

Regarding Meter and Rhythm in the *Ars Antiqua*

LEO TREITLER

THE rhythmic impulse in music is a quality directly apprehended, and its projection is a main aspect of the performer's art. But when we *conceptualize* about rhythm, we tend to think of it as a function of time which we express mainly in terms of duration and succession. Explaining rhythm through temporal concepts, placing it under control in that sense as a compositional factor, and devising a notation to signify it are all achievements of the practice and theory of music in the twelfth and thirteenth centuries.

During that period, duration came to be apprehended through a system of proportional measurement, and the succession of notes assumed patterns that depended on two kinds of configuration at the same time: (1) groups oriented with respect to accents, and (2) the background articulation of time in equal intervals; in short, the configurations of rhythm and meter. It is a history of the transformation of a performance practice into a compositional one, with the attendant provision of a notational system as the medium of transmission from composer to performer; and of the ultimately successful explanation of these things in the precepts of a theory.

The control of rhythm and meter entailed their coordination with other compositional factors, particularly melodic phrasing and harmonic and contrapuntal organization. The history of rhythm and meter in that time is therefore only an aspect of musical developments in general and it can be well understood only in that light.

This essay was completed while I was a fellow at the Humanities Research Centre of the Australian National University. I should like to express my gratitude to the Centre and its director, Professor Ian Donaldson, for the opportunity of working there.

The coordination of time- and pitch-elements produced a new level of complexity, and the development of an explicit rhythmic notation served the consequent need for an invariable transmission. This outlines a simultaneous and fundamental change in the nature of the music and the relations of its transmission: a change toward the production of complex and fixed musical entities, signified by notated scores that provided performers with relatively unambiguous instructions. It was one of the major revolutions in the history of Western music.

The basic claim here, made against two prevailing views in the modern literature, is that the music of the twelfth and thirteenth centuries was accentual. It directly opposes the view — developed most fully by William Waite — that *ars antiqua* rhythm was derived from the quantitative meters of classical prosody;¹ and it contradicts indirectly the view of Carl Dahlhaus that the modern rhythmic system based upon meter and accent emerged only in the sixteenth and seventeenth centuries as a result of transformations in mensural rhythm. He characterizes mensural rhythm as “Zeitmessend” in that rhythmic configurations are determined most prominently by the measure and proportion of durations and less so by their grouping with respect to accents.² I would put it, rather, that the accentual basis of rhythm was established in the *ars antiqua*, but receded into the background with the development of the more subtle time-measuring rhythm from the fourteenth century on. How that occurred, and what the shifting relations were between accent and duration during the *ars nova* and Renaissance, are questions for further study. My task here will be to argue for the claim regarding the nature of rhythm in the twelfth and thirteenth centuries.

In both practice and theory, the rhythmic conception of that time was manifested most prominently as a set of stereotyped rhythmic patterns called “modes,” hence the system itself is referred to in the modern literature as “modal rhythm.” It was expounded in manuals written about the second half of the thirteenth century and transmitted in practice through repertory collections of which the earliest surviving ones were written down during the same half century — some fifty to seventy-five years after the practice had been

¹ *The Rhythm of Twelfth Century Polyphony* (New Haven, 1954).

² “Zur Taktlehre des Michael Praetorius,” *Die Musikforschung*, XVII (1964), 162 ff.

established. The repertories involved are the polyphonic settings of liturgical chant (organum) and the polyphonic conductus and motet compositions of the School of Notre Dame in Paris.

I

The basic notion in modal rhythm is the measuring out of musical time through the regulation of long and short durations ("longa" and "brevis," to be identified as L and B). In the earliest explanation (*De musica mensurabili* by John of Garland, ca. 1250)³ the ratio of L to B is normally as two time units to one. Those basic durations were paced out in repeating patterns according to a number of standard models or modes of rhythmic movement. Usually, six rhythmic modes are identified in the treatises in the following order (the description is taken from the treatise of John of Garland):

The first mode proceeds by an L, a B, and another L,
and continues thus indefinitely.

The second, conversely, by a B, an L, and another B.

The third by an L and two B's and another L.

The fourth by two B's, an L, and two B's.

The fifth entirely by L's.

The sixth entirely by B's.

The basic configuration in each pattern is the *foot* (L-B in the first mode, B-L in the second, L-B-B in the third, B-B-L in the fourth, L-L in the fifth, B-B-B in the sixth). Modes 1, 2, and 6 are called "measurable" because they involve only the "correct" durations (B of one time unit and L of two time units). These are the building blocks of the system in the earliest conceptions. Modes 3, 4, and 5 are "beyond measure" because they involve durations that are beyond the measure of the "correct" values of the B and L (a B of two time units, an L of three). John describes the L of three time units as the sum of a correct L and B, whereas in the later explanations by Franco of Cologne (ca. 1280), it is a "perfect" L and the durational standard for all the modes (there will be more to say about this difference later).⁴

³ Ed. Erich Reimer as Vols. X and XI of the *Beihefte zum Archiv für Musikwissenschaft* (Wiesbaden, 1972).

⁴ *Ars cantus mensurabilis*, ed. G. Reany and A. Gilles, *Corpus scriptorum musica*, XVIII (1974), American Institute of Musicology. Trans. Oliver Strunk in *Source*

That the description of modes 1-4 carries through in each case to the first element of the following foot reflects the concept of *ordo*. An *ordo* is a melodic segment or phrase in one voice comprising one or more successive feet of a mode uninterrupted by rests. The theorists distinguished between perfect and imperfect *ordines*, according to whether the phrase ends with the first element of the foot or not, respectively. To speak of the second perfect *ordo* of the first mode, for example, would be to speak of a phrase comprising two feet of the first-mode pattern, ending with the long of a third foot followed by a rest. Since "perfect" is synonymous with "complete" and "imperfect" with "incomplete," we learn from this classification scheme that there was a norm for ending phrases on the beginning of a foot — that is that melody was understood normally to move from the beginning of one foot to the beginning of another. In Franco's terminology, that would be from the beginning of one perfection to the beginning of another. When this conception is considered together with others soon to be discussed, it will be seen that underlying the concept of *ordo* is a conception of melody moving from downbeat to downbeat in a triple meter.

The concepts of the foot and the *ordo* are two fundamental characteristics of the modal system that were for a time in opposition, a situation that created much difficulty. On the one hand, there was the idea that all rhythmic patterns were *built up* of the basic durations L and B; on the other, that the *perfection*, whatever its durational patterns, was the basis of rhythmic organization, and that music moved from the beginning of one perfection to the beginning of another. Musical time is measured in one conception by sequences of the basic durational elements laid end to end, in the other by higher-order durations articulated in patterns of lower-order ones.

The term "mode" for a standard rhythmic pattern denotes quite literally both the sense of *manner* (a term that occurs regularly in the treatises) and that of *norm*. *Manner* reflects the qualitative aspect of the conception; the modes are distinguished as qualities of rhythmic movement.

Readings in Music History (New York, 1950). In Chap. V, Franco writes: "The perfect long is called first and principal, for in it all the others are included, to it also all the others are reducible." The time span of three beats Franco calls a "perfection." "Three tempora, whether under one accent or under several, constitute a perfection" (Chap. V).

As for *norm*, it was not intended that the six modes should literally exhaust all rhythmic possibilities but rather that, as concrete models with several possibilities for variation and substitution, they would suffice to provide the basis for the range of possibilities. Nevertheless some theorists, evidently not satisfied with these provisions, specified additional modes as models for exceptional cases. This fact suggests that the modes should be regarded as crystallizations out of a flexible rhythmic practice. Franco reflects the opposite tendency of the later thirteenth century to shift the emphasis away from the distinctness of the modes and toward their commensurability on the basis of the three-beat L — *the perfection* — from which he wrote they could all be derived. That amounted ultimately to an explanation of rhythmic patterns in the context of what we would call measures rather than modes. And it corresponds to a tendency in the music of the late thirteenth century — especially the motets — to break down the sharp distinctions between modes and simply to compose in triple meter.

