

Changing Musical Time at the Beginning of the Renaissance (and Today)

Michael Scott Cuthbert (Massachusetts Institute of Technology)
for Renaissance Studies in Honor of Joseph Connors

Arriving at Villa I Tatti for my fellowship year, I was greeted not only by warm schiacciata, the smiling faces of the staff, and the best-supplied early music library imaginable, but also by the passionate imploration of the director that we use our time not just to work on narrow projects, but also to read and think as broadly as possible. I therefore would have liked to write about musical rhythm, meter, and notation in their most general forms and throughout all lands and periods, but, alas, the prohibition against exceeding ten pages forces me to limit the subject merely to Europe and the last 1000 years. I hope that nonetheless the spirit of Joe's suggestion of broad learning carries through even in this too-narrow scope.

One of the fundamental changes in the West's conception of music over the previous millennium was the idea that music's rhythm and meter could be precisely measured not in terms of seconds or minutes, nor in borrowed notions such as poetic feet, but in purely musical terminology like quarter notes or dotted eighth notes. This new way of thinking is intimately connected to the rise of musical notation, and in particular, the use of notation to show relationships among two or more coordinated parts. Pitch needed its own vocabulary even in the era of unwritten music—organs needed to be built; lyres tuned—but the necessity of specific terminology for musical rhythm arose only when it was written down. And while the notation of pitch became largely standardized within the first few centuries of the last millennium to the point where undergraduate music students can (more or less) read pitch from thirteenth-century manuscripts, rhythmic notation remained unsettled much longer.

Seemingly from the first moment when music became measured (*musica mensurata*) it began to slow down. The earliest measured music, that of Leonin and Perotin, the twelfth and early-thirteenth century composers of Notre Dame, used the figure of the “long” as a basic value, to be paired up and combined into a *maxima* or *duplex* long, or to be divided into three “breves.” By the late thirteenth century, music had slowed to such an extent that the breve became the basic note value, and the semibreve, worth either one-half or one-third the value of the breve, sprang into use.¹ This word, semibreve, is still the most common name in the British world for the note that in the States is called the whole note. Because the process of slowing continued unabated, this note is now the longest value in frequent use. By the fourteenth century, the tempo of music had slowed sufficiently that a note even faster than the semibreve needed to be introduced. This note came to be called the *minima* or *minim*—still the British word for half note—signifying that this was to be the minimum, that is, the final, indivisible smallest possible note. (The debates of the music theorists of the Trecento are echoed in the discussions of modern physics that postulate that time itself may move in discrete and indivisible *minimae*, each lasting about 1/200,000,000,000,000,000,000,000,000,000,000,000,000,000th of a second.) But the force of the slowing trend could not be stopped: it was less than fifty years later that the first “semiminim” would appear. Its name embodies a contradiction, “half of the shortest possible note,” yet though it was an extremely fast note for its time, it eventually became our most basic beat, the quarter note.

The process of slowing itself slowed slightly during the fifteenth, sixteenth, and seventeenth centuries. Faster notes continued to be introduced, but the fundamental tempos of music changed little. There are exceptions, and in some of these cases the slowness of the fundamental beat and the speed of the shortest notes produced dramatic effects: tuplet 128th notes appear in Beethoven’s third piano concerto, 256th notes in a concerto by Vivaldi (F. IV. n. 5), and most exceptionally, 1024th notes (incorrectly notated as 2048th notes) in the little known “Toccatà Grande Cromatica” from *The*

¹ On attempts to measure the slowing of medieval musical time in terms of clock time, see MARCO GOZZI, “New Light on Italian Trecento Notation, part 1”, *Recercare*, XIII, 2001, pp. 5–78.

Sylviad by Anthony Phillip Heinrich (ca. 1825), a piece that in its own continual slowing of the fundamental beat is a microcosm of all of the notated music history of the West.² (See Example 1).

* Its subdivisions may be considered collectively, or individually, for the introductory *Estravaganza*, written rather *Alla Ipocondria*, an apology is due. The same shall somewhere appear brighter.

