

Marco Gozzi

New light on Italian Trecento notation
Part 1: sections I–IV.1

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New light on Italian Trecento notation

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- Fc* Firenze, Biblioteca del Conservatorio Luigi Cherubini, ms. D 1175
FP Firenze, Biblioteca Nazionale, ms. Panciatichi 26
Fsl Firenze, Biblioteca Medicea Laurenziana, Archivio di San Lorenzo, ms. 2211
Lo London, British Library, ms. Additional 29987
Pit Paris, Bibliothèque Nationale, ms. Fons ital. 568
PR Paris, Bibliothèque Nationale, ms. nouv. acq. frç. 6771 (Codex Reina)
Sq Firenze, Biblioteca Medicea Laurenziana, Cod. Mediceo Palatino 87 (Squarcialupi codex)
VR Roma, Biblioteca Apostolica Vaticana, ms. Rossi 215, and Ostiglia, Biblioteca della Fondazione Opera Pia Greggiati, ms. Rari B 35

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LIST OF ABBREVIATIONS

2q	<i>quaternaria, modus imperfectus</i>
3q	<i>quaternaria, modus perfectus</i>
B	<i>brevis</i>
d	<i>duodenaria</i>
i	<i>senaria imperfecta</i>
L	<i>longa</i>
M	<i>minima</i>
MM	Maelzel metronome (beat per minute)
n	<i>novenaria</i>
o	<i>octonaria</i>
p	<i>senaria perfecta</i>
q	<i>quaternaria</i>
SB	<i>semibrevis</i>
SM	<i>semiminima</i>

Introduction

The musical writer's ultimate aim is performance: the notational signs achieve their true meaning only in execution.¹ Modern editors of medieval and renaissance music do not always seem to trouble themselves to pursue this aim, so they omit many primary questions that concern the performer possibly because they assume them to be well-understood, even if they are not. Such questions would precisely be of interest to the modern musical philologist and editor. Carl Dahlhaus wrote:

Und wenn die Philologie theoretisch zur Vollständigkeit, praktisch aber zur Unvollständigkeit der Übertragung von Mensuralmusik gezwungen ist, erscheint der aufführungspraktische Kommentar geradezu als philologische Pflicht und als essentieller Teil der Edition, nicht als blosser Appendix.²

Although the notational signs of the Italian Trecento have traditionally been considered as a unified semiographical system, in fact these signs varied in meaning over time. It would be incorrect, therefore, to consider a single interpretative scheme as valid for all the surviving examples of Italian *ars nova* music, which belong to a chronological span of over a century.

For Italian Trecento music, the primary concern related to the meaning of notational signs is that of beat duration: how was tempo conceived and beaten in the performance of madrigals, *cacce* and *ballate*?

¹ MARIA CARACI VELA: *La critica del testo musicale: metodi e problemi della filologia musicale*, LIM, Lucca 1995 (Studi e testi musicali, nuova serie, 4), p. 7.

² CARL DAHLHAUS: "Zur Ideengeschichte musikalischer Editionsprinzipien", *Fontes artis musicae*, xxv 1978, pp. 19–27: 23.

The present work intends to answer this question and to clarify the problem through direct examination of the works in the manuscripts, though without neglecting the theoretical and prescriptive points of view that composers, copyists and singers followed. The only elements that we have today for understanding matters concerning beat duration in Italian polyphonic music of the Trecento are presently found in the few surviving manuscripts and theoretical writings.

1. The theoretical principles: notation and beat duration

A fair amount of work has been done on tempo and measure in Italian Trecento music, but these studies address the subject almost exclusively from the theoretical point of view, and they neglect to include genuine musical examples or any examination of the individual works from the performer's perspective.³ Particularly neglected is the problem of beat duration. Scholars with training in the transcription of Trecento music know that the theoretical principles and prescriptions offered by the treatises are often not reflected in the few surviving manuscripts. This first section, however, offers an overview of the ideas and hypotheses that we may extract from the main theoretical treatises of the middle ages pertaining to the question of beat duration; such data will serve as a frame of reference for the study of the musical reality portrayed in the manuscripts.

³ JOANNES BANK: *Tactus, tempo and notation in mensural music: from the 13th to the 17th century*, Annie Bank, Amsterdam 1972; DALE BONGE: "Gaffurius on pulse and tempo: a reinterpretation", *Musica disciplina*, XXXVI 1982, pp. 167–74; DALE BONGE: *The theory and practice of measure in medieval polyphony to the ars nova*, PhD diss., University of Michigan, 1975; ANNA MARIA BUSSE BERGER: *Mensuration and proportion signs: origins and evolution*, Clarendon, Oxford 1993; CARL DAHLHAUS: "Die Tactus- und Proportionenlehre des 15. bis 17. Jahrhunderts", *Geschichte der Musiktheorie*, Darmstadt, Wissenschaftliche Buchgesellschaft, vol. VII, eds. F. Alberto Gallo, Renate Groth, Claude V. Palisca and Frieder Rempff: *Italienische Musiktheorie im 16. und 17. Jahrhundert: Antikenrezeption und Satzlehre*, 1989, pp. 333–61; F. ALBERTO GALLO: *La teoria della notazione in Italia dalla fine del XIII all'inizio del XV secolo*, Tamari, Bologna 1966; F. ALBERTO GALLO: "Die Notationslehre im 14. und 15. Jahrhundert", *Die mittelalterliche Lehre von der Mehrstimmigkeit*, ed. Frieder Zaminer, Wissenschaftliche Buchgesellschaft, Darmstadt 1984, pp. 257–356; THEODOR GÖLLNER: "Die Trecento-Notation und der Tactus in den ältesten deutschen Orgelquellen", *L'ars nova italiana del Trecento*, III, ed. F. Alberto Gallo, Centro di Studi sull'Ars Nova Italiana del Trecento, Certaldo 1970, pp. 176–85; SALVATORE GULLO: *Das Tempo in der Musik des XIII. und XIV. Jahrhunderts*, Haupt, Bern 1964 (Publikationen der Schweizerischen musikforschenden Gesellschaft, Serie II, 10); LAURIE KOEHLER: *Pythagoreisch-platonische Proportionen in Werken der ars nova und ars subtilior*, Bärenreiter, Kassel 1990 (Göttinger musikwissenschaftliche Arbeiten, 12); WERNER FRIEDRICH KÜMMEL: "Zum Tempo in der italienischen Mensuralmusik des 15. Jahrhunderts", *Acta musicologica*, XLII 1970, pp. 150–63; ALEJANDRO ENRIQUE PLANCHART: "Tempo and proportions", *Performance practice: music before 1600*, eds. Howard Mayer Brown and Stanley Sadie, Norton, New York 1989, pp. 126–44; CURT SACHS: *Rhythm and tempo: a study in music history*, Dent, London 1953; RICHARD SHERR: "Tempo to 1500", *Companion to medieval & renaissance music*, eds. Tess Knighton and David Fallows, Dent, London 1992, pp. 327–36; NANCY C. SIRAI: "The music of pulse in the writings of Italian academic physicians (fourteenth and fifteenth centuries)", *Speculum*, L/4 1975, pp. 680–710.

A famous passage in the *Speculum musicae* by Jacobus of Liège (ca. 1330)⁴ testifies to a recent transition from breve-beat to semibreve-beat and the contemporaneous coexistence, in early fourteenth-century practice, of longa-beat (*in hoketis duplicibus*),⁵ breve-beat (*in motetis*) and semibreve-beat (according to the use of the *moderni*).⁶ Jacobus calls the three different systems respectively *mensuratio cita*, *media* and *morosa* or *mensura cita*, *media* and *morosa*. And he later adds that the notational signs can be interpreted in three ways: *tractim* (slow), *velociter* (fast) or *medie* (medium), thus modifying the beat duration and employing three different measurements of the time unit. To underline with even greater force the three-fold interpretation of the notational signs — which does not however lead to the creation of three different notational systems (“et quocumque modo fiat, non est mutanda maneries notandi”; i.e. and in whichever way it is done, the manner of writing the notes need not be changed) — he says that *tempus perfectum* is triple: minimum, medium and major (“sciendum tempus perfectum esse triplex: minimum, medium et majus”). However, he does not explain the metric relationships between the three tempi (and their respective beats).

Various units of time-measurement are mentioned also by other fourteenth-century theorists. The English writer Robertus de Handlo refers to the three ways of reading notational values as *mos longus*, *mos mediocris* and *mos lascivus*

⁴ The beginning of the passage reads as follows: “Est autem notandum quod moderni pro perfecto vel imperfecto tempore nunquam ponere videntur quattuor semibreves, non quinque, non septem, non octo, sed duas, tres, sex vel novem. Et cum moderni novem quas ponunt pro perfecto tempore, vel sex pro imperfecto, pronuntiant ternarias et sic discernant eas quas vocant minimas, non videntur illæ novem esse pro uno perfecto tempore sed pro tribus, ut tribus et tribus unum tempus respondeat perfectum, sicut fuit apud antiquos. Et illi quidem, cum sex vel novem pro perfecto ponebant tempore, sic æqualiter ipsas pronuntiabant ut ipsas non ternarias, binarias vel quaternarias discernent”; JACOBUS LEODIENSIS: *Speculum musicae*, ed. Roger Bragard, American Institute of Musicology, [Roma] 1973 (Corpus scriptorum de musica, 3), voll. VII, p. 38; CHARLES-EDMOND-HENRI DE COUSSEMAKER: *Scriptorum de musica medii ævi novam seriem a Gerbertina alteram*, 3 voll., Olms, Hildesheim 1963 (Reprographischer Nachdruck der Ausgabe Paris 1864), vol. II, pp. 400–1; quoted also by MICHAEL PAUL LONG: *Musical tastes in fourteenth-century Italy: notational styles, scholarly traditions and historical circumstances*, PhD diss., Princeton University, 1981, p. 48; BONGE: *The theory and practice of measure*, pp. 77–9; BANK: *Tactus, tempo and notation*, pp. 32–3.

⁵ This *mensura* of the *hoketi* is not to be confused with the so-called *Longanotation*, which is a completely different phenomenon (with a breve-beat). Speaking of the notation in the *hoquetus*, Jacobus states: “Non iam ibi locum habere videtur cita mensuratio, sed citissima, ut non plus teneatur ibi brevis perfecta quam nunc semibrevis minima” (This place does not yet seem to have a fast *mensura*, but a very fast one, so that the perfect breve would be held here no longer than a minim [would be held] now); JACOBUS LEODIENSIS: *Speculum musicae*, vol. VII, p. 36. According to Jacobus, hocket uses only longas and breves; Franco refers to this style as *copula*.

⁶ “Sed moderni nunc morosa multum utuntur mensura; tantum enim apud modernos valet nunc brevis perfecta tertia pars quam apud antiquos brevis perfecta, quia tam morose mensuratur ut illa, et tantum brevis perfecta quantum apud veteres longa perfecta” (But moderns now make great use of the *mensura morosa* [the slow measure, i.e. the semibreve-beat, that greatly expands the breve’s value]; in fact, among moderns the third part of a perfect breve [i.e. the semibreve] is now worth as much as a perfect breve was worth among the ancients); JACOBUS LEODIENSIS: *Speculum musicae*, vol. VII, p. 36.

(the slow manner, the medium manner and the lascivious or fast manner).⁷ Here the *mos longus* corresponds to the *mensura morosa* of Jacobus.

In addition, at the end of the short treatise *Ars nova*, ascribed to Philippe de Vitry (ca. 1323), we find a simple exposition of the three kinds of *tempus perfectum* (minimum, medium and major).⁸ Here the author explains that *tempus perfectum minimum* belongs to the *ars vetus* (old style) and that three semibreves of that measure are equivalent to three minims of *tempus perfectum majus* (so we infer that the beat of *tempus minimum* was represented by the *brevis*).⁹ In *tempus perfectum medium* the breve is equivalent to three semibreves or six minims, whereas in *tempus perfectum majus* it is equivalent to nine minims; but the treatise does not explicitly clarify the metric relation between the two. The two kinds of *tempus imperfectum* (minimum and major) are described respectively as made up of four and six minims; and in both tempi the breves are obviously divided into two semibreves. The treatise ends with the remark that *tempus imperfectum majus* has the same total value as *tempus perfectum medium*.¹⁰ From these statements we are able to set out the following table (which excludes *tempus perfectum minimum*, because it was ascribed to the *ars vetus* system and therefore did not concern the *ars nova*):

<i>tempus perfectum maius</i>	B = 3 SB = 9 M	[⊙]
<i>tempus imperfectum maius</i>	B = 2 SB = 6 M	[⊙]
<i>tempus perfectum medium</i>	B = 3 SB = 6 M	[○]
<i>tempus imperfectum minimum</i>	B = 2 SB = 4 M	[⊙]

As the value of the minim is the same in all the *mensurae* (in consideration of the stated equivalence between *tempus imperfectum majus* and *tempus perfectum medium*), it follows that the French notational system adopted a twofold value of the semibreve (i.e. the beat). The *mensurae* with perfect prolation have in fact a slower beat than those with imperfect prolation; the ratio between the two basic values (the semibreves) is 3:2 (in perfect time), depending on the number of minims contained in each semibreve. This ratio was to remain valid for French black notation until the early years of the fifteenth century and subsequently also for many compositions written in white mensural notation.

⁷ LUTHER DITTMER: *Regulae cum maximis magistri Franconis cum additionibus aliorum musicorum compilata a Roberto de Handlo*, Institute of Mediaeval Music, Brooklyn 1959 (Musical theorists in translation, 2), pp. 14–5. The treatise, dated 1326, is also in COUSSEMAKER: *Scriptorum*, vol. 1, pp. 383–403.

⁸ PHILIPPE DE VITRY: *Ars nova*, eds. Gilbert Reaney, André Gilles and Jean Maillard, American Institute of Musicology, Roma 1964 (Corpus scriptorum de musica, 8), chapters XX–XXIV, pp. 29–31.

⁹ “Semibreves in hoc tempore minimo se habent sicut tres minimæ in tempore maiore” (Semibreves in this minor time are worth as much as three minims in the major time); VITRY: *Ars nova*, p. 29.

¹⁰ “Et est notandum quod maius tempus imperfectum se habet sicut medium tempus perfectum” (And it must be observed that the major imperfect tempus has the same value as the medium perfect tempus); VITRY: *Ars nova*, p. 31.

Jacobus and Vitry, however, say nothing about the actual temporal duration to assign to the semibreve in the modern *mensura*, and both give an account of the French notational system without even briefly mentioning the Italian system. To the principles of Italian notation are explicitly devoted instead some fourteenth-century treatises, the most important being the *Pomerium musicae mensuratae* by Marchetto de Padua (ca. 1323), summarized *pro rudibus* by the same Marchetto in the *Brevis compilatio*.¹¹ The anonymous *Rubricae breves* (ca. 1350) and the *Liber de musica* by Johannes Vetulus de Anagnia modernize and develop its content, in different ways.¹²

Apart from these three important treatises, other minor theoretical works have also survived. They are most valuable in tracing the history of Italian mensural notation.¹³

In his *Pomerium* Marchetto starts the discussion on *tempus* (in the section “Quid sit ipsum tempus musicum”, i.e. what is the musical time) by retracing the famous Franconian definition “Unum tempus appellatur illud quod est minimum in plenitudine vocis” (We call one *tempus* the smallest duration of a complete sound).¹⁴ However, he misinterprets the original meaning of the definition, which he broadens and develops according to his own ideas, completely altering the original context. The Franconian definition referred to the *brevis* in the practice of the thirteenth-century French motet (a very short value), whereas for Marchetto the duration of this *primum tempus* (“mensura omnium aliorum temporum”, i.e. measure of all the other measurements) seems to refer to the length of a melody sung after taking a deep breath, and is moreover connected with his idea of *plenitudo vocis* (fullness of voice). It thus implies quite a long period of time, about eight seconds:

Quando ergo plene dicta instrumenta concurrunt ad formationem vocis et decenter, non nimis nec parum, tunc fiet plenitudo vocis. Et istud fiet quando cum canna pulmonis seriose et decenter impleta anhelitu cum decenti inflatione ventris

¹¹ The edition by GIUSEPPE VECCHI: “Su la composizione del Pomerium di Marchetto da Padova e la Brevis compilatio”, *Quadrivium*, I 1956, pp. 153–205; 178–205, integrates and corrects the nineteenth-century edition by COUSSEMAKER: *Scriptorum*, vol. III, pp. 1–9.

¹² GIUSEPPE VECCHI: “Anonimi Rubricae breves”, *Quadrivium*, X 1969, pp. 125–34; also in COUSSEMAKER: *Scriptorum*, vol. III, coll. 9b–11b, as they belonged to the *Brevis compilatio* by Marchetto. They are also translated and discussed in BONGE: *The theory and practice of measure*, pp. 96–116. Modern edition of Vetulus de Anagnia in FREDERICK HAMMOND: *Iohannis Vetuli de Anagnia Liber de musica*, American Institute of Musicology, [Roma] 1977 (Corpus scriptorum de musica, 27). Vetulus is a Latinized form of the family name Vecchini; Anagni is a town situated about sixty kilometers south-east of Rome.

¹³ Published in F. ALBERTO GALLO: *Mensurabilis musicae tractatuli*, Università degli Studi di Bologna, Bologna 1966 (*Antiquae musicae italicæ scriptores*, 1). A concise history of Italian music theory in the Trecento can be found in GALLO: *La teoria della notazione in Italia*.

¹⁴ GIUSEPPE VECCHI: *Pomerium Marcheti de Padua*, American Institute of Musicology, [Roma] 1961 (Corpus scriptorum de musica, 6), pp. 77–9. FRANCO DE COLONIA: *Ars cantus mensurabilis*, in COUSSEMAKER: *Scriptorum*, vol. I, pp. 117–36: col. 12ob. The treatise *Ars musicae mensurate secundum Guidonem* (about 1325), in GALLO: *Mensurabilis musicae tractatuli*, pp. 17–39, also starts in the same manner.

ad hoc exprimendum, emittitur anhelitus feritque sic auditum quod ad plenum percipit, proferens hunc prolatum sonum sive vocem in sui ipsius seu in alterius proferentis pectore ceu in quodam tintinnabulo resonare. Illud ergo minimum tempus in quo potest plenitudo vocis formari, modo superius declarato, est primum tempus a quo tota musica mensuratur secundum magistrum Franconem. Et hoc de primo.¹⁵

The total duration of what Marchetto calls *tempus primum* seems to be assigned to the *perfect longa*, as we read in the first chapter of the sixth treatise:

Modus mensurandi primus est *modus trium temporum*, tamquam perfectior modus ad quem oportet quod reducantur necessario omnes modi alii mensurandi, et quod ultra modum trium temporum non est dare alium modum mensurandi in musica qui sit perfectior (puta quattuor temporum vel ultra), quoniam omnes alii modi reducuntur ad istum vel ad contenta in isto, sicut omnes numeri super ternarium reducuntur ad ipsum vel ad contenta in ipso.¹⁶

If we assume the breve-beat of *tempus perfectum* to have been MM = ca. 36, the duration of the perfect longa was MM = ca. 12, i.e. seven and a half seconds.

The theoretical system established by Marchetto is fundamental for understanding the profound transformations that took place in the polyphonic compositions of the fourteenth century. His thought was based not on the concept of *divisio* (the basis of subsequent Italian theories and many modern treatments of Italian notation), but on the two main distinctions of *tempus perfectum* and *imperfectum*, which are directly derived from the French system.

The unique mensural increase, which is typical of the Marchettan system and which distinguishes it from the French one, implies the possibility of dividing the *semibrevis maior* into four minims rather than three. All the rest comes from the French system, since *senaria imperfecta* — or rather *gallica* — and *novenaria* are regarded as French and their perfect semibreves are usually subdivided in the French manner (2 + 1) rather than by the Italian *via naturæ* (1 + 2).

In the *Pomerium* Marchetto clearly indicates the mathematical ratio between the *mensuræ* of perfect and imperfect *tempus* in Italian notation, which matches that used in French notation: “Tempus autem imperfectum deficit a perfecto in tertia parte sui ad minus”.¹⁷ The same idea is confirmed in the treatise entitled *Ars musice mensurate* by Friar Guido: “Tempus enim imperfectum deficit a perfecto ad minus in tertia parte sui, et dividitur primaria divisione in duas semibreves equales que in valore equivalent duabus de tribus primarie divisionis perfecti temporis”.¹⁸ Guido’s treatise, transmitted in only

¹⁵ VECCHI: *Pomerium*, pp. 78–9 (*Liber I, Tractatus V, Capitulum I*).

¹⁶ VECCHI: *Pomerium*, p. 88 (*Liber I, Tractatus VI, Capitulum I*), italics mine.

¹⁷ VECCHI: *Pomerium*, p. 161 (*Liber II, Tractatus I, Capitulum III*).

¹⁸ *Ars musice mensurate secundum Guidonem*, in GALLO: *Mensurabilis musica tractatuli*, p. 35.

one manuscript (Seville, Biblioteca Capitular Colombina, 5 2 25, fols. 1–5), is a compendium that is probably coeval with the *Pomerium*, or written shortly after, and may be dated ca. 1325–30.¹⁹

The notational system described by Marchetto was certainly employed for the motets of the early Trecento and perhaps also for the oldest madrigals and *cacce* composed in northern Italy (by Jacopo da Bologna, for example), but the scribal procedure, which was possibly already applied in some areas by 1350, often used a semibreve beat as well. From this important change arose many of the notational misunderstandings that we observe in the manuscript tradition. The change was recorded late in Italian theory, and with varying degrees of approximation, without a correct and appropriate reference to the previous system.