Modal rhythm arose in the context of polyphonic music, and earliest of all in the context of organum. From the beginning, it was in the service of the sound ideal that informed the principles of polyphony: the maintenance of a prevailing consonant sonority over and above the contrasting of consonance and dissonance. With a rhythmic conception in which the central phenomenon is the alternation of long and short durations, that sound ideal translated easily into the principle that the long durations should in the main be consonant, and that any dissonance should be short — somewhat like the intention of our idea of passing dissonance. This is the way some manuals explained it. In what reads like an instruction to performers who sang the upper voice in a two-part melismatic organum, John of Garland wrote, “Everything that meets with another according to the virtue of consonance is to be long.”⁵

Franco put the matter in a characteristically different way: in the event that a long note in the upper voice of an organum threatens to make a dissonance with the tenor, it is not to be made short; rather the tenor is either to move momentarily to a consonant tone or become silent for the duration of the note.⁶ This provides for the integrity of the rhythm and phrase structure of the melody, while

⁵ Chap. XIII.

⁶ Chap. XIV.

still satisfying the demand for consonance. Evidently that integrity had a greater value for Franco than for John, and perhaps we may conclude that his attitude is the more modern in that he wishes to leave such matters as rhythm and phrase structure less open to the discretion of the performer.

The association in the treatise of John of Garland between consonance and duration, while understandable in view of the priority of the consonance principle, created problems. For in the alternation of consonance and dissonance, it is consonance that is the goal; consonance displaces dissonance, dissonance prepares consonance. This dynamic aspect of the consonance concept — which after all is in the nature of things — is apparent in the language of the theorists. Thus, Franco: “Immediately before a concord any imperfect discord sounds well.” And Anonymous IV (ca. 1280, but after Franco): “[Of two simultaneities] the final one must always be consonant.”⁷ With the association of consonance and duration, the quality of arrival transfers to the L, which creates the confusion between accent and duration that flawed the explanations of John and his conservative followers. For in musical reality, the resolution of a dissonance by a consonance, in the absence of any contrary cues, itself defines an accent, whether the duration of the consonant note is long or short.

Franco realigned the association in a way that resolved the confusion: “In all modes consonances are always to be used at the beginning of the perfection, whether this beginning be a long, a breve, or a semi-breve.”⁸ As he says elsewhere, the perfection is marked by an accent (although he does not make it explicit, everything points to the presumption that the accent is borne by the beginning of the perfection).⁹ Franco’s precept reinforces the sense of the beginning of the perfection as a point of arrival that was already implicit in the concept of *ordo*.

Now this second of Franco’s formulations of the consonance rule refers to discant, not organum. And for discant John of Garland also had a different rule: “All odd-numbered notes should be consonant with one another.”¹⁰ In effect, the rule applies to the first element of

⁷ Anonymous IV, Part III in *Der Musiktraktat des Anonymus 4*, ed. Fritz Reckow, *Beihefte zum Archiv für Musikwissenschaft*, IV and V (Wiesbaden, 1967), 75, 1.4; Franco, Chap. XI.

⁸ Chap. XI.

⁹ Chap. V.

¹⁰ Chap. XI.

every foot (in the third mode, the two B's are counted as one for this purpose). John's theory is thus equivalent to Franco's. But since his theory in general excludes the concept of the perfection, his explanation, here as elsewhere, is circumlocutional. Both formulations, however, have the result that the demand for a prevailing consonant sonority is to be satisfied by the principle that downbeats — the beginnings of the perfection or the foot — jointly constitute a chain of consonances equidistant in time and thereby create a temporal hierarchy. Today we call such hierarchical organization *meter*, but the dependence of rhythm, harmony, and counterpoint on it then was essentially the same as now.

The opposing statements of John and Franco concerning the control of consonance in both organum and discant again point to two fundamentally different conceptions about the basis of rhythmic organization which we have mentioned very briefly: the simple alternation of long and short durations in a flat chain and the hierarchical organization of time through musical meter. It is the difference between the filling-in of unarticulated time with fixed durations of one and two beats, strung out according to traditional patterns, and the grouping of notes within the invariable units in which time is divided. In the first case rhythm is a matter of the order of material elements, the durations. In the second it is the creation of form or order within the succession of equal durations, the perfections or measures.

A direct insight into the contrast between the two conceptions is afforded by the corresponding explanations about the two varieties of L's (those with two and three beats). For John of Garland the two-beat long is the correct and true component of rhythmic patterns. The three-beat L is not a true duration but a composite of the correct L and B. For Franco the L that is measured "under one accent by three time units" is the perfect long. The two-beat L is a derivative, an "imperfect" L, a result of the reduction of a perfect L by a following B. The perfect L is the common currency of conversion for all modes. In the alternation between consonance and dissonance, the consonance is to fall at the beginning of the perfection. Considered together, these precepts of Franco's can mean only that rhythm for him was based on the perfection, that is on what corresponds to the modern three-beat measure.

We can broaden the context for a moment in order to gain perspective on this difference between John and Franco.

The conception of the B as a "short time" (*tempus breve*) or simply as "a time" (*tempus*) satisfies the requirement for a minimum that is the reference unit for the formulation of all durational relationships. From that vantage point the perfect L is a compound, as John has it. But Franco, while he transmits the *brevis* concept, wishes at the same time to present the perfect L as a primary quantity. For he recognizes its essential role in the rhythmic system and its notation. The perfection is the reference unit for all the modes; and it is the primary division of time into perfections that is the basis for determining the durations of L's and B's (i.e. it is the premise for the operation of alteration and imperfection).

Johannes de Muris, in the *Ars novae musicae* (ca. 1300) resolved the ambiguity by making the *minim* the unit of reference and giving all note levels from the B upward the perfect and imperfect forms.¹¹ Presumably that was made possible by the shift of prevailing note values from L's and B's to B's and *semibreves*, and by the end of a rhythmic practice characterized by modes. From this theoretical vantage point, we can mark the conclusion of the period of modal rhythm by these changes.

The two conceptions regarding modal rhythm were mixed in the theory of the thirteenth century, and that seems to have been responsible for much of the disagreement and internal inconsistency that has made the theory as a whole so difficult to clarify. Looking only at the beginning and the outcome in the theory, it is tempting to trace a development from the conception based on quantity to that based on perfection. But that would be quite misleading, for the quantitative conception dominates some of the later treatises (e.g. that of Anonymous IV). Holding all the treatises in view, it is not a development that we see but a struggle with difficult and contradictory ideas in an effort to present coherent explanations and instructions.

The nature of the notational system transmitted in the practical and theoretical sources of the thirteenth century follows from two essential conditions of modal rhythm. First, modal rhythm is *men-*

¹¹ See the translation in Strunk, *op. cit.*, especially the table on p. 177.

sural, that is it entails the measurement of time. Indeed the term “modus” traditionally referred to “measure by length, circumference, size, quantity.”¹² The modern conventional characterization of the theorists of modal rhythm as “premensuralists” is quite misleading and should be abandoned. Second, the modal system is proportional, that is the durations of notes are regulated through fixed proportions (2:1, 3:1).

In view of these characteristics, it is the optimal function of the notation vis-à-vis rhythm to indicate to the singer the arrangement of L's and B's that he is to follow, and whether each L and B is “correct” (two and one beat[s], respectively) or “beyond measure” (three and two beat[s], respectively). We must say “optimal” because, taking the notated Notre Dame sources as a whole, much of the time the notation sets up a general rhythmic type, but leaves a more or less wide range of details for the singer to settle in performance. Indeed a full description of that system must present it as functioning through the collaboration of composer, notator, and performer, with variable and uncertain boundaries for the role of each.

