More on musical time

Eamonn Bell - Fundamentals of Music S002 F'16 - Reading due 9/15/16

Much of the emphasis in the first two classes has been on pitch. That is, how low or high is a given musical sound. An accurate and useful notation of music also must include information about the duration of that sound, and its emphasis. These notes are designed to complement but not replace reading from Snodgrass by going into a bit more detail. Snodgrass doesn't use the very useful term tactus; instead, she refers to the "main beat." For our purposes, this is equivalent to tactus.

Rhythm is the characteristic of music given by the relative duration of the sounds and silences (notes and rests) that make up a passage of music.

We can also speak of "the **rhythm** of" a passage of music to refer to the specific durational patterning (be it regular or irregular) of the notes in that passage. When we tap along to the melody from the Beethoven symphony (long, short-short etc.), respecting the various durations, we tapped out the rhythm of that passage (in this sense).

We can also speak of "a **rhythm**" in the abstract, which refers to a hypothetical, pitch-free, tempo-free, timbre-free thing - usually notated on a stave with a single line.

So the word **rhythm** has at least three subtly different senses. It's important to be aware of them, since you'll encounter all of them, in different contexts.

A **beat** is a repeating, equally-spaced pulse.

The **tactus** is the repeating, equally-spaced pulse (a beat) to which listeners tend to match their actions (conducting, tapping, dancing) along with a piece of music. Snodgrass calls the **tactus** the "main beat" (p. 8).

> Think back to the opening of the second movement of Beethoven's Symphony No. 7. Before we tapped along with the melody, we naturally tapped along at a rate of two tactuses per measure. Now imagine (or try) tapping along exactly twice as fast, or twice as slow. Does it feel less comfortable? More forced? In both imaginary cases (faster or slow), you are tapping a beat (see definition above). But only in class were you tapping the beat that was the **tactus** (the main beat).

Beats (and as a corollary, **tactuses**) are grouped into larger units through the use of **barlines**.

A group of **tactuses** thus delineated by a pair of **barlines** is called a **measure** (or bar).

Tempo is the duration, in real terms (clock time), of the **tactus** in a passage of music. It is usually set once, at the beginning of the piece, using one or both of two complementary methods:

1. Metronome markings, which indicate the precise number of beats per minute (from which the real duration of the tactus can be inferred) to be set using a metronome.
2. The use of words referring to speed (and affect) or their foreign-language equivalents (Slow, Fast = *Bewegt*, Moderate = *Moderato*), which have accrued specific connotations for tempo through usage and convention.

Meter is the regular alternation of strong and weak beats in a piece, as felt by a listener.

The **time signature** is a notational device with a number of complementary functions with regard to rhythm and meter. The **time signature** - unlike rhythm, meter, tempo, and tactus - is not strictly a characteristic of music as heard/felt/danced, but a characteristic of music as notated.

> The time signature defines the number of **tactuses** in each measure.
>
> The time signature suggests the duration of the **tactus**: e.g. is it a whole-note, a half-note, a dotted half-note?
>
> The time signature suggests how the **tactus** can be divided by the composer into smaller durations, sometimes called sub**tactus** divisions.
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> A consequence of these these facts is that the **time signature** unambiguously defines the location of barlines (recall the definition of barlines).
>
> The time signature *suggests* - but does not completely determine - the nature of the regular alternation of the strong and weak beats in a piece i.e. its **meter.** For example, most waltzes have the time signature 3/4 (oom-pah-pah/strong-weak-weak). The time signature helps us orient the location of the strong beat in each repeating unit: at the start of the measure. But another piece in 3/4 (for example, a sarabande) might have a different stress pattern. Meter is strongly context-sensitive. It is not fully captured by the time signature.
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> In the past, time signatures communicated information about the **tempo** of a piece. There are still echoes of this practice today.

As you know from the textbook (Snodgrass p.7-14 to review), there are a number kinds of meter that are suggested by time signatures, which can be categorized by concatenating one choice from each of the following columns (e.g. compound triple, simple quadruple etc.)

- simple - compound	- duple - triple - quadruple

Simple meters have a tactus that can be divided into two equal parts. For time signatures indicating simple meters, the lower number of the time signature indicates the relative duration of the **tactus**, while the upper number indicates the number of tactuses per measure.

Simple meters only	
Lower number	**Duration of tactus**
1	Whole note
2	Half note
4	Quarter note
8	Eighth note
16	Sixteenth note

Worked example: the time signature 4/4 denotes **simple quadruple** meter. 4/4 is **simple** because the tactus can be divided into two equal parts. The tactus is a quarter note (lower number, from table); it can be divided equally into eighth notes. 4/4 is **quadruple** because there are four tactuses per measure.

Compound meters have a tactus that can be divided into three equal parts. To represent a compound meter, the upper number of the time signature indicates the total number of *divisions* (not tactuses) in each measure, while the lower number indicates the relative duration of those *divisions* (not the duration of the tactus). From this information, we then calculate the number of tactuses per measure (Snodgrass, middle of p. 10), knowing that each tactus must be divided into three equal parts. It's not given "for free" in the time signature, as it is in the case of simple meter.

Compound meters only	
Lower number	**Duration of subdivisions of tactus**
1	Whole note
2	Half note
4	Quarter note
8	Eighth note
16	Sixteenth note

The most important takeaway is that the upper and lower numbers of a time signature have different meanings when they are used to denote simple and compound meters.

Note there is not a one-to-one correspondence between these names and all possible time signatures. By way of example, 3/8 is a **simple triple** time signature. So too is 3/4. This is because they have In the case of 3/8, the level of the **tactus** is the eighth note. What is the level of the tactus in 3/4? Hence, these labels are a just a way of classifying the plethora of time signatures that are out there. They are not a way to uniquely identify them. There are, for example, a number of distinct **compound triple** time signatures. Can you think of three? Most are not in common use; all are theoretically (and practically) possible.

Finally, it is very common for musicians to collapse the distinction between **time signature** and **meter**. The discussion of simple vs. compound meter above tries to avoid that conflation, but struggles, because the two concepts are intimately linked for historical and pragmatic reasons. We will often say that a piece is "in" 3/4 meter, and our primary source of evidence for this will be the composer's choice of time signature, which seems (and often will be) unambiguous about the question of meter. But sometimes the musical context will make our feelings about meter less certain. It will become obvious that while the time signature (a notational device, an aspect of music as written) helps us organize musical time, it does not fully define meter (which is an aspect of music that we feel). We will talk about this at Thursday's class meeting on 9/15.