fullness of voice, i.e., as "semi-fullness of voice" (ll. 494-495).

One can hardly state too strongly, however, that these are philosophical, not practical, distinctions. Thus one goes astray[2] if he attempts to use the "full human breath" for a perfect breve as a guide to practical tempo, for Marchettus treats all perfect times alike philosophically, even though they might vary greatly in temporal duration. For example, he says of the perfect time divided into six semibreves (i.e., the senaria perfecta division):

Non possumus dare notam, we cannot give a note,

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[1] An "integral measure" is a complete, basic, unaltered and undiminished mensural unit of a mensural system of the numerical type. For Marchettus this unit is the perfect breve. The imperfect breve cannot be a coexisting, independent unit by the very nature of the terminology. Within any system there can be only one "integral" measure. It is the equivalent here of "prime measure."

[2] As in this writer's opinion did Salvatore Gullo, Das Tempo in der Musik des XIII. und XIV. Jahrhunderts (Bern: Verlag Paul Haupt, 1964), pp. 57-69. He bases an analysis of Marchettus on a determined metronomic value for the "minimum in fullness of voice." I can agree with few of either his procedures or conclusions.

quae ad minus unam partem temporis non continet in suo gradu naturaliter, aliter enim esset dare notam non cantabilem.[1]	which would not contain at least one part of time in its natural pace, for otherwise it would be an unsingable note.[1]

Accordingly the tempo for the senaria perfecta (dividing the breve into six parts) would be such that each sixth part, or minimum semibreve, would approximate the shortest singable note. Yet the same perfect breve could also be divided into twelve parts in the duodenaria division, in which case each twelfth part, or minimum semibreve, could clearly be no shorter than a sixth part in the senaria perfecta, where the minimum semibreve already approximates the shortest singable note. The inescapable conclusion is that the duodenaria perfect breve must be approximately twice as long as the senaria perfecta perfect breve,[2] even though both are in "fullness of voice." Thus "fullness" and "semi-fullness" of voice are philosophical distinctions, not an attempt to fix a practical tempo.

Nonetheless there is some practical information to be gained from the distinction. We read that imperfect time (in semi-fullness of voice) is less than perfect time (in fullness of voice) by a third part. If we apply this ratio only to those perfect and imperfect measurements which correspond,[3] we obtain the result shown in figure 11.

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[1] Marchettus, Pomerium, p. 117.

[2] Cf. "Rules for breves," supra p. 102, ll. 38-44.

[3] Cf. supra fig. 10, p. 115.

Imperfect times:		Perfect times:
quaternaria (div. into 4)	is 2/3	senaria perfecta (div. into 6)
senaria imperfecta (div. into 6)	is 2/3	novenaria (div. into 9)
octonaria (div. into 8)	is 2/3	duodenaria (div. into 12)

Fig. 11

A comparison of these relationships with those deduced from the "Rules for Breves" in "Chapter Four" will show that they are the same. The conclusion is that in the Italian system measurement proceeded by the breve, but that the breve varied in speed according to the extent of division, with the smallest notes tending to be equal in duration regardless of the mensuration.

Thus the value of the breve changed from one measurement or division to another. The speed of the breve in each measurement would then be the equivalent of the sum of the smaller notes into which it was divided, and the speed of these smaller notes would be relatively constant, tending to be as fast as practicable. In theory this system would produce relative stability of tempo for the smallest notes in all of the measurements, and for the breves within any one measurement--or from performance to performance for the same measurement. This latter circumstance in turn would permit a stable tempo relationship among different measurements, such as that suggested above in fig. 11 or in the conclusions drawn from the "Rules for Breves." But how well did this system work out in practice? Some of Marchettus' comments suggest that, just as is the case in modern performance, things were more flexible

in practice than in theory. For example, he observes in the course of a discussion of the novenaria division:

Sed postea quaeritur utrum novem, vel duodecim, vel plures vel pauciores, possint taxari tamquam totum tempus perfectum plenarie continentes.

Dicimus quod non, licet possumus dare ita paucas, quod de se manifestum est quod possunt plures fieri; et possumus dare tot, quod manifestum est quod non possunt proferri. Sed quod taxetur numerus infra vel supra quem determinatae non possint proferri semibreves, totam naturam perfecti temporis mensurantes, est omnino impossibile, cum hoc dependeat ab agilitate vocis. Et potest ratio sic formari: illud quod de se est omnino formale et universale, illud non distinguitur per aliquod materiale, quia illud non esset tunc separatum a materia simpliciter. Sed musica est quaedam scientia et consideratio mensurae temporis perfecti pertinentis ad ipsam, et ipsa est in intellectu; et intellectus est separatus a materia, et per consequens scientia, et quidquid pertinet ad ipsam. Si ergo Petrus, ex asperitate

But after this one asks whether an entire perfect time unit could be fixed as fully containing as much as nine or twelve [parts], or more or fewer [than this].