That Marchetto's arguments are concerned mainly (or only?) with the motet repertoire may be inferred from his treatment of the rhythmic modes (in the "Tractatus tertius") and from a clear reference in the title of a later treatise by Pietro di Amalfi (written ca. 1360): the *Compendium artis motectorum Marcheti editum a fratre Petro Capuano de Amalfia*.²⁰ With respect to the motets, the entire Marchettan system should be read with the beat assigned to the breve, as suggested by Jacobus de Liège; Marchetto refers to the *mensura media*, not to that *morosa* of *madrigali* and *ballate*.

An anonymous treatise, dated slightly later than the *Pomerium*, is entitled *De diversis maneriebus in musica mensurabilis*.²¹ It is a very interesting work for its explanation of the more typical Italian *divisiones* (*quaternaria*, *octonaria* and *duodenaria*). In the musical examples provided, the semibreves have the same shape but a different value, and are notated in the same way as in the Rossi codex. The *mensurae* with perfect prolation (*senaria* and *novenaria*), on the other hand, are evidently borrowed from the French system: at the beginning of the sixth chapter, devoted to these *mensurae*, the three kinds of semibreve are described "secundum magistrum Philippum Parisiensem" (i.e. Philippe de Vitry) and the musical examples have the distinctive features of French notation (imperfection and alteration), whereas the sole Italian element is the constant presence of the *pontellus* (here called *puntillus*).

¹⁹ See also LONG: *Musical tastes in fourteenth-century Italy*, pp. 213–8. GALLO: *La teoria della notazione*, p. 25, suggests ca. 1310 as a probable date for the treatise; he later revised this theory, speculating that Guido was probably a student of Marchetto and that his treatise was very likely composed on the basis of lecture notes taken in the course of his studies at Padua: see F. ALBERTO GALLO: "Marchetus in Padua und die 'franco-venetische' Musik des frühen Trecento", *Archiv für Musikwissenschaft*, xxxi 1974, pp. 42–56: 49.

²⁰ Edited by GALLO: *Mensurabilis musicae tractatuli*, pp. 41–7.

²¹ Published in COUSSEMAKER: *Scriptorum*, vol. III, pp. 404–8, as *Anonimo VII*. Now also found in *De valore notularum tam veteris quam novae artis, Compendium musicae mensurabilis tam veteris quam novae artis, De diversis maneriebus in musica mensurabili*, ed. Gilbert Reaney, American Institute of Musicology – Hänssler Verlag, Neuhausen 1982 (Corpus scriptorum de musica, 30), pp. 51–62.

Example 1. The rhythmic interpretation of *semibreves aequales* from Marchetto and from the anonymous treatise *De diversis maneriebus*.

MARCHETTO

DE DIVERSIS MANERIEBUS

Tempus imperfectum

In octonaria manerie

♦♦ $\frac{2}{4}$ ♩ ♩

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♦♦♦♦ ♩ ♩ ♩ ♩

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Tempus perfectum

In duodenaria manerie

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further examples are missing because of
the breakdown of the manuscript

The rhythmic interpretation of semibreves within the *divisio* is different from that offered by Marchetto, as we see in example 1. Here we see two very different ways of translating the rhythm of the original *tempus imperfectum*, written in undifferentiated semibreves, from which it is clear that the application of one or other system led the scribes to translate the old exemplars of

northern Italian origin in various, and sometimes conflicting, ways. It is difficult to know what weight the *De diversis maneriebus* treatise might have had in Italy or whether its influence was widespread in different areas of the peninsula. A new and important feature is that the *quaternaria*, examined as the first *divisio* and clearly differentiated from the *octonaria*, is called *brevis maneria* (breve-measure), examples of which contain up to five semibreves. In the rhythmic interpretation of the *octonaria*, the large value at the start is favoured (in accordance with French taste), whereas Marchetto presents the larger value at the end of the *divisiones* (the *via naturæ*).

In addition, in comparison with the *Pomerium*, the text of the *Rubricæ breves* (ca. 1350) shows a new theoretical conception, one apparently still based on the two fundamental classes (of French origin) of perfect and imperfect *tempus*, but in fact built on seven independent *mensuræ* (two more than the French system offered by Philippe de Vitry: the *octonaria* and the *duodenaria*):

1. *Tempus perfectum recte divisum in duodecim* [*divisio duodenaria*: 12 M, 4 + 4 + 4].
2. *Tempus perfectum recte divisum in novem* [*novenaria*: 9 M, 3 + 3 + 3].
3. *Tempus perfectum minus divisum in sex* [*senaria perfecta*: 6 M, 2 + 2 + 2].
4. *Tempus perfectum minus divisum in tribus* [*ternaria*: 3 SB (a Franconian *divisio*)].
5. *Tempus imperfectum recte modi italici divisum* [*octonaria*: 8 M, 4 + 4].
6. *Tempus imperfectum minus* [*quaternaria*: 4 M].
7. *Tempus imperfectum modi gallici* [*senaria gallica*: 6 M, 3 + 3].

The author of the *Rubricæ* seems to be very respectful of the older Italian practice, and the oldest manuscript containing the treatise (Saint-Dié, Bibl. Munic. 42, fols. 65v–6v; fourteenth century) presents many interesting musical examples with archaic notational features. At first sight the points of contact with the *Pomerium* are numerous, but there are three fundamental innovations. The first is a matter of presentation: the subject is no longer subdivided into only the two great categories of *tempus* (each comprising different possible rhythmic patterns), but into seven distinctive *divisiones*. The second innovation, which is more radical and indeed revolutionary, is that the breve value is no longer the same in all the *mensuræ* of the same *tempus* category (perfect or imperfect), but shows remarkable fluctuations. The third innovation, which is implied but somehow left unexpressed by the anonymous theorist, is the evidence of a transition from a breve-beat to a semibreve-beat — an issue of great importance for performers.

Here again, as we see, an Italian *senaria imperfecta* is not featured: this *divisio* was completely replaced by the *senaria gallica*. This means that Italian theory

(and practice, too) was lacking a *senaria* that typically employed the largest values at the end (as in the other more distinctive *divisiones*: *octonaria* and *duodenaria*). Instead the *ternaria* is mentioned, the usage of which is attested in certain manuscripts (among them *VR*, *LO* and *Sq*) which correspond to Vitry's *tempus perfectum minimum*.

What matters, in this brief survey of *mensura* offered by the *Rubricæ breves*, is nevertheless the calculation of the temporal ratios that appear in all the Italian *divisiones*. By assigning the value of 12 to the first *mensura* described, the anonymous compiler of the treatise indicates the following durations:

<i>duodenaria</i>	B = 12	(hence SB = 4, and M = 1)
<i>novenaria</i>	B = 12	(hence SB = 4, and M = 4/3) ²²
<i>senaria perfecta</i>	B = 6	(hence SB = 2, and M = 1) ²³
<i>ternaria</i>	B = 4	(hence SB, called minim, = 4/3) ²⁴
<i>octonaria</i>	B = 8	(hence SB = 4, and M = 1) ²⁵
<i>quaternaria</i>	B = [16/3]	(hence M = [4/3]) ²⁶
<i>senaria gallica</i>	B = 8	(hence SB = 4, and M = 4/3) ²⁷

From the list it may be inferred that the Italian system, as proposed by the *Rubricæ breves*, does not attribute a fixed value to the minim: in *novenaria*, *quaternaria* and *senaria gallica* (i.e. *imperfecta*) it is greater than that of the other *divisiones* by a third. The *semibrevis maior*, on the other hand, is the value that remains constant: it is equal in *duodenaria*, *novenaria*, *octonaria* and *senaria imperfecta*; while in *senaria perfecta* it is only half the normal duration. This plausibly suggests that the beat lies on the semibreve in all the *mensura* except the *quaternaria* (where it falls on the breve, which is slightly slower than the semibreves of the other *divisiones*) and the *senaria perfecta* (where the breve-beat is one and a half times the beat of all the other *divisiones*).

²² "Item idem tempus in quantitate" (This is again the same time unit [of the *duodenaria*] in quantity); VECCHI: "Anonimi Rubricæ breves", p. 129.

²³ "Quantum ad quantitatem est pro medietate temporis superioris perfecti divisi in duodecim; et dicitur tempus hoc minus perfectum" (With respect to quantity it is one-half of the above cited perfect time divided into twelve, and this time it is called "smaller perfect"); VECCHI: "Anonimi Rubricæ breves", p. 130.

²⁴ "Est pro tertia parte temporis perfecti superius divisum in novem" (It is one-third of the above cited perfect time divided into nine); VECCHI: "Anonimi Rubricæ breves", p. 129.

²⁵ "Hoc tempus deficit a perfecto superiori diviso in duodecim in tertia parte" (This time is less than the above cited perfect time divided in twelve by a third); VECCHI: "Anonimi Rubricæ breves", p. 132.

²⁶ The "quantitas" of *quaternaria* is not described explicitly because its number was not an integer; the passage related to *tempus imperfectum minus* is missing in the text published by MARTIN GERBERT: *Scriptores ecclesiastici de musica sacra potissimum ex variis Italiae, Galliae et Germaniae codicibus manuscriptis collecti*, 3 vols., Olms, Hildesheim 1963 (Reprografischer Nachdruck der Ausgabe St. Blasien 1784), vol. III, p. 188.

²⁷ "Hoc tempus imperfectum deficit a perfecto superiori diviso in novem in tertia parte" (This imperfect time is less than the perfect time cited above divided into nine by a third part); VECCHI: "Anonimi Rubricæ breves", p. 134.

But the *Rubricæ breves* is also important because in various passages it explicitly indicates the possibility of singing certain *divisiones* with a different beat: *rarius* (i.e. slower) or *velocius* (i.e. faster).

Here is the first passage, concerning *duodenaria*: “Si autem rarius cantaretur, sic quod plures quam duodecim ponerentur, diceretur plus quam perfectum” (But if this is sung slower, so that more than twelve [notes] are used, it will be called “more-than-perfect” time).²⁸ It is significant that the manuscript of Saint-Dié (fol. 65v) has *velocius* instead of *rarius* (the term used by later copies: Pisa, Biblioteca Universitaria, 606, fol. 110, and Città del Vaticano, Biblioteca Apostolica Vaticana, Lat. 5322, fol. 115v), because the concept is concerned with the speed of the notes instead of the speed of the beat. The basic idea, however, is clear: when the melody is further diminished with more than twelve notes for the *divisio*, the beat has to be slowed down, and thus we have a new, “more-than-perfect”, time.

The distinction between *tempus perfectum* and *tempus plus quam perfectum* is clearer if we look at the different rhythmic structure of some pieces by Jacopo. Examples of *tempus plus quam perfectum* are the ritornelli of *Non al suo amante*, *O dolz'apress*, *Sotto l'imperio*, *Tanto che siat*, and of the *caccia Oselletto* in the Squarcialupi codex. By contrast the normal *duodenaria* (*tempus perfectum*), with no more than twelve notes per *divisio*, is employed in all the works of Giovanni, Piero and Gherardello that use the Italian *tempus perfectum* and in the following ritornelli of madrigals by Jacopo: *Con gran furor*, *Di novo è giunto*, *Entrava Febo*, *I' mi son un*, *In verde prato*, *I' senti' zà*, *O cieco mondo*, *Quando veg'io*, *Sí come al canto*, *Un bel pelaro* and *Vola el bel sparver*.

The examples of *tempus plus quam perfectum* could in any case constitute a transcription from an original in *tempus imperfectum* with *modus perfectus* (as we see in the examples of section IV).

The second passage concerns *tempus perfectum minus divisum in sex* (i.e. the *senaria perfecta*): “Si autem istud tempus cantaretur rarius, sic quod aliquando possint septem vel octo semibreves poni pro ipso, et non perficere duodecim, diceretur quod esset maius perfecto minori, sicut supra dictum est de plus quam perfecto” (Then if this time is sung slower, so that sometimes seven or eight semibreves can be placed within this time unit, without however completing twelve semibreves, it may be said to be a “major smaller perfect” time, just as has been said above regarding the “more-than-perfect” time).²⁹

The third passage concerns *tempus imperfectum modi gallici* (i.e. the *senaria imperfecta*): “Hoc autem tempus dicitur imperfectum recte. Potest etiam velocius cantari, et tunc dicitur tempus imperfectum minus; et rarius, et dicitur maius imperfecto recto” (This time is called “normal imperfect”. It may also be

²⁸ VECCHI: “Anonimi Rubricæ breves”, p. 128.

²⁹ VECCHI: “Anonimi Rubricæ breves”, p. 130.

sung faster, and then it is called “smaller imperfect” time; or sung slower, when it is called “larger normal imperfect” time).³⁰

For the anonymous compiler of the *Rubricæ breves* there are therefore three possible executions of the *senaria imperfecta*, with three different beats. These three different speeds are not related to the so-called “three tempi” (investigated by Dale Bonge in the fourth chapter of his dissertation),³¹ but illustrate the difficulty (for us, and perhaps for medieval singers as well) of finding a stable reference point for the duration of the beat.

Nonetheless, the most interesting question for the scholar and performer is the following: what is the value of the normal semibreve of the Italian *divisiones* described in the *Rubricæ breves* in terms of absolute duration? The only theorist to try and solve the problem is Johannes Vetulus de Anagnia, in his *Liber de musica*, which Gallo dates ca. 1360,³² but which is probably later by two or three decades. He very precisely defines the temporal value of the beat in the different Italian *mensuræ* through an arithmetic partition of the daily cycle of twenty-four hours:

Dicendum est quod in quattuor principales quadrantes dividitur dies. Quadrans habet horas sex. De hora nascuntur punta quattuor. Punctus habet momenta decem. Momentum habet uncias duodecim. Uncia habet atomos 54. Et est notandum quod ab ista uncia musicus accipit tempus rectum et perfectum, tamen neque maius neque minus sed mediocriter, quod principaliter consistit in forma quadrangulari ad similitudinem quattuor partium mundi in quibus ipsa trinitas in sexta ætate apparuit in carne humana. Et istud tempus dividitur in tres partes ad similitudinem trinitatis. Et dicitur tempus perfecte medie quod tempus dicitur breve, et breve est respectu aliorum superiorum. Licet sit longum respectu aliorum temporum divisionum minorum et minimarum prolationum.³³

In mathematical terms Vetulus’s procedure is very clear; succinctly, the proposed subdivision is as follows:

the day (*dies*: twenty-four hours) is divided into four quadrants (*quadrantes*);
 the quadrant (six hours) is divided into six hours (*horæ*);
 the hour (sixty minutes) is divided into four points (*puncta*);
 the point (fifteen minutes) is divided into ten moments (*momenta*);
 the moment (ninety seconds) is divided into twelve ounces (*uncia*);
 the ounce (seven seconds and a half) is divided into fifty-four atoms (*athomi*);
 the atom (14/100 of second) is indivisible.

³⁰ VECCHI: “Anonimi Rubricæ breves”, pp. 133–4.

³¹ BONGE: *The theory and practice of measure*, pp. 76–118.

³² GALLO: *La teoria della notazione*, pp. 68–9.

³³ HAMMOND: *Iohannis Vetuli de Anagnia*, pp. 28–9. The time subdivision in many categories is not a new suggestion; we find it already in JACOBUS LEODIENSIS: *Speculum musicae*, vol. VII, p. 85.

But there is a problem: Vetulus assigns to the breve of the *tempus perfectum minus seu medium* (here called *tempus rectum et perfectum*) the duration of one ounce. The breve in question is the equivalent of the *brevis perfecta* of the Italian *divisio novenaria* (“with quadrangular shape, subdivided into three parts like the Trinity”: the description agrees completely with the treatment of the breve later in the treatise, in the chapter “De figuris”). The duration of the *uncia* — seven and a half seconds — is thus three times greater than what we would expect, and consequently the values of all the other notes are tripled too.

Pursuing the subject, Vetulus furnishes the following total lengths of the different main *mensuræ*:

tempus perfectum maius [*duodenaria*: 12 M] = B of 72 atoms [1 M = 6 atoms]
tempus imperfectum maius [*octonaria*: 8 M] = B of 48 atoms [1 M = 6 atoms]
tempus perfectum medium [*novenaria*: 9 M] = 1 ounce (B of 54 atoms) [1 M = 6 atoms]
tempus imperfectum medium [*senaria imperfecta*: 6 M] = B of 36 atoms [1 M = 6 atoms]
tempus perfectum minimum [*senaria perfecta*: 6 M] = B of 36 atoms [1 M = 6 atoms]
tempus semiimperfectum maius [*quaternaria*: 4 M] = B of 24 atoms [1 M = 6 atoms]

As we can see, the names of the *mensuræ* are close to those used in the treatise *Ars nova* and in the *Rubricæ breves*, but they do not at all correspond to those of the French system. The terms used by the authors may be the same, but the *mensuræ* indicated are different: by *tempus perfectum maius* Vetulus indicates the *duodenaria*, Vitry the *novenaria*; by *tempus imperfectum maius* Vetulus intends the *octonaria*, Vitry the *senaria imperfecta*; and so on.

The debatable interpretation advanced by Gullo is not convincing: he tries to correct the manifest errors in Vetulus’s calculations in every possible way, and is thus forced to divide by three each of the values indicated by the theorist.³⁴ In the long and very detailed discussion of the twelve manners in which the *tempus* may be divided and subdivided, Vetulus speaks clearly, for example, of semibreves equivalent to twelve atoms, and of minims equal to six.³⁵ The passage on *tempus perfectum minus seu medium* is thus very clear as regards the value in atoms to attribute to the notes:

³⁴ GULLO: *Das Tempo*, pp. 69–76.

³⁵ “Potest etiam quodlibet istorum temporum semiimperfectorum maiorum quaternariæ divisionis dividi in duas partes æquales, et quælibet pars de prolatione maiori duarum minimarum est valoris. Et minor semibrevis appellatur quæ 12 atomorum est valoris” and “Quia est compositum ex duabus semibrevis minoribus, et unaquæque prædictarum minorum, cum sit valoris 6 atomorum, potest ascendere ad divisionem ternariam”; HAMMOND: *Iohannis Vetuli de Anagnia*, pp. 46 and 48.

Dicendum est de divisionibus et subdivisionibus temporis perfecti minoris seu medii, ubi primo per musicum incepta fuit mensura temporis, quod tempus universaliter continet in se valorem atomorum 54, particulariter vocis 27 et minimarum 9 de prolatione maiori. Et tempus divisionis novenariæ maioris prolationis vocatur, quod tempus dividitur per modum infra-scriptum, videlicet principaliter in duas inæquales partes. Et tunc prima pars erit minor, secunda vero maior vel e contrario. Quæ maior pars tempus breve minoris imperfectionis senariæ divisionis maioris prolationis appellatur et atomorum 36 continet in se valorem et non restringitur ad modum. Et minor pars semibrevis maior, quæ est valoris trium minimarum de prædicta prolatione maiori, nominatur.³⁶

Let us speak of divisions and subdivisions of *tempus perfectum minor* or *medium*, in which the *tempus* measurement was initiated at first by musicians, and that *tempus* contains altogether the value of 54 atoms, in particular 27 voices and 9 minims of major prolation. And it is called *tempus divisionis novenariæ maioris prolationis*, which *tempus* is divided in the following manner, that is to say chiefly in two unequal parts. And so the first part will be smaller and the second larger, or vice versa. The main part is called brief *tempus* of minor imperfection of *divisio senaria* with major prolation and holds the value of 36 atoms and it is not connected to *modus*. The smaller part, which has the value of three minims of the above-mentioned major *prolatio*, is called *semibrevis maior* [and so has the duration of 18 atoms].

Vetulus's calculations, however we try to interpret them without forcing the text, would seem to be incorrect. It is therefore an ingenious treatment that unfortunately clashes with the impossibility of accepting a beat duration with a constant minim of six atoms, which is equivalent to a metronomic 72 beats per minute (three times what was to be expected).

But another question is fundamental to the interpretation of the Vetulus treatise: the model presented by the author ascribes to the minim of all the Italian *divisiones* a fixed and constant duration. Such fixity, however, is typical of the French system and has no relation to the Italian system, at least the oldest one. It is clear that Vetulus was writing at a time when (the late fourteenth century), and in a place where (Rome?), the French influence on the notational system was already predominant and the distinctive notion of semibreve fixity in Italian notation had disappeared in favour of the equality of the minim. From his treatment we infer that he has in mind a kind of deeply hybridized, mixed notational system, one saturated with French elements. Indeed he fails to cite the *puncti divisionis* typical of the Italian tradition, and he explains with a wealth of detail the use of points of perfection, the syncope, and the phenomena of *imperfectio* and *alteratio*. His numerous musical examples are essentially concerned with how to decipher correctly the elements of French

³⁶ The text presented here has some variants with reference to HAMMOND: *Iohannis Vetuli de Anagnia*, p. 53.

notation to be introduced into the Italian repertoire.³⁷ He considers the *divisiones octonaria* and *duodenaria* as multiples of the *quaternaria*; in other words, he is thinking in terms of so-called *Longanotation*:³⁸

Ordinandæ sunt principales divisiones [...] videlicet novem, sex de tempore perfecto diminuto et de tempore imperfecto, et quattuor.

Et per istas quattuor divisiones omnes modi et divisiones cognosci, figurari et practicari possunt, ut per exemplum patet inferius. Quæritur quare divisio duodenaria et octonaria non figurantur. Respondetur quia cum tempus duodenarium sit compositum ex tribus temporibus quaternariæ diuisionis et tempus diuisionis octonarie ex duobus et imperfectis diuisionibus; videlicet in duodenariam et octonariam requiruntur multe figure uarie et diuerse et specialiter semibreues caudate uariis et diuersis modis et ipse et alie diuisiones possunt figurari et cognosci per tres solas notas videlicet per semibreuem maiorem, minorem et minimam et istas tres possumus figurare et cognoscere per duas solas figuras videlicet per semibreuem et minimam, que minima per quam cognoscuntur omnes diuisiones cognoscitur per solum paruulum filectum positum in semibreui sursum ductum. Et ideo ad evitandum superfluitates figurarum et ad sequendam breuitatem, debent per modum diuisionis quartæ figurari.³⁹

Vetulus touches on the older Italian notational system of *octonaria* and *duodenaria*, which have an abundance of semibreues *caudate* and differently shaped notes, but he testifies that a different notational system was already commonly used to express the two divisions: that of renewed *quaternaria*, a system that was much plainer and easier than the previous system and also complied with modern demands.

