
From Neumes to Notation:
A Thousand Years of Passing On the Music
by Charric Van der Vliet

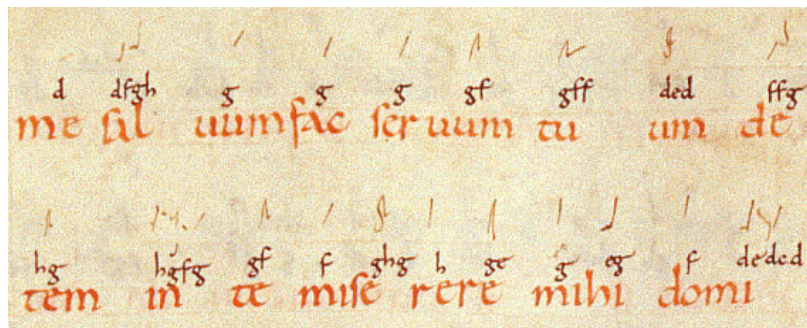
Classical musicians, in the terminology of the 17th and 18th century musical historians, like to sneer at earlier music as "primitive", "rough", or "uncouth". The fact of the matter is that during the thousand years from 450 AD to about 1450 AD, Western Civilization went from no recording of music at all to a fully formed method of passing on the most intricate polyphony. That is no small achievement.

It's attractive, I suppose, to assume the unthinking and barbaric nature of our ancestors, since it implies a certain smugness about "how far we've come." I've always thought that painting your ancestors as stupid was insulting both to them and to yourself. The barest outline of a thousand year journey only hints at the difficulties our medieval ancestors had to face to be musical.

This is an attempt at sketching that outline. Each of the sub-headings of this lecture contains material for lifetimes of musical study. It is hoped that outlining this territory may help shape where your own interests will ultimately lie.

Neumes:

In the beginning, choristers needed reminders as to which way notes went. "That fifth note goes DOWN, George!" This situation was remedied by noting when the movement happened and what direction, above the text, with wavy lines. "Neume" was the adopted term for this. It's a Middle English corruption of the Greek word for breath, "pneuma." Then, to specify note's exact pitch was the next innovation. They just wrote them in. It looked like this in an early 11th c. method called digraphic neumes:



Digraphic neumes, in an 11th-century manuscript from Saint-Bénigne de Dijon (detail)
Source: manuscript Intermediate source: <http://manuscris.biu-montpellier.fr/vignettes.php?GENRE%5B%5D=MM&ETG=OR&TYPE%5B%5D=NA&ETT=OR&ETM=OR&BASE=manua: page 14r>
Date: 11th century Author: anonymous Accessed 1/4/14 at:
http://en.wikipedia.org/wiki/File:Digraphic_neumes.png

You can see the note values in the second line under the neumes in the first line. This was actually an outgrowth of the original notation in the first line, which gave no actual pitch values, just up here, down there. The third line is the lyric. We're not going to teach neumes in a year, let alone a day or an hour, but that was the start of it all. A certain shape of squiggle meant an uncertain higher or lower note. Easier to transcribe, this was a bit farther along the path than the first marks up and down, but still no exact pitch or time length for the notes was included in the notation method itself.



Square notation and Clefs



Some bright person hit upon the method of using lines (and spaces between) as representing HOW high above or below the starting note you were. The most usual keys generated using music theory of the time were C (no flats) and F (one flat). Sharps and naturals were NOT used. The musicians of the time therefore put a small c or f on whatever convenient line where that note was to be placed. How many lines was also a matter of unstandardized convenience. (Capital C had the meaning we now take as 4/4 time.) When the first sharps came along, the key of G was represented by being a letter g placed with the curl of the g upon the most convenient line. These letters' location was NOT standard, and may be found upon *any line*. Upon any number of lines. Staffs came with 2-6 or more lines. This was the start for our present clefs.

