Musical Time & Rhythms

(Simplified)

Every Time-Signature * Every Song-Beat Variation

Easily Explained.

By W. E. (Bill) Powelson

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Smashwords Edition
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*** Lesson Menu ***

Study the following (seven) stair-stepped-lessons in the exact order they appear.

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Lesson #1. The 5 Basic 4/4 Dance-beats

First things first: It's very important to gain a working knowledge of the 5-basic 4/4 dance-beats. Learn to 'routinely' identify them as you listen to everyday music on your own CDs, the radio, and all other media. This is equally important for non-drummers. It's very easy. Most of you will get the hang of it in minutes.

Drummers: Can you already play those 5 beats (below) along with almost any song as you listen. If so, you will be happy to know that they are the key to literally 18 quintillion unique and different beat patterns you will be discovering before you put this book down, just an hour from now.

Non-Drummers: (Song writers, guitarists, etc.) It's important that you to should gain the ability to 'hear and feel' these basic beat structures within the music as you listen, improvise, create and/or play. You don't have to be a drummer to do this! It's easy as pie! Learn to do it in this lesson.
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You've heard these patterns before, countless times. But they are at the hub and they form the backbone of all the music we enjoy every day. Now you'll learn to listen this new way, identifying those specific beat structures by name, and visualizing the underlying beat structures and their many variation possibilities, as they occur within today's popular music.

Note: Many times, the hi-hat (or secondary pulse) may actually become a repeating Arpeggio, on instruments, other than drums. Those 5 primary structures will be there even if there are no drums within the music.

Factoid: Approximately 95% of all the recorded music of the past 75 years, has been based in these simple, 5 basic dance-beats and only a limited number of variations and syncopated versions. We will explode those variations and syncs into the quintillions by lesson six.

All Students:

It is good to write and doodle simple variations of the beat patterns and variations as you hear them being played on recordings. Begin experimenting with pen or pencil, and simple 'Xs' on paper.

* Listen to a recording. Determine the consistent count of the song.

* Determine the basic beat flow and structure by feeling the hi-hat flow (or secondary pulse).

* Determine the bass/snare (downbeat/upbeat) as compared to the hi-hat and/or the secondary pulse.

* Write what you are hearing, by imitating the 3-line beat structures you'll see and learn in this lesson.

It's that simple! You'll get good at doing this, with just a little practice. The remaining lessons in this mini-course are also designed to help you eventually become a master at visualizing, then quickly and easily writing or playing almost any rhythm or beat pattern that may exist.

Have you ever wondered exactly, 'how many' potential beat-variations exist? (Yes, there is a specific, finite number of possibilities.) For example, there are exactly 4,294,967,296 ways to vary basic dance-beat #3, the common 8th 4/4 rock beat. Of that immense number of possibilities all of our greatest drummers (collectively) are playing and using approximately only about 80 of those potential 4.3 billion beats. I hope to place all 4.3 billion beat patterns into your mind as you study the permutation lessons coming up. (Good luck with being able to play each one, it would take a couple of lifetimes just to play that many beats one time each.) Yet, just knowing that those beat variations exist and exactly how they exist will serve as an innovation portal or launchpad to those seeking greater and deeper originality. This knowledge when fully utilized will take popular music to brand new levels. It is my hope that you or some of you will be the chosen one's who may launch entirely new and different eras of music styles.

Have You Ever wondered?

* How many of these beats, have been used and popularized on recordings? (Ans: **Very few**!)

* How many, have **never** been used or popularized in pop-music styles? (Ans: **Most of them!**)

* Is there a formula to help separate the useful beat patterns, from the less useful patterns? (Ans: **Yes!**)

It's important to ask yourself those questions above! Yet, you are about to make some very huge discoveries concerning them, by the end of this mini-course.

Note: This first chapter (Basic Beats) is for those who do not know it already. You'll need all this in order to visualize and see the big-picture in the later lessons. Though we are focusing on drumming techniques here . . . these same beat patterns may occur as arpeggios and/or relative background rhythms on instruments other than drums. This knowledge applies to all musicians and all music styles, especially the writers, composers, creators, innovators and cutting edge artists.

The bulk of modern music is based on these few simple beat patterns. Learn these beats and play drums with any song. Playing music will come natural, and you will be playing by 'ear' once you have mastered these rhythms. As a bonus, you'll be learning to read drumming-notation too. This is the absolute, easiest possible way to learn to read and understand all musical rhythm.

*** The Secret *** First memorize each of the following beats to a point where you can repeat them rapidly. Then, turn on a radio, or put on a favorite CD. No drums necessary. Tap on your lap or anything handy.

Listen deeply into the background of whatever song may be playing, and try to 'feel' the basic beat pattern that is being used within each song. No matter what song you are hearing, it will be based on one of the following 5 beats, 98% of the time . . .

Simple, Easy Steps:

* Memorize all 5 basic beats.

* Categorize each new song you'll hear into one of the 5 beat categories.

* Feel the basic beat pattern of the song.

* Begin playing along in-time with the beat of the music. It'll be automatic if you have done all of the above.

As you study and learn these beats, notice that a mathematical pattern becomes evident between the speed or tempo of the beats, and the number of cymbal (hi-hat) notes being played. Slow songs require more fill notes on the cymbal and fast songs require less. They work like gears that will give you full command of all tempos fast or slow.

No matter what style of music you listen to, you'll be playing along automatically, the very next time you turn on your radio, or listen to your favorite CDs. (It will occur naturally if your ears are working, once you've adequately memorized the following 5 beats.)

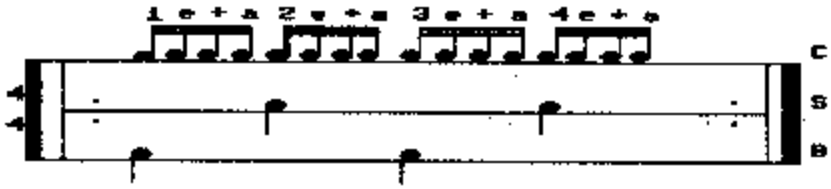
Important tip:

Simply repeat the beats 'as if' you were on a real drum set. Pound on the desk or anything near-by, and pat your right-foot on the floor for the bass-drum. Repeat each pattern until it flows naturally, without thinking. Practice them from memory during your idle moments, wherever you are, as you go through your day.

Shortly after that, no matter what songs play on the radio, you will discover that you can listen for the drums a few seconds, then join in, and play along . . . almost like magic. When that begins to occur (and it will), proceed with the other lessons.

Memorize These 5 Beat Patterns

Dance beat #1:



16th 'Slow Rock' 4/4

Approximately 7 songs per 100 will utilize some form of this basic beat (song-structure)**.**

Can You Read the Beat Below?

I am assuming that you can read and understand these patterns **. . .**

How to read the above beat:

The **top** line (**C=C**ymbal) is your **right-hand.** The **center line** (**S=S**nare) is your **left-hand** and the **bottom** line (**B=B**ass Drum) is your **right-foot**. When a note falls directly below another, both notes are played simultaneously.

Simply tap on your knees, the coffee table or anything handy.

Place a r**ight-foo**t with the **first of four** right-hand notes and a l**eft-hand** with the **first of the next four**. Repeat, repeat, repeat until it becomes second nature. Keep it steady. Be able to play it both slow, then faster as you develop confidence. (You'll add it to your bag of tricks within 15 minutes of steady

repetition.) It's a crucially important beat structure in modern music. I'm estimating that approximately 7% of all music is based in this beat structure. In real numbers that may amount to 7 to 10 million previously recorded popular songs.

Hint: On top of the 16th rock example (above) you will see the counting procedure. It often helps to say the actual words "one, ee, and, aah, two, ee, and, aah", and so on. You will be saying "and" with each "+" that you see. Pat your foot as you say "one" and tap your left hand as you say "two". Follow through and keep it going. (If this counting procedure helps, use it.; otherwise ignore it.)

Dance beat #2: 6/8 'Blues'

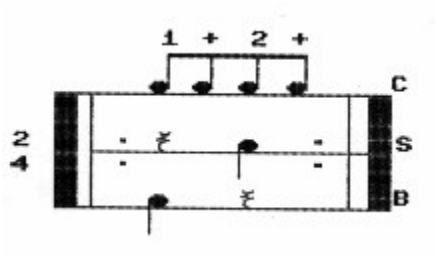
Approximately 7 songs per 100 will utilize some form of this basic beat.

Count: 1 2 3 4 5 6

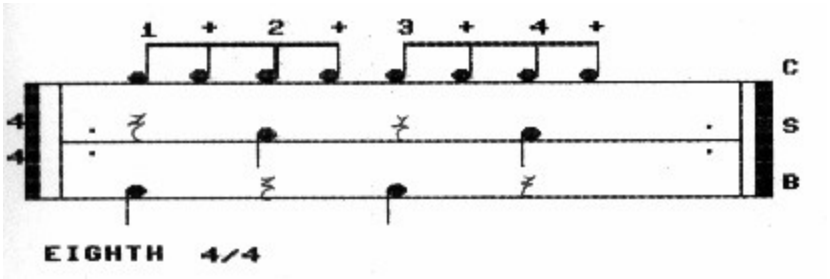
Dance beat #3: Eighth 'Rock' 4/4

Approximately 45 songs per 100 will utilize some form of this next basic beat. This (below) is the 2/4 version. A measure of 4/4 will contain two repetitions of this pattern.

2/4 Version



4/4 Version



So; no matter how many ways we write these beat patterns, they're still the same beats. The confusing thing about that is the fact that each different way we write a pattern gives it a new or different technical name. The technical names get crazy and for that reason, we may also hear 30 or 40 different street

names for each beat. Few musicians actually know the correct technical names! This book will simplify all that, if it catches-on. At least it will simplify everything for those of you who read and understand.

This is a medium tempo beat. Remember; faster tempos (speeds) require less notes on the cymbal per repetition and slower tempos require more. That is an extremely important point. These beats work like gears. The right-hand notes on the cymbal are like the teeth in a gear. The more teeth in a gear, the slower it turns. I normally teach 8th Rock first, because so many songs use it. Almost half of all the songs you'll hear will use some form of this beat. By Lesson 4 we will explode it into 4 billion variation possibilities that have rarely seen the light of day. Lesson 4 is where the real innovation for you begins.

Dance beat #4: 6/8 'SWING/SHUFFLE':

Approximately 20 songs per 100 will utilize some form of this next basic beat.