Example 1: Anthony Phillip Heinrich, "Toccata Grande Cromatica," excerpt, with 512th and 1024th notes (incorrectly notated as 1024th and 2048th notes) at the end of the example.

Between Perotin and Heinrich, there exists a range of time that is almost incomprehensible to our sense of how music unfolds. Within a single maxima, there are 1024 128th notes, and, as we have seen, even longer and shorter notes have occasionally been used. Example 2 shows (on a logarithmic scale) the amount of time various notes would take if they were all played at the same *adagio* tempo of one quarter note per second. Obviously it is absurd to use the entire range of note values in a single piece at a single tempo mark. In

² The source for these (and many other) extremes of musical notation is Donald Byrd's excellent on-line resource: <http://www.informatics.indiana.edu/donbyrd/CMNExtremes.htm>. I thank him for many stimulating conversations on this topic. The score of Example 1 has been re-published recently as ANTHONY PHILLIP HEINRICH, *The Sylviad, or, Minstrelsy of Nature in the Wilds of North America: opus 3*, intr. J. BUNKER CLARK, Greenleaf, Wis. 1996. The term chromatic in the title of the piece may refer not to notes out of the key, but to the amount of ink (or color) needed to express the short notes in the work.

fact the pieces using the shortest notes tend to have the slowest tempos, and the contrary is true for pieces with the longest notes. But Figure 1 demonstrates the enormous pull towards expanding the range of rhythmic resources that composers have felt over the centuries.

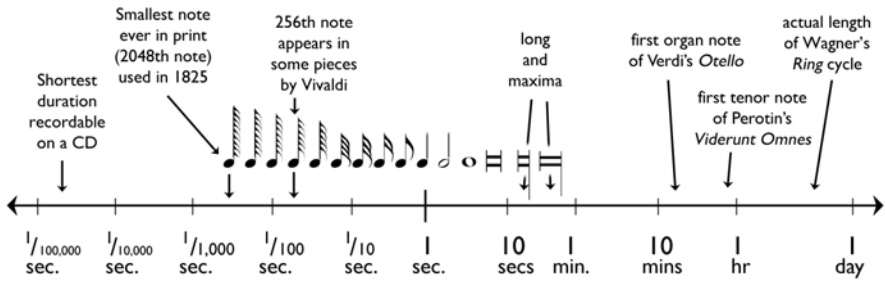


Figure 1: Lengths of different note values at M.M. qtr. = 60.
(with actual CD frequency and *Ring* lengths for reference)

In contemporary art music, composers have played with all extremes of lengths, but the most significant innovations in notation have come, as they did in the Middle Ages and Renaissance, in the notation of the most fleeting notes.³ One of the most interesting case studies in the continuation of the medieval tradition of shorter notes comes in the American composer George Crumb's string quartet *Black Angels* (1970), where, in the excerpt shown in Example 2, he uses a time signature of $\frac{7}{128}$ in measure 2 (written with the denominator as a note, $\frac{7}{128}$) along with the almost as equally unusual $\frac{7}{64}$ with each note receiving an equal accent, thus providing the shortest non-compound meter ever published.

³ On recent uses of extremely long durations in recent music see ALEX REHDING, "The Discovery of Slowness in Music," forthcoming.

The image shows a musical score for two staves: E. Vin. II (top) and E. Vla. (bottom). The music is characterized by dense, complex rhythmic patterns with very short note values. Above the E. Vin. II staff, there are three annotations: '(sul pont.)', '(modo ord.)', and '(sul pon)'. Above the E. Vla. staff, there is an annotation '(sul pont sempre)'. The score is marked with 'fff' (fortissimo) throughout. At the end of the E. Vla. staff, there is a measure rest marked with the number '5'. The notation includes various rhythmic symbols, including eighth and sixteenth notes, and rests.

Example 2: Unusually short beat values in George Crumb's *Black Angels*.