This also reveals that his notational approach, which is very clear about the arithmetic ratios between the *mensura*, is entirely French in style (even though it contains references to the Italian system) and very precisely considers the equivalence of the minim's value in all the *divisiones*. It is probably not, as Gallo conjectures,⁴⁰ an attempt to adapt the French theory of Johannes de Muris (who mentions only four main *mensura* in his *Libellus cantus mensurabilis*) to Italian circumstances, so much as an attempt to reflect a modern — and by that time widespread — Italian practice: the same that we also notice in the principal Italian manuscripts of the early fifteenth century.

A clear view of the Italian notational system, as practiced at the beginning of the fifteenth century, is also provided by Prosdocimo de Beldemandis in his *Tractatus practice cantus mensurabilis ad modum italicorum*, the first compilation

³⁷ The musical examples may be read also in COUSSEMAKER: *Scriptorum*, vol. III, pp. 155–77.

³⁸ On the so-called *Longanotation*, see MARCO GOZZI: “La cosiddetta Longanotation: nuove prospettive sulla notazione italiana del Trecento”, *Musica disciplina*, XLIX 1995, pp. 121–50.

³⁹ HAMMOND: *Iohannis Vetuli de Anagnina*, p. 75.

⁴⁰ GALLO: “Die Notationslehre im 14. und 15. Jahrhundert”, p. 325.

of which (at Montagnana) dates back to 1412. The treatise is polemical in approach and attempts to prove the superiority of the Italian system over the French one (a superiority questioned by many theorists, first of all by Marchetto).⁴¹

With regard to the subject we are discussing, the qualifying points of the *Tractatus* are the following:

- a) Prosdocimo distinguishes two kinds of composition: *cantus simplex*, which uses a single *mensura*, and *cantus compositus* or *mixtus*, which uses several *mensurae*.⁴² The adjective “mixtus” appears already in Marchetto’s *Pomerium*, where it is related to two phenomena: first, the alternation between the French and the Italian systems (“cantus mixtus”, to be marked by the letters G and Y), also typical of the opening sections of madrigals by Giovanni and Jacopo, and even by Nicolò da Perugia and Bartolino;⁴³ second, the alternation between perfect and imperfect *modus*, an alternation we often find in Italian madrigals between the first part and the ritornello.⁴⁴
- b) Prosdocimo points out that *octonaria* and *duodenaria* are nearly in *proportio sesquitertia* with *senaria imperfecta* and *novenaria* respectively: “Si bene consideramus, et ipsas aliquantulum stricte cantabimus, inveniemus octonariam mensuram ad senariam reduci, et duodenariam ad novenariam, que ambe mesure majores ad ambas mensuras minores in sexquitertia proportione se habent”.⁴⁵ The parenthetical “et ipsas aliquantulum stricte cantabimus” suggests that in his day the equality of the minim in all the *divisiones* was also applied in Italian practice, as we have seen in Vetulus’s treatment.
- c) Prosdocimo mentions two possible performances of *quaternaria* with different beats: either “in suis propriis valoribus sive large” or “stricte, in proportione sexquitertia”. The first, which appears to be the only one accepted by the

⁴¹ VECCHI: *Pomerium*, p. 173: “Et ex hoc concluditur quod gallici et melius cantent et rationabilius in tali modo cantandi quam italici. Modus etiam cantandi italicorum potest etiam sustineri, dicendo quod imitantur perfectionem in quantum possunt; quod est rationabile satis, scilicet imperfectum semper reducere ad perfectum. Cum igitur possit proportio de tempore imperfecto reduci ad perfectionem de tempore perfecto (quod est reducere imperfectum ad perfectum), ideo italicorum cantus de tempore imperfecto satis potest rationabiliter sustineri. Dicendum est ergo quod in tali modo gallici proprius et melius cantent, ratione prædicta. Italicorum vero cantus potest etiam, ratione dicta, satis rationabiliter sustineri”.

⁴² PROSDOCIMO DE BELDEMANDIS: *Tractatus practice cantus mensurabilis ad modum italicorum*, in COUSSEMAKER: *Scriptorum*, vol. III, pp. 228–48: 233b.

⁴³ VECCHI: *Pomerium*, p. 182: “Si autem proportionaretur unus cantus de divisione ipsius temporis imperfecti secundum gallicam et italicam divisionem mixte, dicimus quod in principio cantus gallici dicta littera .G. apponantur, in principio vero cantus italicici .Y. græcum (quod est principium nominis eorum) similiter apponatur”.

⁴⁴ VECCHI: *Pomerium*, p. 206: “Dicimus quod in principio cantus modi imperfecti, si ibi sit nota longa, vel ubicunque in ipso primo occurrerit ipsi notæ longæ, debeat ei addi cauda in sursum a latere sinistro [...]. Si autem cantus sit mixtus, puta de modo perfecto et imperfecto, cuilibet notæ longæ de modo imperfecto dicimus debere addi signum superius nominatum”.

⁴⁵ PROSDOCIMO: *Tractatus*, in COUSSEMAKER: *Scriptorum*, vol. III, p. 234b.

author, corresponds to the beat value in the French *mensura* with *tempus imperfectum* and *minor prolatio*; the second, which is a third of the *duodenaria* breve and half of the *octonaria* breve, is rejected (on theoretical grounds), though we understand from his descriptions that it must have been widespread.⁴⁶ There were evidently many *ignorantes cantores italicici* (simply *aliqui* in the first compilation of the treatise) who performed and understood the *quaternaria stricte* in such a way that the *octonaria* became exactly a double *quaternaria* and the *duodenaria* a triple *quaternaria* (thus applying so-called *Longanotation*). Among them we may include Vetulus de Anagnia.

A key piece of evidence concerning the actual value of the beat in the Italian system at the beginning of the fifteenth century (and probably in the French system too, in view of the almost complete fusion of the two systems at that time) comes not from a theoretical treatise, but from a medical book written by Michele Savonarola (1384–1468).⁴⁷ Savonarola was not only (like Prosdocimo) connected to the University of Padua, where he was a professor from 1434, but was also court physician to the Este family at Ferrara (from 1440).

Savonarola asserts that a physician has to know the speed of a normal heartbeat (*pulsus temperatus*), and to do so he must have a good knowledge of the duration of the two *divisiones quaternaria* and *senaria imperfecta* (“cantus imperfectus minor et cantus imperfectus maior, et primus appellatur quaternarius, secundus vero senarius”), which anyone can learn from a good musician in eight hours. He therefore believes that the breves of Italian *mensurae* are absolute time values that can be easily memorized. But what is the ratio of a healthy man’s heartbeat to the length of these two breves? It is halfway between the two (“tempus inter hos medium est tempus sive mensura temperata”). In Savonarola’s day and in the Veneto environment, the breve of the imperfect *senaria* was once one and a half times the *quaternaria* breve (according to Prosdocimo), so the mathematical half-way point between the two breves is five minims. However, Savonarola does not merely give precise indications of the mean value; he also indicates two bracketing values, purposely to establish some reasonable limits within which the heartbeat may be considered normal. He also

⁴⁶ The second compilation of the treatise, copied ca. 1425, reads: “Sed bene posite fuissent sine necessitate si sub suo proprio esse cantate fuissent et non stricte ut octenaria duplex quaternaria et duodenaria triplex quaternaria pro ut quandoque faciunt ignorantes cantores italicici qui dicunt quod non semper tempus octenarium et tempus duodenarium ad senarium et novenarium cantari habent in proportio sexquitertia, sed quod aliquando octenarium sub modo duplicis quaternarii et duodenarium sub modo triplicis quaternarii cantari habent”; see CLAUDIO SARTORI: *La notazione italiana del Trecento in una redazione inedita del “Tractatus practice cantus mensurabilis ad modum ytallicorum” di Prosdocimo de Beldemandis*, Olschki, Firenze 1938, pp. 48–9.

⁴⁷ The evidence was presented and commented on by KÜMMEL: “Zum Tempo in der italienischen Mensuralmusik”, pp. 150–63. The treatise by Savonarola was first published with the title *De febribus, de pulsibus, de urinis...*, in Venezia, 1498, and was compiled in Ferrara.

states that on some days he found his patients' pulses to be identical or very close to the beat of the *divisio quaternaria*.⁴⁸

All the theoretical data in this section will be summarized and translated into possible metronomic values in section III below, after we have observed the "prescriptions" in the surviving manuscripts by means of a study of tenor densities (in section II).

II. Density of *tenores* and beat duration

Not all aspects of the problem of beat duration in Italian music of the thirteenth and early fourteenth centuries are revealed by a study of the theorists' writings, for their descriptions of Italian notations do not exactly correspond to the scribal practices of the copyists responsible for the surviving manuscripts. Certainly, many treatises have also been lost. Nor, for that matter, can we assume that the surviving notational writings in the music manuscripts fully explain and describe — down to the smallest detail — all the notational changes that probably occurred during the Italian Trecento.

After deducing the relationships between the *mensurae* from a reading of the theorists, the present section will investigate — through non-empirical measurement (i.e. not based solely on subjective impressions of performance) — which of those relationships are correct and which of them were actually employed (at least by the composers whose works have been preserved, with few variants, in the principal — and late — manuscripts of the Italian Trecento).

To perform this task I have chosen to examine the densities of the *tenores* — that is, the simple counting of notes within a beat-unit — in the lower voices of the works of Francesco Landini, as they were transmitted in Italian sources.

What is density? There are two kinds of density: relative and absolute.

Relative density is the number of notes divided by the number of beat-units in a certain voice. It is expressed by the formula

$$rd = nn / nb$$

where *rd* = relative density; *nn* = number of notes; *nb* = number of beats. If the number of notes is equal to the number of beats, relative density is calculated as 1. The higher the *rd* value, the faster the rhythm of the examined voice. If, using the same beat, one tenor has a density of 1 and another a density of 2, this means that the second tenor has twice the number of notes as the first.

By contrast, absolute density concerns the number of notes per minute. Its value is calculated by multiplying the relative density by the metronomic value

⁴⁸ The passage by Savonarola (derived from fol. 80v of the Venetian incunabulum) is quoted in its entirety in KÜMMEL: "Zum Tempo in der italienischen Mensuralmusik", p. 153.

of the beat. It can be expressed by the following formula:

$$ad = rd \times vb$$

where *ad* = absolute density; *rd* = relative density; *vb* = value of the beat expressed in pulsations per minute. If the relative density of a voice is 1, and the beat is *MM* = 72, the absolute density is 72.

The relative density value is established by the following steps:

- a) counting the number of notes in a *tenor*, excluding both rests and final notes of sections: the exclusion of rests is dictated by the fact that rests lack independent rhythmic value and often represent pauses for breathing or mere variants of integral notes (the study of variants shows that, in rhythmic terms, rest plus note, note plus rest and integral note are equivalent);⁴⁹
- b) counting the number of beats in the *tenor* (excluding the value of the final note of each section), indicating the counting-unit if other than the *semi-breve* (for instance, *breve* for *quaternaria* with *modus*);
- c) dividing the number of notes by the number of beats, the result of which produces the relative density.

A small example will clarify the procedure: the opening section of the tenor in Landini's two-voice *ballata Per allegrezza* (from *Sq*, fol. 159r), reproduced in example 2. Here there are seven breves and six semibreves, for a total count of thirteen notes; and the section has a duration of ten breve-beats, since the piece is in renewed *quaternaria* (*Longanotation*). The relative density is therefore: $13/10 = 1.3$.

To calculate the absolute density (the number of notes per minute) we would need to multiply the above relative density by the metronomic value of the beat. If we postulate that such an absolute density is constant (within limits) in all of Landini's works, it is possible to calculate this metronomic value, and then to compare it with the results obtained from the study of the theoretical works.

The density value allows one to compare the prevailing rhythm of a particular tenor objectively. It is also quite an accurate indicator of the different *mensuræ*; and above all, it very clearly shows whether a tenor has a breve-beat rather than a semibreve-beat.

Obviously, from the rhythmic point of view the tenor voices are much more alike than the superius voices. They are the first voices to be written down in a composition and they often constitute the regular rhythmic support of the upper voices.

⁴⁹ See for instance MARCO GOZZI: *Il manoscritto Londra, British Library Additional 29987*, tesi di laurea, 2 vols., Scuola di Paleografia e Filologia Musicale dell'Università di Pavia, 1984-5, vol. I, pp. 120-5.

Example 2. The tenor of Landini's *Per allegrezza* (*Sq*, fol. 159r).



The corpus of Landini's compositions has been chosen for four principal reasons:

- 1) the extraordinary consistency of the manuscript tradition of the Landinian oeuvre, which shows very few variants: so our observations on this tradition can be applied to a wide variety of musical manuscripts;
- 2) the regularity and clearly articulated structure of his *tenores* (more orderly than that observed in his contemporaries' works and displaying features that are probably attributable to his blindness);
- 3) the Florentine provenance of this repertory, transcribed by Tuscan copyists of the late Trecento, at times and places proximate to those of other important manuscripts, such as *FP*, *Lo*, *Sq* and *Pit*;
- 4) the large number of compositions, which enables us to observe phenomena across a wide range of different *mensurae*.

If we observe the rhythmic structure of Landini's works, we notice that the *tenores* are rather similar in structure, and that the prevailing rhythmic movement is of one note to a beat (i.e. generally about 80–85 notes per minute). See, for example, the tenors reproduced in examples 3 and 4, which are selected from among the most regular and belong to the *ballate* *Duolsi la vita* (*Sq*, fol. 145r; mensuration: *tempus imperfectum, prolatio maior*) and *Già ebbero libertate* (*unicum* of *FP*, fol. 46r; mensuration: *quaternaria* with *modus imperfectus*).

The tenor of *Duolsi la vita*, which is texted, proceeds consistently in semibreves (example 3), reserving the breves for the cadential points. There are few minims and they are always either in unison with the preceding semibreve or, as in the first three instances, used to fill the interval of a third with the following semibreve. The tenor of *Già ebbero* (example 4), which is not texted and is written using wide *ligaturæ*, has a breve-beat and is constructed on a steady line of breves; the use of semibreves is very limited. It is quite easy, therefore, to determine the beat-unit of a Landinian tenor: all one has to do is observe

Example 3. The tenor of Landini's *ballata Duolsi la vita* (*Sq*, fol. 145r).

Example 4. The tenor of Landini's *ballata Già ebbi libertate* (*FP*, fol. 46r).

the prevailing figure (breve or semibreve), which is often absolutely dominant in a way that displays a deep regularity of conception. The relative density of the tenor of *Duolsi la vita* has an exact value of 1 (62/62, i.e. 43 + 19 notes / 42 + 20 beats); that of *Già ebbi* is 0.94 (64/68, i.e. 39 + 25 notes / 38 + 30 beats), hence slightly lower.

To understand why Landini's tenors are much more regular than those of other composers (in particular those of the early masters), let us look at the tenor of Jacopo da Bologna's madrigal *Non al su amante* (*Sq*, fols. 10v–1v) in example 5. Here the density is not constant, and there are moments of acceleration (preponderance of minims), others of deceleration (breves and semibreves). The relative density in the tenor of *Non al su amante* can be calculated as 1.44: i.e. nearly three notes for every two beats. One notices, however, that the density rises strikingly at certain points. Examples are the central portion of the third line ("vidi nel mezo delle geli-"), where there are ten notes in the space of four beats (density 2.5), and the end of the second line (melisma on the final *a* of the word "inuda"), where the density reaches the value of three notes per beat.

The tenors of the early masters like Giovanni and Jacopo are therefore less stable and standardized than those of Landini. The rhythmic behaviour of his *tenores*, which show greater regularity in their rhythmic organization and more constant densities than those of other composers, may also have been caused

Example 5. The tenor of Jacopo's madrigal *Non al su amante* (Sq, fol. 11r).

by his blindness.⁵⁰ A regular structure is likely to have helped him to memorize the tenors over which he then composed the upper voices “alla mente”.

Table 1 summarizes the calculation of the densities of all the *tenores* in Landini's compositions. When the two sections of a piece have different *mensura*, they are calculated separately.⁵¹ The names of the Italian *divisiones* are here employed mainly to indicate the corresponding French *mensura*, so “F i” (French *senaria imperfecta*) stands for imperfect tempus and perfect prolation, “F n” (French *novenaria*) for perfect tempus and perfect prolation, “F p” (French *perfecta*) for perfect tempus and imperfect prolation, and “F q” (French *quaternaria*) for imperfect tempus and imperfect prolation. As for 2q and 3q, they indicate *quaternaria* with *modus* (imperfect and perfect respectively) and constitute a kind of modernized writing — often called *Longanotation* — of the Italian *octonaria* and *duodenaria divisiones*.

The densities indicated in table 1 range from a lowest value of 0.5 (for the canonic madrigal *Deh, dimmi tu* in *senaria perfecta*, with one note for every two beats in the *tenor*) to a maximum of 1.5 (for the *ballata Già perch'i penso* in *quaternaria* with *modus perfectus*, with three notes for every two beats). The overall mean is very close to 1 (0.99): this means that the normal rate for Landini's tenors is one note for every beat.

⁵⁰ See MARIA CARACI: “La tradizione landiniana”, *Col dolce suon che da te piove: studi su Francesco Landini e la musica del suo tempo in memoria di Nino Pirrotta*, eds. Antonio Delfino and Maria Teresa Rosa Barezzani, SISMEL – Edizioni del Galluzzo, Tavarnuzze – Impruneta (Firenze) 1999, p. 18 and footnote 8.

⁵¹ List of abbreviations (comprising plurals as well): B = *ballata*; C = *caccia*; d = *duodenaria*; F = French notation; i = *senaria imperfecta*; I = Italian notation (with points of *divisio*); L = renewed *quaternaria* (the so-called *Longanotation*); M = madrigal; CM = canonic madrigal; n = *novenaria*; o = *octonaria*; p = *senaria perfecta*; q = *quaternaria*; rit. = *ritornello*; sect. = *section*; v = *voice*; V = *virelai*.