This pattern is tricky. It is actually a fast way of playing Dance Beat #2, the Blues Beat. In order to play it faster we're actually resting on the second and fifth right-hand cymbal notes. This creates a loping feel. You almost need to hear a song that uses it. A popular song from the 80's comes to my old brain. If you can find a copy of this it will help you feel the rhythm. “Gonna Be A Heartache Tonight” by the Eagles is a classic Shuffle pattern. This beat structure dominated the early to mid 20th Century of popular music styles. More than half of the music from the 1920's to the mid-1950's was based in this beat structure.

(Count): 1 2 3 4 5 6 (rest on 2 & 5)

The Jazz and Swing musicians of the 1930's, 40's and 50's eliminated yet another cymbal, (the second cymbal note) and called it Swing. The Swing era began around the mid-1930's and lasted into the 1950's. A predominance of Modern Jazz is based on the Swing beat which is a (faster) first cousin to Shuffle. They're both derivatives of the Blues Beat. In other words they are simply faster versions because they have less teeth in the gears, (ie; or secondary pulse / cymbal line).

Though the Swing and Shuffle beat patterns are associated with a lot of older music, neither will never fall out of fashion or use. Many, many songs of this current era and every era will be based on different forms of these two very similar beat patterns. (It's a math or gearing-ratio thing!) Swing and Shuffle may fade and then return, but they'll never completely disappear.

Notice the eighth rests on the cymbal line. Think in groups of three but omit the middle cymbal of each group. . . (what a nightmare). Listen for songs that use it and try to play along. Move ahead if you are having problems. One day, the perfect favorite song will come along, and you'll just know . . . it's Shuffle or Swing by the loping feel.

NOTE: These patterns may be written many various ways. Only the most simple forms are being shown here.

Dance beat #5: Quarter note 4/4 or 'Quarter Rock'

Approximately 5 songs per 100 will utilize some form of this very simple basic beat and they are almost always extremely fast.

This is a dance beat with many nicknames. It may be called Quarter rock, Double-time, Cut Time, Jazz, Breakdown, Uptempo, Quick-time, Punk, Polka or others that I haven't mentioned. If a song is fast . . . really fast, then this is probably the beat to use.

Next Lesson . . .

Understanding note-values and rhythm terms: This is basic knowledge. Many of you may already know these things. Scan it quickly to be sure. Linger and study, if you have doubts. This knowledge is **very** important towards understanding the bigger picture to come, in the later lessons.

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Lesson #2: Rhythm Terminology, Symbols and Note-Values

Do you understand the mechanics of the note-value system? A deeper study and 'total comprehension' of note-values may be necessary, or you could experience trouble as you try to visualize the big rhythm picture within the upcoming time-signature lesson. We need these note-value tools to help detonate the big bomb that will follow. Though it's admittedly a little dry and boring, don't miss it!

Question: (Test yourself.)

Could you start (in a very slow tempo) and play whole-notes through at least 16th-notes, without losing or changing the tempo? You needn't be extremely fast at this . . . but the 'note value concept' is vital to learning the other more important things I want to show you. Try to play the notation 'tab' (below), from memory. It will be quick and easy, if you already know your stuff.

Non-Drummers: Guitarists, song-writers, etc. You needn't worry about playing the drum-tabs as a drummer would. Just make the mental connections, and understand those connections as they apply to your own instrument, (or instruments).

Or . . . play around with a drum machine program. Enter and listen to some of the beat-patterns.

Note: This info is for those who do not know it already. You'll need all this to see the big-picture in the later lessons. If you already know all this, just scan quickly and move on to the next lesson.

What do we mean by note-values?

When we speak of note-values we are simply talking about slicing a specific (measure) or length of time into smaller (fractional) portions. It is not very much different from measuring the time of day on any clock. When we're measuring rhythm though, the length of time being measured is shorter and that length of time may vary. We may count rhythm many various ways and at different speeds.

What is Tempo?

The word 'tempo' is Latin for time, or more accurately in the musical sense, the speed at which we play or feel a piece of music. The drummer must feel the tempo of a song before trying to read or play it.

What do we mean by Beat?

The 'beat' or 'meter' of a song is determined by its count. We count some measures of songs in sections of fourths with the beat count being a repetitious, one, two, three, four. Other songs may be measured differently. This count and/or beat flow is determined by the time signature. 4/4 is indicating four fourth-note counts to the measure, where 6/8 is indicating six eighth-note counts to the measure.

What is a time signature?
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The time signature is a formula that determines the counting process for each measure in a particular musical piece. For example 4/4 is a time signature formula that tells us to count a piece of music in fours. The **top** number tells us '**how many**' counts and the **bottom** number tells us '**what kind**' of notes are being counted. In the case of 4/4, the time signature is instructing us to feel and count four/fourth notes to each following measure.

What do we mean by 'Down Beat'?

The 'down beat' is always the first count in each measure. It's usually the recurring 'boom' sound of the music and falls on a '**one**' or '**three**' count in 4/4.

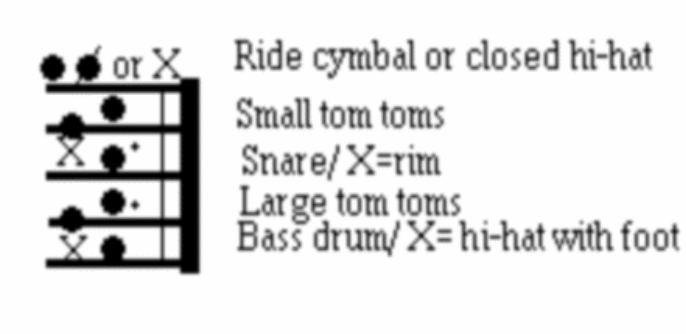
What do we mean by 'Up Beat' or 'Back-beat'?

We aren't speaking in terms of the 'up' position of the conductors wand, here. The 'upbeat' (in this context) is the 'offbeat' or the 'negative' cycling flow of a beat pattern. It's always the counts of 2 and 4 in common (4/4) time signatures. To state it simply, it's usually the repeating, accented 'snap' of the snare sounds, within a repetitious beat pattern. That 'snap' sound is a thing we learn to feel and lock onto. The drummers primary job in most modern music is to lay the (snare) back-beat into the music in such a way that even the listener can feel it. It's the (hypnotic) thing that makes people jump, clap and dance.

We normally write drum notation on a music staff like any other instrument. The music staff usually consists of five lines and four spaces. Each piece of the drum set will occupy a specific line or space on the staff. The writer should always offer a 'code' that explains these designations to the reader.

Sample Staff with Code:

The Music Staff



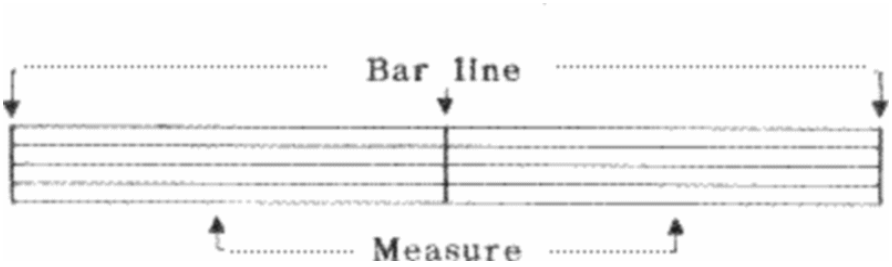
Note: Extra lines are sometimes added to the staff when an abundance of percussion/drum parts deem it necessary.

What is a Bar?

In music notation a bar is a vertical line or divider used to mark off the 'measures' to represent equal segments of time.

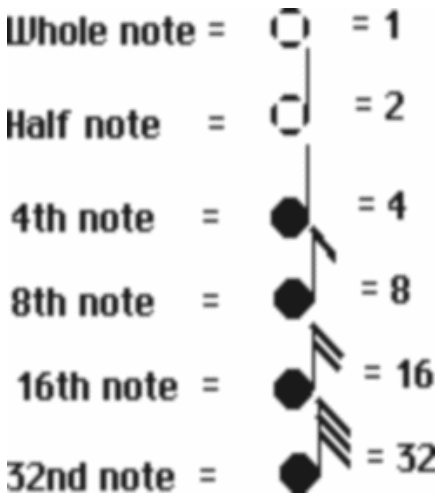
What is a Measure?

A 'measure' is the space between two bars. It is the segment or slice of time that is to be counted as indicated by the time signature. We often refer to a 'measure' of music as a 'bar' of music. I'm showing two full 'bars' or 'measures', in the illustration, below.



Note-values

Note-Value (Number Representations)



Triplets:

A triplet is simply a way of expressing or playing three notes within the time of two. For example, three half note triplets will occupy the same space and time as two half notes. Three quarter note triplets will occupy the same time as two quarter notes. A form of triplets will exist for every note value, from whole notes to sixty-fourth notes and beyond. This will be a little easier to understand as you study the exercises below. Beginning students may wish to skip whole, half note and quarter note triplets at first. These triplet forms will make more sense after you have been playing a while longer.

Special Note: Whole note triplets will be possible in 8/4 time but they are not mathematically possible in 4/4.

For the sake of simplicity, I've omitted whole-triplets in the tab below, since they are so rarely used and this exercise is written in 4/4.

Reading note-values:

The following illustration will help you visualize the way that note-values work together to create a visual picture of common rhythms. The notes on the top line are to be played on the snare (or computer desk) and the (quarter) notes on the bottom line are to be executed with the right foot or bass drum. The right foot or bass drum should remain in a steady tempo as you play all the snare notes. When you can play this entire exercise forward and backward without losing (the bass drum) tempo, you will be at genius level. It is very difficult, so take it in stages. Gain the ability to play the most important part, whole-notes through sixteenths.

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Skip over the half-note triplets and quarter-note triplets as you try to play the following string of note-values below. They are explained in-depth (later). There is a very human reason they may seem so
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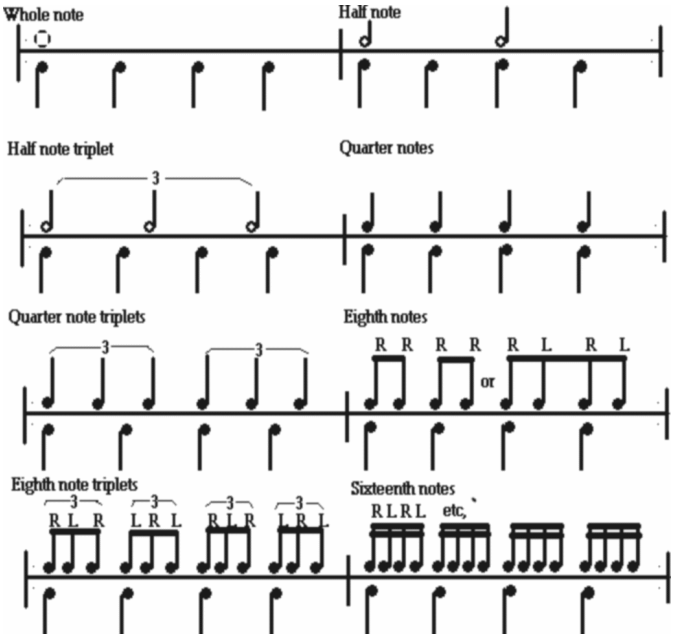
difficult to play. They almost always will require extra special study. Simply be aware that they do most definitely exist in the (note-value) fractional and mathematical scheme of all rhythms.