The signification of relative duration relied on a number of general principles of which the following are the most important for this discussion.

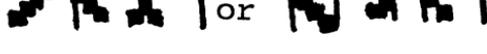
1. In the notation of melismatic music, the succession of the L's and B's was indicated by standard successions of notational figures. The following arrangements (see p. 533) represent the six modal patterns, summarized from the presentation of John of Garland.¹³ (In each case, the reader should compare the pattern with the corresponding description on p. 526.)

2. The relative values of the L's and B's (whether “correct” or “beyond measure”) were to be determined, according to John's proposals, by the note's context among other L's and B's, following these rules: all notes are “correct” except an L preceding an L (three beats) and the second of two B's standing between two L's (two beats) both instances of which are “beyond measure.”¹⁴ On reflection, it will be seen that these rules can be deduced from the modal ligature patterns.

¹² Charles Jones, “Carolingian Aesthetics: Why Modular Verse?” *Viator/Medieval & Renaissance Studies*, Vol. VI (Berkeley and Los Angeles, 1975).

¹³ Chap. IV.

¹⁴ Chap. I.

First:	
Second:	
Third:	
Fourth:	
Fifth:	
Sixth:	

There is a clear drift throughout the thirteenth century away from reliance on contextual indications and toward greater reliance on the shapes of the figures. Compare Franco's ligature rules to John's: binary ligatures are B-L; those with three or more notes are B at the beginning, L at the end, and all notes in between are B; without propriety (reversal of the normal presence or absence of a stem) the first note is L; without perfection (reversal in the position of the last note in the ligature) the last note is B.¹⁵ This gives the values for all notes individually and independently, regardless of the context of ligatures, and of the context of L's and B's within ligatures.

In the theory, the change is neatly captured by the contrast between these formulations of the relationships between the modes and the notational figures. John of Garland: "A figure is a representation of a sound according to its mode." Franco of Cologne: "A figure is a representation of a sound arranged in some mode. From this, it follows that the figures ought to indicate the mode and not, as some have maintained, the contrary."¹⁶

It requires some effort to understand the radical nature of what was effected in the realm of notation during the thirteenth century. And despite the difference between John of Garland and Franco of Cologne, the basic notion was there at the beginning of the theoretical tradition. John wrote this curious sentence: "All simple fig-

¹⁵ Chap. VII.

¹⁶ John, Chap. II; Franco, Chap. IV.

ures are valued according to their names, whether they are with text or not.”¹⁷ That is, the graphic figures designated “L,” “B,” etc., *represent* the durations that have been assigned to those designations — two beats, one beat, etc. Stating it still more directly, written figures represent durations. The form in which John expressed this is characteristic of his reasoning style, but that he should feel obliged to say it at all suggests a consciousness about the novelty of the idea. It was indeed novel when he proposed it; we do not see it put into practice for another generation. But it was the basic notion behind mensural notation.

In order to focus now on the performer’s role in relation to the system of rhythm and its notation, we shall consider two short passages whose notation falls more or less short of the ideal of mensurally unambiguous signification. The objective will be to define the limits of the information that is transmitted through the notation, to identify the range of choices open to the performer and the sorts of considerations that would have guided his choices, and to gain an impression of the kind of competence that a rhythmic performance from such notation might have entailed. We want a sense of the kind of notation that it was, and of the sort of act that performing from it was.

Example 1, from London, British Library, Harleian 978.

The image shows two staves of mensural notation. The first staff is divided into four phrases labeled I, II, III, and IV. The second staff is numbered 1 through 19, corresponding to the notes in the first staff. The notation consists of square notes on a four-line staff, with stems and various ligatures connecting them.

Example 1 is the opening passage (phrases I-III) of a well-known English dance in a notation of the late thirteenth century. Taking just the lower voice in I, there is no standard ligature pattern that is immediately apparent. The principal clue is the pitch repetition at the outset, which suggests a blocked ternary ligature and hence — considering the following binary ligature (2) — a first-mode pattern. The stem descending from the third note represents a passing

tone with the duration of a B. That reduces what would have been an L at the end of the initial ternary group (1) to a B. Assuming a first-mode pattern, ligature 2 begins B, but the second note is uncertain, since ligature 3 breaks the modal pattern. Of the possible readings of a ternary ligature, two are plausible here: L-B-L and B-B-L (all "correct"). If L-B-L, then the last note of ligature 2 is a three-beat L; if B-B-L then the last note of ligature 2 is B. Why? For the first case, John of Garland could have cited the rule "L preceding L is beyond measure" (i.e., three beats). The performer would not have rationalized that way. He would have started a first-mode pattern going in his ear, and he would have known musically that L's are stressed and fall at the beginning of the perfection. To have ligature 3 begin a new perfection, he must sustain the last note of ligature 2 for three beats — he must let it fill the preceding perfection. But if ligature 3 begins B, then the last note of ligature 2 must be B also. The rationale in this case is that the normal L at the end of ligature 2 is replaced by two B's, the last of ligature 2 and the first of ligature 3. But the musical impulse will again be more direct: one wants the final note of ligature 3, an L, to fall on the stressed initial position of the next perfection, for there starts a rhythmic reprise of the beginning (through ligature 5).

The choices come down to two versions of the phrase, each musically and notationally plausible (see Exx. 2a and 2b). Since the piece is clearly built of parallel phrases of identical lengths, and since the upper voice in phrases III and IV cannot be performed at all in the time of six perfections as is version 2b, that version is substantially ruled out.

Example 2 (see Ex. 1, lower voice, phrases I and II)

a.

b.

Phrase II of Example 1 repeats phrase I, and the performance of phrase III will be affected by decisions made about phrases I and II. The phrase (*lower voice*, still) will begin in the first mode. Figure

13, by analogy with figure 3, will begin L-B, but its final note will depend on the reading of figure 14. Once again, that will be either L-B-L — in which case figure 13 ends with a three-beat L (Ex. 3a) — or B-B-L — in which case figure 13 ends B (Ex. 3b).

Example 3. (see Ex. 1, lower voice, phrases III & IV)

This time both versions are of the same length, but the difference in the performance of figures 13 and 14 emerges in the rest at the end of phrase III (B or L). That means that neither version can be conclusively eliminated. But now if we take phrases III and IV as a pair (IV is transcribed without comment in Ex. 3, since there seem to be no questions about it), we note that they work as antecedent-consequent, and that they will work better that way if phrase III is performed with a feminine ending (Ex. 3a) as compared with the masculine ending of phrase IV (Ex. 3b). The reading of figures 13 and 14 is influenced, then, by a higher-order musical judgment.

In interpreting this notation, the performer is not simply reading the individual figures for the durations they signify. A rhythmic performance results from the juggling of four different kinds of configuration at once: the underlying L-B-L pattern, the isochronous perfection with stressed initial position, the variable patterns of the L's and B's within ligatures, and the variable values of the L's and B's according to their juxtapositions with one another. The performer must then control his interpretations from the viewpoint of the larger phrase organizations that they yield.

These decisions were no doubt quite spontaneous; hypotheses suggested by the notation were instantly reinforced or contradicted through cues provided by melodic and harmonic factors. Plausible solutions fell into place and unlikely ones were eliminated. Of course once the performer had made his way through the piece (or probably even once he had heard it), its performance became set,

that is stereotyped, and not to be forgotten. But then he would no longer have been "reading" the notation. If he referred to it at all in subsequent performance, it would have been only to remind him of what he already knew. Notation of this sort must then have functioned in two different ways vis-à-vis the performance: as a set of cues that served the performer as points of departure in working out a performance and as a mnemonic. Neither corresponds to the ordinary modern sense of "reading."