Table 1
Tenor densities in Landini's compositions listed by *divisio*

piece (form)	divisio	beats	1st sect.	2nd sect.	notes 1	notes 2	density
<i>Altera luce</i> (B 2v)	L 2q	B	44	34	46	42	1.12820513
<i>Altri n'avrà la pena</i> (B 2v)	L 2q	B	36	34	46	49	1.35714286
<i>Amor con fede</i> (B 2v)	L 2q	B	42	46	46	45	1.03409091
<i>Benché crudele</i> (B 2v)	L 2q	B	34	26	51	28	1.31666667
<i>Che fa' che pensi</i> (B 2v)	L 2q	B	26	26	37	37	1.42307692
<i>Contemprar le gran</i> (B 3v)	L 2q	B	52	38	45	34	0.87777778
<i>Cost' pensoso</i> (C 3v) rit.	L 2q	B		54		37	0.68518519
<i>De sospirar sovente</i> (B 2v)	L 2q	B	32	16	46	22	1.41666667
<i>Debba l'anim'</i> (B 3v)	L 2q	B	44	42	35	41	0.88372093
<i>Deh che mi giova</i> (B 2v), sect. B	L 2q	B		28		40	1.42857143
<i>Deh pon quest'amor</i> (B 2v)	L 2q	B	36	22	47	25	1.24137931
<i>Deh, dimmi tu</i> (CM 3v), sect. A	L 2q	B	132		104		0.78787879
<i>Divennon gli ochi</i> (B 3v)	L 2q	B	44	34	46	40	1.10256410
<i>Donna l'animo tuo</i> (B 2v)	L 2q	B	40	26	44	31	1.13636364
<i>Donna se 'l cor</i> (B 2v)	L 2q	B	40	22	54	31	1.37096774
<i>Donna, la mente mia</i> (B 2v)	L 2q	B	50	38	48	32	0.90909091
<i>Fa metter bando</i> (M 2v), rit.	L 2q	B		38		53	1.39473684
<i>Già ebbi libertate</i> (B 2v)	L 2q	B	38	30	39	25	0.94117647
<i>Già non biasim'</i> (B 3v)	L 2q	B	42	40	45	48	1.13414634
<i>Giovine donna</i> (B 2v)	L 2q	B	38	28	51	39	1.36363636
<i>Giovine vaga</i> (B 2v)	L 2q	B	36	22	42	25	1.15517241
<i>I' priego amor</i> (B 3v)	L 2q	B	50	42	50	46	1.04347826
<i>Il suo bel viso</i> (B 2v)	L 2q	B	34	38	43	44	1.20833333
<i>L'alma leggiadra</i> (B 2v)	L 2q	B	56	38	65	40	1.11702128
<i>L'alma mie</i> (B 3v)	L 2q	B	58	44	58	43	0.99019608
<i>Lucea nel prato</i> (M 2v), sect. A	L 2q	B	74		99		1.33783784
<i>Muort'oramai</i> (B 3v)	L 2q	B	62	62	66	67	1.07258065
<i>Musica son</i> (M 3v), sect. A	L 2q	B	120		132		1.10000000
<i>Nella partita</i> (B 2v)	L 2q	B	40	36	53	46	1.30263158
<i>Né 'n ciascun mie</i> (B 3v)	L 2q	B	40	38	54	46	1.28205128
<i>Non a Narciso</i> (M 2v) rit.	L 2q	B		58		60	1.03448276
<i>Non per fallir</i> (B 2v)	L 2q	B	48	38	63	50	1.31395349
<i>O pianta vaga</i> (M 2v), sect. A	L 2q	B	140		156		1.11428571
<i>Occhi dolenti</i> (B 2v)	L 2q	B	36	34	39	29	0.97142857
<i>Oimè 'l core</i> (B 2v)	L 2q	B	38	44	40	52	1.12195122
<i>Or è tal l'alma</i> (B 2v)	L 2q	B	30	18	37	22	1.22916667
<i>Orsú gentili spiriti</i> (B 3v)	L 2q	B	56	36	54	37	0.98913043
<i>Per la bellezza</i> (B 2v)	L 2q	B	62	34	59	32	0.94791667
<i>Per la 'nfluenza</i> (M 2v), sect. A	L 2q	B	80		114		1.42500000
<i>Per seguir</i> (B 3v)	L 2q	B	56	44	46	35	0.81000000
<i>Per servar umiltà</i> (B 2v)	L 2q	B	36	28	48	36	1.31250000
<i>Se la vista soave</i> (B 2v)	L 2q	B	72	62	86	67	1.14179104

piece (form)	divisio	beats	1st sect.	2nd sect.	notes 1	notes 2	density
<i>Sí dolce non sonò</i> (M 3v), rit.	L 2q	B		38		41	1.07894737
<i>Somma felicità</i> (M 2v), sect. A	L 2q	B	148		167		1.12837838
<i>Tante belleze</i> (B 2v)	L 2q	B	34	36	33	32	0.92857143
<i>Adiu adiu</i> (V 3v)	L 2q (2,3q)	B	28	10	28	13	1.07894737
							mean 1.134
<i>A le' s'andrà</i> (B 3v)	L 3q	B	57	48	56	48	0.99047619
<i>Ama, donna</i> (B 2v)	L 3q	B	54	39	49	38	0.93548387
<i>Amor, in te sperai</i> (B 3v)	L 3q	B	30	42	39	44	1.15277778
<i>Benché, la trezza</i> (B 2v)	L 3q	B	54	36	63	42	1.16666667
<i>Che cosa è quest'</i> (B 3v)	L 3q	B	39	33	39	36	1.04166667
<i>Chi pregio vuol</i> (B 2v)	L 3q	B	36	39	58	54	1.49333333
<i>Come a seguir</i> (B 2v)	L 3q	B	24	27	32	30	1.21568627
<i>Cosa nulla piú</i> (B 3v)	L 3q	B	42	39	50	49	1.22222222
<i>Da poi che va</i> (B 2v)	L 3q	B	33	36	38	40	1.13043478
<i>Deh che mi giova</i> (B 2v), sect. A	L 3q	B	30		41		1.36666667
<i>Deh volgi gli occhi</i> (B 2v)	L 3q	B	45	42	57	45	1.17241379
<i>Dolce signore</i> (B 2v, Lo)	L 3q	B	39	36	51	43	1.25333333
<i>Donna con vo'</i> (B 2v)	L 3q	B	49	27	56	29	1.11842105
<i>Donna la mia partenza</i> (B 2v)	L 3q	B	36	39	50	49	1.32000000
<i>Donna languir mi fai</i> (B 2v)	L 3q	B	51	24	61	28	1.18666667
<i>Donna s'i' t'ho</i> (B 2v)	L 3q	B	51	45	68	51	1.23958333
<i>Donna tu prendi</i> (B 2v)	L 3q	B	54	51	50	53	0.98095238
<i>Fa metter bando</i> (M 2v), sect. A	L 3q	B	114		117		1.02631579
<i>Fior di dolceza</i> (B 2v)	L 3q	B	33	33	41	48	1.34848485
<i>Fortuna ria</i> (B 2v)	L 3q	B	48	36	53	36	1.05952381
<i>Già perch'i'</i> (B 2v)	L 3q	B	45	36	75	47	1.50617284
<i>Gli occhi che 'n prima</i> (B 2v)	L 3q	B	36	21	53	29	1.43859649
<i>Gran piant'</i> (B 3v)	L 3q	B	48	54	41	45	0.84313725
<i>Guard'una volta</i> (B 3v)	L 3q	B	42	33	57	37	1.25333333
<i>I' piango, lasso</i> (B 2v)	L 3q	B	45	43	56	56	1.27272727
<i>I' vegio ch'a natura</i> (B 2v)	L 3q	B	57	36	70	47	1.25806452
<i>L'antica fiamma</i> (B 2v)	L 3q	B	42	48	54	56	1.22222222
<i>Lasso per mie</i> (B 3v)	L 3q	B	36	39	41	46	1.16000000
<i>L'onesta tuo biltà</i> (B 2v)	L 3q	B	60	48	74	52	1.16666667
<i>Lucea nel prato</i> (M 2v), rit.	L 3q	B		36		44	1.22222222
<i>Musica son</i> (M 3v), rit.	L 3q	B		96		110	1.14583333
<i>Nella tuo luce</i> (B 2v)	L 3q	B	24	48	24	47	0.98611111
<i>Nessun provò</i> (B 2v)	L 3q	B	48	51	51	48	1.00000000
<i>Non a Narciso</i> (M 2v), sect. A	L 3q	B	123		100		0.81300813
<i>Per allegrezza</i> (B 2v)	L 3q	B	39	22	49	27	1.24590164
<i>Po' ch'amor</i> (B 2v)	L 3q	B	48	45	50	47	1.04301075
<i>Po' che di simil</i> (B 2v)	L 3q	B	42	42	49	49	1.16666667
<i>Poi che da te mi</i> (B 2v)	L 3q	B	45	39	50	46	1.14285714
<i>Quanto piú caro</i> (B 3v)	L 3q	B	48	42	52	45	1.07777778
<i>S'andrai senza mercé</i> (B 2v)	L 3q	B	57	42	61	51	1.13131313
<i>Se la nimica</i> (B 2v)	L 3q	B	57	48	72	56	1.21904762

piece (form)	divisio	beats	1st sect.	2nd sect.	notes 1	notes 2	density
<i>Sempre girò caendo</i> (B 2v)	L 3q	B	51	44	56	42	1.03157895
<i>Sí dolce non sonò</i> (M 3v), sect. A	L 3q	B	186		134		0.72043011
<i>S'í ti son stato</i> (B 2v)	L 3q	B	39	36	49	40	1.18666667
<i>Somma felicità</i> (M 2v), rit.	L 3q	B		54		68	1.25925926
<i>Va pure amore</i> (B 2v)	L 3q	B	45	42	50	51	1.16091954
<i>Viditi donna</i> (B 2v)	L 3q	B	39	30	49	35	1.21739130
<i>Vita non è</i> (B 2v)	L 3q	B	42	30	48	36	1.16666667
							mean 1.156
<i>Benché, ora piova</i> (B 2v)	I d	SB	36	36	41	33	1.02777778
<i>Mostrommi amor</i> (M 2v), rit.	I d	SB		51		52	1.01960784
<i>Piú bella donna</i> (B 2v, Lo)	I d	SB	36	33	43	42	1.23188406
<i>Tu che l'oper</i> (M 2v), rit.	I d	SB		51		57	1.11764706
							mean 1.099
<i>Amar sí gli altri</i> (B 3v)	F i	SB	52	42	45	34	0.84042553
<i>Amor c'al tuo sugetto</i> (B 3v)	F i	SB	40	36	36	26	0.81578947
<i>Cosí pensoso</i> (C 3v), sect. A	F i	SB	174		102		0.58620690
<i>Da poi ch'a te rinasce</i> (B 2v)	F i	SB	46	50	48	40	0.91666667
<i>Duolsi la vita</i> (B 2v)	F i	SB	42	20	43	19	1.00000000
<i>El gran disio</i> (B 3v)	F i	SB	66	54	36	37	0.60833333
<i>El mie dolce</i> (B 3v)	F i	SB	40	44	26	32	0.69047619
<i>Giunta vaga biltà</i> (B 3v)	F i	SB	46	34	32	29	0.76250000
<i>I' fu tuo servo</i> (B 2v)	F i	SB	36	28	29	23	0.81250000
<i>I' non ardisco</i> (B 2v)	F i	SB	54	50	37	40	0.74038462
<i>La dolce vista</i> (B 2/3v)	F i	SB	54	38	41	29	0.76086957
<i>La mente mi</i> (B 3v)	F i	SB	42	24	32	18	0.75757576
<i>Nella mia vita</i> (B 3v)	F i	SB	50	50	34	32	0.66000000
<i>Nella piú cara parte</i> (B 2v)	F i	SB	50	44	37	28	0.69148936
<i>O fanciulla giulia</i> (B 3v)	F i	SB	58	48	43	40	0.78301887
<i>Ognor mi trovo</i> (B 2v)	F i	SB	48	36	39	26	0.77380952
<i>Perché, di novo</i> (B 3v)	F i	SB	38	24	45	26	1.14516129
<i>Po' che partir</i> (B 3v)	F i	SB	70	36	46	24	0.66037736
<i>Quel sol che</i> (B 3v)	F i	SB	44	36	39	26	0.81250000
<i>Questa fanciulla</i> (B 3v)	F i	SB	40	34	41	33	1.00000000
<i>S'í fossi</i> (B 3v)	F i	SB	36	30	27	22	0.74242424
<i>Vaga fanciulla</i> (B 2v)	F i	SB	50	46	45	38	0.86458333
<i>Mostrommi amor</i> (M 2v), sect. A	I i, o	SB	102		108		1.05882353
<i>Ma' non s'andrà</i> (B 2v), sect. A	I i-o (alt)	SB	64		68		1.06250000
<i>Nessun ponga</i> (B 3v)	F i-p	SB	60	66	50	51	0.80158730
							mean 0.814
<i>Caro signor</i> (B 3v)	F n	SB	60	48	41	31	0.66666667
<i>Conviensi a fede</i> (B 3v)	F n	SB	48	60	34	48	0.75925926
<i>Donna, per farmi</i> (B 3v)	F n	SB	60	54	46	32	0.68421053
<i>Gentil aspetto</i> (B 3v)	F n	SB	90	72	52	40	0.56790123
<i>Partesi con dolore</i> (B 3v)	F n	SB	42	93	34	78	0.82962963
<i>Perché, virtú</i> (B2v)	F n	SB	33	36	26	31	0.82608696
<i>Posto che</i> (B 3v)	F n	SB	54	48	40	33	0.71568627

The figures below concisely summarize the average densities for each individual *mensura*:

<i>2q</i> (<i>quaternaria</i> with <i>modus imperfectus</i>)	density: 1.134
<i>3q</i> (<i>quaternaria</i> with <i>modus perfectus</i>)	density: 1.156
<i>o</i> (Italian <i>octonaria</i>)	density: 1.143
<i>d</i> (Italian <i>duodenaria</i>)	density: 1.099
imperfect tempus with perfect prolation (2.3)	density: 0.814
perfect tempus with perfect prolation (3.3)	density: 0.793
perfect tempus with minor prolation (3.2)	density: 0.753
imperfect tempus with minor prolation (2.2)	density: 0.780

The chart shows how the works with a French measure (and semibreve-beat) — i.e. those written in French *mensurae* equal to the Italian *imperfecta* (3.2), *novenaria* (3.3), *perfecta* (3.2) and *quaternaria* (2.2) divisions — have tenors with a relative density of less than 1 (mean 0.78, i.e. around seven notes per nine beats), while those in *Longanotation* and in Italian notation have a density of over 1 (mean ca. 1.13, i.e. around nine notes per eight beats).

These simple data are very important, and constitute a revolutionary way of considering the beat in the Italian polyphonic music of the Trecento.

Two occurrences have to be pointed out. The first is the clear-cut distinction between the two groups of notational types: the French (the *quatre prolacions*) and the Italian (*octonaria*, *duodenaria* and *quaternaria* with *modus*), which in all likelihood have different beats. The second is the perfect equivalence, as far as the beat is concerned, between *quaternaria* with *modus* and the Italian *octonaria* and *duodenaria* divisions. This also confirms the hypothesis of a direct derivation, with the same beat, of the *quaternaria* with *modus* from the old *octonaria* and *duodenaria* divisions, written in the earlier type of Italian notation, with regular *pontelli*. Therefore the renewed *quaternaria* remains one of the most Italian of measures (at least as far as the beat is concerned) in the almost completely French-dominated notational world of the early Quattrocento.⁵²

If the actual density of notes per minute is typically constant in the *tenores* of the various pieces written in several notational systems, then we must agree that the compositions written in the French system have a semibreve-beat of ca. MM = 104 (in fact 7 notes per 9 beats, with a beat at 104, yields about 82 notes per minute), while the compositions written in Italian notation, or with the new system of *quaternaria* with *modus*, have a beat of ca. 72 (thus again about 81–82 notes per minute in the *tenores*):

⁵² See GOZZI: “La cosiddetta Longanotation”, p. 142.

FRENCH SYSTEM

2.3 (<i>i</i>)	density: $0.814 \times 104 = 84.656$ notes per minute
3.3 (<i>n</i>)	density: $0.793 \times 104 = 82.472$ notes per minute
3.2 (<i>p</i>)	density: $0.753 \times 104 = 78.312$ notes per minute
2.2 (<i>q</i>)	density: $0.780 \times 104 = 81.120$ notes per minute
	mean 81.64

ITALIAN SYSTEM

2 <i>q</i>	density: $1.134 \times 72 = 81.648$ notes per minute
3 <i>q</i>	density: $1.156 \times 72 = 83.232$ notes per minute
<i>o</i>	density: $1.143 \times 72 = 82.296$ notes per minute
<i>d</i>	density: $1.099 \times 72 = 79.128$ notes per minute
	mean 81.576

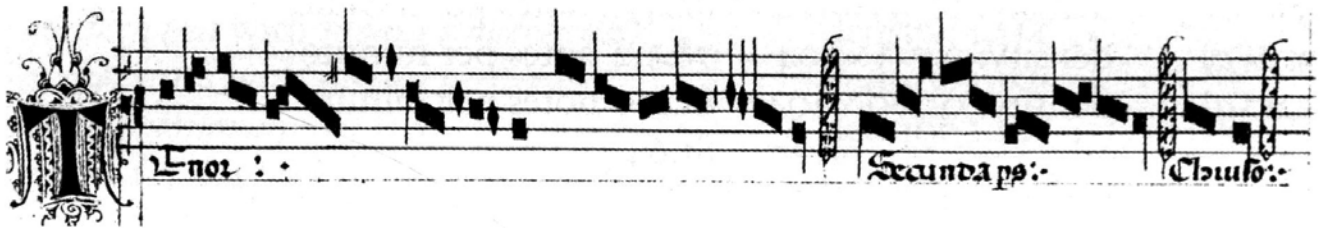
Table 1 can prompt a number of other observations. Here we shall mention some of the main ones. The final group of seven pieces written in imperfect time with imperfect prolation is very significant. In the table this group appears isolated, but the separation from the compositions in renewed *quaternaria* was not immediately apparent. We were able to isolate the group not only by carefully evaluating the density — which, if calculated for a breve-beat, would have the highest value of all (1.56 on average, i.e. 0.78×2) — but also by studying the rhythmic and metric structures.

These seven tenors all belong to compositions that at first sight look as if they were written in the usual *quaternaria* (similar to that of all the other works written using the Italian system), but they have no *modus*. Schrade considers these seven pieces to have been originally written in Italian *quaternaria*, in contrast with the pieces in *Longanotation* with clear *modus* organization, which he considers to be transcriptions of presumed originals in *octonaria* (*modus imperfectus*) or *duodenaria* (*modus perfectus*).⁵³

Here the tenor density, if calculated for a breve-beat, would be exactly double that of the pieces in French notation. Do we really have to believe that these pieces were performed at doubled time? I think not. We are dealing with the usual French *tempus imperfectum* with major prolation, with a semibreve-beat (ca. MM 104): very different from the Italian *quaternaria* of this period, ca. 1400, which had a breve-beat but a slightly slower one (ca. MM 72). This is

⁵³ LEO SCHRADER: *Polyphonic music of the fourteenth century. Commentary to volume IV: The works of Francesco Landini*, Monaco, L'Oiseau-Lyre, s.d. *Chi più le vuol*, p. 68: "The original probably was based on *quaternaria*"; *Donna l tuo partimento*, p. 93: "divisio *quaternaria* in Italian terms; notation is French"; *Già d'amore*, p. 87 "with *quaternaria* probably the original"; *Lasso di donna*, p. 113: "*quaternaria* probably the original rhythm"; *Non do la colpa*, p.102: "divisio *quaternaria*"; *Se pronto non sarà*, p. 53 "the unit is the Breve, not the Longa"; *Non creder donna*, p. 35 "The unit of the measure is Breve, not Longa; original rhythm probably *quaternaria*".

Example 6. The tenor of Landini's *ballata Donna 'l tuo partimento* (*Sq*, fol. 149v).



a problem that has hitherto never been investigated specifically and which poses an inevitable question: what inspired the singers of the fourteenth century to use a semibreve-unit of time instead of a breve-unit? In all likelihood they were motivated by the prevailing note-values in the tenor. Moreover, a cursory examination is sufficient to reveal those prevailing note-values, which correspond to the beat: where there is an absolute supremacy of breves, accompanied by a few *longæ* and semibreves (often pairs of single-pitch semibreves), the beat falls on the breve; where, on the contrary, the semibreves prevail and there are also some minims, but no *longæ*, the beat falls on the semibreve.

Let us observe, for instance, the tenor of the *ballata Donna 'l tuo partimento* (*Sq*, fol. 149v) reproduced in example 6, and compare it with the preceding example of *Già ebbi libertate* (example 4) in renewed *quaternaria*. *Donna 'l tuo partimento* is one of the seven *ballate* in *quaternaria* without *modus*. Both tenors of examples 4 and 6 are untexted, so no notes are repeated on the same pitch for textual requirements (e.g. two unison semibreves in place of a breve). *Già ebbi* has fifty-five breves, five *longæ* and five semibreves (excluding the final notes of the two sections); *Donna 'l tuo partimento*, on the other hand, has thirty-one semibreves, seventeen breves and two minims. The prevailing value is evident and would be easily identified by the singer: breve in the first case, semibreve in the second.

In the *ars nova* period, as Bank has pointed out, there are two fundamental “basis-mensuræ”, and consequently also two “basis-tempi” of the beat-time: on the *semibrevis* or on the *brevis*.⁵⁴

The data of table 1 are surprisingly convincing and consistent with Prosdocimo's exposition of the mensural rules and the relationships between divisions, in spite of the obvious oscillations caused by the presence or absence of a literary text and other uncontrollable factors. There is only one exception: the *ballate* in *tempus imperfectum* and major prolation have a relative density (0.81) that is very close to that of the *ballate* in *tempus perfectum* and minor prolation (mean 0.75). This could indicate that the semibreve in *tempus imperfectum* and

⁵⁴ BANK: *Tactus, tempo and notation*, pp. 43–5.

major prolation was performed at ca. MM 104, exactly as in \subset and in \circ ; hence the same semibreve (beat) was retained in all the *mensurae*. This would mean that in practice (only in Italian practice?) the French system of the *quatre prolationes* resembles the old Italian system described in the *Rubricae breves*: with a fixed semibreve, except for the beat value, which ranged from 72 to 104 beats per minute.

But here a further ratio emerges, as yet not determined by the theory, between 2.3 and 3.2: it is no longer a *proportio subsesquitertia* as in the Italian system (see, for example, the *Rubricae breves*), nor an equivalent minim as in the French system (Vitry), but a *proportio sesquialtera* at the minim level (three minims in the place of two):

Italian theory (<i>Rubricae breves</i>)	$3 M i = 4 M p$	(1 SB = 2 SB)
French theory	$1 M 2.3 = 1 M 3.2$	(1 SB = 1,5 SB)
practice in the early fifteenth century	$3 M 2.3 = 2 M 3.2$	(1 SB = 1 SB)

The two absolute values of the *senariae*, however, are the lowest (81.3 for the *perfecta*) and highest (nearly 88 for the *imperfecta*) of all the average values described: a signal that perhaps the *perfecta* beat was slightly accelerated (semibreve ca. MM 108) and the *imperfecta* slightly decelerated (semibreve ca. MM 100).

All these deductions are valid if we postulate an absolute constant density in Landini's tenors, i.e. a uniform, steady enumeration of the tenor values (about 82 notes per minute).

The framework of mensural proportion that emerges from the study of the densities in Landini's tenors will be compared in section III with the theoretical statements. It is undoubtedly valid for the Florentine manuscripts (*FP*, *LO*, *Pit* and *Sq*), but it could possibly be extended to other coeval sources.

The investigation of tenor density could be extended to the entire corpus of Italian Trecento secular works, but in this case the results obtained have to be analyzed with great critical discernment, especially as far as the early masters are concerned, since the situation is very different from that presented by Landini's oeuvre.

I offer here another possible example of how this method can be used to resolve a further question connected with the beat in Jacopo da Bologna's works.