We say that [it could] not [be fixed], in that we can give so few [parts], that it is manifest per se that more [divisions] can be made; and we can give so many [divisions], that it is manifest that they cannot be performed. But that a number might be fixed, below or above which prescribed [division] semibreves could not be performed; ([a division] measuring out the entire nature of a perfect time unit), is altogether impossible, since this would depend upon the agility of [one's] voice. And this can be rationalized thus: that which in itself is altogether formal and universal, that thing is not distinguished by anything material, because then it would not be separate from the simply material. But music is a branch of knowledge. Now since an examination of the measure of perfect time pertains to this [knowledge], and this [examination] exists in the intellect, and [since] the intellect is separate from the material, so [is this] knowledge, and whatever pertains to it, [separate from the material]. If therefore Peter, on account of the harshness of his

organi, non potest
formare nisi
tres semibreves, ipsae
non debent determinari
ad hoc quia Martinus
potest formare novem,
et Iohannes duodecim;
et sic unus pauciores,
alius forte plures,
ita quod
impossibile est
omnino taxare
hominibus. Sed Deus et
angeli, qui sciunt
naturam organorum
hominum, possent dicere
quis esset ille qui
haberet organum magis
expeditum ad tales
semibreves formandas,
et qui plures possent
facere semibreves,
mensurae perfecti
temporis respondentes.
Ridiculosum et vanum
est omnino dicere:
Tot vel tot semibreves
possunt simul fieri
pro perfecto
tempore mensurando; sed
debet dici: Tot
semibreves possunt pro
tempore perfecto fieri,
quot vox humana
frangere potest,
mensura debita ipsius
perfecti temporis
observata.

instrument [i.e. his voice],
can form [a division of] only
three semibreves, [semibreves]
should not be limited to this
[division], because Martin can
form [a division of] nine,
and John [a division of] twelve;
and thus one [can sing] fewer
[divisions], and another as it
happens [can sing] more, so that
it is altogether impossible to
fix [a division] with respect to
mankind. But God and the
angels, who know the nature of
the instruments [i.e. "voices"]
of mankind, might be able to say
who he might be who has an
instrument more appropriate
to forming a particular
[division of] semibreves,
and which persons can perform
more semibreves ([in a division]
corresponding to the measure
of a perfect time unit).
It is altogether ridiculous
and vain to say:
"'X' or 'Y' [number of] semi-
breves can be set together
to the measuring out of a
perfect time unit;" but one
ought to say: "The number of
semibreves [that] can be set to
one perfect time unit [is]
however many the human voice
is able to break [it] up into
(while [still] preserving the
proper measurement of this
perfect time unit)."[1]

Marchettus' discussion here is one of the most practical in his treatise, but as with nearly every point he makes, this one also has its philosophical side. Philosophically he says that the extent of practical division of the breve is irrelevant, since musical performance pertains to that which is material, while the

[1] Marchettus, Pomerium, pp. 154-155.

science of music is purely intellectual, and thus separate from the material. And practically he says that the division of which a breve having a hypothetical "fixed value" within a given mensuration[1] is capable depends entirely upon the agility of the voice, that is, upon the skill of each particular singer.

And thus, we conclude from what Marchettus says, a singer will tend to sing as small divisions as he can. Since the time value of the shortest note he can sing will be relatively constant, the breves for music written in different divisions will go at different speeds,[2] with the time occupied by the breve in each case being equal to the sum of the short notes into which it is divided. So for any given singer the different divisions will have different speeds in proportion to the number of minims they contain. However, the tempo for a given division will also vary from singer to singer, since each singer will give a larger or a smaller duration to the shortest notes, according to his skill.

In other words, practical tempo at the time of Marchettus was variable, the speed at which the divisions were taken being subject to the skill of the performer. The measure, and thus presumably the conducting motion, was placed on the breve,[3]

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[1] I.e., conforming to "the proper measurement of...[the] time unit" (ll. 84-86).

[2] Which speeds--the "three tempi"--we have already treated above.