We can quickly gain a sense of how natural and spontaneous a process the performance of such a piece as is shown in Example 1 would have been, if we consider as an analogous situation the recitation of some simple English verse. The following rhyme should be spoken aloud:

Ride a cock horse to Banbury Cross
 To see a fine lady upon a white horse;
 Rings on her fingers and bells on her toes,
 And she shall have music wherever she goes.

Usually the following stress pattern will be marked in the performance of this verse (X designates an accented syllable, O an unaccented one, – designates a pause in place of a syllable but of the same duration that is required for a syllable):

X O O X – O X O O X –
 O X O O X O O X O O X – –
 X O O X O O X O O X –
 O X O O X O O X O O X – –

There is no consistent pattern in the number of syllables to the line, and while both dactylic and iambic movement can be heard, there is no consistent poetic meter. There are two controlling factors for the performance. Each line has four stresses, and the time interval between stresses is always the same. This is so between lines as well as within them. In that time interval, there may be one or two unstressed syllables, or none. (The dashes in the schema above show that the time between stresses is always the same, regardless of the number of unstressed syllables.) We may say that this duration has three positions. The first is always occupied by a stressed syllable; the second may be occupied by an unstressed syllable, or it may be vacant; if it is occupied, the third position is also occupied by an

unstressed syllable; the second may be vacant and the third occupied but not vice versa; the unstressed syllables with which lines 2 and 4 begin are actually in the third position of the last group of the preceding line. The time taken for each syllable is a function of the number of unstressed syllables between stresses. Without the slightest reflection, the performer will take care to observe the stresses and preserve the time interval (three "beats") between them, adjusting for the variable number of unstressed syllables. Where two stresses follow one another directly, the first stress is "sustained" for three beats ($\underline{\text{J.}}$). Where there is one unstressed syllable, the

performance is $\underline{\text{J.}}$ $\underline{\text{J.}}$; where there are two, the duration is evenly

divided ($\underline{\text{J.}}$ $\underline{\text{J.}}$). The first of these principles corresponds to the

mensural rule that an L before an L is perfect; the second corresponds to the imperfection principle (again, in English there is nothing corresponding to the alteration principle); and the third corresponds to the *fractio modi* principle. Again the description seems rather complex for what is essentially a spontaneous and simple process. The reader who leafs through *Mother Goose* will find again and again that his performance rests on his grasp of two factors: the number of stresses in the line, and the constant time interval between stresses into which he must fit the unstressed syllables (the number will vary between 0 and 1 or 0 and 2, depending on the metrical scheme). The parallel with modal rhythm is clear. The constant time interval is the perfection, and the regularly recurring stresses are the accents at the beginnings of perfections. As for the number of stresses in the line, the performer must make a projection of the length of the phrase, based on his perception of the higher-order form, and that, too, will be a factor in his working out of the lower-order metrical organization. Then he proceeds, utilizing whatever detailed cues the notation provides.¹⁸

Example 4, a passage from an organum of the oldest layer of the

¹⁸ This discussion has profited from the writings of Morris Halle and S. J. Keyser on prosody. Expositions of their theory and further bibliography will be found in the following: Halle, "On Meter and Prosody," in M. Bierwisch and K. Heidolph, *Progress in Linguistics* (The Hague, 1970); Keyser, "The Linguistic Basis of English Prosody," in S. Schane and D. Reibel, eds., *Modern Studies in English* (Englewood Cliffs, N.J., 1969); Keyser, "Old English Prosody," *College English*, XXX (1969).

Magnus liber, offers another useful ground for reconstructing such a process. (The example follows Fritz Reckow,¹⁹ although the analysis is somewhat different from his.) In Example 4a, the passage is shown as it is notated in three Notre Dame sources. In Example 4b, the same passage is shown with the ligatures resolved for easy comparison of melodic contours. Taking only the pitches into account, there is an obvious articulation in two phrases, A and B, related as antecedent and consequent. That might suggest to the singer a performance in which the two phrases are of the same length and where the parallels and contrast between the first five notes of the two phrases are brought out. The version of W1, with parallel notation for those five notes, is easily interpreted that way (Exx. 4c and 4d). The two transcriptions differ only with respect to the decision about the length (the number of stresses) of the first phrase. There seems no obvious way to choose between them.

In the version of F, the phrases are not given parallel notations. The explicit L figures are the linchpins for working out the rhythm

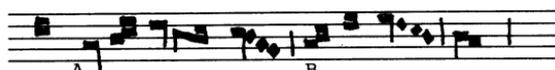
Example 4, *Alleluia, Pascha nostrum*

a.

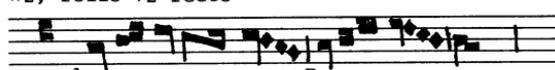
W1, folio 32 recto



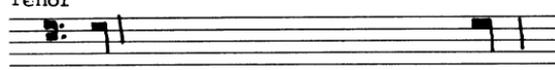
F, folio 109 recto



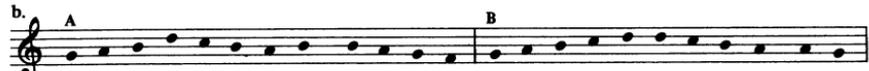
W2, folio 72 recto



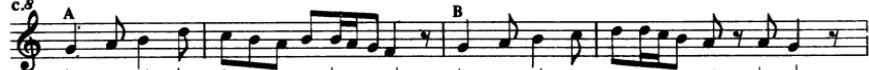
Tenor



b.



c.



d.



¹⁹ *Op. cit.*, Part II, p. 79.

of the first phrase. Everything else falls into place around them (Ex. 4e). The interpretation of the second phrase depends on a decision about the length of the phrase — in particular, whether or not it is to match the first in length. In W2, by means of another explicit L figure, the two phrases are given parallel openings. That rather forces a second phrase the equal in length of the first (Ex. 4f).

The image contains two musical examples, labeled 'e.' and 'f.', each on a single staff. Example 'e.' shows a sequence of notes grouped into two phrases, 'A' and 'B', with a brace underneath. Example 'f.' shows a similar sequence, but with an alternative notation 'or' shown below the second phrase, indicating a different rhythmic interpretation.

The point of all this is that the notation of the example does suggest a modal performance. But the performer would not have read it off; he would have had to work out a performance on the basis of the kinds of principles and decisions I have suggested. Some alternatives were equivocal. The later sources tend to reduce that by means of a greater explicitness in the notation. But, so far as we know, their choices have no necessary musical priority over others they *might* have made. That is, there are no internal musical grounds (in the nondurational aspects of the music) for choosing from among transcriptions 4c, d, e, and f. This means that the rhythmic aspect is not highly integrated with other aspects. Later, in the discussion of Example 7, we shall see how such choices can be forced by the nondurational aspects.²⁰

II

How did this flexible rhythmic practice and its pragmatic notation become a system about which one could write a theory? It has generally been held that the modes were differentiated in stages, and that earliest of all there was a kind of first-mode rhythm alone.

Walter Odington (ca. 1300) wrote, "With the earliest polyphon-

²⁰ My interpretation of modal notation has much in common with Anton Maria Michalitschke's conception of "Modalschrift," presented in his very interesting book, *Theorie des Modus* (Regensburg, 1923).

ists the L was worth two time units . . . but later on it was brought to perfection so as to contain three." That would rule out modes 3, 4, and 5 for the early period, and Odington indirectly confirms that: "The perfect L had its origins in these [the third and fourth] modes."²¹

In the two-part organum of the Notre Dame school, wherever there is a run of clear modal notation, it shows mainly first mode, and in later repertories in which all the modes are represented the passages in first mode outweigh those in the other modes. First-mode runs with passing tones and sustained perfect L's can suggest the fifth and sixth modes respectively, but extended passages in B's and perfect L's occur mainly as upper voices and tenors, respectively, in clausulae and motets of the Perotin period and after.