Of the twenty-nine surviving madrigals by Jacopo, as many as nineteen show the same mensural plan: imperfect time for section A; perfect time for the ritornello. In table 2 Jacopo's madrigals are listed in alphabetical order with the *divisiones* that appear in *Sq* (or in *FP* or *Lo* in the only two cases of *unica* not present in *Sq*). Two of the three *cacce* have this same mensural scheme: *Oselletto* (*o / d*) and *Per sparverare* (*o / p*). It is immediately obvious that the *tempus perfectum* of the ritornello has two mensural aspects: *duodenaria* (*d*) and *senaria*

Table 2
Jacopo's madrigals and their divisions
 (the madrigals with *tempus imperfectum* in the first section
 and *perfectum* in the second are listed in bold type)

madrigal	divisions	madrigal	divisions
<i>Aquila / Uccel</i>	<i>o p</i>	<i>O in Italia</i>	<i>o p</i>
<i>Con gran furor</i>	<i>o d</i>	<i>Oselletto</i>	<i>p</i>
<i>Di novo è giunto</i>	<i>o d</i>	<i>Posando</i>	<i>p</i>
<i>Entrava Febo</i>	<i>o d</i>	<i>Prima vertute</i>	<i>o</i>
<i>Fenice fu' e vissi</i>	<i>o p</i>	<i>Quando veg'io</i>	<i>i d</i>
<i>I' mi son un che</i>	<i>i d</i>	<i>Sí come al canto</i>	<i>i d</i>
<i>I' senti' zà</i>	<i>p d</i>	<i>Sotto l'imperio</i>	<i>o d</i>
<i>In su' be' fiori (FP)</i>	<i>o i</i>	<i>Straccias'i panni</i>	<i>o</i>
<i>In verde prato</i>	<i>i d</i>	<i>Tanto che siat</i>	<i>o d</i>
<i>Lo lume vostro</i>	<i>p</i>	<i>Tanto soavemente</i>	<i>o</i>
<i>Lucida petra</i>	<i>d n</i>	<i>Un bel perlaro (Lo)</i>	<i>o d</i>
<i>Nel bel giardin</i>	<i>o d</i>	<i>Un bel sparver</i>	<i>o p</i>
<i>Non al so amante</i>	<i>o d</i>	<i>Vestise la cornachia</i>	<i>p o</i>
<i>O cieco</i>	<i>o d</i>	<i>Vola el bel sparver</i>	<i>o d</i>
<i>O dolz'appress</i>	<i>o d</i>		

perfecta (*p*). Do these represent two modern translations of the same original rhythm? If so, then their densities would have to be equal.

Table 3 shows the data concerning the breve-density (number of notes/number of breves) of the four ritornelli in *perfecta* and the fifteen ritornelli in *duodenaria* (in alphabetical order).

The arithmetic mean of the four densities of the tenors in *perfecta* is exactly 2, while the average of the other values, relating to the sections in *duodenaria*, is 3.23. In the *duodenaria* group there are some values that differ from the mean. The first is that of *In verde prato*: here the anomaly is due to the brevity of the ritornello (only seven breve measures), which has a very slow rhythmic pace, full of *breves*. On the other hand, the values of *Non al so amante*, *O dolz'appresso* and *Tanto che siat* are much higher than average. Why? If we look at the rhythmic structure of both voices we find that they are probably translations of pieces in *tempus imperfectum* and *modus perfectus* (but the breve of *tempus imperfectum* is probably ca. MM 54). The *Rubricæ breves* called this *duodenaria* “tempus plus quam perfectum”.

Table 3
The density of the ritornelli in perfect time in Jacopo's tenors

title	division		density
<i>Aquila / Uccel</i>	<i>p</i>	43/26	= 1.65
<i>Fenice fu' e vissi</i>	<i>p</i>	30/17	= 1.76
<i>O in Italia</i>	<i>p</i>	38/16	= 2.38
<i>Un bel sparver</i>	<i>p</i>	47/21	= 2.24
<i>Con gran furor</i>	<i>d</i>	41/13	= 3.15
<i>Di novo è giunto</i>	<i>d</i>	25/8	= 3.13
<i>Entrava Febo</i>	<i>d</i>	50/14	= 3.57
<i>I' mi son un che</i>	<i>d</i>	34/10	= 3.4
<i>In verde prato</i>	<i>d</i>	13/7	= 1.86
<i>Nel bel giardin</i>	<i>d</i>	45/13	= 3.46
<i>Non al suo amante</i>	<i>d</i>	56/13	= 4.31
<i>O cieco</i>	<i>d</i>	42/13	= 3.23
<i>O dolz'apress</i>	<i>d</i>	48/10	= 4.8
<i>Quando veg'io</i>	<i>d</i>	21/7	= 3
<i>Sí come al canto</i>	<i>d</i>	34/14	= 2.43
<i>Sotto l'imperio</i>	<i>d</i>	43/14	= 3.07
<i>Tanto che siat</i>	<i>d</i>	55/15	= 3.67
<i>Un bel perlaro (Lo)</i>	<i>d</i>	33/11	= 3
<i>Vola el bel sparver</i>	<i>d</i>	30/12	= 2.5

The data shown in table 3 demonstrate that the breve of *duodenaria* was once one and a half times or twice that of *senaria perfecta*. In the former case the breve of *senaria perfecta* was perfectly equivalent to that of *tempus imperfectum*.

The notational appearance of these compositions was not based on Marchettan theory, where the *perfecta* and *duodenaria divisiones* are two complementary, and only apparently contrasting, aspects of the same musical substance in which the *brevis perfecta* is ca. MM 36. In fact the difference in density shows that the two *divisiones* are conceived by Jacopo as distinct (breve of *perfecta* ca. MM 54, that of *duodenaria* ca. MM 36), and this assumption is further strengthened by an examination of Jacopo's madrigal *I' sentii già* (first section in *p.*, ritornello in *d.*) where we have a density ratio similar to that already noted (section A, density: 99/58 = 1.7; section B, density: 56/17 = 3.29), and where it is clear that the two parts of the madrigal are different in rhythmic conception.

Table 4
Density of Jacopo's compositions in *senaria perfecta*

GROUP A		
<i>Aquila / Uccel</i> (section B)	43/26	= 1.65
<i>Fenice fu' e vissi</i> (section B)	30/17	= 1.76
<i>I' sentii già</i> (section A)	99/58	= 1.70
<i>Oselletto</i> (sections A and B)	159/80	= 1.98
<i>Per sparverare</i> (section B)	30/19	= 1.58
<i>Posando</i> (sections A and B)	176/102	= 1.72
<i>Vestise</i> (section A)	98/54	= 1.81
	mean	1.73
GROUP B		
<i>O in Italia</i> (section B)	38/16	= 2.38
<i>Un bel sparver</i> (section B)	47/21	= 2.24
<i>Lo lume vostro</i> (sections A and B)	126/58	= 2.17
	mean	2.26

The discovery that the breve of *senaria perfecta* in Jacopo's works is sometimes equivalent in value to that of *senaria imperfecta* and also to that of *tempus imperfectum* is an important one, and is also confirmed by the theory. The phenomenon may be in fact reconnected to the theoretical concept of *mutatio qualitatis*, introduced into Italian practice ca. 1330 and described as follows by Long:

By endowing the minim with a discrete value in real time, the six-fold division of the perfect breve (in which each semibreve is subject to binary division) takes on a length two-thirds that of the nine-minim breve (in which each semibreve is subject to ternary division). This situation explains Jacobus' [of Liège] remark that the ancients sang both of these perfect tempora equally (the implication being that the moderns did not).

The perfect breve of six minims' length (the *divisio binaria* of which Jacobus complains) was, then, perfect only in concept. In reality, it was equivalent to an imperfect breve (a nine-minim breve minus one-third). By mid-century, this notational paradox was given a theoretical basis in the concept of *mutatio qualitatis*.⁵⁵

Table 3 also shows two different groups of density values for *senaria perfecta*: one of ca. 1.7 (*Aquila altera* and *Fenice fu'*), the other of ca. 2.2 (*O in Italia* and

⁵⁵ LONG: *Musical tastes in fourteenth-century Italy*, p. 51.

Un bel sparver). The study of other compositions by Jacopo in *senaria perfecta* displays the same situation, illustrated in table 4.

Observation of the manuscript reveals that the lower density of group A (ca. 1.73) occurs with the use of *modus imperfectus* and the lack of triplets, while the greater density of group B (ca. 2.26) is always combined with the presence of minim-triplets and the lack of *modus*. In the former case the breve in *.p.* is worth half the breve in *.d.*, whereas in the latter it is the same as that in *.si.*; here too the density values are good indicators of the phenomenon.

Tenor density will therefore be employed in section v to investigate other questions concerning mensuration in the works of individual composers.

III. The possible reference framework

The information concerning beat provided by theorists is not always concordant, nor can it be interpreted with any certainty. It is important, however, to try and reconcile the divergent views and trace the possible theoretical reference frameworks regarding the value of the beat in polyphonic music of the Italian Trecento.

It is possible to summarize the situation by proposing at least three hypothetical models:

- A) 1320–50 (pure Marchettan system);
- B) 1350–80 (system of transition);
- C) 1380–1430 (Vetulus–Prosdocimo system, supported by Savonarola's evidence).

These models, however, show only little connection with the rhythmic structures observed in the surviving manuscripts. One's impression is that the musical state of affairs in the Trecento was very unsettled and diversified. The issues become more complicated when we consider the rhythmic structures in the works of individual composers. An initial investigation may be conducted on Jacopo da Bologna's works, which present a very stable picture and almost exclusively use four mensurations: the two appearances of imperfect time, Italian (consistently marked as *.o.* in the surviving manuscripts) and French (*senaria gallica* - *s.g.* - or *imperfecta* - *i* -); and perfect time, marked in the manuscripts as *duodenaria* (*.d.*) and *senaria perfecta* (*.p.*). This basic pattern of mensuration — which we can deduce from the study of the metric structures in Jacopo's compositions, but which was then misunderstood and widely corrupted within the manuscript tradition (surely owing to the different theoretical reference points of the copyists) — may be called model D, which we add to the three basic schemes cited above:

Table 5

TEMPUS PERFECTUM		TEMPUS IMPERFECTUM	
brevis perfecta ■ = MM 36		brevis imperfecta ■ = MM 54	
<i>secundum italicos</i>			
prima divisio temporis (ternaria):	◆ ◆ ◆	prima divisio temporis (binaria):	◆ ◆
secunda divisio temporis (senaria):	◆◆ ◆◆ ◆◆	secunda divisio temporis (quaternaria):	◆◆ ◆◆
tertia divisio temporis (duodenaria):	◆◆◆◆ ◆◆◆◆ ◆◆◆◆	tertia divisio temporis (senaria gallica):	◆◆◆ ◆◆◆
		quarta divisio temporis (octonaria):	◆◆◆◆ ◆◆◆◆
<i>[secundum gallicos] divisio novenaria</i>			
prima divisio (ternaria):	◆ ◆ ◆		
secunda divisio (novenaria):	◆◆◆ ◆◆◆ ◆◆◆		

D) the system used in the compositions of Jacopo, derived from their rhythmic structure, but not present in the extant manuscripts.

A second mensural scheme is suggested by the study of the only manuscript that has a certain internal coherence in its treatment of the Italian *divisiones*, i.e. the Rossi codex:

E) the system used in the Rossi codex, the earliest actual example of Italian notation.

Finally there is the model derived from the study of tenor density in the works of Landini:

F) mensuration in the surviving Florentine manuscripts (1390–1430).

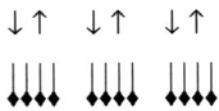
Since they need detailed illustration, these three real models (D, E and F) will be provided at the end of section v, after discussion of the relationships between the *divisiones* and analysis of the manuscripts.

Let us therefore now examine the three theoretical schemes.

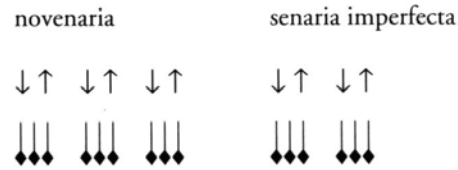
A) *Marchettan system, described in the Pomerium*. The Marchettan system, illustrated in table 5, is based solely on *tempus perfectum* and *tempus imperfectum*. Both can be divided *secundum italicos* (in the Italian manner) or *secundum gallicos* (in the French manner). The two manners of subdividing the imperfect breve may alternate in the same work, thus forming a *cantus mixtus* (a mixed song). The beat remains unchanged and it falls on the breve. Compared to the perfect breve, the imperfect breve is shorter by a third.

The novelty compared to French theory (codified in the same period in the treatise *Ars nova* ascribed to Vitry) is the possibility it offers of subdividing

Example 7.



Example 8.



the perfect breve into twelve stemless semibreves (called *semibreves minima* or simply *minima* — minims) and the imperfect breve into eight *semibreves minima*: French musicians were not allowed to subdivide the perfect breve into more than nine semibreves, and the imperfect breve into more than six. Marchettan notation provides for the use of the *pontellus* (point of division) to define the borders of the groups of notes that correspond to the overall value of a breve. As far as perfect *tempus* is concerned, two or three semibreves between two *pontelli* tell us we are in the first time division; four to six, the second; over seven, the third. A similar method is used for imperfect *tempus*.

B) *The system of transition.* A new system is described in the *Rubricæ breves*. It arguably represents the first fundamental theoretical change from Marchettan notation. If it was realized in performance (and it probably was, at least partially), it would have been very practical for the singers.⁵⁶ The beat (which is likely to be very close to the pulse beat) remains unchanged: it is divided by four in *quaternaria*, *octonaria* and *duodenaria* (because these divisions have four minims for each *semibrevis maior*), and by three in *senaria imperfecta* or *gallica* and in *novenaria* (the French mensurations). Examples 7 and 8 display the subdivision of time in the *Rubricæ* system (↓ and ↑ stand for the downbeat — *depositio* — and upbeat — *elevatio* — respectively).

Example 7 shows how the beat behaves in *quaternaria* (where the *pontelli* were sometimes placed by the copyists after each group of four minims; so the example shows three *divisiones quaternariae*), in *octonaria* (with *pontelli* after each group of eight minims) and in *duodenaria* (with twelve minims in each *divisio*). Example 8, on the other hand, shows the beat in *novenaria*. The beat in *senaria imperfecta* considers only the first six minims, but it is perfectly equivalent. This system was probably also adopted in France for the *mensura* with perfect prolation.

The French system, which would eventually enjoy greater success historically and also continue into white mensural notation, was instead more rigorous from the theoretical point of view, as regards the equality of the minims, but slightly more complex in practice, since it had two different values for the semibreve-beat. It is illustrated in table 6.

⁵⁶ The system is efficiently and clearly described by SHERR: "Tempo to 1500", p. 331.

Table 7 converts the lengths of the notes indicated by the *Rubricæ breves* into metronomic values. The value of the prevailing beat of the Italian *divisiones* (MM 72) complies with that conjectured by many scholars (e.g. Gullo, Bank and Sherr) and is very close to the pulse beat. As we can see, this Italian theoretical system is easily applied, because the beat is the same in all mensurations, with the sole exception of *senaria perfecta*, in which the breve-beat is diminished by 3:2 (though there are other possible ways of performing this *divisio*; see below) and the *quaternaria morosa* (about which see below).

It should be noted that in the treatise the Italian *divisiones* are not indicated by the names shown in table 7, but instead by the corresponding Latin terms listed in table 8.

Previous scholars have incorrectly designated the system illustrated in table 7 as the “Italian system” *tout court*, or even as Marchettan.⁵⁷ In actual fact, not only is this table not a Marchettan system; it does not even exhaust the values of the different Italian *divisiones* indicated in the *Rubricæ breves*. The treatise also provides for other distinct, though possibly similar, ways of performing the same mensurations (which are given different names; see table 9).

The expanded beat of the *duodenaria*, which was used when the *divisio* had more than twelve notes to each breve measure (and was thus called *tempus plus quam perfectum*), can be expressed simply by using the French minim, which is equivalent to that of *novenaria*. In this an equivalence between divisions was realized that was subsequently sanctioned by theorists (for example Vetulus). The semibreve thus assumes a beat of MM 54. Likewise, the enlarged *senaria perfecta* (called *tempus maius perfectum minor*) has the same French minim, and thus a beat of ca. MM 108. This *senaria* is defined with an awareness of what was written above in the treatise about *tempus plus quam perfectum*, granted that this *senaria* is in any case equal to half that of *duodenaria*. This evidence is significant, since it attributes some kind of theoretical order to a phenomenon already found in the Rossi codex: the alternation of the two *senariæ* (*imperfecta* and *perfecta*) *per equipollentiam*, i.e. with equal breves and equal minims.

Senaria gallica, finally, is the only *divisio* for which the *Rubricæ breves* provides up to three different modes of performance (standard, fast and slow).

In its faster interpretation it is called *tempus imperfectum minus*, precisely the same name used for *quaternaria* (see table 8). This means that the breve must be the same in the two *mensuræ* and that the minim of *senaria* stands at ca. MM 324, the fastest value hitherto found, which however has parallel instances in practice (see below, in the section devoted to the composers).

The slower execution, on the other hand, is in all likelihood comparable to the beat of *tempus plus quam perfectum* (defined above as ca. MM 54).

⁵⁷ For the “Italian system” *tout court*, SHERR: “Tempo to 1500”, p. 330; for the Marchettan system, GULLO: *Das tempo*, p. 68, and BANK: *Tactus, tempo and notation*, p. 19 (table II).

Table 6
French system (ca. 1350)

FRENCH NOTATION			
tempus imperfectum, prolatio imperfecta [c]		↓ = MM 216	beat:
tempus imperfectum, prolatio perfecta [c]		↓ = MM 216	beat:
tempus perfectum, prolatio imperfecta [o]		↓ = MM 216	beat:
tempus perfectum, prolatio perfecta [o]		↓ = MM 216	beat:

Table 7
Rubricæ breves (ca. 1350)

ITALIAN NOTATION			
duodenaria		↓ = MM 288	beat:
novenaria		↓ = MM 216	beat:
octonaria		↓ = MM 288	beat:
senaria imperfecta		↓ = MM 216	beat:
senaria perfecta		↓ = MM 288	beat:
quaternaria morosa		↓ = MM 216	beat:
quaternaria		↓ = MM 288	beat:

Table 8
Names of the Italian divisions in the *Rubricæ breves*

duodenaria	<i>tempus perfectum recte divisum in duodecim</i>
novenaria	<i>tempus perfectum recte divisum in novem</i>
octonaria	<i>tempus imperfectum recte modi italici divisum</i>
senaria imperfecta	<i>tempus imperfectum modi gallici</i>
senaria perfecta	<i>tempus perfectum minus divisum in sex</i>
quaternaria	<i>tempus imperfectum minus</i>

Table 9
The alternative beat for the Italian divisions in the *Rubricæ breves*

TEMPUS PERFECTUM			
plus quam perfectum		↓ = MM 216	beat:
maius minor		↓ = MM 216	beat:
TEMPUS IMPERFECTUM (senaria gallica)			
minus		↓ = MM 324	beat:
maius recte		↓ = MM 162	beat:

Table 10
The duration of the different divisions based on a minim at ca. MM 288

duodenaria	↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	↓ = MM 288	beat: ♠ [↓ ↓ ↓ ↓] = MM 72
novenaria	↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	↓ = MM 288	beat: ♠ [↓ ↓ ↓] = MM 96
octonaria	↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	↓ = MM 288	beat: ♠ [↓ ↓ ↓ ↓] = MM 72
senaria imperfecta	↓ ↓ ↓ ↓ ↓ ↓	↓ = MM 288	beat: ♠ [↓ ↓ ↓] = MM 96
senaria perfecta	↓ ↓ ↓ ↓ ↓ ↓	↓ = MM 288	beat: ♠ [↓ ↓] = MM 144 ♠ = 4
quaternaria	↓ ↓ ↓ ↓	↓ = MM 288	beat: ♠ [↓ ↓ ↓ ↓] = MM 72

In the complex system explained by the *Rubricæ breves*, each *divisio* has its peculiar beat, and the Marchettan bipartition *tempus perfectum* – *tempus imperfectum* has only terminological significance: each of the *mensuræ* belonging to a *tempus* class has a different value for the breve (apart from *duodenaria* and *octonaria*, which have the same breve: of *novenaria* and *senaria gallica*, respectively). Clearly we are very far from the Marchettan system, which was based on the fixed value of the breve (see table 5).

Some questions however are immediately raised. Was the theoretical system presented in the *Rubricæ breves* applied in practice, and was it actually used by the scribes? Do we find it in the manuscripts? Is it used in its pure form or does it betray the influence and contamination of other systems? Does it remain unchanged throughout the Trecento, or is it soon abandoned? Did northern and Florentine copyists react to this chart in the same way?

The following lines will search for answers to these questions, but one must immediately stress that the great elasticity of the system offered in the *Rubricæ breves* (with the various exceptions to the basic structure listed in table 9) suggests that the anonymous compiler actually wanted to describe the reality of performance, and not merely to convey an abstract theoretical picture. The Rossi codex, which chronologically (and perhaps also geographically) is the manuscript closest to the treatise, displays many points of convergence with this theory. The same can also be said for the works of certain Trecento composers (see section v).

c) *The Vetulus–Prosdocimo system.* The tempo-theory of Johannes Vetulus is by far the most mathematically grounded. His calculations of the duration of the “full brevis” may be incorrect, but his notational framework is fairly clear as regards the arithmetic ratios between the *mensuræ*, so that it can serve at least to establish the correct relationship between the *divisiones*.

Example 9. Prosdocimo's *quaternaria larga*.

slow quaternaria $\downarrow\downarrow\downarrow\downarrow$ ($\downarrow = \text{MM } 216$) beat: $\diamond[\downarrow\downarrow\downarrow] = \text{MM } 108$

Example 10. Prosdocimo's *quaternaria stricta*.

fast quaternaria $\downarrow\downarrow\downarrow\downarrow$ ($\downarrow = \text{MM } 288$) beat: $\blacksquare[\downarrow\downarrow\downarrow\downarrow] = \text{MM } 72$

Although the system is devised entirely in the French style, it contains references to Italian practice, and it precisely considers the equivalence of the minim's value in all the *divisiones*. Table 10 shows the duration of the different divisions based on a minim at ca. MM 288, a very plausible value that achieves the same beat value as the *Rubricæ breves*, at least for Italian mensurations (*duodenaria*, *octonaria* and *quaternaria*). Gullo and Bank instead proposed a value of MM 216 for the *semibrevis minima*.⁵⁸ The mensural system to which Prosdocimo de Beldemandis refers in his *Tractatus practice cantus mensurabilis* is probably very close to that of Vetulus, shown in table 10.