[3] This postulates the plausus pattern on the breve, with its constituent motions or "beats" on the larger semibreves--of which the imperfect times have two and the perfect three. Probably the first two semibreves of a perfect time would be conducted to the longer first "beat" of an unequal plausus pattern, with the

but the concepts of "fullness of voice" and "semi-fullness of voice" are principally philosophical distinctions more relevant to the science of music than to its practice. For music is a kind of knowledge, existing "in the intellect, and [since] the intellect is separate from the material, so is this knowledge, and whatever pertains to it, [separate from the material]"--supra, ll. 35-46.

Besides this explicit description of temporal flexibility, there is yet another reason why Marchettus' resort to a natural standard (i.e., a full human breath) for tempo is not to be taken too literally. We cannot fix a division of time with respect to human beings, says Marchettus--for human beings are variable, and a standard based on a variable can only be relative. Only God and the angels, he says, might be able to fix such a division for mankind. In other words, Marchettus' philosophical view of measure, while based on an Aristotelian, natural standard, is also Christian, recognizing God himself as the final arbiter and ultimate standard of measure. Thus we read elsewhere in the Pomerium that measure is a comparative thing:

...certum est enim quod	but it is clear that measure
mensura non potest esse,	can neither be,
sive cadere, nisi	nor can it occur, except
inter duo diversa;	among two different things;
est enim mensura	for measure is the
habitudo secundum	condition according to
longitudinis quantitatem	quantity (of length
et brevitatis mensur-	and shortness) of measured
atis ad mensuratum.	thing to measured thing.
Oportet ergo quod	So it is necessary that
duo cantus diversi sint,	there be two different voices,

---

third semibreve on the shorter second "beat." According to this hypothesis the manner of conducting perfect times in the ars nova would be similar to known practice of both the ars antiqua and the early Renaissance. Cf. supra p. 44.

si debent ad invicem mensurari; nihil enim potest esse mensura sui ipsius, nisi solus Deus.[1]	if they are to be measured in proportion to each other, for nothing can of itself be its own measure, except God alone.[1]

Measure at the Level of Mode

Our discussion of the Italian system of measure as described by Marchettus of Padua has thus far been concerned with measure at the level of the breve or time unit. Marchettus also recognizes and extensively discusses[2] measure at the level of mode.

It will be recalled that in Marchettus' conception the measure of the breve is considered the basic unit of measure, and that the role of the breve in musical measure is likened to the position of the number "one" in the number system.[3] Measure on the level of mode is based on this unit in a numerical fashion and according to a numerical logic very like that of Augustine.[4]

Marchettus discusses mode as the way in which the time unit is applied to notes without being subdivided. Measurement in music is accomplished, he explains, by applying the time unit to the notes "according to numbers" ("secundum numeros"), and the only numbers required for this are the first three terms of the numerical series:

Secundum proportionem numeralem tempus sic	According to numerical proportion time may be applied

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[1] Marchettus, Pomerium, p. 184.

[2] Ibid., pp. 85-88. The subsequent quotations are from this.

[3] Supra, pp. 120-121.

[4] Supra, pp. 63-67.

applicetur ad notas: nam	to the notes as follows: for
in numeris ita est quod	with numbers the situation is
omnis numerus	such that every number is com-
perficitur per	pleted by [the number] "one"
unum primo, secundario	first of all, and yet secondarily
vero per duos primos numeros,	by the first two numbers,
scilicet per duo et tria,	namely by "two" and "three,"
et non	and not by any more
per plures.	than these three.

For all the other numbers may be derived from "two" and "three" by addition or multiplication. "Two" and "three" are the more perfect numbers because all other numbers are measured through them, and "one" is primary because "two" and "three" are measured by it. "Three" is the most perfect measure of all (for, being larger than "two" it can contain it, while the reverse is not possible), but it is still measured by the prime numerical measure, "one."

Musical measure is governed by these principles of numerical measure. There are three degrees in notes. The first and most perfect corresponds to the number "three"; this is the perfect long or major mode. The second corresponds to the number "two"; this is the imperfect long or minor mode. The third is the time unit, the breve, which measures all the other notes as the prime measure.[1]

Thus larger notes in the Italian system are measured according to the breve by the numbers "two" and "three" by multiplication, just as smaller notes are reckoned by the same numbers by division.