Against the conclusion about the first mode as the earliest in use, Gordon Anderson has presented new evidence of a predominance of second-mode patterns in early monophonic conductus that have been transmitted in mensural notation.²²

But to speak of either first or second mode as the earliest, and to represent the subsequent history as one in which the remaining modes are gradually put into place, is to presuppose a system with a prior theoretical existence. That is, to speak of a *mode* is to imply a system of *modes*. It is perhaps simpler and more realistic to represent the initial situation as one in which the rhythmic norm involved the regular alternation of single L and B notes, with the longs broken up by passing and accessory tones, and with the movement occasionally slowed down by perfect L's. Out of that general and variable rhythmic type, particular modal patterns might have become stereotyped through practice and systematized in the theory. John of Garland presents the second mode as a reversal of the first mode — that is he relates them as a small system — and the latest state of the evidence is at least consistent with the idea that they may have crystallized at the same time. The concept of *fractio modi* is at least consistent with the idea that the sixth mode may have crystallized out of the first-second mode type (i.e. by giving passing and neighboring notes a primary status). That there is not a counterpart in the treatises for interruptions by perfect L's is at least consistent with

²¹ *Speculatione musices*, Coussemaker, *Scriptores*, I.

²² "The Rhythm of the Monophonic Conductus in the Florence Manuscript as Indicated in Parallel Sources in Mensural Notation," in *JAMS*, XXXI (1978), 480-89.

Odington's claim that the perfect L derives from the third and fourth modes.²³ In view of the relative scarcity of fourth-mode patterns in the music, that mode should perhaps be understood as an artifice created for the sake of the system as a reversal of the third mode (it is described as such in the treatise of Anonymous VII, ca. 1250), on the model of the first-second mode relation.

All such reasoning is speculation that is not subject to confirmation. But whatever its exact details, it all bears on the hypothesis of a gradual systematization of a flexible rhythmic practice.

There is, however, an idea very much taken for granted in the modern literature on this subject that entails instead the assumption of an a priori system. It is the association of the modes with poetic meters (first mode with trochaic meter, second with iambic, etc.). The underlying assumption, whether or not it is made explicit, is that the modal system was invented on the model of the classical theory of metrics — that is that modal practice was theory-induced.²⁴ Perhaps the associations made in the modern literature between modes and meters are often made innocently and do not reflect a commitment to that proposition. But questions about the relation between musical rhythm and poetic meter are fundamental to the problem about the nature and history of the modal system. It will be important, therefore, to consider the reasons for believing that modal rhythm is based on metrics and to consider whether they stand up.

In 1199 — probably the year of Perotin's four-part organum *Sederunt principes* — the Parisian grammarian Alexander de Villa-Dei described, in his *Doctrinale*, the principal meters of quantitative verse in a system of six "modes."²⁵ Here are the names of the modes in the order of his presentation and the quantities of the syllables in a foot of each mode. (A short syllable has a value of one time unit in his presentation, a long one has twice that.)

Dactyl: long-short-short

Spondee: long-long

Trochee: long-short

²³ The term "extensio modi," which has become a commonplace in the modern literature, is an invention of Willi Apel in *The Notation of Polyphonic Music 900-1600* (Cambridge, Mass., 1942). Such confounding of medieval and modern terminology obscures the medieval conception and is better avoided.

²⁴ See especially William Waite, *op. cit.*

²⁵ See Rudolf Flotzinger, "Zur Frage der Modalrhythmik als Antike-Rezeption," *AfM*, XXIX (1972).

Anapest: short-short-long

Tribrach: short-short-short

Iamb: short-long

This exposition follows the long tradition of the *ars metrica*. Metrics had to do with the measurement of syllable durations or quantities and of the proportions obtaining between them and with the standard patterns of syllable quantities in verse types. The tradition goes back to classical times, and persisted into the late Middle Ages, when in practice poetic meter had long since become a matter of accentual rather than durational pattern. That the tradition nevertheless continued indicates something important about its place and utility in the system of knowledge. The *ars metrica* was not simply a body of doctrine utilized by poets; rather it concerned number and proportion in general, and poetic meter might be considered as a concrete medium for its exposition. But metrics provided the conceptual framework for the discussion of number and proportion in other connections as well. It supplied the "philosophical part," as a writer of the time expressed it, of the "lawful art of adjusting this music in suitable proportions."²⁶ Once the attention of music theorists was focused on the measurement and proportions of durations, the terminology and concepts of metrics were at hand for their use, and especially for their explanations. Villa-Dei's treatise shows they were available in Paris around 1200.

A *direct* association between rhythmic *modes* and poetic *meters* was drawn explicitly only once, by Walter Odington, who noted the correspondence between the six rhythmic modes of music and the corresponding meters listed by Villa-Dei and suggested that the former would be suitable for setting poetry written in the latter.

But there is an older tradition for the idea that the ancient meters could provide practical models for the rhythmic performance of music. It is the testimony from the ninth through the eleventh centuries about the performance of plainchant according to the ancient poetic meters. This passage by Guido of Arezzo (eleventh century) is typical:

The similarity between chants and meters is by no means a small one, since the neume corresponds to the foot, and the phrase to the verse. And, as is natural,

²⁶ "Introduction to Music," ascribed in Coussemaker, *Scriptores*, I, to John of Garland.

this neume proceeds in dactylic meter, this one in spondaic, and that one in iambic; and one sees the phrase to be now in tetrameter, now a pentameter, or sometimes as if it were an hexameter. [*Micrologus*, Chap. XV]

The tradition goes back to the great cultural leader of the Carolingian court, Alcuin, and seems to disappear in the eleventh century.

On the basis of the evidence that has been very briefly touched upon here, a strong circumstantial case can be (and has been) made for the proposition that from the eighth century on, at least, the ancient meters provided a concrete basis for the rhythmic performance of music, and that in the twelfth and thirteenth centuries an independent system of musical rhythm, with its own notation and theory, was created through the direct adaptation of classical prosody. But there are reasons for circumspectness about this proposition.

First, whatever the actual rhythmic practices in the performance of plainchant were to which the medieval writers refer, they must have been forgotten by the twelfth century, for the writers of the eleventh century were already lamenting their passing. Furthermore, John of Garland, in his treatise *De Musica mensurabili*, concerning measured music, contrasts that genre with *musica plana*, from which we have our expression "plainsong." The contrast is between both polyphony and monody and measured and unmeasured (or even); that is, by his own testimony John was not building his theory on plainchant practice.

Second, it is important not to interpret the testimony about plainchant performance too literally. It leaves us completely unenlightened about how the ancient meters would have related to the phrase structure and formulaic structure of the melodies, to the ligature formations in the written transmission, to the tones of functional importance in the melodies (the finalis, the recitation tone), and to the declamation of the nonmetrical texts of the chants. We can well imagine artful performances of plainchant in which some tones are drawn out, others are sung quickly, and thereby living configurations are formed. The musical sources are in support of such an idea. And it is readily understandable that such an art would have been prized and therefore lamented when it was no longer cultivated.

When it came to describing such a practice in writing, it is equally understandable that it would have been assimilated into

the doctrine about the system of durations that was taught by theorists — and that was the traditional format of discussion about durations and proportions.