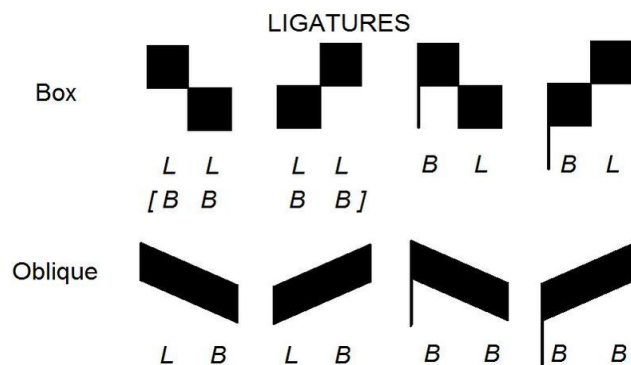
Notes were a small square placed at the correct line or space. All notes were of indeterminate time length, and varied according to musical whim, but now exact pitch was specified. This was the notation of Gregorian Chant.



Early Ligatures:



De mensurabili musica, copied around 1260, presented the rhythmic mode method, with square single notes and notes "bound" together, for ligatures. By introducing relative length from note to note, part singing of note against note, could begin. This diagram of two note ligatures comes to us from the Wikipedia article on the subject.(4) Here, L=Long, twice the time of B=Breve.



Description: A descriptive diagram of ligatures as they pertain to music from the 13th to the 16th centuries AD.
Date: Accessed 01/04/14 Source-http://en.wikipedia.org/wiki/Ligature_%28music%29 Author: Lioux

All ligatures of this period have the following principles in common:

1. All ligature notes are of three lengths: Long, Breve, and Semibreve. The length of a longa ("L"), is two times as long as a breve ("B"), which is twice as long as a semibreve ("S").
2. All ligatures have at least two notes.
3. For ease of discussion, ligatures of different lengths have different names. A ligature with two notes is called a *binaria*; one with three notes, a *ternaria*; one with four notes, a *quaternaria*; and one with five notes, a *quinaria*. Larger ones are possible, but rare.
4. If a ligature has three or more notes, all notes in the middle (the *mediae*) are *B* (*Breves*).
5. A downward tail changes the value of the note where the tail occurs, either from *L* to *B* or, less commonly, from *B* to *L*.
6. An upward tail indicates that the next *two* notes are to be a series of *S* (*Semibreves*).
7. Tails at the end of a ligature would indicate an additional note be sung or played, called a *plica*, that was not part of the ligature. This was especially common with the rhythmic modes to accommodate in practice what could not be accomplished within the very strict theoretical basis for modal music.



Poetic Metre:



Those poetic lyrics were the source of the first way of deciding the length of a note. The Classical poetic modes were:

1. Trochaic:	- .	long-short	♪ ♪
2. Iambic	. -	short-long	♪ ♪
3. Dactylic	- ..	long-short-short	♪ . ♪ ♪
4. Anapaestic	.. -	short-short-long	♪ ♪ ♪ .
5. Spondaic	--	long-long	♪ . ♪ .
6. Tribrachic	...	short-short-short	♪ ♪ ♪



Chart adapted from Hoppin, pg. 222 (1).

thus, Iambic Pentameter, or 5 Iambs, = . - . - . - . - = "To be or not to be, that is the question..." (That fourth iamb is more three shorts. Shakespeare cheated sometimes. To be proper iambic pentameter it should be, "to be, or not, to be, that's the, question")

In the first efforts of notation of the length of musical notes, poetic meter was borrowed. It wasn't, in it's inexact nature, a satisfactory solution, but a big step away from indeterminate length of notes.



Rhythmic modes:



The Classical names of the poetic modes were discarded in favor of the simpler number for the modes, as in the above chart. According to Hoppin [1], Augustine's *De Musica* defined the long of poetic meter as being exactly twice the time of a short. (pg. 222) The theorists developed a system of perfect (three divisions) and imperfect (two divisions) based not on the religious observation of the trinity as was proposed by some medieval theologians, but based on the ideas of classical greek antiquity, where music had a beginning, a middle, and an end, thus three divisions were perfect.

When you were talking about the divisions of a long, it was a perfection of three breves, an imperfection of two breves. When you are talking about the divisions of a breve, you were with propriety of three semibreves, and without propriety of two semibreves. This expands later in the ligature period.