Italian Measure: Summary

Measure in the Italian system at the inception of the ars

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[1]Marchettus, Pomerium, pp. 85-88.

nova was of the numerical order based upon the breve as the unit. This theoretical formulation of the concept of measure harmonized the Aristotelian definition of measure as the "minimum thing" with a maximum of conceivable alternatives by accomodating to each other both ancient (Aristotle) and more recent (Franco) authoritative tradition, a human or natural standard (one full breath) and a divine one (perfection), and--not least in importance--the "measure" actually in practical use in both notation and performance (the breve note). The speed of practical measurement according to the breve was varied both according to the particular mensuration of the notation (i.e. in accordance with the "three tempi" described in "Chapter Four" above) and the skill of the singers involved, the general principle being that one would sing the smallest notes as quickly as possible.

Measure in French Theory

French mensural theory of the beginning of the ars nova, while different from the Italian in some important respects, is very similar to it in many aspects of its conception and presentation. Our discussion of the French system will accordingly be restricted to highlighting the important differences.

The French concept of measure was more exclusively based on Aristotle, and its formulators seem less troubled by a need to harmonize and reconcile his definition with other, potentially conflicting standards for what "measure" might be. Since Aristotle had said that measure must be the minimum of a kind of thing, and since musical measure concerned the measurement of time, the

French ars nova concluded that this minimum would have to be the shortest time or note available in music. This note was apparently the minim (minima--"minimum") at the time the theory was first developed. Thus the minim was defined as the prime measure in the French system, functioning as the unit of a numerical system of measure just as the breve in the Italian system.

In Johannes de Muris' "Compendium musicae practicae," apparently an instruction manual for students, the concept of the prime measure is presented thus:

	Minima quae est?	What is the "minim"?
	Impartita est.	It is an indivisible [note].
	Quare?	Why [should it be "indivisible"]?
	Quia non est minimo	Because you can't have some-
5	dare minus.	thing less than the minimum.
	Quid est minimum absolute?	What is the "absolute minimum"?
	Quod est metrum et	Whatever is the meter and measure
	mensura omnium, quae in	of all [the things] that are of
	eodem genere continentur.	the same kind.
10	Quid est mensura?	What is the [prime] "measure"?
	Quae totiens	Something repeated a number
	repetita, quot	of times, which number ultimately
	mensurato fuerit	will have been made equal to
	finaliter adaequata.	the measured thing.
15	Quid vult dicere	What is meant by "making the
	mensurato mensuram	measure equal to the measured
	adaequari?	thing"?
	Plures cantus	Having several vocal lines
	sub multitudine	(with a large number of simul-
20	vocum in bona	taneous [singers'] voices)
	proportione musicali	sounding together in a pleasing
	consonari.[1]	musical harmony.[1]

The Aristotelian definition of "measure" appears in this passage in the form of the third question and answer: "What is the 'absolute

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[1]Johannes de Mvris, Notitia artis mvsicae et Compendium mvsicae practicae: Petrvs de Sancto Dionysio, Tractatvs de mvsica, ed. by Vlrich Michels, Corpvs Scriptorvm de Mvsica, Vol. XVII (n.p.: American Institute of Musicology, 1972), p. 127. Hereafter CSM XVII.

minimum'"? "Whatever is the meter and measure of all the things that are of the same kind." This is merely a reversal of Aristotle's equation of "measure" with the "minimum thing." (As a true equation the statement is reversible with no change of meaning).

"Measured things" are measured out by repeating the prime measure as many times as may be required--in other words, numerically, as multiples of a fundamental unit. And this fundamental unit is the basis of measuring out polyphonic music in such a manner that the several voices will be in a harmonious relationship to one another.

Figure 12, from the "Notitia artis musicae" of de Muris, shows how the notes of measured music are reckoned or calculated according to the minim as prime measure:

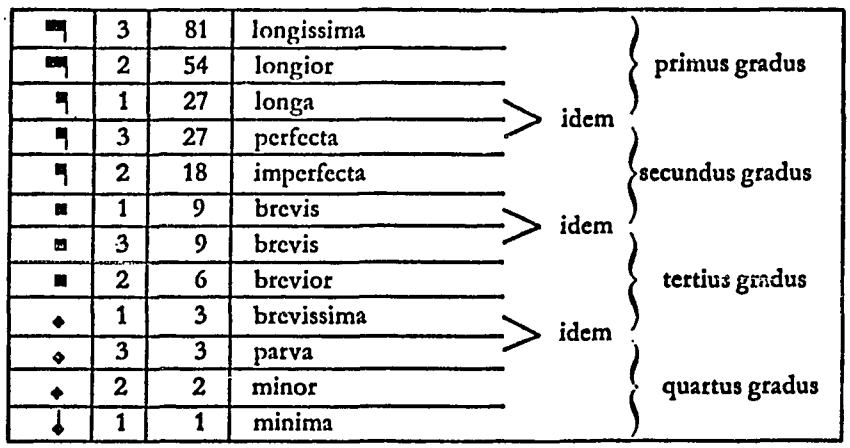

Fig. 12.--The degrees of music and their numerical calculation according to the French system.[1]

[1]Johannes de Muris, "notitia artis musicae," CSM XVII, 79.