For Prosdocimo, however, there are two possible performances of the *quaternaria*: “in suis propriis valoribus sive large” (in its own values or with a wide beat) or “stricte, in proportione sexquitercia” (strictly, in a 3:4 ratio). The first manner is the only one accepted by Prosdocimo and it probably corresponds to the beat value of the French *mensura* of *tempus imperfectum* and *prolatio minor*; at that time this *mensura* had a minim of about MM 216 (see table 6 and example 9).

The second type of *quaternaria*, which is one third of the breve in *duodenaria* and half of that in *octonaria*, is totally rejected by Prosdocimo, but it was widely employed (see example 10) and it represents the basic *divisio* of the so-called *Longanotation*. This fast *quaternaria* is the only one described by Vetulus.

There is only one thing wrong with the theoretical system explained in table 10 and example 9: it has up to four different beat values: 72, 96, 108 and 144. In musical practice, as we have seen in section II, all the beat values faster than 72 probably conformed to an average value of ca. MM 104.

Before presenting the examples, it is worth summarizing the evidence on note durations in the different theoretical statements from Philippe de Vitry (*Ars nova*) to Prosdocimo de Beldemandis. Tables 11–5 offer a concise overview of the subject; the durations of the notes are expressed in metronomic values (beats per minute).

⁵⁸ GULLO: *Das tempo*, p. 74, and BANK: *Tactus, tempo and notation*, p. 17 and table 1.

Table 11
Ars nova (ca. 1323)
(the values during Machaut's time are in parentheses)

measure	B	SB	SB minima
tempus perfectum, prolatio maior (= Italian novenaria)	36 (24)	108 (72)	324 (216)
tempus perfectum, prolatio minor (= senaria perfecta)	54 (36)	162 (108)	324 (216)
tempus imperfectum, prolatio maior (= senaria gallica)	54 (36)	108 (72)	324 (216)
tempus imperfectum, prolatio minor (= quaternaria)	81 (54)	162 (108)	324 (216)

Table 12
Marchetto (ca. 1320)

division	B	SB maior	SB minima
PERFECT TEMPUS	36	108	
divided in twelve			432
divided in nine			324
divided in six			216
IMPERFECT TEMPUS	54	108	
divided in eight			432
divided in six			324
divided in four			216

Table 16 shows only the values of the beat-notes in the different systems, and offers a comprehensive overview of the different theoretical approaches.

Table 16 shows the hypothetical beat durations (sometimes of the breve, sometimes of the semibreve) in the main Italian *divisiones* (*d* = *duodenaria*, *n* = *novenaria*, *o* = *octonaria*, *i* = *senaria imperfecta*, *p* = *senaria perfecta*, *q* = *quaternaria*), as suggested in the five main treatises of the fourteenth and early fifteenth centuries. In actual fact, the treatises deal with internal comparisons between the *divisiones*, and would be unlikely to provide information on the actual beat duration (we have already observed the inaccuracy of Vetulus's calculation). It is clear that the Italian names are inappropriate for denoting the

Table 13
Rubricæ breves (ca. 1350)

division	B	SB maior	SB minima
duodenaria	24	72	288
slow duodenaria (<i>tempus plus quam perfectum</i>)	18	54	216
novenaria	24	72	216
octonaria	36	72	288
senaria perfecta	48	144	288
slow senaria perfecta (<i>tempus maius perfectum minor</i>)	36	108	216
slow senaria imperfecta (<i>tempus imperfectum maius</i>)	27	54	162
senaria imperfecta	36	72	216
fast senaria imperfecta (<i>tempus imperfectum minus</i>)	72	144	432
quaternaria (<i>tempus imperfectum minus</i>)	72 or 54	144 or 108 (SB minor)	288 or 216

Table 14
Vetulus (ca. 1390)

division	B	SB maior	SB minima
duodenaria (quaternaria with <i>modus perfectus</i>)	24 (72)		288
novenaria	32	96	288
octonaria (quaternaria with <i>modus imperfectus</i>)	36 (72)		288
senaria perfecta	48	144	288
senaria imperfecta	48	96	288
quaternaria	72	144 (SB minor)	288

French *mesuræ* (as well as Marchettan *tempi*). Nonetheless, four of these terms (and concepts) have their equivalents in French theory (*novenaria* is *tempus perfectum majus*, *imperfecta* is *tempus imperfectum majus*, *perfecta* is *tempus perfectum medium*, and *quaternaria* is *tempus imperfectum minimum*) and were used

Table 15
Prosdocimo (ca. 1420)

division	B	SB maior	SB minima
duodenaria	24	72	288
novenaria	32	96	288
octonaria	36	72	288
senaria perfecta	48	144	288
senaria imperfecta	48	96	288
quaternaria	54 (72)	108 (144)	216 (288)

Table 16
Summary of beat values

	ARS NOVA 1332 ca.	MARCHETTO 1320 ca.	RUBRICÆ BREVES 1350 ca.	VETULUS 1390 ca.	PROSDOCIMO 1412-25
<i>d</i>		■ = MM 36	◆ = MM 72 (or ◆ = MM 54)	◆ = MM 72	◆ = MM 72
<i>n</i>	■ = MM 36	■ = MM 36	◆ = MM 72	◆ = MM 96	◆ = MM 96
<i>o</i>	■ = MM 54	■ = MM 54	◆ = MM 72	◆ = MM 72	◆ = MM 72
<i>i</i>	■ = MM 54	■ = MM 54	◆ = MM 72 (or ■ = MM 54 or ◆ = MM 54)	◆ = MM 96	◆ = MM 96
<i>p</i>	■ = MM 54	■ = MM 36	■ = MM 48 (or ■ = MM 36)	◆ = MM 144	◆ = MM 144
<i>q</i>	■ = MM 81	■ = MM 54	■ = MM 54 (or ■ = MM 72)	■ = MM 72	◆ = MM 108 (criticise the use of ◆ = MM 72)
notes	fixed ↓ = MM 324			fixed ↓ = MM 288	

by Italian composers, scribes and singers to describe, with greater concision, the quasi-French rhythmic structure of the compositions.

A few brief explanatory notes will help to clarify the data displayed in table 16. One feature of French Trecento notation, which was systematized in the treatise called *Ars nova* (ca. 1322, attributed to Philippe de Vitry), is the fixed value of the minim, which moves at about MM 216 in the works of Guillaume de Machaut (the corresponding values of the breves are given in brackets in table 11), but was probably much faster, ca. MM 324, in Vitry's day.⁵⁹

⁵⁹ WILLI APEL: *The notation of polyphonic music*, The Mediaeval Academy of America, Cambridge (Mass.) 1953, p. 343, provides different data for the minims, but with an identical ratio: Vitry MM 360 (that appears too fast), Machaut MM 240, and so does BANK: *Tactus, tempo and notation*, pp. 33 and 43.

Marchetto, in his *Pomerium* (ca. 1320; see table 5), makes use of the old values of the most important French *tempi* (perfect and imperfect) and extends them to all the other Italian *divisiones*: *quaternaria*, *imperfecta* and *octonaria* are divisions of *tempus imperfectum*, whereas *perfecta*, *novenaria* and *duodenaria* are divisions of *tempus perfectum*. There are also two other *divisiones*: *binaria* and *ternaria*, the *primæ divisiones temporis* in both cases. A value of MM 54 for a *brevis* that could contain up to eight minims seems fast to us. But we have to remember that this music was written for highly trained professional musicians, and that the minim quadruplets (probably very rare in the *mottetti* of that time) were ornaments to be performed in a light, agile manner. On the other hand, it is likely that the choice of tempo in the fourteenth century was still influenced by the rule that the smallest note values must be sung properly or lightly, “bene vel leviter”, as Jacobus de Liège says in chapter xvii of his *Speculum musicae*:

Si de hoketis loquimur duplicibus et contra duplicibus et aliis quibusdam mensuratis cantibus, brevis perfecta ita citam, secundum antiquos, habet mensuram, ut non bene vel leviter pro ea tres semibreves dici possunt.⁶⁰

If we were to speak of double and counterdouble hockets, and of certain other measured songs, the perfect breve has such a fast beat, according to the ancients, that three semibreves cannot be performed well or easily in it.

The first sign of a complete change of mensuration is the invention of a *quaternaria* in which the value of the breve is half that of the *octonaria* breve. Petrus de Amalfi speaks of it already in his *Compendium artis motectorum Marchetti* (dated by Gallo ca. 1370, but possibly ca. 1360),⁶¹ though the concept is more clearly expressed in the *Rubricæ breves*. The description of values in the *Rubricæ breves* shows a situation that has profoundly changed since the Marchettan system. The beat is now on the semibreve, and the total length of the breve is therefore expanded. The basic framework of rules (see table 7), however, is simpler and easier for the singer, who has only one beat at MM 72 for all the *divisiones*, except for the *senaria perfecta* (where the breve-beat is ca. MM 48: the down-beat and the first up-beat are those of the other *divisiones*, the *perfecta* has only a further equal up-beat to complete the breve) and *quaternaria morosa*. In spite of the terminology, the *Rubricæ breves* show that the fundamental idea is no longer the *tempus*, but the *divisio*: almost every *divisio* has two or three different tempo possibilities (with beats sometimes doubled in speed). This theoretical system is very far removed from Marchetto's two fixed *tempi*.

⁶⁰ COUSSEMAKER: *Scriptorum*, vol. II, p. 401a. The passage is cited by BANK: *Tactus, tempo and notation*, p. 15.

⁶¹ Edited in GALLO: *Mensurabilis musica tractatuli*, pp. 43–7; p. 43: “Si vero mora fuerit brevis et sic habemus tempus breve, quod ex quatuor minimis perficitur et aliter nuncupatur quaternarium nec non imperfectissimum”.

In the late fourteenth century the Italian notational system takes on a French countenance and adopts the equality of the minim in all the *mensurae*: Vetulus is inspired by the desire to systematize the material and adds to the French system the calculation concerning the Italian *duodenaria* and *octonaria* measures. Slightly later, Prosdocimo reasserts the fundamental (non-Italian) conception of the minim's equality by stating the *proportio sesquitertia* between *tempus duodenarium* and *novenarium* ($3/4$ of twelve minims is exactly nine minims); and he criticizes, though showing his familiarity with, the use of *Longanotation*, i.e. the *duodenaria* made by a triple *quaternaria*, and the *octonaria* made by a double *quaternaria*.

In the next section we shall attempt to establish which of these various normative frameworks were used by the copyists and singers in the actual notational and performance practices of the Trecento: first by studying the notation of significant examples from the surviving manuscripts; then (in section v) by studying the works of individual composers.

iv. Examples

A useful starting point in this investigation would be to verify whether the reference framework outlined in the previous section matches what is observed in the few surviving manuscripts.

As we have seen, notational theory changed quickly during the period under discussion, and the majority of the large surviving musical anthologies use a notational system that is not described in any known theoretical treatise. Moreover, we do not know even what knowledge the singers and copyists had of the theory preserved in some of the contemporary manuscripts. The training of singers would have consisted in little theory and a great deal of practice, listening to the living voice of the teacher — as continues to the present day in all the music schools of the world. And in all likelihood the scribes of *FP*, *Pit*, *Lo* and *Sq* were also completely ignorant of Marchettan theory. At times, however, they would have perhaps come up against some exemplars written in undifferentiated semibreves: encounters that would have no doubt tested their interpretative skills.

As John Nádas writes:

Substantial evidence reveals that much of the Trecento repertory was originally notated in a form more completely Marchettan than the translated, Northern influenced forms in which so much of it now survives. [...] The major problem is that at the time the manuscripts were copied, many notational features were in a state of flux; scribes, Italian or otherwise, no doubt had to exercise a good deal of

text-critical judgment in their work, for they were expected to handle a wide range of notational problems.⁶²

The following examples intend to substantiate and develop this important statement.

IV.1. *Tempus mensuræ and their notational translations*

The earliest masters, such as Piero, Giovanni, Jacopo, and also Gherardello, Lorenzo, Donato and other composers, probably wrote some of their pieces in a notational system close to that described by Marchetto in his *Pomerium*, with the breve of *tempus imperfectum* ca. MM 54 and the breve of *tempus perfectum* ca. MM 36, as often as not with undifferentiated semibreves. In many compositions there was an alternation — perhaps not clearly indicated — between *divisiones*, such as the “cantus de divisione temporis imperfecti secundum gallicam et italicam divisionem mixte”,⁶³ which in subsequent theoretical views (expressed for example in the *Rubricæ breves*) corresponds to an alternation between *octonaria*, which we sometimes regard as *quaternaria* since there are no more than four semibreves in a *divisio*, and *senaria imperfecta* (or *gallica*).

We have very few examples of this archaic method of writing in the surviving manuscripts of the Italian ars nova, but some traces do surface. A clear instance is furnished by the first section of the madrigal *Nel mezo a sei paon* by Giovanni in the reading of *FP*, fol. 55r (see example 11).

In this superius we can see the Marchettan system (a “cantus de divisione temporis imperfecti”), but not in its pure form.⁶⁴ Apart from some archaic traits (the four *semibreves minimæ sine filo aliquo*, i.e. stemless minims — the stem being reserved for the notes whose value is one-eighth of a *divisio*), there are features that were unknown at the early stage of Italian notation: for example, the reiterated group SB – SB – SB MAIOR, which in primitive Italian notation was written simply as SB SB SB (with the last semibreve doubled *via naturæ*),⁶⁵ and the group M M SB SB SB, which were stemless (five semibreves

⁶² JOHN NÁDAS: *The transmission of Trecento secular polyphony: manuscript production and scribal practices in Italy at the end of the middle ages*, PhD diss., New York University, 1985, p. 37.

⁶³ VECCHI: *Pomerium*, p. 180.

⁶⁴ It is not a question of *octonaria*, as suggested by Pirrotta (CMM 8/1, p. 24) and EUGENE C. FELLIN: *A study of superius variants in the sources of Italian Trecento music: madrigali and cacce*, 4 vols., PhD diss., University of Wisconsin, 1970, p. 36 (in note 52 Fellin writes: “The first section of *FP* is in augmentation”).

⁶⁵ Guido (ed. by GALLO: *Mensurabilis musicæ tractatuli*, p. 36, in the last example, but in the second example the semibreves are undifferentiated) and above all Petrus de Amalfi (ed. by GALLO: *Mensurabilis musicæ tractatuli*, p. 46) had already felt the need to solve the ambiguity of the value of the three undifferentiated semibreves (it is worth remembering that Marchetto supplies the rhythmic pattern 1, 1, 2, and the treatise *De diversis maneriebus* 2, 1, 1).

Example 11. Superius of *Nel mezo* by Giovanni: a) *FP* (fol. 55r); b) modern edition.

a)

b)

aquales, as Marchetto explains, are to be performed with the following values: 1, 1, 2, 2, 2).⁶⁶ These minor but significant changes demonstrate that Florentine scribes and readers of the late Trecento needed such rhythmic clarifications; they were probably ignorant of Marchetto's theory and unable to sing from music notated in undifferentiated semibreves. In example 11, is the slight

⁶⁶ VECCHI: *Pomerium*, p. 176; VECCHI: "Su la composizione del Pomerium", p. 198 and figure 40.

Example 12. A section of *Nel mezo* by Giovanni: a) *FP*; b) *Sq*; c) *PR*; d) modern edition (from *FP*).

The image displays four musical staves, labeled a) through d), representing different notational systems for the same section of the madrigal 'Nel mezo' by Giovanni.
 a) *FP* (Fratelli Padri): Original notation with square neumes on a four-line staff. It includes vocalizations [v] and [g]. The lyrics are 'con mor bi da pen na'.
 b) *Sq* (Squadrato): Notation with square neumes and a [q] vocalization. The lyrics are 'con mor bi da pen na'.
 c) *PR* (Petrus Rubeus): Notation with square neumes and a [o] vocalization. The lyrics are 'con mor be da pen na'.
 d) Modern edition: A transcription in a 2x4 time signature with a treble clef. The lyrics are 'Con mor - bi - da pen - na'. It features triplets of eighth notes.

modernization of an old and obsolete manner of writing correct? Were the scribes and performers of the late fourteenth century still aware of the correct measure of this notation? In the manuscripts after 1380 there are certainly many instances of the old notational signs being misunderstood.

Example 12 shows the very revealing translations of the presumably original *superius* for this madrigal made by later scribes (close to the reading of *FP*), which transform the notational system from *tempus imperfectum secundum ytalicam divisionem* (later *quaternaria* or *octonaria*) to the *gallica divisio* (*senaria gallica* or *imperfecta*).

It is clear that the composer's original concept did not provide for a continuous change of *divisio* (i.e. a *quaternaria* – *senaria gallica* alternation), but a single *tempus imperfectum* beat to the breve, sometimes divided into four semibreves, sometimes into six. It is worth noting that the switch to the subdivision into six semibreves (*secundum modum gallicum*) can also occur for one breve measure only, as in the third line (*Sí bel che dolçemente 'l cor mi spennna*) on the syllable *çe* of *dolçemente* (see example 11). This is confirmed by the appearance of the *tenor* (consisting in section A of 15 *longæ*, 37 *breves* and 38 *semibreves*), which flows regularly and without variation in comparison with the alternation that occurs in the upper voice (see example 13).

The constant forward progression of the tenor also suggests that there is an exact ratio that exists between the two time subdivisions (see example 14); the equality of the breve between *quaternaria* and *senaria imperfecta* is, however, also anticipated in the *Rubricæ breves* for *tempus imperfectum minus* (see table 8 and table 9).

Example 13. The tenor of *Nel mezo* by Giovanni (section A): a) *FP*; b) modern edition.

a)

b)

Example 14. Modern edition of a section of *Nel mezo* by Giovanni from *FP*.

The copyist of *Sq* (see example 12b) uses a modernized Italian *quaternaria* with stems (*caudæ in sursum*, as Marchetto calls it) and *pontelli*, whereas the copyist of the Reina codex prefers a less ambiguous transcription in a clear *octonaria* that includes two original breves in each *divisio*. We find a notational appearance identical to the readings of *Sq* (*divisio quaternaria* with triplets and *mimimæ artificiales*, i.e. with *caudæ in sursum*) in only one other madrigal by Giovanni: *Fra mille corvi* (*unicum* of *Sq*, fol. 6v), in the section of the ritornello.

Are the two translations of example 12 equivalent? I think so, but they are nonetheless bad translations of the original from the metrical point of view: the quarter-note in the transcription from *FP* is in MM 54, while in *Sq* and *PR*

Example 15. The first section of the *Con gran furor superius* by Jacopo: a) *Sq*, (fol. 18v); b) modern edition.

Example 16. Hypothetical reconstruction (a) and transcription (b) of the original notation-type of the *superius* of Jacopo's *Con gran furor*.

the quarter-note of the modern editions — corresponding to the *brevis* in *Sq* and to the *semibrevis maior* in *PR* — is in MM 72.

The need to signal a different, obsolete beat perhaps explains why the copyists of codex *FP* used this unusual notational system.

The same type of rhythmic structure that we observed in the madrigal *Nel mezo* is also employed in many of Jacopo's madrigals, such as *Non al so amante*, *O dolz'apresso*, *Prima vertute*, *Sotto l'imperio*, *Tanto che siat*, *Un bel sparver*; in the lauda *Nel mio parlar* and in the *caccia Oselletto*.

Is the notational guise found in all the surviving redactions of the works of the earliest masters a transcription of an authentic version? I think so, and I also think that we know this music only through later copies, sometimes quite different from the originals. The following examples will clarify this statement further.

The madrigal *Con gran furor* by Jacopo da Bologna (example 15) is a *unicum* preserved in the Squarcialupi codex (fols. 18v–9). The notation-type of the *superius* in the first section is identical to that used in the Reina codex (*PR*) for the *divisio gallica* shown in the previous example. It is an *octonaria* with four triplets in a breve, so each *divisio octonaria* groups together two original *divisiones gallica*. The hypothetical original has a very different notational appearance, and is based on a Marchettan “cantus mixtus”, with *tempus imperfectum* and an alternation between French and Italian systems (marked by the letters G and Y), as we see in example 16.

Example 17. *In verde prato* by Jacopo (*Sq*, fol. 14r).

Example 18. *Quando veg'io* by Jacopo (*Sq*, fol. 9r).

We do not know exactly when the fundamental change from breve-beat to the prevailing semibreve-beat took place in the practice of Italian scribes. Jacobus of Liège testifies to this change in his *Speculum musicae* of ca. 1330,⁶⁷ but the conservatism of certain schools of northern Italy, loyal to Marchetto's *auctoritas*, probably delayed this important innovation, which is associated with the adoption of *divisiones* instead of *tempi*, to the years 1340–50. Other questions are even more important: when did the composers begin to structure and write their compositions with a semibreve-beat? Are the madrigals of Jacopo da Bologna, for example, all conceived in a breve-based *mensura*? Or did Jacopo begin to change his notational style at a specific point in time?

The answers lie in the careful analysis of the extant compositions, though we must also consider that notational appearances can be misleading. Let us look, for instance, at the opening sections of the cantus in three madrigals by Jacopo, preserved in the surviving manuscripts in *senaria imperfecta*: *In verde prato* (example 17), *Quando veg'io* (example 18) and *Sí come al canto* (example 19).

Example 17 is in French notation, without *pontelli*; the other two are in a modernized Italian notation. All three madrigals employ the *modus imperfectus*;

⁶⁷ JACOBUS LEODIENSIS: *Speculum musicae*, vol. VII, pp. 38–9.