The ordos, or phrases, of poetic rhythm consisted of a single type of metre from the chart repeated, then ending with a rest instead of the final note. The various theoretical treatments of these basic rules are complicated, and vary. Musicians mostly went on creating music in ways that defied the theories, and the theorists. One of the stimuli for creating better notation, in my humble opinion, was to create systems that could actually describe real world performances which outstripped the theorist's ability to notate.



Later Ligatures (Mensural Notation):



Wikipedia says it very well:

"The modern name is inspired by the terminology of medieval theorists, who used terms like *musica mensurata* ("measured music") or *cantus mensurabilis* ("measurable song") to refer to the rhythmically defined [polyphonic](#) music of their age, as opposed to *musica plana* or *musica choralis*, i.e. Gregorian [plainchant](#). Mensural notation grew out of an earlier, more limited method of notating rhythms in terms of fixed repetitive patterns, so-called [rhythmic modes](#), which was developed in France around 1200. An early form of mensural notation was first described and codified in the treatise *Ars cantus mensurabilis* ("The art of measured chant") by [Franco of Cologne](#) (c. 1280)[6]."

Introduced in 1280, by about 1400 AD this new French method became pretty universal in Europe. The system looked like this:

Note values					
Name		13th	14th	15th	17th
Maxima	Mx				
Longa	L				
Breve	B				
Semibreve	Sb				
Minima	Mn				
Semiminima	Sm				
Fusa	F				
Semifusa	Sf				

The shift from filled in notes to hollow notes (white notation) occurred about 1450 and coincides with the introduction of paper for music instead of parchment. Too much ink on the note-heads made holes in the paper.

Rests were also given a very specific value:

Rests		
Value	Mensural	Modern
Mx		
L		
B		
Sb		
Mn		
Sm		
F		
Sf		

Basically, a line through one space is a breve rest, two spaces a long, and so forth. A semibreve is a line of half length hanging, a minima sitting on the line. I find the shorter rests were a) almost never used, and b) are so poorly made you have to work them out from context anyway.

The fun comes in when the divisions from Long to Breve or Breve to Semibreve occur. If the division is Long to Breve, it's called Tempus (time) and the division can be either perfect, ternary (in three) or imperfect, binary (in two). This can depend on the time signature, or some other factors. If the division is from Breve to Semibreve, it's called Prolatio (Prolation) and the division is again either perfect or imperfect.



Long Mode, Mode, Time, and Prolation.



Mensurations		
	Ternary	Binary
Maximodus	perfectus 1 Mx = 3 L	imperfectus 1 Mx = 2 L
Modus	perfectus 1 L = 3 B	imperfectus 1 L = 2 B
Tempus	perfectum 1 B = 3 Sb	imperfectum 1 B = 2 Sb
Prolatio	maior 1 Sb = 3 Mn	minor 1 Sb = 2 Mn

Perfect=ternary. Imperfect=binary.

Note terms: Mx=Double Long. L=Long. B=Breve. Sb=Semibreve. Mn=Minum

Later in the ligature period, the level of the division you were perfecting or imperfecting was called by four different terms. The terms describing the levels of division were:

Double Long to Long=Maximodus (Long Mode)

Long to Breve=Modus (Mode)

Breve to Semibreve=Tempus (Time)

[Tempus was perfectum or imperfectum instead of perfectus or imperfectus. Why? Got me. A music professor needed work?]

Semibreve to Minum=Prolatio (Prolation)

[Prolatio was maior and minor instead of perfectus and imperfectus. Why? Again. Got me. Make it pointlessly harder for music students?]

Notice instead of Perfection and Propriety, with the earlier time divisions, we have more terminology. This is an evolving system, because now you have more levels of division than before. Why not use the same terms for each level of division? I've never found any answer other than petty fogging of the issue by academics.