Plainchant is for Guido *the* practical medium of music. It is pleasing to the mind, hence it must be susceptible of rational treatment, for the mind operates by reason. Difference in duration is one of the aspects of plainchant that must be open to rational apprehension, and the appropriate discipline is metrics. To speak rationally of long and short durations is to speak of these in terms of proportions. We cannot conclude from Guido's exposition that there was a tradition of plainchant performance according to the classical meters and that that tradition was absorbed into the system of modal rhythm. We can however see in it a desire to conceive duration as discrete, measurable, and relatable through the proportions. That desire is apparent again in the thirteenth and fourteenth centuries, when it was given the necessary philosophical implements for the production of a theory and notation, chiefly under the new Aristotelian influence in Paris.²⁷ But then the theory did not rely on metrics.

That the explanations of the modal system bear the conceptual stamp of the tradition of metrics is undeniable. Perhaps that reflects the efforts of those theorists to derive legitimacy from the domain of the trivium. But metric theory did not provide an adequate theoretical framework for modal rhythm, for it offered no way of taking into account factors other than duration that contribute to the experience of rhythm in music: stress accent, tonic accent, rhythmic grouping, phrase organization (sequences, antecedent-consequent, etc.), tonal priorities and polarities, consonance and dissonance, and contrapuntal relations between voices in polyphony. These factors were forced on the attention of musicians by polyphonic practice and by other developments of musical style. The system of rhythm was a product of their efforts to bring them under control. The principles of modal rhythm are older than the system of rhythmic modes; for that matter there is really nothing so very anachronistic about the fact that it was only Walter Odington who suggested a direct association between the modes and the ancient meters. That was strictly a rationalization, long after the fact.

²⁷ See the forthcoming essay of Max Haas on this subject in *Forum musicologicum*,

The hypothesis that modal rhythm was imposed on music as a system from without is inadequate. The alternative is that it grew naturally from within, and gradually became systematized. But in order to feel comfortable with that hypothesis, we ought to be able to see what it was about musical developments in general that encouraged this sort of rhythmic focus.

A pair of examples will take us quite far into these style-historical matters. They are shown without any interpretation about duration or bar lines in order that we may be free to consider the other factors that bear on their rhythm and meter.

Example 5 is a passage from a three-voiced liturgical organum of the Notre Dame school, presumably from the time of Perotin, that is circa 1200. Example 6 is a passage from a two-voiced versus contained in an Aquitanian manuscript of the same period. (The manuscript is associated with others of Aquitanian provenance that span the entire twelfth century or more and that constitute the sources of what is known as Saint Martial polyphony.)

Example 5. Gradual *Benedicta*. F, f81. 29; W₁ f. 67

Example 6. Versus *Omnis curet homo*, London, B.M. add. 36881, f. 2^v

The great similarity between the two examples, in view of the absence of any *direct* contact between the repertories they represent, allows us to see in them the features of a well-established, strong, and widespread style. The following characteristics are striking.

1. Melodic contour and phrasing. In both examples, each voice pro-

ceeds as a sequential repetition of a six-note group that is articulated as two three-note groups.

2. Contrapuntal relationship between the voices, emphasizing the articulation of two three-note groups. In Example 5 this amounts to an inversionsal exchange of successive three-note groups between the two voices. In Example 6 the three-note groups in the two voices are related alternately through simple inversion and retrograde inversion.
3. Diminution of a diatonic stepwise descent to the tonic. Both examples are strong cadential thrusts. In both, each of the successive six-note groups begins with a unison, and those unisons carry the passage by step down to the tonic. They constitute a structural framework for the passage and would quite naturally receive the primary accent in each six-note group.
4. Sequential repetition of a pattern of sonorities. The most salient aspect of that in both examples is the repeated expansion from the unison to the fifth of which it is the center. It gives each example the aspect of a triadic sonority shifting downward by steps.

Of course these features are not independent of one another; they are rather the coordinated aspects of a highly organized periodic form, governed by a single idea.

Disregarding for the moment any direct clues about duration that may be furnished by the notation of these passages, their metrical articulation is already determined to a high degree by the non-durational characteristics that have just been reviewed. There are two main aspects:

1. The groups of three notes and twice three notes are presumably isochronous — they mark equal time intervals. There is no direct proof of this, but there is no evidence for any other sort of interpretation, and it would be odd to propose one. For any alternative would distort the patterns made by the pitches.
2. All the musical factors emphasize a main grouping of twice three notes. The choice is between a main stress on the first of every three or the first of every six notes. The former seems more likely because there is no evidence in the notation or the theory of a concept of compound meter.

These two factors alone are sufficient to establish a meter, whatever the durational patterns within three-note groups may be. As in

tonal music, the articulation of musical time and the resulting musical structures do not simply proceed from a pulse and its organization into measures in the manner of a preestablished grid. It is a function of the configurations created by the melodic, harmonic, and contrapuntal actions of the music. The rhythm is generated from within, not imposed from without.

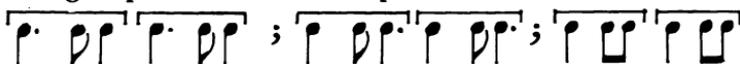
For the details of duration and the rhythmic grouping within the metrical configurations, we may turn first to the notation of Example 5. Given the repertory and sources from which the passage is taken, an effort to read the notation as modal is appropriate. But the ligature pattern does not correspond to any one of those taught by the theorists.

Chains of ternary ligatures occur in the notation of modes 3, 4, 5, and 6. We may rule out mode 5, which is strictly a tenor pattern. All of the others are plausible, but each will assume some deviation from the modal norm in the notation. There is no evidence for a uniquely correct choice, and that itself is noteworthy where the notation is so sharply and consistently patterned. It puts in doubt the idea that the passage is built as a pattern of fixed durations. Its generating idea must have been the larger form, and the rhythm would have projected that.

With Example 6 we are in a similar situation. The rhythmic modes *as such*, and their notation, are highly specific and local phenomena. There is no pressing reason to look for just those patterns in the music represented by Example 6, although there is no reason to reject them, either. The simplest reading would be one in which all notes are given equal durations:



But since the middle notes in the groups of three frequently come together in dissonant intervals, it would make sense to shorten them. If we wish to do that and to preserve the equality of duration among three-note groups, there are these possibilities:



Again, there is no evidence for a uniquely correct choice, and indeed it is easy to hear one possibility fading into another.

Bruno Stäblein suggested the possibility of a modal rendering of Limousine polyphony on the grounds of just such pitch group-

ings.²⁸ His actual focus was as much on ligature formations as pitch groupings, but chains of binary or ternary ligatures that might be interpreted in the light of modal notation are after all reflections of pitch patterns. Fritz Reckow developed this point with respect to the organum of the *Magnus liber* and established clearly the relevance of the pitch parameter of the music to the development of regular rhythmic patterns.²⁹ With Example 7 I should like to carry this kind of analysis somewhat further, for I believe that a really satisfactory account of the nature and origins of modal rhythm requires that we understand how it served to project the tonal, harmonic, and contrapuntal relations of the music in whose context it arose (p. 550).

The example is the Parisian organum duplum *Judea et Iherusalem*, transcribed from the manuscripts W1, F, and W2. The lower two staves in each system contain a reduction of the upper voice, designed to bring out its voice-leading relationships in terms of the elaboration of the principal tones consonant with the tenor. Those tones are written as half notes. Upward- and downward-directed stems identify the two registers in which the voice moves. Slurs indicate long-range voice-leading connections. Arabic numerals identify *ordines*, lower-case Roman numerals identify notational groups. The discussion here will concern in detail only the passage through phrase 5.