Dotted Notes:

A dot beside any note-value or rest will increase the value by half. For example, a dotted half-note will have the same value as three quarter-notes. A dotted quarter-note will have the same value as three eighth-notes and a dotted sixteenth will equal three thirty-second notes. Since sustaining or holding a note is difficult with most percussion instruments, the note should be struck and counted. The actual sound of the note will usually die-out, long before the count is complete**.** Yes! It's mathematical madness. Dotted-notes could and should be avoided and/or eliminated completely, (if the arrogant and lazy writers are the least bit concerned about clarity).

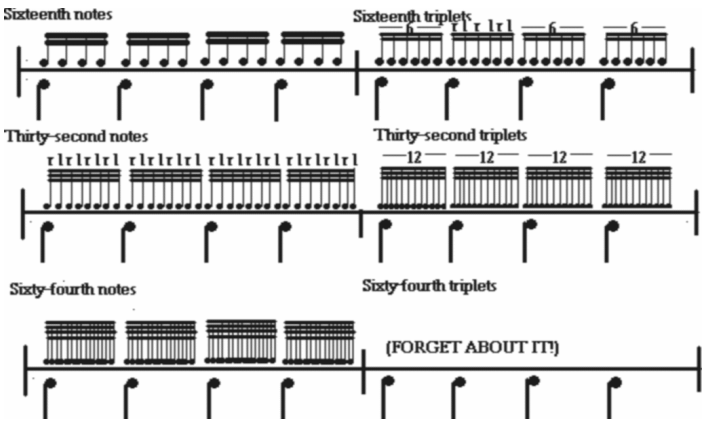
Dotted notes and figures were apparently added in the 16th and 17th centuries to help composers and writers avoid the effort required to write various rests, from 64th rests to whole-note rests. This addition to the process has added greatly to the phobias musicians everywhere encounter as they are struggling to read music notation. In chapter six I'll show that dotted-notes should now be eliminated entirely.

Try to play the following tab while patting the foot in steady quarter-note beats.



With that accomplished, try playing from sixteenths to sixty-fourths.

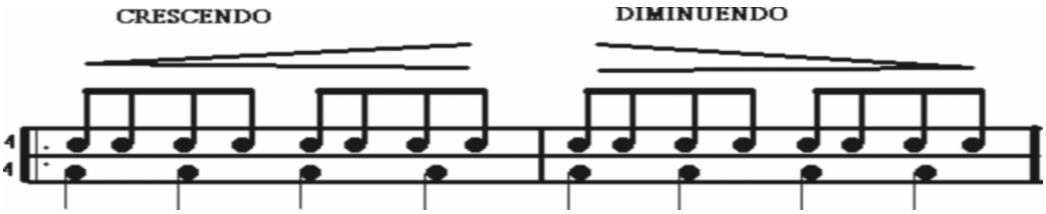
Next, try working backward from sixty-fourths.



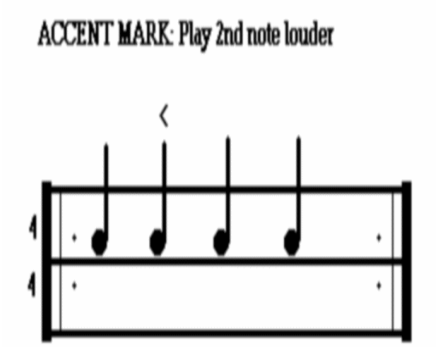
Other Musical Expressions and Signs

Crescendo: This is a musical symbol that may be placed over a series of notes, telling the player to increase volume from soft to loud.

Diminuendo: A musical symbol placed over a series of notes, telling the player to begin loud and decrease volume to very soft.



Accents:



When the < (accent mark) is placed over an individual note it indicates that the player should play that note louder than the rest.

Encouragement: Do not drive yourself crazy trying to master the lesson above. If you only have a vague understanding of the concepts; it should prove adequate. Your ability and full comprehension will improve with time, deeper thought and experience. The mind is a magic instrument. As you ponder the above (admittedly dry and boring) concepts and begin to recognize the various note-value abstractions when listening to your favorite music, the puzzling and confusing aspects will all come together in a natural way. Many great working musicians fail to fully comprehend all this. They may play and execute these various note-value relationships beautifully as they play what they feel and 'hear' 'by-ear'. In other

words the 'mind' will often comprehend these theories in an almost sub-conscious way though the conscious mind may not fully understand the abstract visual mathematical symbols, connections or the words and images on paper. Somehow, the ears understand naturally what the eyes may not fully comprehend.

For Example: Notice the half-note and quarter-note triplets as you are reading and trying to play the various note-value types (whole notes to 16ths), above. Those two (very special) triplet patterns are very difficult for the visual/aural mind to conceptualize, because they are essentially counter-rhythms. Half-note triplets in 4/4 equate to a 3:4 counter-rhythm if the right-foot maintains the steady 4 count as one or both hands try to play a steady 3 against the 4. It can take a very long time for the eyes and/or the 'ears' to fully comprehend such a concept completely. Though it appears simple on paper, it isn't. It actually amounts to playing two different tempos at the same time. The human mind wasn't designed to multitask in that way.

The quarter triplet pattern is the same way. It's is actually a 3:2 counter-rhythm (played twice in a bar of 4/4). It might more accurately be called a 6:4 counter rhythm. To execute them perfectly in long repeated streams will produce two different tempos (one based on a 2 or 4 count, while at the same time playing a steady 3 or 6 count simultaneously. It is only natural for our minds to freak-out completely when trying to execute ideas like that. If they boggle your brain, it's only normal and natural. Skip them if necessary. As long as you understand the (fractional) mathematical way they exist within the note-value scheme, you'll be okay with the rest of the lessons.

Lesson #3: Permutations (Part I)

(The Many Faces of the 8th 4/4 rock beat)

Be certain you thoroughly understand the following **Permutation** concept. It's vital towards helping you see the much bigger picture within the upcoming time-signature lesson. This material is rarely (if ever) taught in music theory. I'm seeing it as quintessential to elementary rhythm theory. It should and could be taught from the 6th grade on up. Again; total mastery isn't the objective. See the **Big Picture**!

Math Buffs and computer programmers may already have a general idea concerning the musical-implications of these concepts, yet it will be wise to visualize exactly, the very simple and practical way it all connects to the music we hear playing around us every day, on CD's, radio, etc.

Non Math Buffs: Don't worry! We won't be studying the fine points of 'Linear Algebra', here. It'll be totally clear, without seeing even one equation, algebraic-formula or finite-math problem.

Study Both Permutation Lessons until you can visualize, thousands, even millions or billions of 8th rock beats within your mind's eye. Write a few of these real beats on paper. Play around with them! The more we think, the bigger this gets! But, this is only the tip of the Iceberg. This is the stuff that explodes the time-signature formulas. It will detonate later. However, this lesson will expand your 'rhythmic knowledge base' by several billion beat possibilities now . . . and we'll multiply this knowledge by a factor of another trillion (or so) as we connect these same principles to all the time-signature formulas, and their respective note-value modifications.

What it a Permutation?

Now I must introduce you to a new word. The word is permutate and that is what we are going to do to the poor little rock beat and all the other basic dance beats as well. The dictionary defines the word "**Permutate**" primarily as:

"**An alteration of arrangements or a changing of the order of a set of things.**"

For drummers, the "set of things" is the way we may vary the snare or bass drum against the steady or constant cymbal rhythm. Simply put; the number of cymbal notes in the measure will tell us precisely how many variation possibilities (permutations) exist per measure within that particular basic dance beat structure. This means that virtually any measure of any piece of music will contain a specific number of rhythmic variation possibilities based on the steady cymbal note "flow" (aka; secondary pulse). We may assign each variation possibility a logical number name on a chart that I will explain in a moment.

Are you confused yet? Just shake your head and continue, it gets easier! Don't worry if math is not your best subject, I have already done all the math work. However, if you are interested in learning about the actual math and how it works I have added the formulas at the end of this section. Math-phobes should totally ignore that page completely.

65,536 Rock beats per (4/4) measure

We will examine the existence of 65,536 Rock variations in a moment. Each of these beat possibilities abides theoretically in every measure of any song in the eighth rock category. You will also discover that the concepts learned here will apply to every form of any conceivable time signature. This means that the number of beat possibilities gained from this knowledge will be astronomical. We will get to the time signature stuff later.

The important thing is awareness! We are learning the mathematics of rhythm. Once we completely understand the structures, we will be more inclined towards more innovative discovery as we play and jam by feel and by ear.

Can you read and play the song-beat structure below ?

If you can read and understand the pattern the pattern below, the remainder of this study should be easy.

Remember:

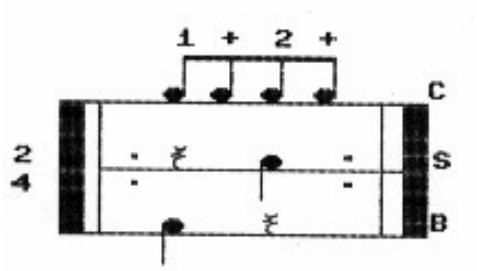
Top line = Cymbal (**right hand**)

Center line = Snare (**left hand**)

Bottom line = Bass drum (**right foot**)

The top line is the secondary pulse.

Our challenge is to discover all the rhythmic possibilities that are contained within this beat pattern. We may place snares or bass drum notes anywhere, and in any order, along their respective lines. How many possibilities exist? Think about it for a minute . . .



Question (or clue): How many ways might we alter or change the snare patterns when repeating 4 cymbal notes repetitiously?

Question (or clue): How many ways might we alter or change the bass drum patterns when repeating 4 cymbal notes repetitiously?

There are 16 total possibilities for each, the bass and snare. In fact, it's the **same** 16 for each. Each of the 16 may be mixed or combined with any of the other 16. This is the embryo of a system that will produce more dance-beat variations than you can imagine. Stay with me and I guarantee it will be worth the effort. The chart on the next page will explain in detail, but there are still some things to explain before we get down to business. First of all, we need to set a few guidelines to insure that the full benefit will be realized from this lesson.