The chart of figure 12 is arranged in six vertical columns. The first (from the right) labels the four different levels of reckoning by the prime measure, or "degrees" (gradus) of musical notation. The second column (idem)designates those notes which are the same and held in common by each of the adjacent degrees: the simple long (longa) of the first (primus) degree equals the perfect long of the second; the brevis of the second degree equals the perfect breve (brevis) of the third; and the semibreve (brevissima) of the third degree equals the major semibreve (parva) of prolation. The third column names the three notes in each degree.

The fourth column is the one containing the calculation of the value of each of the notes of measured music according to the number of minims or prime measures it contains. These calculations occur on four different levels according to the prime number, "one," and the two principal numbers, "two" and "three," so that each perfect (i.e. triple) value may be taken as a unit on a higher level. These different levels of calculation by the three primary numbers constitute the four "ranks" or degrees of notes. The only one of these degrees represented in Italian theory is the secundus gradus, so that while the perfect breve in the French numerical order has a value of "nine," in the Italian it is assigned the value "one."

Summary

French ars nova theory, like Italian, suggests that in the practice of measure tempo should be as fast as practicable--thus the minim is a note so short as to be called "indivisible"

(supra, p. 150, l. 2). And both systems conceive musical measure as a numerical system of order based on a prime unit. But at that point the two systems quickly part company. The French prime measure is conceived in exclusively Aristotelian terms as the shortest possible note, and makes no attempt to accomodate actual mensural practice (where, as we have seen in "Chapter Four" concerning the "three tempi," measurement followed the breve). The Italian prime measure, however, is so arranged as to coincide with practical measurement and also to accord with a variety of other standards for what "measure" should be.

CHAPTER SIX

TEMPO STANDARDS AND VARIABILITY

What standards for tempo in Medieval measured polyphony are suggested by Medieval sources, and to what extent would tempo be varied from such standards in Medieval performance practice? This chapter will briefly summarize the findings of this study as they touch on these questions.

Tempo Standards

Medieval writers on music suggest a variety of standards or guides to a proper tempo for measured music. These include:

1. A short syllable (modal theorists);
2. A note of a "moderate" duration (Franco, Anonymous IV);
3. Relative or comparative designations (of which no. 2 above is one), such as "slow," "medium" and "fast" (the "three tempi");
4. A full human breath (Marchettus de Padua);
5. The solar day, mathematically divided (Verulus);
6. The shortest singable note.

As we have seen, certain of these (as numbers 1, 2, 3 and 6) were of some practical significance or derivation, and others were more or less purely philosophical. None can yield any absolute standard of tempo, though number 6, "the shortest singable note," comes closest to this goal. Its implication is that tempo was generally as fast as convenient for the performer involved. Yet even this

guideline must be tempered with the knowledge that the written notes we find in the extant manuscripts of Medieval music probably do not reflect the shortest values actually in use. It is clear that many performers--exactly what proportion of the total we do not know--tended to treat the written music to a lesser or greater extent as a framework for improvised ornamental diminutions, and this fact renders any attempt to fix even approximate metronomic tempi by use of the "shortest singable note" standard highly questionable.

Yet another standard, the human pulsebeat, is alluded to in a peripheral way by at least one Medieval author, Marchettus de Padua, who says in one passage that "time is the measure of motion,"[1] and in a separate passage asserts that "the heart is the principal generator of motion."[2] These passages may be the germ of the well-known Renaissance statements linking the measure of musical time to the human pulsebeat, but Marchettus does not appear to make that analogy in a direct fashion. Both references alluded to above seem, at any rate, of philosophical rather than practical significance.

Tempo Variation

While we cannot suggest specific metronomic tempi for particular Medieval pieces with any degree of certainty, our knowledge of the relationships of tempo between the various measurements and of the circumstances under which tempo was subject to variation

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[1] "Tempus est mensura motus." Marchettus, Pomerium, pp. 75-76.