Example 19. *Si come al canto* by Jacopo (*Sq*, fol. 19v–20r).

co maleanto della bel lay gua na

Ab blu so can min piu tempo el gre co. Pren cento

suo piacer confor ma hu ma na. ro che sie

Example 20. Modern edition of example 17 (opening).

$\text{♩} = \text{MM } 54$

In ver - de pra - to a

13
ppa - di - glion - ten - du - ti.

Example 21. Modern edition of example 18 (opening).

$\text{♩} = \text{MM } 54$

Quan do ve - gio rin -

13
no - vel - lar i - fio - ri.

Example 22. Modern edition of example 19 (opening).

$\text{♩} = \text{MM } 54$

Si co -

10
m'al can - to del - la bel - la i - gua -

19
na.

which, however, is the very same type of *tempus imperfectum gallicum* (*senaria gallica* or *imperfecta* for later theorists) of examples 12 and 15, though here it is seen not in combination with *tempus imperfectum ytalicum* and is thus translated differently by the Tuscan copyists. Obviously the modern performer would have to sing these three madrigals with the same beat, i.e. $6/8 = \text{MM } 54$ (see the transcriptions of openings in examples 20, 21 and 22).

It is in any case possible that the said three madrigals all originally used a kind of notation seen in example 16, i.e. a “cantus de divisione temporis imperfecti secundum gallicam et italicam divisionem mixte”, which was misinterpreted by later copyists.

But with regard to the beat, the question is: would a performer of the early fifteenth century, when reading the madrigals *Con gran furor* (example 15) and *In verde prato* (example 17) from *Sq*, have adopted a different beat? I think so. He would have interpreted what he saw in the manuscript: in the first case, he would have performed *octonaria* (which incorporates the *senaria*) with the normal semibreve-beat of ca. MM 72, speeding up the performance in accordance with Jacopo’s rhythmic conception; in the second, he would have respected the original speed, making use of the normal beat of the French *senaria*: SB = MM 104 (as we saw in section II), which has a breve of around MM 52, not far from the original conception. *Senaria imperfecta* was an extremely mutable and difficult *divisio* for Italian scribes to interpret. Originally it was a French measure, but it was commonly employed in Italy as well, and it often appeared in combination with other *divisiones*, whether in a horizontal form (successive occurrence), as we saw in example 12, or in a vertical form (the simultaneous use of different meters in different voices), as shown in the following examples. Example 15 can be taken as a mistaken attempt to “Italianize” *senaria gallica* and to render its beat unequivocal.

In this regard let us observe the two madrigals by Gherardello reproduced in examples 23 and 24: the short sections of *superius* in *senaria imperfecta* occur at the same time as a *tenor* in renewed *quaternaria* with a breve-beat. From the comparison between the voices we infer that the beat of *senaria imperfecta* falls on the semibreve instead of the breve.

Example 23 is very important for our understanding of Gherardello’s rhythmic conception: he uses a *quaternaria*, that is one-half of *tempus imperfectum* (.o.) and one-third of *tempus perfectum* (.d.), so as to allow the performer to play with the *modus* in a steady flow of the same beat (brevis of .q., at ca. MM 72): this also explains the frequent phenomenon of a supernumerary beat in Gherardello’s compositions.

In this example the brevis of *senaria imperfecta* is the equivalent of two *breves* of *quaternaria*. The seven-syllable line “Uno splendor sí chiaro” has in the *superius* a *quaternaria* with *modus imperfectus* (2.q.), alternating with four semibreve-

Example 23. Transcription of the second line of *Allo spirar* by Gherardello (*unicum Sq*, fol. 28r) with the original values of the manuscript.

The image shows a musical score for Example 23, consisting of two systems. Each system has a vocal line and a lute line. The first system is in 4x4 time and features a vocal line with lyrics: "U no splen dor sí" and a lute line with original notation and modern transcription. The second system is also in 4x4 time and features a vocal line with lyrics: "chia" and a lute line with original notation and modern transcription. The original notation includes various note values and rests, while the modern transcription uses standard musical notation.

Example 24. A section of *Una colomba* by Gherardello: a) *Sq* (fols. 28v-9r); b) modern edition.

a) *Superius*:

The image shows the *Superius* part of Example 24a, featuring a single melodic line with original notation and lyrics: "ella cui bella piu mai na mo ra".

Tenor:

The image shows the *Tenor* part of Example 24a, featuring a single melodic line with original notation and lyrics: "ella cui bella piu mai na mo ra".

b)

The image shows the modern edition of Example 24b, consisting of two systems. Each system has a vocal line and a lute line. The first system is in 4x4 time and features a vocal line with lyrics: "del - la cui bel - la piu - ma in - na - mo - ra" and a lute line with original notation and modern transcription. The second system is also in 4x4 time and features a vocal line with lyrics: "del - la cui bel - la piu - ma in - na - mo - ra" and a lute line with original notation and modern transcription. The original notation includes various note values and rests, while the modern transcription uses standard musical notation.

Example 25. The ritornello of Jacopo's madrigal *O dolz'appresso*: a) *Sq* (fol. 14v); b) *Pit* (fol. 8r); c) *Lo*₁ (fol. 1r); d) *Lo*₂ (fol. 3v); e) *Fp* (fol. 62v); f) *PR* (fol. 7v).

beats of *senaria*, while the tenor maintains the *quaternaria* throughout the entire section.

A *quaternaria* with perfect *modus* begins the next line ("Ch'all'ochi de la man feci riparo") then continues with a *senaria imperfecta*; the *tenor* is in *modus imperfectus* (2.q.). The final cadence of the tercet is preceded by a melisma in a measure indicated as .o. (*octonaria*; in fact 2.q.), but composed of an odd number of *breves* in the *superius*. The original version of this passage was probably in *quaternaria*, and the indication .o. must have been added later.

Example 24 shows the same combination of the previous example: a *senaria imperfecta* in the *superius* versus a *quaternaria* in the tenor. A breve of .i. corresponds to two breves of .q.; therefore the double *quaternaria* corresponds exactly to an *octonaria*. We find an identical rhythmic situation in another madrigal by Gherardello: *Cacciand'un giorno*, in the melisma of the first line. In the conclusion of the ritornello, however, we encounter instead the simultaneous presence of *novenaria* in the *superius* and a triple *quaternaria* in the tenor (which is the same phenomenon of three minims in the *superius* against four minims in the tenor, with a common beat).

Gherardello's *senaria imperfecta* of examples 23 and 24 is no longer a *divisio* with a breve-beat (as was the case in examples 17, 18 and 19) — but what was the beat adopted by the performer who read from *Sq*?

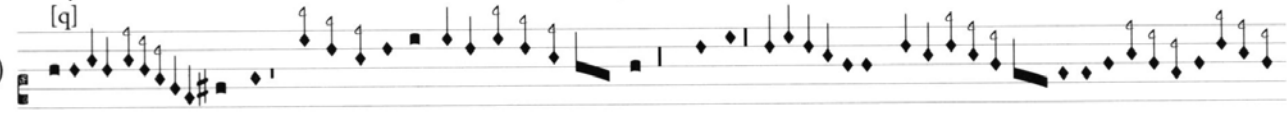
The modern editor of Italian Trecento music has to clearly isolate this problem of *senaria imperfecta* (and other related measures) and to reconstruct (if possible) the original beat of the tempo. The same rhythmic substance can be rendered by various forms of notation, and the same *divisio* — in this case *senaria imperfecta* — may be used to translate different original *tempi*. Misunderstandings and mistaken equivalences were certainly common throughout the fourteenth century too, but the modern editor at least has the possibility of collating the manuscripts and examining the tradition.

In later manuscripts we find some divisions indicated as *octonaria* that include two *tempi* of the original writing (e.g. the *octonaria* of *PR* in example 12c and that of *Sq* in example 15), and others (e.g. Jacopo's *Di novo è giunto*, *Entrava Febo*, *Fenice fu*, etc.) that were originally conceived in this form. Such translations are quite common in later sources, and it is very rare to find even one manuscript that employs the kind of notation that we imagine was close to that of the original (as seen in example 11).

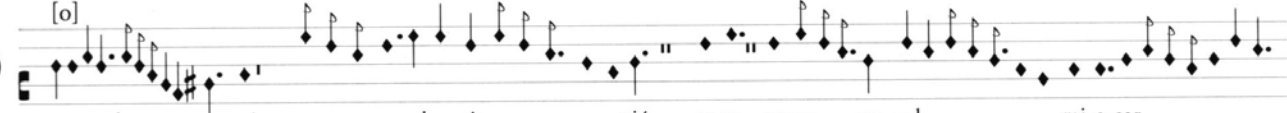
The rewriting of an original *tempus imperfectum* (possibly with the beat on the breve) with *modus* in a *divisio octonaria* that comprises two *tempi*, or in a

a) 

A y las sa me non vol ve nir piú an na ve mat ti e nel mi o co

b) 


A i las so a me non vuol ve nir piú an na ve mat ti o nel mi o co

c) 

y las so mi non vol ve nir piú an na ve ma cte nel mi o cor

d) 

y las so mi no vol vi nir piú an na ve ma tien el mi o cor

e) 

Ay las so a me non vuol ve nir piú an na ve ma tie nel mi o cor

f) 

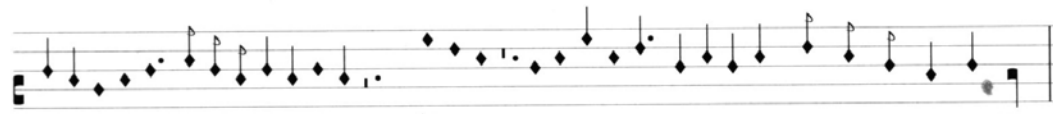
Hay las so mi non vol ve gnir piú a na ve ma tien el mi o cor



re stret to sot to chia ve.




re stret to sot to chia ve.



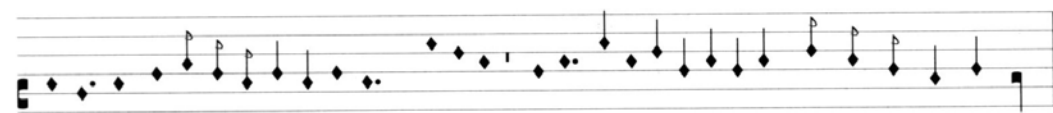
stre cto sot to chia ve.



stre to soc to cia ve.



stret to sot to chia ve.



stret to sot to chia ve.

Example 26. Modern edition of the ritornello of Jacopo's *O dolz'apresso*: a) *Pit*; b) *Lo*₂; c) *PR*.

a) Ai las so_a me non vuol ve nir piú an na
 b) Ai las so mi no vol vi nir piú an na
 c) Hay las so mi non vol ve gnir piú a na -

ve ma tti o ne' l mi o co re stret to sot to
 ve ma tien el mi o cor stre to soc to
 ve, ma tien el mi o cor stret to sot to

chia ve.
 cia ve.
 chia ve.

duodenaria made up of three *tempi*, is a phenomenon exactly contrary to that which until now was called *Longanotation* or renewed *quaternaria* (the presumed transformation of *octonaria* in a .q. with *modus imperfectus* and of *duodenaria* in a .q. with *modus perfectus*).⁶⁸

A new hypothesis is suggested, however, when we carefully consider the ritornello of Jacopo's madrigal *O dolz'apresso*. Example 25 presents six readings of the upper voice in concordant manuscripts (only the tenor survives in the fragment *Fc*, and that version has the same *divisio* as the two "translations" of *Lo*). The readings of *Lo*₁ are emended by additions made by a later hand. Example 26 provides modern editions from *Pit*, *Lo*₂ and *PR* (one codex for each group): *Pit* and *Sq* are in *divisio quaternaria*; the two versions of *Lo* (derived from different exemplars) are in *octonaria*; *FP* and *PR* are in *duodenaria*.

Even if from the point of view of performance the variants are very minor — for instance, between *PR* and *Lo*₁ (granted that the beat is identical in both

⁶⁸ See, for example, GOZZI: "La cosiddetta Longanotation".

Example 27. A hypothetical reconstruction of the original version of example 25.

Ai las so mi non vol ve nir piú an na ve ma tien el mi o
cor stret to sot to chia ve.

divisiones) — it is important to understand the genesis of such diversity in the notational tradition.

Example 27 displays a hypothetical reconstruction of the original *superius* part in *tempus imperfectum*, with four groups of *minimæ artificiales* (with stems). These groupings (M M SB) are important indicators of mensuration, and in later translations could be turned into triplets; they indicate that the composer originally conceived of the *divisio* with a brevis-beat that includes two of these groups, but without *modus*. In the original *divisiones octonaria* and *novenaria* (where the beat falls on the semibreve), these groupings are absent; they sometimes appear however in (misleading) later translations that group together two or three measures of the original *quaternaria*.

The system of writing in example 27 is called “tempus imperfectum minus” or “quadernarium” by the *Rubricæ breves*. It is described as follows:⁶⁹

Tempus hoc imperfectum dicitur minus, quia dividitur in duas partes equales, post hoc in quattuor; et propter suam velocitatem non possunt poni octo, sed bene partes ipsarum octo aliquando, et vocatur quadernarium, ut hic patet:

This imperfect time is known as “smaller” because it is divided into two equal parts, and after that into four; and because of its speed eight notes cannot be placed, but sometimes a part of those eight can be appropriately placed, and it is called “quadernarium”, as is seen here:

[Example 28.]

⁶⁹ VECCHI: “Anonimi Rubricæ breves”, p. 133.

The musical example of the treatise (see example 28) is, as was customary, more eloquent than the text: it contains only two groups of two *minimæ artificiales*, since, as the author explains, “because of its speed, in this *divisio* there should not be eight equal notes (*minimæ*), but only sometimes a part of them (i.e. two minims)”.

This *quadernarium* (present in some pieces of the Rossi codex, such as in *De soto l'verde* and *Vaguzza vaga*) probably also represents the original notational system of the A sections of the following compositions (the list is limited to the pieces of the old masters Piero, Jacopo and Giovanni):

Piero: *All'ombra d'un perlaro*
 Piero: *Quando l'aire comenza*
 Piero: *Sí com'al canto della bella Iguana*
 Jacopo: *Nel mio parlar*
 Jacopo: *Non al so amante*
 Jacopo: *O dolz'appress'un bel perlaro*
 Jacopo: *Oselletto salvazo per stasone (caccia)*
 Jacopo: *Prima vertute*
 Jacopo: *Sotto l'imperio*
 Jacopo: *Tanto che siat* (also in the ritornello)
 Jacopo: *Un bel sparver gentil*
 [Jacopo?]: *Cantano gli angioli lieti*
 Giovanni: *Agnel son bianco*
 Giovanni: *Nel mezo a sei paon*
 [Giovanni?]: *Io son un pellegrin*

The corresponding *senaria imperfecta* or *gallica*, whose breve is equivalent to the *quadernarium* breve, is often alternated with this “tempus imperfectum minus”, or it is employed alone in the first sections of these pieces:

Piero: *Sovra un fiume regale*
 Jacopo: *Con gran furor*
 Jacopo: *Giunge l'bel tempo (caccia)*
 Jacopo: *I' mi son un*
 Jacopo: *Quando veg'io*
 Jacopo: *Sí come al canto*
 Giovanni: *Nel mezo* *ch'ama il bel papagallo*

The readings of *Sq* and *Pit* (in example 25) limit themselves to rewriting the old *tempus imperfectum* in a new *quaternaria* without pontelli and replacing the M M S groups with triplets. The reading of *Lo* translates the passage into *divisio octonaria* (and groups two *quaternariae* in each *divisio*), recognizing a

hypothetical *modus imperfectus*; *FP* and *PR*, on the other hand, identify a *modus perfectus* in the original, so they transform the ritornello into *duodenaria*. It is worth noting that the two versions of *Lo*, copied by different scribes from two distinct exemplars (possibly both old and of northern origin), had triplets in one case and the SM SM M group in the other: two ways of writing that were considered equivalent “propter suam velocitatem”.

The same transcription from a *tempus quadernarium* with *modus perfectus* to a clear *duodenaria* must have been implemented in the ritornelli of *Tanto che siat* and *Non al so amante*, even if there is no conflict between the manuscripts, because here the grouping of the breves in *modus perfectus* was obvious.

So we may conclude that so-called *Longanotation* is often a direct translation of the former *tempus imperfectum* with *modus*, not a transformation of the “ancient” Italian *divisiones octonaria* and *duodenaria*. Sometimes this same *tempus imperfectum* with *modus* is translated in the manuscripts of the late fourteenth and early fifteenth centuries as *octonaria* and *duodenaria*.

The many cases of such translation in the repertory of the Italian *ars nova* could be studied primarily through a collation of the readings offered by several codices. In this regard, there are two main pieces that provide much material for discussion: the madrigals *La bella stella* and *Nascoso el viso* by Giovanni.⁷⁰ Here we wish to consider carefully *Nascoso el viso*, whose rhythmic structure embraces almost all the Italian *divisiones* in the three manuscripts that contain it: *VR* (fols. 18v–9r), *FP* (49v–50r) and *Sq* (fol. 3v).

Table 17 lists the textual variants of the three manuscripts with reference to the readings of the *superius* of *VR*; the *residuum*, written at the end of the tenor voices of *VR* and *FP* (missing in *Sq*), is in clear-type, while the words placed below the notes in the manuscripts are highlighted in bold lettering.

There are no notable variants in the literary text: the majority are merely matters of spelling (*Nascoso* / *Naschoso*, *pescava* / *peschava*, *naque* / *nacque*, *piacque* / *piacque*), phono-syntactic doubling (*fra le* / *fralle*, *a le* / *alle*, *ela* / *ella*) or different linguistic patinas (*me* / *mi*, *lizadre* / *leggiadre*). Philological analysis of the literary text, therefore, does not provide the musical philologist with the valuable information that is instead offered in other examples.

The notational system adopted by the scribe of *VR* is an Italian *duodenaria* alternating with a “French” *novenaria* (or better: a perfect time related to Marchettan “*divisio temporis secundum Gallicam et Italicam divisionem mixte*”). Both sections of the madrigal use *semibreves minima sine filo* (without stem),

⁷⁰ *La bella stella* is discussed in F. ALBERTO GALLO: “Critica della tradizione e storia del testo”, *Acta musicologica*, LIX 1987, pp. 36–45, with incorrect evaluation of errors and variants (especially the notational ones), and lack of consideration of the important phenomenon of diffraction. A more developed and careful examination of *La bella stella* is offered by MARCO GOZZI: “Tradizione, traduzione e tradimento: problemi di trasmissione nei codici dell’ars nova italiana”, paper read at the “Seminario di filologia musicale” in Cremona, 26–8 October 1999 (forthcoming).

Table 17
 Giovanni's *Nascoso el viso*:
 textual variants with reference to *VR*'s *superius*

<i>VR</i> (fol. 18v) <i>superius</i>	<i>VR</i> (fol. 19r) tenor	<i>FP</i> (fol. 49v) <i>superius</i>	<i>FP</i> (fol. 50r) tenor	<i>Sq</i> (fol. 3v) <i>superius</i>	<i>Sq</i> (fol. 3v) tenor
Nascoso el viso stava fra le fronde d'um bel çardino, apresso a mi guardava sopra una fonte dove se pescava.	apreso	Naschoso '1 / 'nfralle d'un / giardino / me sopr' una / si pescava	Naschoso / 'nfralle d'un / giardin / me sopr' una / si pescava	fralle d'un / giardino appresso an me sopr' una / si	'1 / fralle [come superius <i>Sq</i>] sopr' una / si
E vedea donne vermigliete e bionde, liçadre al modo che solea le euguanne trovarse al boscho e quando a le fontane.			vidi / vermigliete leggiadre / solean l'eguanne trovarsi / alle		[FAILS] [FAILS] [FAILS]
Qual era scalça, qual com'ela naque, qual / nacque	schalça		e qual com'ella nacque	com'ella nacque	scalç'e / nacque e
piú non vol dir quanto quel dí me piaque.		vo' / mi piaque	vo' / mi piaque	vo' / mi piaque	vo' / mi piaque

one-pitch ligatures, regular dots (*pontelli*) and a few problematic rests. The *duodenaria* / *novenaria* alternation is a phenomenon very similar to the *octonaria* / *senaria gallica* alternation, and represents, as Long has shown, the most characteristic element of the traditional Italian notational system, i.e. the ability to express *proportio sesquitertia* at the level of the minim without the use of unusual or hybrid note shapes.⁷¹

VR's notation, in all likelihood, does not represent the original notational appearance of the piece but a rather modernized version of it — with the letters *.d.* and *.n.* (for *duodenaria* and *novenaria*, referring to the divisions) — instead of the Marchettan *.Y.* and *.G.* (*ytalicum* and *gallicum*, referring to *tempus perfectum*).

However, *VR* also preserves archaic characteristics such as the different arrangement of the rests: from a staff line upwards, or from the line downwards, or again on the same line. The position of the rest has no mensural consequence: the rest has to be interpreted through careful evaluation of the context, i.e. by calculating case by case the duration of all the notes in the *divisio* without consideration of its location, which is nearly always connected to that of the semibreve preceding it.⁷² The value of the rest, therefore, depends not on its vertical location on the staff (which in the later notation was to differentiate the semibreve rest from the minim rest), but on its position in the context of the *divisio*, and can oscillate from the value of a minim (very rarely) up to two-thirds of the whole *divisio* (with extension *via natura*).⁷³ The rest in *VR* can have a different function as well: that of indicating a change of meter (from 3/4 to 6/8, for instance, as occurs especially in the monophonic *ballate* *Che ti zova*, *Lucente stella*, *Non formò Cristi*, but also in the madrigal under examination), i.e. a different grouping of the values within the *divisio*. In this case the rest is not at all a “desistentia vocis vel soni”, according to Marchetto’s definition, but a simple rhythmic guide without independent duration.⁷⁴

A similar treatment of the rests undoubtedly created misunderstandings among the copyists of the early Quattrocento transcribing from exemplars of the early Trecento.