Note: Some of the beat patterns created from the (**Quad Chart**) below, may reverse the polarity or the downbeat/upbeat flow of the music. It is very uncommon (but not wrong) to hear those patterns in typical

popular music. So I have devised a coding system that should enable you to work with only the beats that will be most useful.

The coding is very simple. If you see an "**S**" above a pattern then that pattern will best function as a snare idea. Likewise, "**B**" works best as a bass idea. You will also see "**S/B**" for ideas that may be used for either the snare or bass. "**Inv**" indicates an inversion which can be utilized as either a snare or bass example. An inversion is a pattern that is neither on or off the beat, it is actually in between the counts. Inversions can produce some very interesting rhythmic effects but might be best avoided in the beginning because they tend to confuse the downbeat/upbeat flow, without actually reversing it.

Computerized drum machines can easily play most of these patterns but it will take a human mind to do the programming.

With all that out of the way, continue and have a look at the **Quad** chart . . . It will help you to visually connect the dots and those connections will (eventually, we hope) kick your ears and imagination into high gear. It is virtually impossible (due to time constraints) to memorize and use all the beat patterns that are about to form within your mind. The broad or **Big Picture** is the important thing. It's important to understand how these patterns exist and the immense numbers involved. Whether we can play them all isn't the important thing.

Permutations: Part II (Quad Chart)

CODE:

Cymbal = C

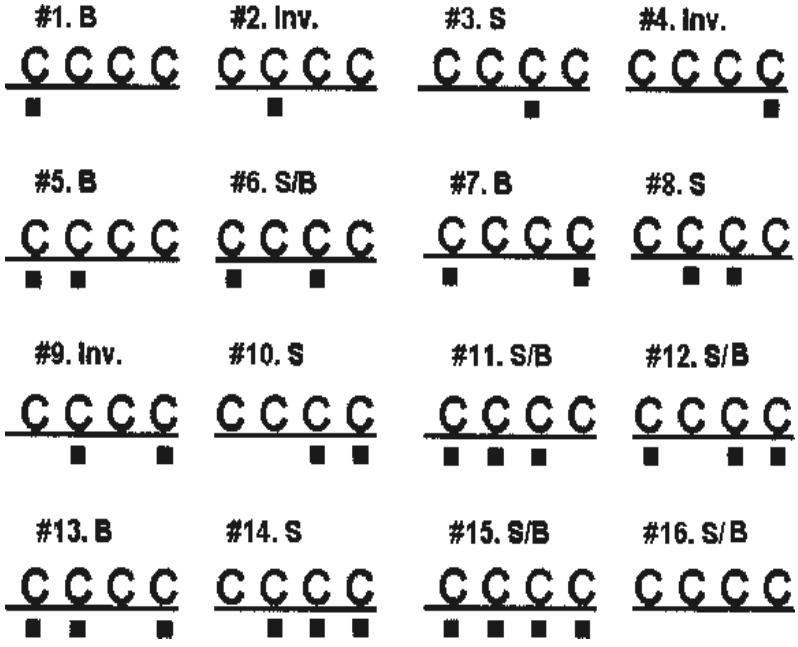
Snare = S

Bass = B

Snare or Bass = S/B

Inversion = INV

Note: When writing rhythms, stick with the coding. Do not place "**B**" type patterns on the snare line or "**S**" type patterns on the bass line. This will reverse the downbeat/upbeat flow of the music. Inversions (**Inv**.) Can be utilized but they often confuse the flow. "**S/B**" type patterns may be used on either line.

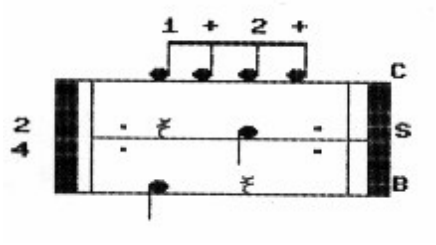


Using the Chart to Create Half Measure Rock Beats

Now let's use the above chart to create a familiar beat. You will be playing four repetitious notes on the cymbal. Next, choose pattern#3 for the snare line and pattern#1 for the bass line. Do you recognize this beat? It is basic rock with a new name. By the chart we would call it S3/B1.

Constructing S3/B1 (basic rock)

Are you beginning to see how the chart can help you to discover Billions of new rhythms? Grab some scratch paper then write and play a few patterns of your own. Eighth 2/4 contains a total of 256 possible variations.



Project for proper comprehension:

HINTS: Some of these beats will be very difficult to play even for pro-drummers.

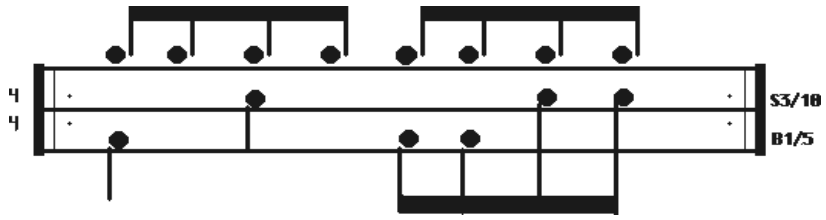
1. Play all sixteen bass patterns against **S3** on the snare as an early project.

2. Then play all sixteen as snare figures against **S1** on the bass.

3. Avoid a mixture like S12/B13, they are guaranteed to drive you insane.

Awareness should be your main goal. There is not enough time remaining in your life to play every beat that we are about to discover. If you understand how the chart works to produce 256 half measure beat variations, then you are probably ready to move on.

Let's investigate some possibilities with 8th "rock" 4/4.



Notice: I often omit 'rests' from the music notation samples as they have a tendency to confuse the newer students. I'm trying to keep everything as simple as possible.

Locate these numbers on the chart. On the snare line you see numbers **3** and **10** while on the bass we have numbers **1** and **5**. This means that there are 256 half-bar variation possibilities that may be mixed with any of those same 256 possibilities in a **whole** bar of 4/4. Each beat variation is unique in its own way. It means you are currently visualizing 65,356 potential (unique) beat variation possibilities that will exist within the 8th 4/4 beat structure. The whole concept should have hit you like a ton of bricks by now. If it hasn't, keep thinking until it has. Try writing a few more whole bar (4/4) variations.

In eighth 'rock' 4/4 you will discover **65,536**, single measure beat possibilities and nearly 4.3 billion, two measure patterns. Also, no rule says you must stop with two measure variations though most commercial music seems to limit itself to that to that.

If we consider syncopations or playing snare or bass notes in-between the steady cymbal flow, the two bar totals swell to over 18.4 quintillion unique and different forms of 8th-note 4/4, the classic rock beat. All

the drummers in the world (collectively) have used only about 80 of the potential 18.4 quintillion possibilities over the past 80 years. Are you seeing the potential for innovation, yet?

Food for thought:

With permutations in mind you should now return to the Basic Dance Beats lesson, scan over the various beats and think, think, think. You will hopefully be flooded with awareness. This same general permutation theory will apply to any form of any time signature, including all the primary 3/4 and 4/4 dance beats. The Blues beat will use a chart based on three or a '**Tri'** chart. The shuffle beat is based on the same '**Tri**' chart as well except with rests on the cymbal line. Remember too, the Shuffle and Swing beats are essentially based in triplets as the secondary pulse (hi-hat). This means that the same permutations for the Blues Beat will also exist within the other two (Swing and Shuffle). However; they will sound totally different because the gearing mechanism (secondary pulse or hi-hat) is different and the tempos are greatly increased. Those increased tempos will often render some of the (Shuffle and Swing) permutations as near-impossible for average human ability. The plot thickens as we study the **Waltz** beat, coming up right after this short pause for the math buffs. If math isn't your favorite subject, skip immediately to the Waltz lesson.

Permutation Formulas: If finite math isn't your bag, don't panic. You'll find it easy to comprehend and play every beat in this e-book without ever seeing the upcoming page. You may skip this if you wish. I'm actually only including this page for those who get into this sort of thing.

Formulas for Finding Permutation Combinations:

The dictionary defines the word "**Permutate**" primarily as:

"**An alteration of arrangements or a changing of the order of a set of things.**"

As we study this e-book we are most concerned at the moment with discovering the exact number of bass/snare variations and syncopations contained within 8th-note 2/4 and 4/4 time-signature modifications.

The number of permutation combinations or arrangements of n things taken r at a time, where r < n, is

$$C(n,r) = \frac{n!}{r!\,(n,r)!}$$

So, what does that mean to us?

C = combinations

n = number of notes on the cymbal line (**right hand**).

r = number of bass (**right foot**) and snares (**left hand**) we wish to compute (r must be less than n).

! = symbol for Factorial.

The formula for finding the Factorial of a number is:

$n! = n(n-1)(n-2) \ldots 2.1$

For Example: if you wanted to find the Factorial of 4,

$4! = 4(4-1)(4-2)(4-3)(4-4) = 24$

$n! = 24$

Next, pretend we have four repeating notes on the cymbal (right hand), as in 8th 4/4 or 2/4. We would like to know how many ways the snare (only) could be varied against those 4 cymbals.

Note: We are not concerned with syncopations or hitting in-between the cymbals just yet though the same general concepts and formulas will explain them as well. As we consider syncopations later, we see that we will simply square the numbers which we will discover here.

Start with one snare and use the formula to find the number for one combination: then figure two, three and four and finally, zero counts as one permutation combination. Next, add all your totals. The number should be sixteen.

If we also figure the bass drum (**right foot**) the number will be sixteen again. It's the same problem. As we play, the objective is to know and combine each of the 16 bass permutations with each of the 16 snare permutations. This means we will square 16, or multiply 16 by itself. 16 X 16 = 256 total variations possible within every measure of 8th note 2/4. To find the number of variations possible within every bar of 8th-note 4/4 is easy. We square the number 256 again. As we square 256 variations we discover there are 65,536 possible variations in every bar of 8th-note 4/4. Squaring that number gives us the total possible variations within every bar of 8th note 4/4. Then if we square that number we'll find the number of syncopations that could possibly exist. That number is 4,294,967,296**.** It means that 4,294,967,296 individually unique variations and syncopations exist within every bar or measure of eighth-note 4/4.

Interestingly enough, it also means that there are the same number of variations existent within each bar of 16th 4/4 as well. They are exactly the same beat patterns that exist as syncopations in 8th-note 4/4; but as we play them in 16th-note 4/4 they aren't syncopated because we are playing them **along with** the cymbal notes and not **in-between**. This causes those patterns to take-on unique sounds of their own because of the greatly decreased tempos. It creates an entirely different feeling and different sounding flow for the music that surrounds it.

Syncopations are not often utilized within 16th 4/4, but the same math tells us there do exist 18,446,744,073,709,552,000 (18.4 quintillion) potential syncopated possibilities within each measure of sixteenth 4/4. They are rarely used because they tend to clutter most music with too much garbage and they are all very difficult to execute because of the speeds we might normally have to play them. (I should also add this: "Never say never".)