[2] "Dicimus quod cor...est principium generationis...omnis motus." Ibid., p. 50.

is more exact. For example, at the inception of the ars nova the pace of the breve in the several measurements varies directly (in relative terms) with the number of minims into which it is divided. Thus if one performs several pieces in different mensurations the pace of the breves should be varied by keeping the minims relatively constant from one piece to another. Likewise, if there should be a change of mensuration within one piece, the speed of the minim should be kept constant, with the pace of the breve adjusted accordingly. One might also wish to perform pieces or sections written in perfect prolations somewhat more slowly (by a factor of perhaps 4/3) with respect to the speed of the minim than pieces or sections in imperfect prolations, since there is sufficient theoretical evidence to justify such a differential.

One should keep in mind that these temporal relationships apply only once the initial tempo has been selected. If it is not defensible to set up a firm guidline for precisely what the initial tempo of the minim should be, neither is it responsible to leave this matter entirely to the discretion of the performer. Medieval writers clearly suggest that the tempo of the shortest notes used in a performance should be as rapid as clear articulation will permit. Thus the less skillful will sing more slowly than those capable of greater agility, but they will also, in all probability (being less able) tend to sing few if any improvised ornaments. The more skillfull musician will be able to sing or play small notes more rapidly, but being more skillfull he will also be more likely to be familiar with, and make extensive use of, the art of impro-

vising very short ornamental tones. In these circumstances it would not be unreasonable that the tempo of the longer notes would be similar in performances by either skilled or relatively unskilled singers. It thus seems unlikely that modern performers would go far wrong in selecting a tempo for Medieval music if they should observe this dictum: "If you wish to perform fast, improvise short ornamental tones. If you wish to perform more slowly, omit them." (Anyone in doubt as to what kind of ornamentation is appropriate to Medieval music would do well to study the Faenza manuscript as a guide).

Having once selected an initial tempo, then, under what circumstances should it be changed? Besides changes of mensuration, which we have already discussed, there is one other situation in which Medieval music permits--or perhaps one should say,requires--a change of tempo. This change of tempo is merely a temporary one, a momentary relaxation of regular measurement--what we today call ritardando.

Ritardando is generally appropriate to Medieval music at the end of compositions or sections of compositions. We know this because very often the ritardando is actually notated by the use of a rest called the finis punctorum. The finis punctorum (see fig. 13) has the same appearance as the modern barline, and (as nearly every Medieval theorist explains) calls for the suspension of regular measurement for the final notes preceding it. Franco, for example, says that "the finis punctorum is called 'unmeasured.'" "[It] indicates that the penultimate note shall be a long in what-

