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Simple and Compound Time Signatures Re-Examined

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Abstract

This handout was created for music minors and non-music majors, most of whom enter my class with some music background. They typically have some understanding of simple meters like 2/4, 3/4, and 4/4. Compound Time is typically a difficult concept to teach, so this handout treats compound meter a bit more in-depth than some textbooks. This handout would be appropriate for not only music minors and non-music majors, but also remedial music theory classes for music majors or even Music Theory 1 classes. I believe it could also be used in high school AP classes.

There are three worksheets that accompany this handout. The first two have been combined into a single file, since the JMTP website allows for uploading only 3 files.

And, as indicated in the attached handout, I refer to a previous (unnamed) handout that deals with dotted and undotted notes. I have already submitted that.

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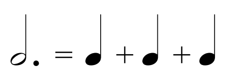
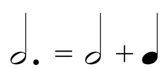
Meter signatures developed and evolved over a period of several centuries in an ongoing effort to accommodate the music that was being written at the time, and to make it as easy as possible for any musician to be able to perform music accurately and satisfactorily. That is still true today. There are different ways to describe and explain meter signatures. This handout expands upon the traditional explanations. We will begin by reviewing five points:

1. ***Dotted notes***: You have likely learned already two ways of understanding dotted notes:

(i) A dotted note comprises three equal divisions of the next smaller note value:



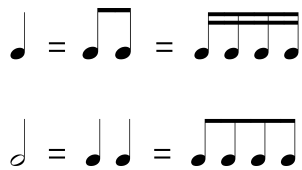
(ii) A dot increases the value of the undotted note by 1½ times its value:



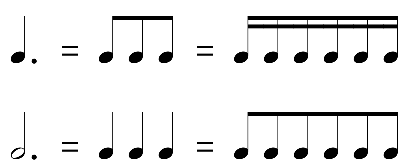
2. ***Ties*** are musical symbols that tell us to combine the durations of two or more notes of the same pitch; instead of using the + sign as in the examples above, a musical score would show combined note values this way:

Ties can be used to combine note values within measures, in order to have a clear visual representation of where a new beat begins (as in the first measure of the following example in 2/4); or across measure bar lines, when the intended duration exceeds the number of beats in a measure (as in the second and third measures of the following example):

3. ***Simple Meter***: Any meter in which the beat regularly divides into two equal parts is called a simple meter. We can see from our *Understanding Undotted and Dotted Notes* handout that the beat unit in a simple meter would therefore be an undotted note, since undotted notes divide equally into two smaller undotted notes, and subdivide into four equal undotted notes, as shown below:



4. ***Compound Meter***: Any meter in which the beat regularly divides into three equal parts is called a compound meter. We can see from our *Understanding Undotted and Dotted Notes* handout that the beat unit in a compound meter would therefore be a dotted note, since dotted notes divide equally into three smaller undotted notes, and subdivide into six equal undotted notes, as shown below:



5. ***Beats per Measure***: Duple, triple, and quadruple are terms that refer to how many beats are in a measure: 2, 3, or 4, respectively. Both simple and compound meters can be duple, triple, or quadruple.

• *Be sure you understand this information before moving on*—you may want to review the *Understanding Undotted and Dotted Notes* handout.

Why do we need both simple and compound meters? Because music in which the beat divides into two parts generally has a different feel from music in which the beat divides into three parts.

Musicians as far back as the Middle Ages recognized this. They struggled to develop a way to notate music to indicate these differences, and that development continued for several hundred years.[1] Think, for example, of any march you know, perhaps, Sousa's "Stars and Stripes Forever," or "Yankee Doodle." You could easily march to either of these, and both of these are in simple duple meters. Many people experience music in simple meters as having an up-down feel to it.

Now, contrast those songs with any number of nursery rhymes such as Jack and Jill, Humpty Dumpty, Little Bo Peep, or Heigh Diddle Diddle; or such songs as Pop Goes the Weasel, Over the River and Through the Woods, The Mulberry Bush, or Row, Row, Row Your Boat. Notice how these nursery rhymes and songs all have similar rhythms, what we might refer to as lilting rhythms, or even sing-songy rhythms. These are the rhythms of childhood. These nursery rhymes and songs are all in compound meters. Many people experience music in compound meter as having a swaying, swinging, or rocking feel.

I. Simple Meter Time Signatures

(i) **Beat Unit**: ***Any undotted note*** can serve as the beat unit in a simple meter: a whole note, half note, quarter note, eighth note, sixteenth note, and so on. The meter signature will identify which it will be for any given piece.

(ii) **Upper number**: An upper number of 2, 3, or 4 signifies a simple meter, regardless of the bottom number, and identifies the meter as duple, triple, or quadruple (i.e., two, three, or four beats in the measure), respectively.