It should also be added here that two full bars of 8th-note 4/4 will contain the same numbers (18.4 quintillion) and in many cases the syncopations will work okay within those tempo frames.

Quarter-note 4/4 (Dance-beat #5) will contain similar numbers of essentially the same beat patterns though the cymbal line is reduced by half. Because of extreme tempo constraints we only see 65,536 permutations as practical and most of those border on near-impossible for most humans to play (as tempos increase).

Note: Almost any Freshman college algebra text book offer a much more detailed and qualified explanation of how these formulas might be used for rhythmic applications.

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Lesson #4: 3/4 Waltz

We are entering the realm of what is called odd-time, here. Three is an odd number. This means that the Waltz (song-beats) are actually Rosetta stones or a template towards complete understanding all the other odd time-signatures. Once the students can feel and play comfortably in 3/4 time, they will find that any odd-time will be based (partially) in those same 3 count (lopsided) song-beat structures.

Our 6th grade fractional math breaks down a little here too, because in the music realm, **3/4** = the **Whole** measure. It means we are counting **three fourth-notes** to every measure. Third-notes do not exist in written music so the rules of reading and writing musical times compensates by changing a few mathematical rules.

Waltz garners a reputation as a square and boring beat pattern, but it isn't at all. It's a bridge, or stepping-stone into the entire odd-time rhythmic universe. Be well aware of all the different forms of Waltz, and how the Waltz beats are affected by the permutation theories you've just learned above. See those connections! See the way the **5 basic WALTZ beats (in 3/4)**, mimic the **5 basic beats (in 4/4**). That's the important thing! They're both based within the same note-value framework, and that's a very important
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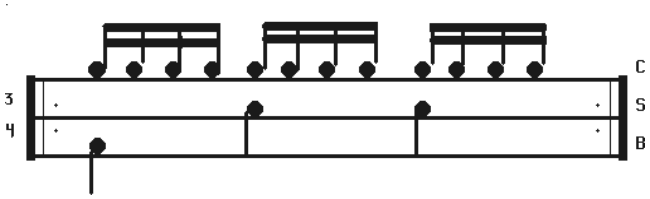
clue to all the other (odd/even) time-signature structures to follow. Everything odd (ie; 5/4, 7/4, 9/4 etc.), (partially) follows this same 3/4 pattern of note-value modifications and permutations! This awareness above, will be crucial to the eureka moment you are about to experience as you study time-signatures, with each of those previously mentioned elements in full view.

What is a Waltz?

The Waltz beat gets its name from a dance, based on three steps and a three-count measure. According to Webster, the term originated from Old High German *walzan*, meaning to turn or roll. It first appeared in 1781. The dictionaries and encyclopedias all seem to insinuate 3/4 time only. We will see in a moment that many variations of the Waltz dance beat may be written in any number of interesting time signatures. We will begin with the slower rhythms and move up to the quick tempo beats.

NOTICE: When it seems that musical symbols (rests) may confuse beginning students, I will avoid using them.

16th note 3/4 Waltz:



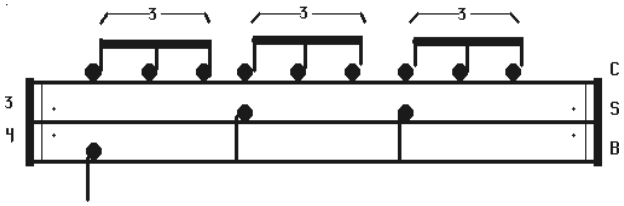
This rhythm hasn't really had its day in the sun. You will not hear many songs that use it. I say it is waiting for the right song or songs. After studying permutation theory you will be able to visualize at least 16,777,216 variation possibilities within this solitary form of Waltz not including syncopations. How many songs are you familiar with that use it? Go get 'em, songwriters!

8th triplet 3/4 Waltz or 9/8 Waltz:

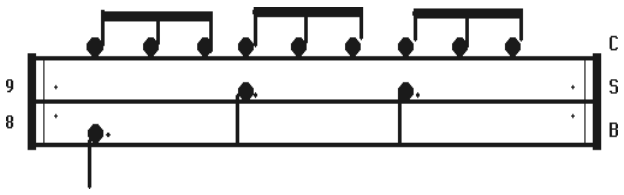
This next Waltz beat pattern (below) has become a very popular form of Waltz. You will hear this pattern used often in top 40, contemporary, gospel and country & western music styles.

When played at a comfortable tempo, it can take some drudgery away from playing the really boring songs. This beat contains 262,144 variations, not including syncopations. We need not write it exclusively in 3/4 time. I am showing two examples below, to help illustrate that point.

8th triplet 3/4 Waltz: . . . SAY **"1 an a 2 an a 3 an a", repeat, repeat, repeat.**



SAY " **1, 2, 3, 4, 5, 6, 7, 8, 9**".

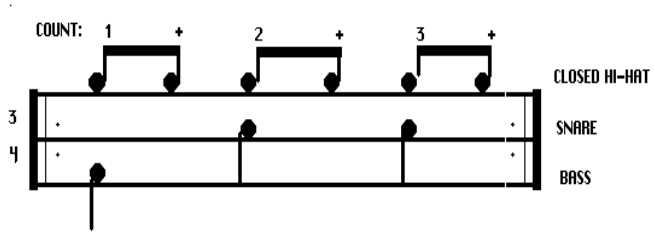


The 9/8 version above possesses exactly the same permutations and is played exactly the same. It is the same beat pattern and we could write it several other ways as well. Since we are now counting 8th-notes,

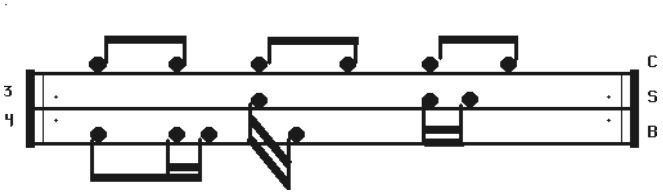
(not triplets), we . . .. . . SAY " **1, 2, 3, 4, 5, 6, 7, 8, 9**". The only things that change are the names, the notation (**notice the dotted quarter notes**), and the way we count it. Doh!

8th note 3/4 Waltz:

This next modification of 3/4 time may not seem especially exciting at first but with practice you will discover that it is a close cousin to the ever popular 8th 4/4 'rock' beat that has dominated the music scene for so many years. You will also quickly discover that it has inherited much of the same 'funk' potential as cousin 'Rocko'. After you gain a feel for 8th 3/4 you will find yourself jamming with variations, syncopations and fills on a new level. From that point, all you will need is a band that is innovative enough to create lyrics and music to fit the beat. We may squeeze up to 160,000 syncopated variations from this pattern. (Count: 1 an 2 an 3 an.)

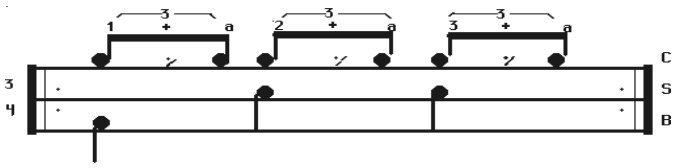


If you want something a little tougher, try the syncopated variation below. Also, experiment with a few similar examples of your own. This is an example of just one of the 160,000 cool syncs we can do in 8th 3/4.



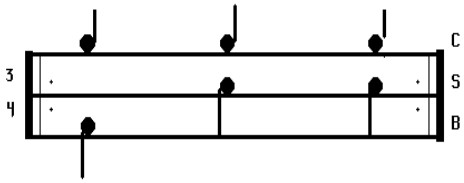
Shuffle 3/4 Waltz:

There are 8th rests in this next one that we can't live without. Count:"1 an a 2 an a 3 an a". Do not strike the cymbal as you say "an". Like Swing/Shuffle 4/4, it may take a while to get this one perfect. Don't worry about it if you are having trouble. Sometimes it will require just the right song before it will feel natural. Polish will come with time and experience, so be patient. Shuffle Waltzes are more prevalent in Country & Western music styles. We may write this pattern several ways, including triplet 3/4 or 9/8. Theoretically it exists with the same number of variation possibilities. It's the same beat pattern no matter how we choose to write it.



Quarter note 3/4 Waltz: Quarter note Waltz (below) is most often used with fast waltz tunes.

It is easy to play but a bit of a bore!



There is still much more . . .

Yes, I am afraid there is a whole lot more but then it may be two or three centuries before any of it will be of any practical use. For example, if you are up on your note-values. Some modifications I have excluded are:

*** 16th triplet 3/4 contains a whopping 6.87 billion permutations.**

* **32nd 3/4 contains 2.81474977e+14 variations.** This pattern contains some interesting 'disco' possibilities too. By 'disco' I am referring to playing a two-handed roll on the hi-hat while slipping to the snare on the counts of 2 and 3. There are 8 cymbal notes (secondary pulse) to each of the three counts in the measure.

*** 64th 3/4 . . . forget it!** (That's, 16 cymbal notes for each of the three counts in every measure.) It appears (at first glance) to border on ridiculous, but it's dangerous to say and think that. One day in the future a smash blockbuster-hit may use it in some splendid way which we might not imagine.

Next Lesson:

Time-Signatures: (1/1 to 64/64.)

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Lesson #5: Time Signatures

Now . . . we're about ready to explode the big bomb. The objective here is to implant every possible beat and/or every beat variation within the known musical universe, into your own mind . . . all in one sitting. Think a minute about what I just said, then repeat after me: “Yikes”!

It could happen within the next 5-minutes to 5-days. Much will depend on the amount of thought you devote to this project!

This knowledge will leave you bewildered once you've totally absorbed it. It should astound you completely! If it doesn't, there's something really wrong. It may be an indication that you just don't see it at all. Sometimes, students may need to read the Time-Signature lesson several times, and think for several days . . . before the obvious simplicities become apparent. This should become the most exciting musical knowledge you've ever gained in your life! Especially, with such 'little' effort. If you don't agree, it is an indication that the bomb didn't explode. You didn't get it. Study it again. Connect all the dots. It will happen. Think, experiment and explore.

This awareness is relative to several years of advanced rhythm theory classes in college, and you can have it in three or four days (maybe a few minutes) . . . just by thinking about it. What I'm telling you isn't sales hype. I'm not trying to sell you! I just trying to be sure you haven't missed it.

You may miss it . . .

* If, you do not adequately understand the note-value system.

* If, you do not adequately appreciate the 5 basic beats in 4/4.

* If, you can't accurately visualize and connect permutation theories to all time-signatures.
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* If, you do not connect the (note-value and dance-beat) resemblance between the 3/4 ; the 4/4 basic beat structures and all the others. Those (basic beat) frameworks recur throughout the entire time-signature system.