Other unusual and brief meters appear occasionally in modern music. Karlheinz Stockhausen's 1956 composition *Zeitmaße* uses meters whose bar lengths are nearly as short as Crumb's, such as $\frac{2}{32}$. Composers allied with the New Complexity school, including Brian Ferneyhough and Thomas Adès, have used meters such as $\frac{5}{6}$ and $\frac{2}{10}$ that allow "tuplet" values (in these cases, triplets and quintuplets) to be fundamental and independent units. Finally, though multiple simultaneous meters were used in the works of both Bach and Mozart, the metrical experiments of Conlon Nancarrow use multiple meters in ways that particularly stretch the definition of meter. His "*Transcendental*" *Etude* contrasts two canonic lines whose rhythms are in the ratio of the transcendental irrational numbers e to π .

I mention these unusual ways of specifying beat and meter in today's music because the same spirit of experimentation was at work throughout the Italian *ars nova*. The feeling that the resources of the past were insufficient to express the creative metrical impulses of the present dominated musical thought in the late Trecento and early Quattrocento. The remainder of this short offering demonstrates one interesting and thus far overlooked example.

The cover of the register "Ravi 3" dal Fondo Vicariato di Gavorrano (1568–69) in the Archivio di Stato, Siena is a bifolio of an otherwise lost musical source from the period of the Great Papal Schism. The fragment contains parts of seven pieces, of which five were transcribed by in the article

announcing its discovery.⁴ A further piece, the cantus of a Gloria was first transcribed by Marco Gozzi but later identified as the missing part of a work long known from a fragment in Madrid and a recently discovered folio in Columbia, South Carolina.⁵ The last piece that remains untranscribed is the most interesting for this study, a unique lauda, *O regina ... sempre regna*, in an extremely poor state of preservation. Previously identified as a lauda in ballata form,⁶ it could very well be a madrigal instead seeing as it possesses both key features of the late-fourteenth century madrigal. Like most madrigals, it has extended melismas on the first and penultimate syllables of most lines and it changes of meter after the mid-point of the piece where, if it were a madrigal, the ritornello would begin. This change of meter is the most unusual feature of the piece and is the focus of the discussion at hand.

There were two competing systems of notating rhythm in late-fourteenth and early-fifteenth century Italy. Usually called French and Italian, the systems can more properly be called international and Marchettian (after the theorist Marchetto da Padova who first documented the latter system). Even though Marchettian notation was more common in sources of the mid-Trecento than in later sources, contrary to previous reports there is little evidence that international notation was ever absent. Each of these two systems had their own ways of notating changes in meter (since the initial meter of each piece is rarely specified). The Marchettian system used letters that stood for the number of minims within a breve, e.g., .q. = *quaternaria* = 4, .d. = *duodenaria* = 12. The international system used a collection of signs that showed how the fundamental unit of the breve was to be divided (called men-

⁴ ENZO MECACCI and AGOSTINO ZIINO, "Un altro frammento musicale del primo quattrocento nell'Archivio di Stato di Siena", *Rivista Italiana di Musicologica*, XXXVIII, 2003 (i.e., 2006), pp. 199–225.

⁵ MARCO GOZZI, "Liturgia e musica mensurale nel Trecento italiano: i canti dell'*Ordinarium*", in *Kontinuität und Transformation in der italienischen Vokalmusik zwischen Due- und Quattrocento*, ed. SANDRA DIECKMANN, et al., Hildesheim, 2007, pp. 53–98. MICHAEL SCOTT CUTHBERT and ELIZABETH NYIKOS, "Style, Locality, and the Trecento Gloria: New Sources and a Reexamination", *Acta Musicologica*, LXXXII, 2010, pp. 185–212.