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[1] For an excellent and entertaining video on the development of Western notation, see Howard Goodall's "Notation: The Thin Red Line," https://www.youtube.com/watch?v=NOuHKlpkOmE

(iii) **Lower number**: The lower number of the signature (1, 2, 4, 8, 16, etc.) represents an undotted note value and identifies the note getting the beat. Additionally, the bottom number also signifies how many beats the whole note gets. In 4/4, the whole note gets four beats; in 4/2, it gets 2 beats, in 4/8 it gets 8 beats; and so on.[2]

(iv) **Beats per measure**: A simple meter signature tells you that in 2/4, for example, there will be the equivalent of:

2
4 (th) notes in every measure.

The quarter note will get the beat and there will be 2 beats in every measure.[3] Similarly, in 4/8, there will be the equivalent of:

4
8 (th) notes in every measure.

The eighth note will get the beat, and there will be 4 beats in every measure. And so on. The chart in Figure 1 below shows some common simple meter signatures, along with the note value that gets the beat, and the normal division of the beat.

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[2] For more on this, see the *Understanding Undotted and Dotted Notes* handout.

[3] I have adopted this layout from David Newell, *Teaching Rhythm* (San Diego, CA: Kjos, 2008), 188.

Figure 1

Simple Duple	Simple Triple	Simple Quadruple	Beat Unit	Division of the Beat
2/4	3/4	4/4	♩	♫
2/2	3/2	4/2	𝅗𝅥	♩ ♩
2/8	3/8	4/8	♪	♬

The chart in Figure 2 shows the same simple meter signatures as Figure 1, but rewritten so that the lower symbol of the signature shows the actual note value that gets the beat. This makes the note value explicit. We will consider this type of notation again when we discuss compound meters.

Figure 2

Simple Duple	Simple Triple	Simple Quadruple	Beat Unit	Division of the Beat
2/4 = 2/♩	3/4 = 3/♩	4/4 = 4/♩	♩	♫
2/2 = 2/𝅗𝅥	3/2 = 3/𝅗𝅥	4/2 = 4/𝅗𝅥	𝅗𝅥	♩ ♩
2/8 = 2/♪	3/8 = 3/♪	4/8 = 4/♪	♪	♬

II. Compound Meter Time Signatures

Like simple meters, compound meters can have 2, 3, or 4 beats in a measure, making them duple, triple, or quadruple. But we obviously need a different set of meter signatures to distinguish them from the simple meter ones. We need a time signature that will tell us that the beats are regularly dividing into *three* parts, rather than two, because this is what gives compound meters their characteristic feel.

So, in a ***Compound Meter***:

(i) **Beat Unit**: ***Any dotted note*** value can be the beat unit: a dotted whole note, a dotted half note, a dotted quarter note, a dotted eighth note, a dotted sixteenth note, and so on. The meter signature identifies which it will be for any given piece.

(ii) **Upper number**: An upper number of 6, 9, or 12 signifies a compound meter, regardless of the bottom number, and identifies the meter as duple, triple, or quadruple, respectively. (We will see how it does so momentarily.)

(iii) **Lower number**: The bottom number of the signature (1, 2, 4, 8, 16, etc.), which represents an undotted note, is ***not*** the note value getting the beat.

Why?? Because unfortunately, we have no numeral that can indicate the dotted beat value in a compound time signature—musicians had to come up with a different system. Consequently, in compound meters, the bottom number had to equal something other than the beat unit. Therefore, unlike simple meter signatures, compound meter signatures cannot show us directly what note value is getting the beat, nor how many beats are in a measure. It tells us those things only indirectly (as we shall see momentarily).

(iv) **Time values per measure/division of the beat**: What compound meter signature can tell us directly is that in 6/8, for instance, there will be the equivalent of:

6
8 (th) notes in every measure.

Likewise, in 12/4, there will be the equivalent of:

12
4 (th) notes in every measure.

And in 9/2, there will be the equivalent of :

9
2 (half notes) in every measure.

And so on for all compound meters. In this respect, they are exactly the same as simple meter time signatures—they tell us how many of a certain type of note will fit in a measure.

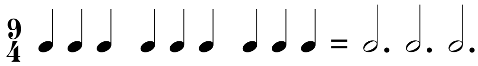
But they do not, can not, indicate *directly* the note value getting the beat because the bottom number signifies an undotted beat value rather than the dotted note beat value. What the bottom number *does* signify is the *division* of the beat. It follows, then, that it will take three of the bottom note value to equal a single beat. Thus, in 6/8, three eighth notes equal a single dotted quarter beat: 

And, since in 6/8 there must be the equivalent of six eighth notes in every measure, those six eighth notes will equal two compound dotted quarter beats:

6
8 (th) notes = 

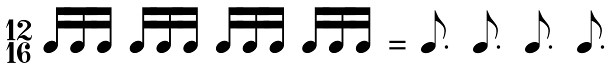
Similarly, we can see there are three compound dotted half note beats in 9/4:

9
4 (th) notes = 



Likewise, there are four compound dotted eighth note beats in 12/16:

12 4
16 (th) notes = ♪.