It's easy to miss any one of the above factors. The failure to connect any of the above, will lessen the much larger-picture immensely.

Let's face it. We're all a little 'mentally lazy' unless we know that our mental efforts will pay-off in a big way. This should pay-off in a very big way, now that we've laid the proper ground-work. Study it! Play with the possibilities on paper. Actually play what you've written. Hear it. Feel it. Play your ideas on a real drum set, preferably, or on a drum machine, or simply tap the possibilities on your desktop. Then . . . make it work the same way on any other instrument.

Non-Drummers (Tip): Build chord-progressions around the patterns you'll see and learn. Test the new rhythm structures you'll find, by composing songs around them. Add a haunting melody to the new beats, insert some meaningful lyrics, and do some serious innovating of your own. Many times, the hi-hat (or secondary pulse) may actually become a repeating Arpeggio or soft background rhythm, on instruments, other than drums. That's important to remember.

The time has come for you to create some original music! Generate music that's totally new, different and diverse. There's plenty of room for everyone to become an innovator . . . as each of these finite, though nearly endless possibilities, become apparent.

Almost any music instruction manual will teach the basics of time-signatures. The objective here is to take you far beyond all the basics, painlessly. Struggle through this lesson, even if it exhausts you mentally. This could be the most valuable music lesson you will ever take. I do not think you will argue against that point if you make it to the bombshell at the end.

Time Signatures

What is a time-signature?

A time-signature is fractional looking number, a formula that determines the count in a piece of music. A time-signature formula should always precede any written notation and may often change more than once in a song to show any changes in the counting procedure. Think of the time-signature as a code telling us how to count and feel a particular rhythm. Let us break that code to reveal its secrets, in this way:

4/4 is a common time-signature

The **top number** = 4, tells us **how many** counts per bar or measure = (Could be any number.)

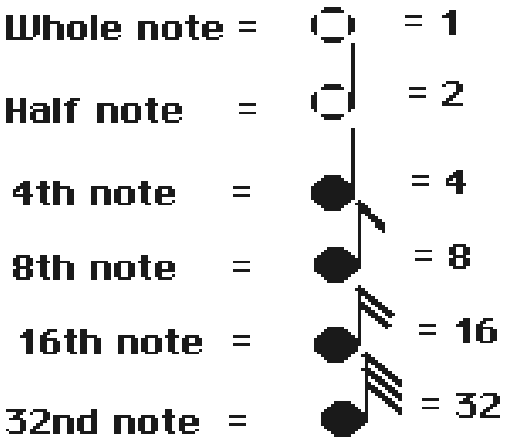
The bottom number = 4, tells us **what kind** of note we're counting. The bottom number (or denominator) must always represent a note-value, (or 1, 2, 4, 8, 16, 32, 64, etc., etc.)

What does this mean?

Our top number here is four. This means that each measure will have four counts. The top number can be any number within reason. Anything above 64 might be considered to be quite unreasonable.

The bottom number here is also four, indicating quarter notes. This means that each following measure must equal four/quarter (or 4th) notes.

The bottom number must represent a note value. We may figure out note value representations from the following chart:



Notice: A form of triplets will exist between each of the note-values. We will not be concerned with those triplets in this stage of the time-signature system. However; the importance of triplets will become obvious a little later as we study the dance beat forms of each time-signature.

How many different time-signature formulas are there?

The top number can be any reasonable number (1 to an arbitrary 32 or 64.) The bottom numbers may be any of the following 1, 2, 4, 8, 16, 32, 64 and so on. No specific limit on the number of formulas has been set as far as I know. To keep everything within reason we will use 32 as an arbitrary stop point. If you understand that much, you will be ready to take on the big dogs. So, to state it arbitrarily, you may have time-signatures running from 1/1 through 32/1 all the way through the note-value system (bottom numbers 1, 2, 4, 8, 16, 32). The last time-signature in this line of thought would be 1/32 to 32/32. Before anyone goes into a complete state of shock, let me say that many of these strange signature formulas are rarely used. About the only logical use for a time-signature like 1/4 or 1/8 might be to write a one count exercise in a music method book. Also, many (extremely redundant) beat replications appear within the system. For drummers this means that we often see the same beat patterns within all the different time-signature formulas which technically renames the patterns to a point of complete insanity. The notation and time-signature formula may look different but the beat will be one with which we are already very familiar.

For example: Check out the waltz beat lesson again. Notice that triplet 3/4 and 9/8 are actually the exact same basic dance beat. The names and the notation may change but the exact same beat variations, syncopations and permutations exist in each. There's no difference! This is the thing that has caused so much confusion within the music community for the past 500 years. It's the reason that most of us glaze-over at the very mention of time-signature theory.

This madness has existed since the 1500s when the geniuses of that era expanded the system to save a few (quill) pen-strokes. Most of those weird signatures are now completely antiquated in these days of computers and instant copying and printing technologies. Pen-strokes are no longer the issue. **Confusion is the issue!** The entire World is likely to remain completely confused until this knowledge you are currently absorbing, becomes mainstream and we take a unanimous vote to completely ignore all signatures that do **Not** have **4** as the **denominator**. Yes! I'm saying that every rhythm existent in the musical universe can easily be explained, diagrammed, written, felt, charted and played using **only** the X/4 signatures 1/4 through 32/4, (or 64/4 and beyond).

The rest of the story . . .

Most music instruction books drop you off around this point, leaving you to figure out the rest over a lifetime career. It is safer that way! The system is immensely complex in the way it was designed during the 16th, 17th and 18th centuries. I am going to try to take it a lot further, but I may need to argue with tradition more than some traditionalists will approve. In my opinion, if tradition is antiquated and unnecessarily trite without sufficient reason, it needs and begs to be challenged.

I have compiled most of the following information over many years, teaching, playing, dabbling with computer programming and drum machines. The teaching methods in the later half of this lesson are my own. I am using some explosive ideas in regards to describing rhythms and musical time, from the pop-music, and the working-drummer's (musician's) perspective. All this relates to the music styles we know and love today. If you know of any other book that uses these same ideas, please e-mail the details (Title, author and publisher) to me, so that I may obtain a copy. I will be forever grateful. Otherwise, I'll boldly state that you won't find the following information, anywhere but right here. By that, I mean time-signatures taught as popular song-beat structures that may be blown sky-high with permutation theory that describes each and every beat and beat variation in the musical universe. As far as I know, it has never been explained this way before. Plus; there will be some unique twists by the sixth lesson that I've never heard anyone mention before.

Time-signatures, note-values and Dance Beat Structures:

Notice: I originally taught these beats below in reverse order while illustrating (slow to fast) tempo relationships to beginners.

We will begin with something we already know, then build on it. Think about the 4/4 time-signature.

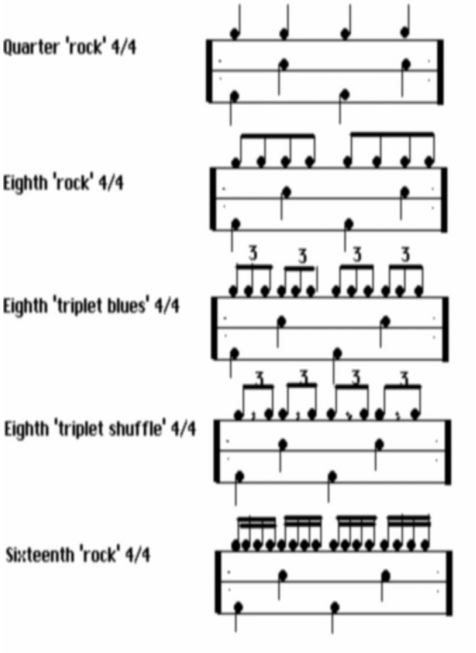
We learned in the 'Basic Dance Beats' lesson that 4/4 is made up of many basic (note-value) dance beat modifications. Each dance beat modification, gets its name from the type of note being used on the cymbal line (secondary pulse) and the time signature that is used to describe it. These primary beats are crucial to the entire design of the entire time-signature system.

Both 4/4 and 3/4 and all the time-signature formulas are based on the same note-value beat structures. Be fully aware that these same dance-beat patterns continue on through the entire time signature and note-value system. They're the secret to everything! For the sake of simplicity I haven't included all of the possible dancebeat or song-beat forms (below). The next in line would be **16th triplet 3/4**, then **32nd 3/4, 32nd triplet 3/4, 64th** 3/4 and so on. Those two in particular contain many absolutely incredible beat modifications too. They are loaded with billions of unique and fascinating permutations and syncs that have rarely (or never) seen the light of day. Just the same, I'm trying to keep all of this simple enough for everyone. I need to curtail some those complexities, except to say they possess considerable potential for innovation. If you are in full comprehension of everything we've discussed so far, and if you are in search of a way to do something very original with music, it's definitely there to be discovered.

Comparing 4/4 and 3/4 dance-beat structures:

The whole system works on this note-value dance-beat-structure principle!

Use your head and try to visualize the entire system again, one signature formula at a time. Now, reduce each time-signature into a hierarchy of dance beat patterns. Don't panic! I will help! Think about 3/4 and the system of dance beat patterns that exist there. You will see the same note-value (song-beat) structure repeatedly with every new time-signature.



Next, compare 3/4 to 4/4:

Remember the Waltz beat lesson?

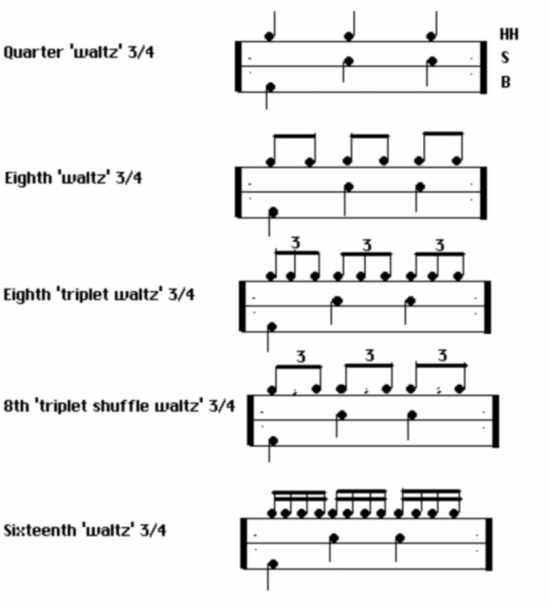
Disregard the 9/8 dance beat in that lesson. 9/8 belongs in the eighth family of signatures and that is another discussion, though it illustrates redundant nature of the time signature system as it currently exists. None of the X/8 signatures are necessary at all! We could dispense with them completely and never miss them. They are completely covered as we understand the 3/4 time-signature**.**

How do we play the many forms of 5/4, 7/4 and all the others?