Let us now examine the sections containing significant variants among the upper voices of the three manuscripts. This will enable us to understand certain processes of the tradition and to formulate certain semiological hypotheses regarding both the meaning of the notational signs in the various periods of the history of Italian notation and the transmission of the repertory. The first

⁷¹ LONG: *Musical tastes in fourteenth-century Italy*, p. 86.

⁷² TIZIANA SUCATO: *Il codice Rossi 215*, tesi di laurea, Università degli Studi di Milano, 1994–5, pp. 24–30.

⁷³ The lengthening *via artis* of a rest that comes before a semibreve in *tempus perfectum* is explicitly prohibited by Marchetto (see VECCHI: *Pomerium*, pp. 60–1), but the normal lengthening *via natura* is allowed after a semibreve, which often also appears in *VR*.

⁷⁴ For Marchetto’s definition, see VECCHI: *Pomerium*, p. 55.

Example 29. A section of Giovanni's *Nascoso*: the *superius* in the three concordant manuscripts and transcriptions from *VR* and *Sq*: a) *VR*; b) *FP*; c) *Sq*; d) *VR*; e) *Sq*.

Example 29 shows five versions of a musical passage. Versions a, b, and c are square-note mensural notation. Version a has a delta symbol above the staff and lyrics 'so el vi so stava'. Version b has a [3q] bracket above the staff and lyrics 'so l vi so stava'. Version c has a delta symbol above the staff and lyrics 'so el vi so stava'. Versions d and e are modern transcriptions in 3/4 time with lyrics 'so el vi - so stava'.

passage where the readings of *VR* fail to coincide with those of *FP* and *Sq* is the fourth breve measure of the *superius*, where the Rossi codex shows four equal semibreves in *tempus perfectum* (see example 29). For anyone who knows Marchettan theory this simple figuration is immediately translatable into the rhythm 1, 1, 2, 2 (eighth, eighth, quarter, quarter in a modern edition in 3/4). For the Florentine copyists of the late fouteenth century, however, it was simply puzzling, so they gave the same notes the normal rhythmic pattern of cadences: the syncopated rhythm 1, 2, 2, 1 (eighth, quarter, quarter, eighth in modern edition; see example 29e).

As we can see, *FP* is in a renewed *quaternaria* (so-called *Longanotation*) with a breve-beat, while *Sq* shows a *duodenaria* with regular dots.

The second variant occurs at the end of the second line in the *superius* (on *mi guardava*; example 30). Here the copyist of *VR* does not record the letter indicating the change of mensuration from *duodenaria* to *novenaria* (clearly marked instead by an *.n.* in the other two manuscripts) and probably also omits a minim before the first *pontellus*. However, the lack of the *divisio* letter is no mistake, since the presence of the distinctive rhythmic pattern of Gallican mensuration (SM SM M M) is enough here to indicate the change to performers.⁷⁵

⁷⁵ See the second part of this article, section VII (indicators of measure).

Example 30. Giovanni's *Nascoso*: end of the second line of the *superius* in the three concordant manuscripts and transcriptions from *VR* and *Sq*: a) *VR*; b) *FP*; c) *Sq*; d) *VR*; e) *Sq*.

a) mi guar da va

b) .n. me guar da va

c) .n. an me guar da va

d) mi guar da va.

e) an me guar da va.

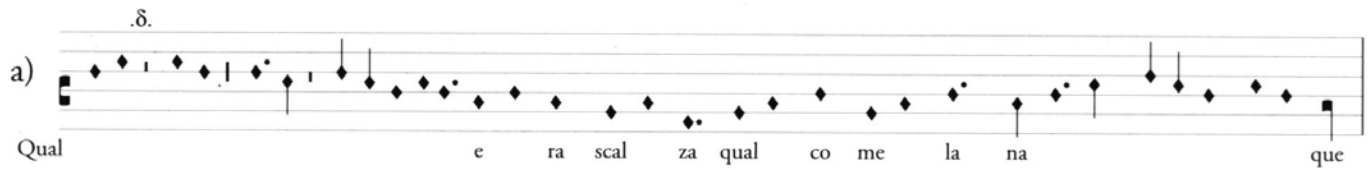
The diffuse but less important melodic and rhythmic variants between the manuscripts are normal in a cadential context, but without the readings of *FP* and *Sq* we would have had trouble transcribing this passage from *VR*. Evidently the exemplar from which the scribes of the two most recent manuscripts copied indicated (unlike *VR*) the change of *divisio* in the *superius*. It is therefore worth noting that in *VR* and in *FP* the tenor stays in *duodenaria* from the very beginning to the end of the first section.

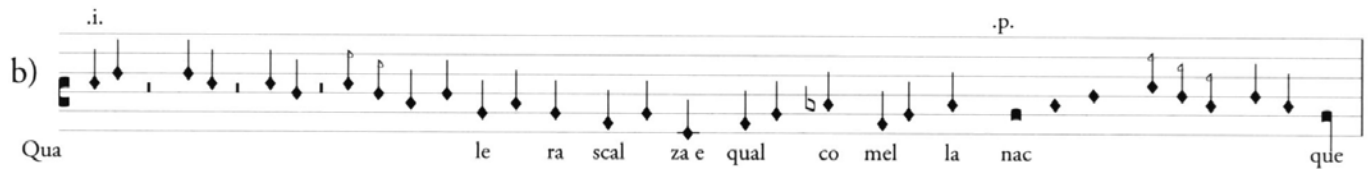
There are other minor variants in the first part of the madrigal, but the more important differences between the readings occur in the ritornello.

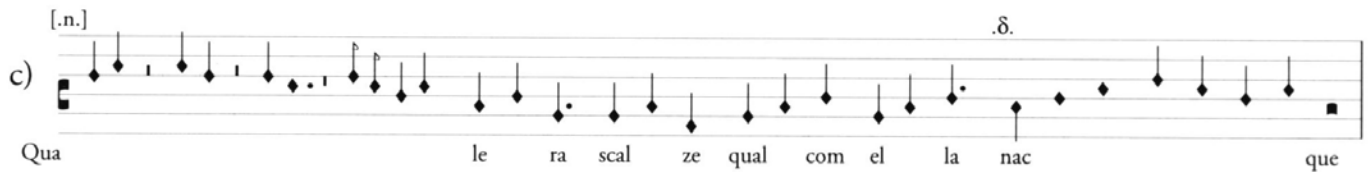
In this section *FP* is pitched a tone lower than the other manuscripts: a strange occurrence caused perhaps by the *b* cadence at the end of the first verse. The scribe preferred to close the first verse of the ritornello on *a*, but this led to an unusual final cadence on *b-flat*. The transposition, however, does not affect the possibility of comparing the rhythmic readings of the three manuscripts.

After a common incipit in *novenaria*, clearly indicated in all the manuscripts by the letter *.n.*, from a certain point onwards the codices proceed with three different mensurations: *duodenaria* in *VR*, *senaria imperfecta* and then *perfecta* in *FP*; *novenaria* and then *duodenaria* in *Sq* (see example 31a).

Example 31. Giovanni's *Nascoso*: the end of the first line of the ritornello in the three concordant manuscripts (*superius* voice only): a) *VR*; b) *FP*; c) *Sq*.

a) 

b) 

c) 

Example 32. Giovanni's *Nascoso*: the end of the first line of the ritornello in the synoptical transcription by Pirrotta: a) *VR*; b) *FP*; c) *Sq*.

a) 

b) 

c) 

The rhythmic interpretation in *FP* (we are uncertain as to whether this reading is the work of the *FP* copyist himself, or if it derives directly from the exemplar) is an attempt to clarify — by means of the new *divisiones* — the rhythmic thread of this section in perfect time *more italico*, the notation of which a late-Trecento copyist would have found confusing. The reason for this misunderstanding lies in the fact that this section (as it appears in *VR* too) never

has more than six notes per *divisio*, and that the textual rhythm (emphasized by the trochaic structure of the tenor) suggests a binary metrical organization (three plus three notes, as in *senaria imperfecta*) — and certainly not the normal ternary structure of *duodenaria* (two plus two plus two semibreves, or, more often, four plus four plus four minims). As a result, the copyist, perhaps also confused by the likely .Y. marking in the exemplar (which he would have been unable to interpret correctly without knowledge of Marchettan theory), translated the passage into *senaria imperfecta*; he thus tried to adapt the rhythm of the *superius* to the presumed binary meter by removing the last note before the textual section and interpreting the two superfluous rests as essential). The last three breve measures, with their evident ternary rhythm (here the rhythmic ambiguity between 6/8 and 3/4, often employed by composers, stops), are instead translated into *senaria perfecta*, whose breve was equivalent to that of the *imperfecta*.

The mensural ratio between *senaria imperfecta* and *perfecta* is correct, but the beat of the two in proportion to that of the original *duodenaria* is not.

The mensuration of the exemplar from which the readings of the Squarcialupi codex are derived is certainly very close to the notation of *FP*. The scribe of *Sq* (or its exemplar), who was undoubtedly musically competent, intended to restore the section to the correct *novenaria-duodenaria* alternation of the piece, so he retained the *divisio novenaria* instead of switching to *senaria imperfecta*. The procedure was rather simple, given that the two *divisiones* have the same beat. But since *novenaria* has a ternary, rather than binary, organization (three semibreve-beats per *divisio*), and given that the passage covers a span of eight semibreves instead of nine, the scribe was compelled to double a semibreve on *G* in the tenor and add a corresponding semibreve rest in the *superius* (see the arrows in the transcription of example 32c). In this way he attained the nine beats required to connect correctly with the last change of the *divisio*, which his exemplar recorded in *senaria perfecta*. Granted that the breve of *senaria perfecta* was equal to exactly half that of *duodenaria*, it was a simple matter of translating into *duodenaria* these last two measures of the first part of the ritornello.

Without the readings of *FP* we would be hard-pressed to reconstruct the genesis of the considerable variants of *Sq* compared to *VR*, which even achieve a doubling of the performance speed of the *duodenaria* in the final part of the first line of the ritornello. But if we examine the two changes, we understand that the error in transmission must have been caused by an initial major misunderstanding attributable to a scribe who could no longer correctly interpret the notational signs of the archaic *duodenaria*, and by a further translation, carried out correctly according to the knowledge of early-Quattrocento mensural theory, but drawn from an incorrect exemplar.


Example 33. A section of the final line of Giovanni's *Nascoso* in Pirrotta's synoptical transcription: a) *VR*; b) *FP*; c) *Sq*.


The image displays three synoptical transcriptions (a, b, and c) of a musical passage. Each transcription consists of a vocal line and a piano accompaniment. The lyrics are: "piú non vo dir quan to quel dí mi piac - - - piú non vo dir quan -".

- Version a) VR:** Features a delta symbol (δ) above the first measure and the number 55 above the second measure. The vocal line has a long note on "piac" that spans across the end of the line.
- Version b) FP:** Features a piano (*p.*) dynamic marking above the first measure. The vocal line has a long note on "piac" that spans across the end of the line.
- Version c) Sq:** Features the number 60 above the second measure. The vocal line has a long note on "piac" that spans across the end of the line.

The same misunderstanding occurs in the texted section of the final verse of the ritornello (*Piú non vo dir quanto quel dí mi piacque*), where *FP* changes from *novenaria* to *senaria perfecta*, *Sq* maintains its *duodenaria*, and *VR* changes from *novenaria* to *duodenaria* (see the modern editions in example 33).

Example 34. a) original: *tempus imperfectum*; b) modern notation.



a)  [■ = MM 54]

b) 

Example 35.

 [◆ maior = MM 72]

Example 36.

from  [■ = MM 54] to  [◆ maior = MM 54]

Here too, the *duodenaria* of *Sq* is twice as fast as the original *duodenaria* of *VR*, because it represents a transcription of an incorrect translation into *perfecta*.

We shall return to the translation of an archaic *duodenaria* (or rather of perfect *tempus ad modum italicorum*) into *senaria perfecta* (as occurs in *FP* with reference to *VR*), since it could be considered as a correct translation as far as the beat is concerned. (In both measures the breve was possibly performed at MM 36.) We need to understand if the copyists of *FP* conceived of the *quaternaria* with *modus perfectus* (3q) as having a breve-beat equivalent to ca. MM 104–108, or, as seems likely from an examination of the tenor densities, whether they slowed it down to MM 72.

We can view the Marchettan rhythmic structures of many madrigals by the early masters in two ways, in accordance with the later theoretical framework of the *Rubricæ Breves*: first, as a *quaternaria-senaria imperfecta* alternation; second, as an *octonaria-senaria imperfecta* alternation. The latter alternation could be expressed perfectly in modern Italian notation with a semibreve-beat, since it indicated a *proportio sequitertia* at the minim level (four minims instead of three), while the first *quaternaria-senaria gallica* sequence implies a ratio of four to six (*proportio subsesquialtera*), which is difficult to translate into the new system.

With respect to this problem we find three main rhythmic alternations in the compositions of the earliest masters: they are here indicated by the letters A, B and C.

Schema A. Perhaps the earliest schema, A consists of a *tempus imperfectum* with typically four semibreves for each breve-measure (*ad modum italicorum*) alternating with *divisiones* composed of six semibreves — three plus three (*secundum gallicos*). The structure was notated in accordance with Marchetto's description, as shown in example 34a.

Example 37. Jacopo's madrigal *Un bel sparver* (section A of the *superius*) from *PR*.

Un bel sparver gentil de pena bian
 chi no lanto sopra layre, sa pon
 In un tel peato uerte pie de ston

Example 38. Jacopo's madrigal *Un bel sparver* (section A of the *superius*) from *FP*.

Un bel sparver gentil de pena bian
 chi no lanto sopra layre
 ze sa pon In un tel peato uerte
 Amoz che el fuiz may non sil canite
 midulle uasde guento quel sparverio
 che duera gentil tante manero
 solando arionte tutto giorno ludi
 malaz arionte in sine a meza nocte
 polcia l'ichollegana infra due gotte. Malla.

This was probably the original notational appearance of certain passages in the first sections of the following madrigals by Jacopo: *Con gran furor*, *Non al su' amante*, *O dolz'apresso*, *Prima vertute*, *Sotto l'imperio*, *Tanto che siat*, *Un bel sparver*, and the lauda *Nel mio parlar* (in both sections). It also appears in the opening sections of the *caccia* *Oselletto* by Jacopo and in the madrigals *Agnel son bianco* and *Nel mezo a sei paon* by Giovanni da Cascia (see example 11).

In the later transcriptions (the readings of Florentine manuscripts such as *FP*, *Pit* and *Sq*) the notation was sometimes rendered as in example 35; this transcription led to a remarkable acceleration of tempo (from MM 54 to 72 for

Example 39.



Example 40. A hypothetical reconstruction of the original version of the first line of Jacopo's *Un bel sparver* (*superius*).

the measure-unit); or rather, a change from a slow breve-beat (MM 54) to a faster semibreve-beat (MM 72).

But this is probably the final step in a process of transmission that started with a transcription of such pieces in the context of a system similar to that described by Petrus Capuanus de Amalfi, where the *divisio octonaria* is equivalent to two *quaternariae* (see example 36). For the Florentine scribes of the late Trecento this *octonaria* was however indistinguishable from the original *tempus imperfectum* with eight semibreves per *divisio*.

We have already seen (example 15) how the first part of the madrigal *Con gran furor* by Jacopo was presumably originally in *tempus imperfectum*, and was then preserved in the only surviving manuscript (*Sq*, fols. 18v–9r) in an *octonaria* that contains two *tempi* of the original *mensura*.

A further example of this phenomenon, as described above, is the version of the madrigal *Un bel sparver* by Jacopo in the *Codex Reina* (fol. 4r), which bears the letters .G. and .q. in the *superius*. These letters are certainly derived from an old exemplar (see example 37). This version is a modernization of the original alternation between *tempus imperfectum ytalicum* (here *quaternaria*) and *gallicum* (the section still marked .G.). In the three concordant manuscripts (*FP*, fol. 73v; *Pit*, fol. 3v; and *Sq*, fol. 9v) section A of the madrigal is in *octonaria*. Let us here examine the readings of the oldest of the three, *FP* (example 38).

It is worth noting that in the third and fourth breve measure of *FP* (corresponding to the sixth and seventh measures of *PR*) we encounter the group SM SM M, followed and preceded by two minims. This is presumably the original rhythm. In *PR*, by contrast, the group is composed of triplets (as also in *Pit* and *Sq*). In the remainder of the piece the copyist of *FP* also adopts the

Example 41. a) original: *tempus imperfectum*; b) modern notation.

a) [■ = MM 54]

b)

Example 42.

[◆ = MM 72]

Example 43.

triplets for the group; during the late Trecento the two sets of example 38 were considered interchangeable, if not equivalent. The hypothetical original presumably appeared as illustrated in example 40.

This hypothetical reconstruction can be usefully compared with the other two reconstructions already produced in examples 16 and 27, where the groups of five *semibreves aequales* recur (to be performed as 1, 1, 2, 2, 2 minim values) and where we occasionally find the alternation with *senaria gallica*.

Schema B. This is a *tempus imperfectum* with, for the most part, eight semibreves for each breve-measure (*ad modum Italicorum*) alternating with *divisiones* composed of six semibreves — three plus three (*secundum Gallicos*). This structure was notated as in example 41a, according to Marchetto's description. This was probably the original notational appearance of certain passages in the first sections of the following madrigals by Giovanni da Cascia: *Agnel son bianco*, *Donna già fu*, *In su la ripa*, *La bella stella*, *O perlaro gentil*, *O tu cara scienza*, *Quando la stella*, *Sedendo a l'ombra*.

In later transcriptions, following the theoretical system of the *Rubricæ breves*, the notation was changed (see example 42); the transcription led to a slowing down of the tempo (from MM 54 to 36 for the brevis); or rather, a passage from a total breve-beat (MM 54) to a semibreve-beat (MM 72) that covers only half a *divisio*.

The same passage could be rendered in another way (see example 43): with renewed *quaternaria* for the Italian sections, and the elimination of the *puncti divisionis*. But this type of translation was never used in the more recent manuscripts because the beat of the *senaria gallica* was faster than that of the renewed *quaternaria* (with the result that the prescribed *proportio sequitertia* at the minim level, which was typically Italian, did not appear there).

Example 44. a) original: *tempus perfectum*; b) modern notation.

a) [■ = MM 36]

b)

Example 45.

[◆ = MM 72]

Example 46.

[■ = MM 72 and then ◆ = MM 104]

Example 47.

The compositions listed above which use the described mensural types thus have to be performed with a semibreve-beat (half measure in the modern edition) of MM 104–108, or with a breve-beat (whole measure) of MM 54, if we wish to understand the composer's original intention. However, it is likely that these pieces also had a history of performances with a slowed beat.

Schema C. This is a *tempus perfectum* with typically twelve semibreves for each breve-measure (*ad modum italicorum*) alternating with *divisiones* composed of nine semibreves — three times three (*secundum gallicos*). This structure was notated as in example 44, in accordance with Marchetto's description. This was probably the original notational appearance of certain passages in the first sections of Giovanni's madrigals *Appress'un fiume* and *Nascoso el viso* and in the ritornelli of *Quando la stella* and *Sedendo a l'ombra* by Giovanni too. The ratio is perfectly equivalent to that of schema B of *tempus imperfectum* (*proportio sesquitertia* within minims); but while the latter was hardly ever translated into the French system, this one was occasionally translated — at least as far as the quadruplets are concerned — with very instructive results (exemplified in *Nascoso el viso* and *Sedendo all'ombra*).

In the later codices the notation of this structure may assume three different outward aspects (see examples 45–7), which concern however only groups of the Italian sections, not those of the Gallican section. The transcription in example 45 led to a slowing down of tempo (from MM 108 to 72 for the semibreve).

The so-called *Longanotation* for the quadruplets, then a regular *novenaria*, is used especially if the two sections in different divisions are clearly defined as well as long in duration, as occurs in the ritornello of Giovanni's madrigal *Sedendo all'ombra* (example 46).

Example 47 is an extreme solution, but adopted in some cases by the copyists of the late Trecento and early Quattrocento to translate the perfect time divided in twelve. In the mensurations of Italian *tempus perfectum* there are not always twelve notes per *divisio*, at times only two to six. In these cases — as happens for instance in the last mensuration of the readings of *FP* (example 32b) — a translation into *senaria perfecta* hardly reveals the derivation from an original *duodenarium*.

The three general schemata analysed thus far (schemata A, B, C and examples 34–47) concern the deep rhythmic structure of the early compositions of the Italian *ars nova*, in which we detect different approaches in the individual composers. Jacopo prefers an alternation (schema A) different from that typically employed by Giovanni (schemata B and C). Giovanni actually uses the *proportio sesquitertia* (three minims in place of four), while Jacopo uses six minims in place of four, that is to say three minims instead of two; and since the *proportio sesquialtera* can be perfectly expressed in the French system as well, the translation into the late Italian system (which was deeply influenced by the French system) is possible without ambiguity. The continuous alternation between the two *divisiones*, even for just one breve-measure, with frequent changes from Italian to French system, was probably not even indicated by the *divisio* letters in the earlier manuscripts. The physical groupings (four at a time or three by three of the minims, or equivalent groups of notes) were considered sufficient to suggest the correct rhythmic interpretation. The lack of letters of *divisio* caused further problems of interpretation on the part of the Florentine copyists of northern exemplars.

(to be continued)