This principle holds true for all compound meter signatures: dividing the top number by 3 (the three divisions of the beat) gives you the number of beats in the measure. Adding together three of the bottom note values (the divisions) gives you the beat unit. Here is another graphic to help visualize this:

6/8 = 6 (÷ 3) = 2
♪ (x 3) = ♩.

The chart in Figure 3 shows the most common compound meter signatures, along with their beat units and divisions.

Figure 3

Compound Duple	Compound Triple	Compound Quadruple	Beat Unit	Division of the Beat
6/8	9/8	12/8	♩.	♪♪♪
6/4	9/4	12/4	𝅗𝅥.	♩ ♩ ♩
6/16	9/16	12/16	♪.	𝅘𝅥𝅯𝅘𝅥𝅯𝅘𝅥𝅯

It would be ideal if we could use the note value itself in place of the lower number, as in the chart shown in Figure 4 below (similar to Figure 2). Such a system would show us explicitly how many beats are in a measure (top number) and what note gets the beat (bottom note value).

Figure 4

Compound Duple	**Compound Triple**	**Compound Quadruple**	**Beat Unit**	**Division of the Beat**
2 ♩.	3 ♩.	4 ♩.	♩.	♫♪
2 𝅗𝅥.	3 𝅗𝅥.	4 𝅗𝅥.	𝅗𝅥.	♩ ♩ ♩
2 ♪.	3 ♪.	4 ♪.	♪.	𝅘𝅥𝅯𝅘𝅥𝅯𝅘𝅥𝅯

In fact, some modern composers use exactly these symbols for compound meters, but most music is not written this way—it is written in the traditional way. Nevertheless, it is an ideal way to *think* about compound meters. If compound meter signatures were notated as shown in Figure 4, they would be similar to simple meter signatures, in that the top number would tell you how many beats are in a measure, and the bottom symbol would tell you explicitly what note value gets the beat.

Another solution would be to put a dot after the bottom numeral, indicating a dotted note value, as shown in the chart in Figure 5. The top number would again tell us how many beats are in a measure, and the bottom number would tell us the note value getting the beat (dotted quarter note, dotted half note, etc.), almost exactly the same way a simple meter signature does.

Figure 5

Compound Duple	**Compound Triple**	**Compound Quadruple**	**Beat Unit**	**Division of the Beat**
2 4.	3 4.	4 4.	♩.	♪♪♪
2 2.	3 2.	4 2.	𝅗𝅥.	♩ ♩ ♩
2 8.	3 8.	4 8.	♪.	𝅘𝅥𝅯𝅘𝅥𝅯𝅘𝅥𝅯

Unfortunately for us, neither of these two ideal systems were considered back in the Medieval and Renaissance periods, when meter signatures were evolving into the standard system we have today.[4] (Sorry!) Nevertheless, even if you do not see music written as in our systems shown in Examples 4 and 5, they still offer profitable ways to conceptualize compound meter signatures. The chart in Figure 6 combines the information from Figures 3, 4, and 5 to help you visualize the compound meter signatures with their units of beat, and number of beats per measure.

[4] Very early time signatures contained circles, broken circles and dots to indicate whether the meter was duple, triple or quadruple, and whether the division of the beat was into two or three parts. Our modern-day symbols for "Common Time" (𝄴) and "Cut Time," or "Alla Breve" (𝄵) are direct descendants of that system.

Figure 6

Compound Duple	**Compound Triple**	**Compound Quadruple**	**Beat Unit**	**Division of the Beat**
$\frac{6}{8} = \frac{2}{♩.} = \frac{2}{4.}$	$\frac{9}{8} = \frac{3}{♩.} = \frac{3}{4.}$	$\frac{12}{8} = \frac{4}{♩.} = \frac{4}{4.}$	♩.	♫♪ (3 beamed eighths)
$\frac{6}{4} = \frac{2}{𝅗𝅥.} = \frac{2}{2.}$	$\frac{9}{4} = \frac{3}{𝅗𝅥.} = \frac{3}{2.}$	$\frac{12}{4} = \frac{4}{𝅗𝅥.} = \frac{4}{2.}$	𝅗𝅥.	♩ ♩ ♩
$\frac{6}{16} = \frac{2}{♪.} = \frac{2}{8.}$	$\frac{9}{16} = \frac{3}{♪.} = \frac{3}{8.}$	$\frac{12}{16} = \frac{4}{♪.} = \frac{4}{8.}$	♪.	𝅘𝅥𝅯𝅘𝅥𝅯𝅘𝅥𝅯 (3 beamed sixteenths)