⁶ MECACCI and ZIINO (as in n. 4), p. 207. Note though that the piece is not a contrafactum of any known ballata or madrigal.

uration). The signs have come down in our history texts as a standardized group of four: \odot , \circ , \ominus , and $\omin�$, but close examination of the manuscript evidence shows that there was a wide variety of symbols and meanings, a diversity that included important regional variants (such as the Veneto usage of \circ and $\omin�$ for the meanings usually associated with $\omin�$ and \ominus respectively). These variants have been regarded as scribal errors and overlooked by our modern editions.⁷

Quite possibly because of differences in meanings among the international system of mensuration signs, pieces from Italy often used the international rhythmic system along with the Marchettian meter signs. This practice is sometimes referred to in modern literature as “mixed notation.” *O regina [...] sempre regna* uses a different type of mixed notation that is, to my knowledge unique.⁸ Although the rhythm of the piece is Marchettian, the switch from *tempus perfectum* to *tempus imperfectum* (from $\frac{2}{4}$ to $\frac{3}{4}$) is accomplished by means of the international meter sign, \circ . Although the piece is extremely damaged, rendering much of the text illegible, there are only a few notes of the music that cannot be read. The piece is thus transcribed with the surviving text in Example 3, while a facsimile of the relevant section of the manuscript is in Figure 2.

⁷ MICHAEL SCOTT CUTHBERT, “Trecento Fragments and Polyphony Beyond the Codex”, (Ph.D. diss., Harvard University 2006), p. 225, to be discussed in more detail in a forthcoming monograph. The most significant work on these signs to date is JASON STOESEL, “The Use of Unusual Mensuration Signs in the Notation of the *Ars Subtilior* and Their Socio-Cultural Context”, in *A Late Medieval Songbook and its Context: New Perspectives on the Chantilly Codex (Bibliothèque du Château de Chantilly, Ms. 564)*, ed. YOLANDA PLUMLEY and ANNE STONE, Turnhout 2010. I thank him for sharing this work with me prior to its publication.

⁸ *Intrando ad abitar* in Paris, Bibliothèque Nationale de France, MS Ital. 568, ff. 27v–28r, is an example of the opposite phenomenon, using a mix of French and Italian metrical signs within a piece notated in international notation. However, the Italian *divisionis* sign seems to me both a later addition and a mistake. C.f., JOHN NÁDAS, “The Transmission of Trecento Secular Polyphony: Manuscript Production and Scribal Practices in Italy at the End of the Middle Ages, (Ph.D. dissertation, New York University 1985), Ann Arbor 1985, p. 323.

Musical score for a vocal line, likely a soprano or alto, in 3/4 time. The score is divided into systems with measure numbers 8, 18, 28, 38, 46, 54, 61, and 69. The lyrics are:

re - - gi - na in[?] cui[?] [... ...] sem - pre re - - - -
 na, c<h>o - lo -
 na d'iu sti - tia et di ra - gio - - - - ne. Et di pruden - tia
 so - pra l'al - tre di - - - - -
 gna. [...]
 [...] bat - te so - lo per ma - re et
 [...]
 [...]

[*] possible alternative reading
 na, c<h>o - - - - lo - na

Example 3: *O regina [...] sempre regna*, Siena Ravi 3, f. 70v, tentative transcription.



Figure 2: Siena, Ravi 3, f. 70v grazing-light detail of *O regina*, with computer-enhanced detail of the meter change on the fourth staff. (Photo: MSC. Courtesy of the Archivio di Stato, Siena)

As a whole, the lauda appears uncomplicated. Aside for a predilection for using syncopation at different levels and in both mensurations (and a lack of interest in accurate text-setting that suggests later fifteenth-century practice), little about the work seems remarkable, though of course without the other voice all aesthetic judgments are tentative. (After all, what would we think about Ciconia's masterly *Aler m'en veus* were it not for the second voice found only in a later contrafact?)

It is precisely the unremarkable nature of *O regina*, and the fragment in which it is contained, that makes it so fascinating in its role as a unique testimony to a key transition moment in the long history of musical rhythm. While some inflection points and extreme moments in the history of notation have come at the hands of great masters, such as Beethoven, Verdi, and Perotin, many others are found hidden in texts by minor figures like Anthony Heinrich and the anonymous creator or creators of this *lauda*. Broad readings in music history that include studying both major and minor works are essential to understanding how our own modern conceptions of musical time came to be formed.