You will be happy to discover that it is not as difficult as you might think. A repeating structure is at work here. It is a very ordered system and if we understand the basics of that system, everything will simply fall into place. If you fully understand 2/4, 3/4 and 4/4, they may easily be combined to show everything else.

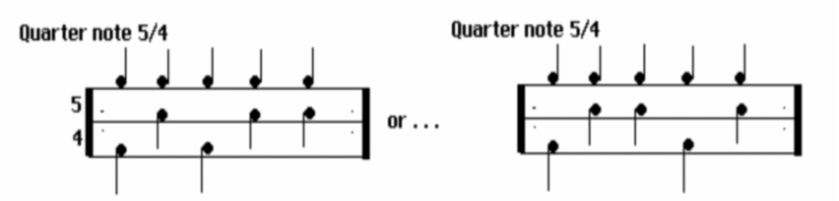
For Example: If you understand 2/4 and 3/4, put them together to illustrate 5/4. 7/4 is the combination of 4/4 and 3/4. It continues on like that all they way through the system. Could you understand, write and play the 1,048,576 variations of 8-note (the rock form of) 5/4? Do you see that if we include syncs there will be a grand total of 1,099,511,627,776 (over 1 trillion) unique and different (funky) ways to play the 8th (rock form) of the 5/4 structure. Next, consider the 16th form, the Blues form, Swing-Shuffle and even the quarter-note version.

Hopefully it just hit you in a blinding flash (or it will within the next few paragraphs). The other good news is that you already know the hardest part, if you have already followed the previous lessons within this mini-course. It all ties together! The basic beat foundations and permutation (variation and syncopation) theories all function in every time-signature as they did in 4/4 and 3/4 above. Now, stop and think about that. BOOM! I hope you got it, right there. Did the lights go on? (I heard the windows rattle.)



The Blinding Flash!

Are you beginning to see the whole picture now? What comes after 4/4? The answer is 5/4. Can you visualize that dance beat structure? Try writing a few of those patterns. 5/4 is really 3/4 and 2/4 mixed and it does not matter which comes first as long as it is consistent throughout, (see 'Quarter note 5/4 . . . below). I will help a little by furnishing the first . . . (Quarter note 5/4). You will need to grab a pencil and piece of paper then figure out the beat patterns that fall below it. As you are doing this, the entire system should unfold. (Remember too, this pattern could go on to **16th triplet 5/4** and **32nd 5/4** as well.)



Notice in the above illustration that the 2/4 and portions of 5/4 are reversed. This is acceptable provided the entire band stays together.

HINT: You will write the following:

Eighth 5/4

Eighth 'triplet' 5/4

Eighth 'triplet shuffle' 5/4 (Do not forget the rests on the top line).

Sixteenth 5/4

While you are at it, why not examine the following:

sixteenth 'triplet' 5/4; thirty-second 5/4; thirty-second 'triplet' 5/4 and sixty-fourth 5/4? (It's on the fringe of ridiculous! Or is it?)

These later beats are not extremely popular at this time. Who can speak for the future? Imagine a smoking bass guitar riff and screaming guitar ride as you play these patterns. Add a few lyrics, dye your hair purple, put a bone through your nose; you'll be ready for the big time!

What is next?

You can figure out the rest on your own. The next signature to study is **6/4**. This is an 'even' signature that contains all the same rhythms as 2/4 and 4/4. 6/4 **IS** those two combined. It will use the same 5 primary beat structures and their potential permutation possibilities.

NOTE: If the top number is even (**8**/4, **10**/4, **12**/4,etc.), you will usually be dealing with beat patterns that feel natural. They are all pretty much redundancies of 2/4 and 4/4. There isn't a lot to be excited about there.

If the top number is 'odd' (**7**/4, **9**/4, **11**/4, etc.) then the song-beats will have an unsettling lop-sided feel like, 3/ 4 and 5/4. Each is loaded with similar variations, permutations and syncopations.

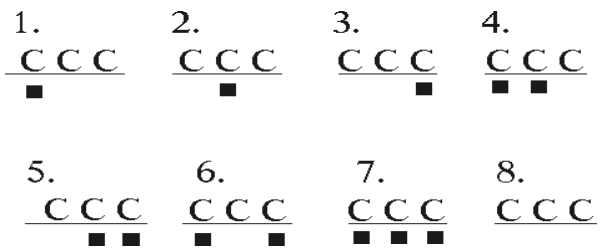
The Big Bombshell!

Did you study the permutations' lesson? Did you totally understand it? We only investigated one basic beat form of 4/4 in that lesson (Eighth 'rock' 4/4). Do you remember how we discovered 65536 simple variations and over 4.97 billion to 18.4 quintillion complex versions of that beat? Can you see how that theory applies to each basic dance beat in 4/4 and ALL the remaining time-signature formulas 1/4 to 64/4, as well? You should buy two or three pencils, you are going to need them.

The 'Tri' Chart.

In the permutation lesson, we used a chart that we called the 'Quad' Chart. To investigate **all** the beat variation possibilities within the complete time-signature system we will need a couple more charts. The next most important additional chart is the 'TRI' chart. It will help us fully investigate the permutation or variation possibilities within triplet-based rhythms.

'Tri' (Bass or Snare) Chart:



There may also be a need for another chart that is based on two cymbal notes. Of course we would call this a '**BI**' chart.

'Bi' (Bass or Snare) Chart:

These charts have the effect of illustrating and labeling every possible dance beat permutation in the time-signature system. With this concept, each existing dance beat variation has its very own name. Keep in mind, that if the tempo is slow enough, we may slip snare and bass-syncs, in-between the cymbal notes. As we add syncopations it increases the number of permutation possibilities, exponentially.

Think and ponder with the objective of implanting every possible beat and/or every beat variation in the known musical universe, into your own mind . . . all in one sitting. Think a minute about what I just said . .

The remaining time-signature families?

The remaining time-signature forms are based on similar logic. You can probably figure it out on your own from here anyway. 3/8 is really a quarter-note 3/4 'waltz' with weird notation. The beats we have found in the quarter-note family of signatures (X/4) will redundantly exist again and again within each of the remaining (X/1, X/2, X/8, X/16, X/32 etc.) time-signature families. This will include:

Whole-note (1/1, 2/1, 3/1 to 32/1)

Half-note (1/2 through 32/2)

Eighth (1/8 through 32/8)

Sixteenth (1/16 through 32/16) . . . and so on.

The notation and signature formulas will be different in each case, but the underlying beats and permutations will **always be the same** . . . if we are comparing apples to apples. All the X/X signatures but X/4 are totally unnecessary, as I'll explain in the next lesson.

NEXT LESSON:

What About 7/8 and All the other crazy X/X time-signatures? Here's more help, with X/X time-signatures other than X/4.

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Lesson #6: There's more! What about all the other X/X signatures?

(Time Signatures other than X/4.)

Once you've absorbed the first five lessons . . . there may still be some lingering questions in your mind, (if you are doing all the necessary 'thought'). There may be a need for a few more lessons to help clear up those lingering questions, like, "What is '16th-note 7/8', etc.?" This lesson will hopefully put the cherry on the top of this whole thing.

Hopefully by this stage of the course, you now have a complete working knowledge of the X/4 signatures. But . . . What about the others, (ie; X/1, X/2, X/8, etc?)

Please do this . . .

I want to setup a few 'thought projects' for you. It's important that you should think about them, write them, and try to play them.

Thought Project #1:

Writing and playing '8th-note 7/8'

Setup Seven Xs on your computer in the text editor . . . . . (or with pen or pencil on scratch-paper.)

X X X X X X X <--- **Hi Hat (Right hand)**

Now . . . place any variation of S's along the snare line, in any order you choose; Then, do the same for the bass, on the line below that.

H X X X X X X X <--- Hi Hat

S

B

Incidentally, this structure could be written in 4th note 7/4 (7/16th or 7/32) for that matter. All the exact same rhythms will exist. They will simply look different and completely confuse the average 'smuck' who is trying to decipher your ideas. (Think about it: Are you trying to stump your reader? Is that your motive?)
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Next, comes the fun part . . .

Drummers should play and repeat what you've written on a full drum set! Other musicians might setup the pattern(s) on a drum machine, then play along, on your own instrument. Otherwise, just tap the patterns on your desktop and try to feel the rhythm structure. Anything written with 7 (or any odd number) as the top number will sound a feel lop-sided and uncomfortable to the listener and the musician as well. The back-beat flow will be completely disturbed. It'll be difficult to find it and keep it. It actually amounts to a bar of 4/4 and a bar of 3/4 combined. It's the 3/4 (or **3/8 = same thing**) part that throws the song into chaos. So, my argument asks why we write in a complex time-signature that baffles the reader when it isn't necessary? Note: If you really want to wig people out, why not write it in 7/1, 7/2, 7/32 or whatever. (Are you seeing the ridiculous redundancies? They're all the same thing!)

Congratulations! You've just potentially invented/discovered thousands of new 7/8 beats! Each of which 'could' be the basis of a new sounding song or arrangement. You did discover at least 1,000 variations, didn't you? It doesn't matter what you have written on the snare or bass lines! It will always be considered a legitimate 7/8 beat pattern as it is repeated consistently . . . **and that's the major point!** In a sense, it's chaos or a traffic jam in downtown Manhattan at 9:00 am. About the only reason to write anything in those weird time signatures is to prove that it can be done legitimately. It isn't wrong even if it does look like spaghetti and sound a lot like a train-wreck in progress.

* Yes! Even nothing (no snares or basses), will be an acceptable and legit, beat pattern . . .

* Yes! Everything (or all the snares or basses) could be used as well! (However dumb it might sound.)

* We may place basses or snares in-between any of the cymbal notes as well, (as syncopations).

Anything, everything, and all that's in-between, will be a legit beat pattern in '8th-note 7/8' as long as we consistently repeat, and remain confined to that seven-note (or equal value) within our arrangement.

'Staying together' **as a band**, makes everything and anything legit! There are few rules in art and music. It makes me wonder if the same is true when writing non-fiction? What if I caused you to learn eleven million ways to say the simple word "**the",** simply because I don't want to place the cross-bar on the **"t"**? Wouldn't that be pretty stupid?

Anyway; this is a great piece of knowledge, though the beat-patterns within this odd, offbeat, uncomfortable structure will probably defy and offend our rhythmic sensitivities. (Most human ears will not agree with the feel and sounds of these beats.) However; in art and music we're virtually exempt of most rules. These beat patterns are totally legit, and may be used as the structure for a song, or an arrangement of a song, whether our ears agree or not. That's the thing we want to discover, as we ponder this.