To Summarize: Any meter signature with a 6, 9, or 12 as the top number will be a compound meter, regardless of the bottom number:

- An upper number of 6 tells us there are 2 compound beats per measure
- An upper number of 9 tells us there are 3 compound beats per measure
- An upper number of 12 tells us there are 4 compound beats per measure

Bear in mind the the beat unit of a compound meter signature will always be one note value *larger* than the bottom number, and dotted, as follows:

- If the bottom number of a compound signature is 2, the beat will be a dotted whole note;
- If the bottom number of a compound signature is 4, the beat will be a dotted half note;
- If the bottom number of a compound signature is 8, the beat will be a dotted quarter note;
- If the bottom number of a compound signature is 16, the beat will be a dotted eighth note.

III. Subdivisions of the Beat in Simple and Compound Meters

We have already looked at the divisions and subdivisions of beat units in simple and compound meters, but it is also important to understand what each individual division or subdivision equals in a given meter. Figure 7 shows the single note values for common portions of a beat in simple meters.

Figure 7

Simple Meter Time Signature	Beat Unit	1/2 Beat (Division)	1/4 Beat (Subdivision)	3/4 Beat
2/16, 3/16, 4/16	𝅘𝅥𝅯	𝅘𝅥𝅰	𝅘𝅥𝅱	𝅘𝅥𝅰.
2/8, 3/8, 4/8	𝅘𝅥𝅮	𝅘𝅥𝅯	𝅘𝅥𝅰	𝅘𝅥𝅯.
2/4, 3/4, 4/4	𝅘𝅥	𝅘𝅥𝅮	𝅘𝅥𝅯	𝅘𝅥𝅮.
2/2, 3/2, 4/2	𝅗𝅥	𝅘𝅥	𝅘𝅥𝅮	𝅘𝅥.

So, for example, the following three rhythmic figures in 4/4 would equal $1^{1}/_{4}$ beats, $1^{1}/_{2}$ beats, and $1^{3}/_{4}$ beats, respectively:

Figure 8 shows single note values for common portions of a beat in compound meters.

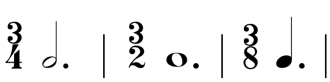
Figure 8

Compound Meter Time Signature	Beat Unit	1/3 Beat (Division)	1/6 Beat (Subdivision)	2/3 Beat
6/16, 9/16, 12/16	𝅘𝅥𝅮.	𝅘𝅥𝅯	𝅘𝅥𝅰	𝅘𝅥𝅮
6/8, 9/8, 12/8	𝅘𝅥.	𝅘𝅥𝅮	𝅘𝅥𝅯	𝅘𝅥
6/4, 9/4, 12/4	𝅗𝅥.	𝅘𝅥	𝅘𝅥𝅮	𝅗𝅥
6/2, 9/2, 12/2	𝅝.	𝅗𝅥	𝅘𝅥	𝅝

Thus, the following three rhythmic figures in 6/8 would equal $1\,^{1}/_{6}$ beat, $1\,^{1}/_{3}$, and $1\,^{2}/_{3}$ beats, respectively:

IV. More on Ties in Simple and Compound Meters

Because dotted notes comprise three smaller undotted notes, they are often used in simple meters to represent a three-beat note value. For example, in 3/4, a dotted half note gets three beats, in 3/2, a dotted whole note gets three beats, and in 3/8, a dotted quarter note gets three beats, as shown below:



The situation is different in compound meters, where a dotted note can represent the beat unit, a two-beat duration, or a four-beat duration, but never a three-beat duration. Why? Recall that if a dotted note gets the beat, the next larger dotted note value equals two beats, and the next larger one equals four beats. This is illustrated below, where the dotted quarter note is the beat unit, the dotted half note equals two beats, and the dotted whole note equals four beats.

Therefore, in order to represent a 3-beat note in a compound meter, we must tie a 2-beat note to a 1-beat note. This principle holds for any compound meter in which you can have three beats (i.e., a meter with a top number of 9 or 12):

V. Transposing Between Meters

When we understand what note value gets the beat in a given meter, we can transpose music from one meter to another. For example, knowing that the quarter note gets the beat in 4/4, and the dotted quarter gets the beat in 12/8, we can transpose from one to the other. Below, the song "London Bridge" is first notated in 4/4, then it is transposed to 12/8. Both versions sound identical: in each case there are four beats to a measure, and there are one-beat, two-beat, and three-beat durations present. Note that a tie is required in the final measure of the 12/8 version since there is no three-beat note in a compound meter.