Mensuration signs

Tempus	Prolatio	Sign	Semibreves	Minims	Modern		
					1:4	1:2	1:1
perfectum	maior	⊙	○○○	↓↓↓ ↓↓↓ ↓↓↓	9/8	9/4	9/2
perfectum	minor	○	○○○	↓↓ ↓↓ ↓↓	3/4	3/2	3/1
imperfectum	maior	⊕	○○	↓↓↓ ↓↓↓	6/8	6/4	6/2
imperfectum	minor	⊖	○○	↓↓ ↓↓	2/4	2/2	2/1

The system evolved, and the earlier time divisions became longer. Shorter notes became the basic beats, and Mode and Long Mode pretty much became irrelevant. The indication of the Tempus on the staff became a Circle to show perfection, or broken to show imperfection. Likewise, a dot at the center of the circle showed prolation major, or minor when the dot was gone. The "C" became our "Common Time" and a line through it showed 2/2, our "Cut" time.

As a practical matter, there is no difference, of course, between 4/4 and 2/2 time, except how often the conductor's hand falls.

This was the precursor to our modern time signatures, showing number of beats above note type of the beat. (2/2 is two beats indicated by half notes. 3/4 is three beats indicated by quarter notes. A one over the bottom number is the note type of the beat, the top number is how many of them in a measure.)



The Franconian Notation Rules:



1. A long before a long is perfect. (three beats)
2. A single breve (one beat) must form part of a perfection. It can, therefore, either imperfect a leading or a following long. (make the long two beats)
3. When two breves stand between two longs, the second is imperfected (becomes two beats instead of one)
4. Three breves between two longs perform a perfection by themselves.
5. Four or more breves between two longs will be divided into threes (perfections) and leftover single breves must imperfect one of the leading or following longs. If two breves are left over, the second is imperfected into two beats.

The *divisio modi* or *signum perfectionis* was a short vertical line, or later a dot, (not to be confused with the similar mark for a rest at that time, or the modern dotted note) which was placed between two notes to indicate that they were NOT part of the same perfection. This was used to clarify when multiple readings could be made of the same grouping. *Example: long-breve-breve-long could be transcribed in modern notation as **dotted half, quarter, half, dotted half**, or could be **half-quarter-quarter-half**. A dot between the breves forced the second interpretation. It divided the perfections.* This also applies between semibreves in the same situation for prolatio.

The rules for the ligatures, still in use from the old Rhythmic Modes, were basically adapted from the old rules.



Note Combos in ligatures: the Franconian rules



1. Any unmarked square note by itself is a breve.

Two note rules:

2. If the first notehead is flagged downward, it's a breve.
3. If the first note is flagged upward, the next TWO notes are semi-breves.
4. If the second notehead of a ligature is a box, it's a long.
5. If the second notehead of a ligature is an oblique, it's a breve.

Three (or more) note rules:

6. All ligatures in the middle of a group, of three or more, are breves.
7. Any middle ligature note with a right-hand downward flag is a long.
8. If the last note of a descending group of notes in ligature is of a different length, shorter or longer, than the preceding notes, it was indicated by making the final note oblique, descending, or turning the top note to the right, ascending. (This was to avoid confusion with the plica, an added grace note up or down at the end of a ligature indicated by an up or down flag.)

This is by no means a complete list of the rules and usages, often varying in frustrating ways, for the budding transcriber. By the 1400's, practice became practically baroque, with colored note heads, filled and hollow notes, and strange rules only used for short times and in local areas. The problems these strange flourishes of the rules were trying to address is what led to our modern system of notation, substantially in place by 1550 or so.

Old methods tended to bleed over from previous eras, and still do. We still haven't lost the old concept of variable numbers of beats a whole rest can represent, for example. A whole rest is often taken to mean three beats or four depending on the time signature. So in 3/4 time, you can have either a whole rest or a dotted half rest representing the same three beats to fill a measure.

Eventually, the system will rationalize in favor of whole rests always being binary, and not having them in 3/4. The point is that the creation of the system of musical notation is still a technology in progress, even today, though the basics were in place well before the Elizabethan era. We owe our Medieval musical ancestors for *all* our present ability to symbolically describe the process of creating music. It was indeed a great technological achievement.

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