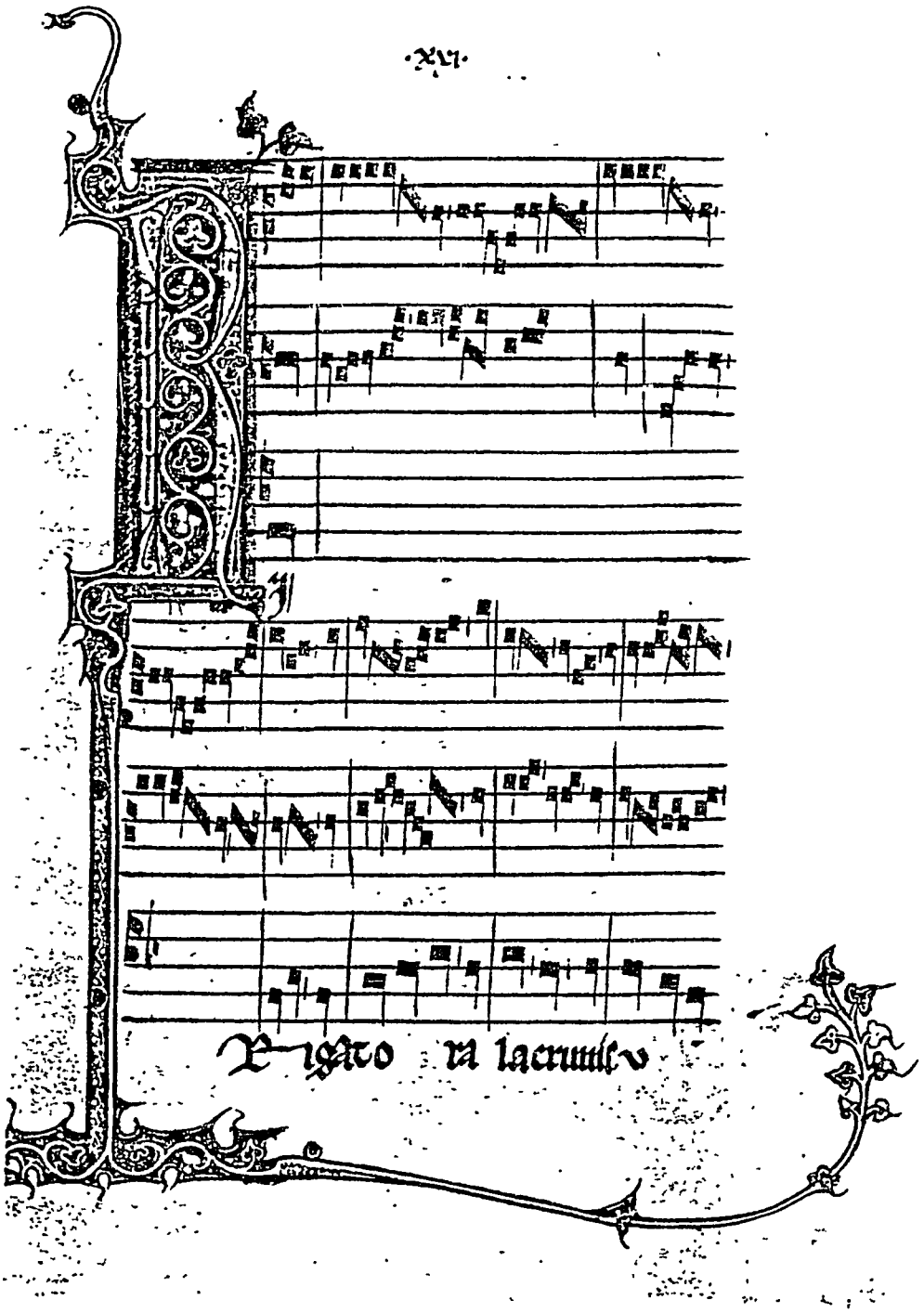

Fig. 13.--Clausula in score notation from the modal period, showing use of finis punctorum (from Mo., fol. 21ro.).

ever mode it is found, even though perchance such penultimate note (by reason of the mode in which it is) would be a breve."[1] Since this significance of the finis punctorum has often not been recognized as an important indication to be included in modern editions of Medieval music, the performer who wishes to observe such notated ritardandi must usually consult the original source or a facsimile.

But may the modern performer not apply ritardando at the ends of pieces or major sections without such consultation, or in instances where the original shows no finis punctorum? If he wishes to do so, the practice may be defended, for a number of Medieval writers mention the use of final ritardando even in the absence of the finis punctorum. Franco, for example, is one of those who describes final ritardando as a normal procedure. In explaining the use of measure in music he explains that it is applied to all the notes and rests "right up to the end, where such measure is not observed, but it is rather like a note of organum."[2] Franco's discussion of copula[3] similarly implies ritardando at "the end."

Thus while we cannot specify an exact metronomic tempo

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[1]"Finis punctorum immensurabilis appelatur...penultimam notam significat longam in quocumque modo invenitur, licet forte ista penultima de ratione modi, in quo est, brevis esset." Franco, "Ars cantus mensurabilis," Gerbert, Scriptores, III, 8. Cf. Coussemaker, Scriptores, I, 126.

[2]"Usque ad ultimam (penultimam), ubi non attenditur talis mensura, sed magis est ibi organicus punctus." Ibid., GS III, 14. Cf. CS I, 133.

[3]Supra, p. 80.

for any of the different mensurations of Medieval polyphony, we know quite well what the relationships between these measurements should be, and can deduce workable guidelines as well for choosing an initial "authentic" tempo. And, finally, we can readily determine those places in a composition where some flexibility in tempo, such as the use of ritardando, would be appropriate.

CHAPTER SEVEN

LEGACY FOR THE RENAISSANCE

The mensural system of the Renaissance, called tactus, was derived from and based upon Medieval mensural practices and concepts. To fully trace the course of the development of "measure" through the later ars nova and on into the Renaissance would be a study in itself, but it nevertheless seems proper to briefly suggest some of that development here.