The passage has a clear gross-structure comprising the opening sonority, sustained *ad libitum*, and three phrases that I take to be eight perfections in length each: 2, 3, and 4-5 (the third phrase comes out to eight perfections on the plausible supposition that 5 [including its rest] would have a duration of two perfections). This exemplifies the association of a clear modal microrhythm with a balanced macrostructure of phrases matched in duration. (Reckow has drawn attention to this association in his discussions of *copula*, but it obtains as well in symmetrical structures of the kind shown here. It is in general a mark of the establishment of modal rhythm and its notation in organum duplum.)

The organal voice establishes itself in two registers at the outset, the octave (1) and the fifth (2) of the tenor's *f*. Its action through 6

²⁸ "Modale Rhythmen im Saint-Martial-Repertoire?" in *Festschrift Friedrich Blume* (Kassel, 1963), 340-62.

²⁹ *Die Kopula*. Akademie der Wissenschaften und der Literatur (Mainz, Jg. 1972), Nr. 13.

Example 7

Example 7 is a musical score for a five-part setting, likely a motet or a similar vocal-instrumental piece. The score is organized into three systems of measures, each with five staves: W1 (Waltz 1), F (Fugue), W2 (Waltz 2), Tenor, and Duplum reduction. The key signature is one flat (B-flat), and the time signature is common time (C).

System 1 (Measures 1-3):

- W1:** Measures 1, 2, and 3. Measure 1 contains notes G4, A4, B4. Measure 2 contains notes C5, B4, A4, G4. Measure 3 contains notes F4, E4, D4, C4.
- F:** Measure 1 has a whole rest. Measure 2 has a whole note G4. Measure 3 has a whole note G4.
- W2:** Measure 1 has a whole rest. Measure 2 has a whole note G4. Measure 3 has a whole note G4.
- Tenor:** Measure 1 has a whole rest. Measure 2 has a whole note G4. Measure 3 has a whole note G4.
- Duplum reduction:** Shows the combined melodic lines of W1, F, W2, and Tenor, with a slur over measures 1-3.

System 2 (Measures 4-6):

- W1:** Measures 4, 4a, 5, and 6. Measure 4 contains notes C4, D4, E4, F4. Measure 4a contains notes G4, A4, B4. Measure 5 contains notes C5, B4, A4, G4. Measure 6 contains notes F4, E4, D4, C4.
- F:** Measure 4 has a whole rest. Measure 4a has a whole note G4. Measure 5 has a whole note G4. Measure 6 has a whole note G4.
- W2:** Measure 4 has a whole rest. Measure 4a has a whole note G4. Measure 5 has a whole note G4. Measure 6 has a whole note G4.
- Tenor:** Measure 4 has a whole rest. Measure 4a has a whole rest. Measure 5 has a whole rest. Measure 6 has a whole note G4.
- Duplum reduction:** Shows the combined melodic lines, with a slur over measures 4-6.

System 3 (Measures 7-9):

- W1:** Measures 7, 7a, 8, and 9. Measure 7 contains notes C4, D4, E4, F4. Measure 7a contains notes G4, A4, B4. Measure 8 contains notes C5, B4, A4, G4. Measure 9 contains notes F4, E4, D4, C4.
- F:** Measure 7 has a whole rest. Measure 7a has a whole note G4. Measure 8 has a whole note G4. Measure 9 has a whole note G4.
- W2:** Measure 7 has a whole rest. Measure 7a has a whole note G4. Measure 8 has a whole note G4. Measure 9 has a whole note G4.
- Tenor:** Measure 7 has a whole rest. Measure 7a has a whole rest. Measure 8 has a whole rest. Measure 9 has a whole note G4.
- Duplum reduction:** Shows the combined melodic lines, with a slur over measures 7-9.

can be understood as double voice-leading in those two registers, elaborating those two tones. The decisive fact of this interpretation is that the organal voice moves by step *within* each of the registers,

and moves by skip *between* them. The essential lines of motion can be summarized thus: in 1-3 the duplum makes a linear descent from *f'* to *c'* in the upper register, and a linear descent from *c'* to *f* in the lower register. But in the second descent in 3 the *f'* is left by skip, and that keeps it hanging, so to speak, as an upper ceiling that is reclaimed in 8-9. In 4-8 there is a linear return in the upper register from *c'* to *f'*, and in the lower register from *f* to *c'*. By virtue of these underlying lines the entire passage from 1 to 9 attains a unified structure of a higher order. The movement of the Tenor is worked into the total action, rather than being treated as the a priori base for a series of melismas in the upper voice. How that is done is exemplified by the preparation for the first Tenor motion to *d*. In 4 the two registers of the duplum are collapsed into one on *f*, whence the motion is to *a*. In the circumstances that has the effect of two voices moving in unison. It is the strongest thrust in the duplum to this point, and it motivates the shift in the Tenor voice at the precise moment when it occurs. The Tenor's return to *f* in 6 is again prepared by the duplum, something that is best seen in the reduction. The lower "voice" prolongs *a*, consonant with the Tenor's *d*, while the upper one prolongs *c'*, which is dissonant with the Tenor's *d* but consonant with its coming *f*. That is confirmed when the upper "voice" repeats its figure against the Tenor's *f* in 7. The Tenor's move to *f* is motivated as the resolution of the dissonantal tension in 6. Perhaps we ought to consider this sort of planning of the present in view of the future as a mark of composed, as distinct from extemporized, music.

Now we must focus on the progression of the duplum melody from another point of view. It moves in two- and three-note directional units that make the detailed contours of the line, and that coincide with the grouping of notes in ligatures. That is the notation, hence the rhythm, is an expression of the melodic contours. But it is an expression of the voice-leading, as well. Thus in 2 the accented beginnings of the odd-numbered perfections are always occupied by the *c*; that is where the dissonances are most consistently resolved. In 3, where the main descent takes place, the stressed position of the odd-numbered perfections is occupied first by *f'*, then again by *f'*, then by *c'*, and finally by *f*. I am proposing, with this interpretation, the following reading of 3, in the more explicit notation of W2:



All this is to say that the principal notes of the voice-leading fall at the beginnings of alternate perfections. Rhythm and voice-leading reinforce one another as aspects of an integrated compositional scheme.

The transmission of this piece through the three sources is stable. The variants that occur are mainly notational, and they can be understood in the light of a clarification of the essential processes that have been observed to this point. In 3 the extra *c'* of F and W2 (i) makes for an easy continuation of the first-mode rhythmic pattern. In W2 the binaria (ii) and the breve-long (iii) further clarify that pattern. In 4 the breve-long of W2 (iv) makes clear a second-mode rhythmic pattern, and the final note with plica in F and W2 (v) in place of the binaria of W1 suggests a reversal to  instead of . That is consistent with the tendency to stress the consonant tone. But it may be that it simply makes explicit what a performer would have done in any case. That would be to suggest that the notation of F and W2 is more prescriptive than that of W1. The clarifications under vi, vii, and viii are self-explanatory.

In Examples 4 and 7 we see the same kinds of changes throughout the sources toward a greater explicitness in the notation. The performer was given more, and more specific, cues. He could get his readings more directly, and his range of choices was narrowed. There is this important difference: with Example 7 we can see the musical motivation for this narrowing of the options. But the scribes of F, and especially W2, applied their techniques, and through them their attitudes about the fixed state of music and the role of notation in transmitting it, to the older music (Ex. 4) as well as the newer (Ex. 7.) We see two phenomena in these examples: the integration of musical parameters in music represented by Example 7, creating a pressure for exact transmission, and the habit of exact transmission operating independently as a phenomenon of notation, affecting also the writing down of older music for which it was less essential. The music of all strata is given a uniform redaction in the later sources, under assumptions about transmission and performance that are fundamentally different from those that prevailed during the early phase of the tradition. (This rather reduces the appearance that these sources are sometimes said to have of "historical" collections, or as "anachronisms." For the notational clarifications presumably indicate that a performance was intended, and that the tradition, there-

fore, was still alive.) This situation is strikingly similar to that of the Frankish redaction of the Gregorian chant, in which music that was originally a performer's art in the making as well as the rendering, was graphically fixed on new principles regarding transmission, thereby separating the work from the performance. The modern scholar is obliged in both cases to read the musical script with a versatile eye, penetrating through the fixed surface to the fluidity of transmission that once obtained.