The later development of the ars nova followed principally the French theoretical and notational systems, and transmitted them to the Renaissance. The minim continued for a long time to be considered the prime measure in a numerical (though not in a conducting) sense, so that when numerical proportions came to be applied to music they defined relationships in terms of the minim, the musical unit. This reliance upon the minim unit for proportional purposes continues into the Renaissance, but not without qualification, since some early Renaissance sources[1] seem confused at times as to just how to apply numerical proportions.

The separation of the prime measure in French theory (where it was the minim) from practical measurement (still following the

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[1] Cf. Joanne Tinctoris, "Proportionale," Coussemaker, Scriptores, IV, 176; also p. 157; "Tractatus de regulari valore notarum," CS IV, 53.

breve at the beginning of the ars nova) had created an unstable situation which invited confusion and was subject to criticism. When proportions were introduced it was natural that performers should sometimes be confused as to whether to apply the proportional ratio to the mensural unit of theory or that of practice. Further, the minim owed its role as prime measure to the fact that it was the shortest note--but very soon there were shorter notes than the minim, which made its place as prime measure no longer philosophically defensible. Thus some writers refused to acknowledge the existence of notes shorter than the minim,[1] others advocated continually moving the designation "minim" to whatever note was shortest in current use,[2] and still others averred that the mensural unit actually in practical use (which by the later fourteenth century had often become the semibreve) should be made the "measure."[3]

The Renaissance tactus cleared up this confusion by following this last course: it recombined the idea of a prime measure as the basis of a numerical system with the unit of measurement in practical use, and rather than fixing it to a

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[1]Tinctoris, "Tractatus de notis et pausis," Coussemaker, Scriptores, IV, 42; "Diffinitorium musicae," CS IV, 185.

[2]E.g., Johannis Hanboys, "Summa," CS I, 405.

[3]Anonymous VI, "Tractatus de figuris sive de notis," CS I, 374-375. For what appears to be an explicit ars nova description of conducting by the semibreve [which will be presented in a later study] see Das Cantuagium des Heinrich Eger von Kalkar (1328-1408), ed. by Heinrich Hüschen, Beiträge zur Rheinischen Musikgeschichte, Heft 2 (im Staufen-verlag zu Köln und Krefeld, 1952), pp. 45-46.

particular note such as the breve or minim made it movable among the several degrees of music, so that the mensural unit could be the breve, the semibreve, or the minim (corresponding to de Muris' second, third, and fourth degrees respectively--see supra p. 151, fig. 12).

Several Renaissance authors summarize the course of this development. Having already referred to such a discussion by Zarlino,[1] we shall conclude this study with a brief consideration of that by Ramis de Pareia, apparently the first[2] to explicitly describe the tactus conducting motion (tactus being the name given to "measure" by most Renaissance theorists).

Ramis has explained that the practice of the recent past[3] has been to place the measure on the breve in the mensurations C2, C3, O2, and O3, and on the semibreve in the mensurations O, O, G, and C. Recently, however, there has been some modification of this practice:

Aliquando autem propter cantus nimiam diminutionem cantores mensuram, quae in brevi erat observanda, ponunt in semibrevi, et si erat in semibrevi tenenda, transferunt illam in minima taliter, quod iam	But sometimes (because of the very great diminution of the song) singers place the measure, which was supposed to be on the breve, on the semibreve, and if it was to be on the semibreve, they transfer it to the minim (as already for

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[1] Supra, p. 44, note 1.

[2] Supra, p. 10, note 2. A full discussion of tactus is, of course, beyond the scope of the present study.

[3] The early fifteenth century, and perhaps the later fourteenth as well.

pro maiori parte omnes tenent et scribunt in compositione pro hoc signo ⊙ vel hoc ⊂, quod mensurae morula in minima teneatur integra.[1]	the most part everyone observes [in performance] and writes in composition for this sign ⊙ or this ⊂) so that the integral unit of duration of the measure is given to the minim.[1]

It is as a result of this recent shift to a minim measure in perfect prolations that Ramis' contemporaries use the measure on three different notes for the several mensurations--sometimes on the breve, sometimes the semibreve and sometimes the minim.

Thus the mensural practice of the Renaissance inherited a number of things from Medieval measure, including: the name mensura, and a large body of associated theory used as a source of "authoritative" citations; a conducting tradition (perhaps using the plausus motion, or something derived from it); a notational system organized numerically according to "degrees"; and, finally, the conceptualization of "measure" in music as a numerical system or order based upon a fundamental unit, which now came to be called the tactus.

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[1]Ramis, Musica practica, pp. 83-84.

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