One other matter regarding the tendency toward metrical phrase formation must be taken into account, one which is rather ironic. We have already noted that while the prosody that was taught in the *ars metrica* concerned quantitative verse, it was accentual verse that poets had been composing and musicians setting since Carolingian times. For the music, however, there is an essential difference. In quantitative verse, the primary constraint on the line is the meter: the foot is defined as a particular arrangement of long and short syllables, and the length of the line is determined by the number of feet. Because of the possibilities for elision and substitution, two lines of dactylic hexameter need not scan the same number of syllables. In accentual verse, the primary constraint on the line is the number of syllables, and the patterns of accented and unaccented syllables through which the poets ultimately imitated the ancient meters are articulations within isosyllabic lines. But it appears that where accentual verse is concerned, isosyllabism has historical priority, and while stress was a means of articulation from the beginning, stress *patterns* became conventional later.³⁰ Here is an instructive example from the tenth century:

O Roma nóbilis./orbis et dómina,
 cunctarum úrbium/excellentíssima,
 roseo mártýrum/sanguine rúbea,
 albis et virginum/liliis cándida:
 salutem dícimus/tibi per ómnia,
 te benedícimus;/salve per saécula.

The twelve-syllable lines are marked by an end rhyme and divided by a caesura after the sixth syllable. Each half line rises to an accent on the antepenultimate syllable and falls on the last two

³⁰ Instructive reviews of this subject are given in Jones *op. cit.*, and Dag Norberg, *Introduction à l'étude de la versification latine médiévale* (Uppsala, 1958).

unstressed syllables. Occasionally that rhythm spreads through the entire line, giving it a dactylic movement (ll. 3, 4, and 6). But it would be an analytical distortion and historically misleading to attribute a dactylic *meter* to the poem as a whole. The lines are not built of dactylic feet, but of isosyllabic half lines with parallel contours in which the play of accented and unaccented syllables has a major role.⁸¹

In the time of the *ars antiqua*, however, consistent accentual meters were a normal aspect of syllable-counting verse. And these were associated with such rhythmic patterns as are found in the modes — though not always in the most obvious ways. The irony is that, while theorists of the thirteenth century explained modal rhythm as chains of durations following the model of classical meters, the historical influence that poetic form had on musical rhythm seems in practice to have been of just the opposite kind.

For it seems that the periodic organization of musical time, like the structuring of the poetic line, proceeded from the larger articulation to the smaller. The proportional organization of durations within the phrase, like the breaking down of the line into accentual meters, followed the articulation of an overall phrase structure. The introduction of musical meter followed the concern for symmetrical forms.

With this historical perspective, the hypothesis that modal rhythm was *invented* (as distinct from *explained*) on the model of the ancient meters becomes even more doubtful.

I have argued that a historical understanding of the theory of modal rhythm requires us to see in it a tension between an additive rhythmic conception based on quantity and an analytical one based on perfections. What evidence is there about the stance of practical musicians on this issue?

We can concretize the question — and make a final approach to the nature of modal rhythm — through a question that has been much discussed in the literature: does the B in the second-mode pattern B-L-B-L-B fall on an upbeat,  or on a downbeat,

⁸¹ For a view of prosody based on stress positions rather than meter, the reader is referred to the studies of Halle and Keyser cited in n. 18, and also to Martin Halpern, "On the Two Chief Metrical Modes in English," *Publications of the Modern Language Association*, LXXVII (June, 1962) 177-86.

From a strictly quantitative point of view, Example 8 begins, clearly enough, with a L-B-L pattern, in the manner of the first rhythmic mode. But there will be a tendency to hear a movement from the B into the L, at first because of the underlying motion g-a-b, and that will be strongly reinforced beginning with the upbeat to the third measure. The grouping B-L, with stress on the L, is largely responsible for the rhythmic character of this tune. (We note at once that this sort of figure-ground relationship between the patterns B-L and L-B-L is something with which metrics cannot possibly be concerned.)

Example 9 also groups mainly B-L and without any ambiguity, but it has a far different rhythmic character that principally concerns the disposition of the B-L groups with respect to the measure — especially the downbeat. The stress is on the B. We should identify the B-L rhythm in Example 8 as iambic (it moves from unaccent to accent) and the B-L in Example 9 as trochaic (it moves from accent to unaccent; because of the durational relationship it is sometimes called “reverse trochaic” or “scotch snap”). This rhythm is really the most unambiguously trochaic one, for in the reverse series

there is always the eventual tendency to hear the short note moving into the long; that is, to group short-long; short-long, short-long, rather than the other way round. It is precisely this conception of rhythmic grouping in relation to the accents of the (musical) meter that is lacking in the explanations of the thirteenth century. But was this kind of relationship not at all involved in the composing and hearing of the thirteenth century? There is a way of gaining at least an impression about that.

Walter Odington, as has been noted, linked the rhythmic modes directly to the poetic meters, enumerated by Villa-Dei. With iambic verse he associated the second mode, with trochaic the first, which takes the conception of rhythmic modes as durational series to its most literal extreme. But in Example 9 we saw that a second-mode pattern can be apprehended as a trochaic rhythm, with accented B and unaccented L, and in Example 8 that a first-mode pattern *may*, at least, be dominated by an iambic rhythm. (This difference is apparent in the notations for the two modes. The second mode begins in binaries expressing B-L, which define perfections. The final ternary ligature of the second mode brings the end of a phrase down on the beginning of a perfection. In the first-mode notation, the

binaries also signify B-L but because of the initial ternary, whose initial and final notes begin perfections, they overlap the perfections. The notation indicates not only the durational patterns but also the rhythmic groupings — and does so somewhat better than our notation, with its way of setting bar lines inside of rhythmic groups.) Now if there is any consistency about the accentual verse meters that are declaimed, say, as second mode in the music of the thirteenth century, that should give some indication whether or not the musicians followed Odington's recommendations. For this, we must look at the syllabic settings of Latin verse (French accentuation is uncertain) written in unambiguous mensural notation so that we may read the durations without regard to the text.

Example 10. Mo fol. 366 motet (duplum only)

In - re tu - is lau - di - bus
Be - ne - vo - lis men - ti - bus, etc.

In thirteenth-century sources, second-mode pieces of that description set trochaic verses with such consistency that we may safely say that the second mode is treated as a trochaic rhythm, with accented B and unaccented L (Ex. 10). With this knowledge, we can see that Franco understood and intended exactly what he said in the passage cited above. For the text in his example of second mode is trochaic and declaimed thus:

O Ma-ria mater dei.

This shows exactly that separation of function between accent and duration which Franco made explicit with his formulation of the consonance rule for discant (the beginning of the perfection is consonant, whether it is L or B). Accent and consonance are attributes of the initial position of the perfection, which coincides with the initial element of the modal foot, and is the position on which phrases normally begin and end. Within the perfection, any arrangement of L's and B's is possible and the resulting rhythmic groupings may be

contained within the perfections — as in the trochaic second mode — or overlap them — as in the iambic first mode.

Odington's linking of the first mode with trochaic meter is perfectly sound from a nominalistic point of view — it follows directly from the definition of mode as a series of durations, and of first mode as the series L-B-L-B . . . L. That it does not correspond to practice is a further indication that this practice was not invented out of theoretical deliberations, and that the theory of that time cannot simply be read as instructions for performance.