The variation (permutation) possibilities are astronomical within the 7/8th-note structure, and any of the variations could (apparently) be different from one bar to the next, of our potential song. But; the 7-per-bar count (secondary pulse) must remain consistent, or we've encountered a **time-signature change**, (which is okay too theoretically, as long as the band stays together and they all make the change at the same time.) Just don't be offended when the bubble-gummers or the beer-slurping working folks refuse to buy it or listen to it.

Thought Project #2: '16th-note 7/8': Now, start a new project. Setup the X's to number exactly 14:

H X X X X X X X X X X X X X <---**hi-hat (or secondary pulse)** = 14

S

B

This is (arbitrarily) 16th-note 7/8. It could also be written in a lot of other odd-ball ways as well, thus changing the note-values and the technical names but nothing else. It's really 8th-note 7/4 if we're thinking in a practical way. Alter the bass and snare notes any way you choose, but maintain the 14-flow (secondary pulse) within each succeeding bar, and build a song around all of it. Your beat-permutations may be extremely simple, or extremely complex. It simply doesn't matter. If we've experimented with syncopations in project #1, then we are effectively recreating similar permutations again here . . . but now they're somewhat different. They are no longer syncopations, because we're playing **ALONG WITH** the

secondary pulse, rather than in-between it. The notes on the top line (hi hat) will be sixteenth notes, of which 14 will fit in a bar of 7/8. But, it is exactly the same as playing or writing eighth-note 7/4. There is really nothing special about the X/8 signatures. Each is a redundancy of rhythms that could have and should have been written in 7/4.

NOTE: We could however, syncopate in-between the 14 secondary pulse notes (or hi hat), if the tempo is slow enough, but let's don't do that right now. It's already becoming ridiculous and the point has been made.

So, now we have a new arrangement in '16th-note 7/8', though I doubt if it has been used, much. It would be very rare to hear this . . . if it has been used at all. This may be great stuff for innovative minds, though! Play around with these, and come up with a new sounding song or arrangement. But, please write it in 7/4, if for no other reason but to **appear as if** you're trying to make it easy to read and comprehend.

Project #3: '9/8, 15/8, or any X/8?

What if it were 9/8, or 15/8 . . . or (any) X/8? Now, focus your mind on those, and play around with all of them!

Here's '8th-note 9/8' . . . (add your own bass and snare permutations.)

H X X X X X X X X

S

B

Project #4: '8th-note 15/8' (add your own bass and snare permutations).

H X X X X X X X X X X X X X X

S

B

Then . . . covert those to 16ths or 32nds on the hat (or secondary pulses), as well.

Now for some really good news! This is essentially very good news, for our easily confused and weary minds!

Redundancies Abound!

There are tons of redundancies (unnecessary replications) built-into our very remarkable time-signature system. Understanding, then eliminating those redundancies will simplify everything, if we'll allow it to happen!

Understanding all the redundancies:

Our very complex time-signature system was setup and designed in the16th/17th Centuries to unnecessarily over-compensate for every eventuality! It was intentional, but about 99.99% of it was totally unnecessary. We could dispense with most of it (. . . all but X/4), and the discarded portion would never be missed! Understand exactly what I'm about to show you . . . and the entire time-signature picture will become crystal-clear, and extremely simple.

For Example:

Our '8th-note 7/8' pattern (the first one), is really just a mirror-copy of quarter-note 7/4. Think about that a very long time!

Write a few bars of quarter-note 7/4 as we did above! Do this study with a real pen or pencil, on paper. Construct the actual note-values and make them tally with the time-signature you've chosen to use. Play around with the permutation possibilities. You'll quickly see the redundancies that permeate the entire time-signature system. They're both exactly the same thing! Both structures contain exactly the same rhythmic permutations, no matter how we choose to write them.

Try to discover and write a pattern that exists in one framework (4th 7/4), but not the other (8th 7/8).

You won't find one! Or . . . if you do . . . I'll want to see it!

All the above could also be a mirror of:

7/1 (= Seven whole-notes per bar)

Or, 7/2 . . . (= Seven half-notes per bar.)

Or . . . '7/16', (= Seven 16th-notes per bar)

Or, numerous other totally wacky possibilities.

Do You See the Point?

All of those time-signatures above, contain exactly the same rhythmic permutations. That's the redundancy that's built-in! They're exactly the same except for the appearances of the notes, the intimidating time-signature formulas and a myriad of new and different technical beat names. It could be whole-notes or 64th-notes in the secondary pulse. It wouldn't matter! All the exact, same potential beat patterns, structures, rhythmic variations and syncopations exist in each situation the same way. Each would take-on a different technical name and different note-value representations. Doing so will only confuse us all (myself included) and prove little more than the fact that our writer is either ignorant or on an ego trip. If the writer is intentionally trying to blow unintelligible smoke and baffling mirrors to confuse their reader; what does it say about the writer? If the writer doesn't know better, what else does it say?

That's why it's so easy to just use X's to describe all this. The ridiculous time-signatures, incomprehensible note-value enigmas and myriads of technical names serve no practical purpose, other than allowing the writer to eliminate that tiny “3' over each group of triplets.

The same rhythms consistently emerge, no matter how we choose to express them in note form, (provided we're always comparing x-apples to x-apples as the secondary pulse or hi hat).

By the way . . . that 15/8 (I mentioned above), could also be written as (a Blues form of) '8th-triplet 5/4', and several other ways as well.

Write it, and see for yourself . . .

Compare them . . . and search for even one discrepancy. I've been searching more than 30 years and haven't found any *worthy* reason for those additional time-signatures at all.

The rhythm patterns (permutations and syncopations) will always be the same . . . 'If' the secondary pulse, (hi hat) is always relative!

MY POINT . . . (Call it a rule!)

All the rhythms within the musical universe will exist with four (X/4) as the only necessary time-signature denominator! All the other (X/1, X/2, X/8, X/16, etc., etc.) signatures are foolish redundant copies of one or another form of X/4.

So, why do they exist?

ANS: They often **saved** a few monotonous and boring **pen-strokes**, **when quill pens were in fashion** and composers were writing pages and pages of musical scores for each member of the symphony orchestra. Largely it was because of that little __3__ we place over a set of triplets in any X/4 time signature. For example, if they were writing in (perhaps) 8th triplet 4/4, the composers realized that 'if' they changed the time signature to 12/8, they could eliminate that annoying __3__ over each and every group of triplets. They had writer's cramps and they were making their own jobs easier. It made great sense at the time, to them. Whoa! That's a bold statement, but the facts prove it. All the other time signatures are copies of X/4. Only the beat names and the note-values are changed to annoy and confuse the masses.

In other words: when **X/4** is the time-signature formula . . . Where X, the top number, is any number, and the denominator is always '4', we'll ALWAYS have access to each and every potential rhythmic possibly that exists within the entire musical Universe.

The time signatures will be different (simpler) in X/4, and the note-values may be different (simpler) in X/4 . . . but **all** the rhythmic permutations of the secondary pulse are **always the same**. Check it out completely. Do some investigating of your own. Don't just take my word for it. If you discover something I'm not seeing, please tell me. (I'll crawl back under the rug and die forgotten and publicly embarrassed.) Otherwise, I'm stating flatly and boldly that the time-signature system of formulas we use today is **grossly antiquated** for the times.

Because; with the advent of the printing press, copy-machines, ballpoint pens, computers and word processors, everything has changed! Those __3's__ over our triplets are no-longer at issue enough to warrant the absolute and total mass confusion and pandemonium they've caused for the past 500 years.

Do this . . .

Name all the truly great musicians you know who will claim that they actually understand the current time signature formulas and all their implications? Consult with them! If they do fully understand it, my bet is, they will be in 100% agreement with me. If they disagree, the odds are especially good that they only 'think' they understand the extremely complex system as it still exists today. Make them offer proof! Ask for other (additional) reasons to maintain the antiquated redundancies. My bet is that the proof will not appear other than the _3_ over the triplets or the dot that eliminates a few (pen-stroke) rests.

As we consider all the potential note-value modifications and permutations of X/4, we're also seeing ALL the other time-signatures as well, (ie; X/1, X/2, X/8, X/16, x/32 etc., etc.).

To further Explain . . .

9/8 is really just '8th triplet 3/4', written a different way and without the _3_ over each triplet! (See the Waltz Beat lesson.)

7/8 contains all the exact same rhythms as quarter note 7/4.

5/8 is exactly the same as quarter note 5/4, etc., etc., etc.

9/16 is really just quarter note 9/4 (or . . . it 'could be' 9/1, 9/2, or even 9/8, 9/32, etc., . . . depending on the writer's wish to confuse the reader. It's always an arbitrary decision . . . left up to the writer. Y**ou**, are now the writer.

Some writers like to be impractical and confusing. It's great fun for them to create intimidating and confusing transcriptions, though they 'could' easily write things in a much simpler and in a much less confusing way. Egos get involved. It's as if they are trying to illustrate to us how brilliant they are, while showing little concern for actually communicating their already complex ideas in the simplest way.

As a teacher and a writer, **I would call that, trite.** It all started with the long-hair composers of the 15th and 16th Century. **Before they came along . . . all music was written in X/4.**

Really . . . they should have left the system alone. The music world has never been the same! They've only confused everyone with countless, confusing arrays of enigmatic, duplications, redundancies and mind-boggling dotted-notes, (which really weren't necessary at all). Dotted notes were invented to eliminate the necessity of writing rests instead of the dot. If we're writing with a quill pen, it makes (a little) sense. So; literally 18 quintillion (duplicated) rhythmic permutations are copied, and re-written, using countless millions of needless different technical names and trillions of very complicated unnecessary note-value re-representations of all those same 18 quintillion rhythmic permutation possibilities. All of that just to avoid writing a __3__ over the triplets, or to avoid writing a small handful of rests.

Why did They Do It?

The historical records are a little sketchy on this issue, but here's the way it has been told to me . . .

They changed the time-signature system, because they were getting 'writers cramps', as they wrote endless pages of symphony scores. They found that by adding the other redundant signatures (X/1, X/2, X/8, X/16, X/32, etc.) and by creating dotted notes, it would often eliminate a few pen-strokes per page.

(Dotted notes became necessary as a result of this too. Total chaos was born and has existed 500 years as a result. It's absolutely ridiculous if we examine it thoroughly enough.)

It's true! In the 1600s, the pen-strokes were an important issue, but, complete and total confusion has been the end result of those changes! Because of the changes, . . . Almost no one has FULLY understood time-signatures since then! Time-signature theory became so complex that it has caused mass-phobias, concerning written music notation ever since that ill fated time.

We must endure these confusing complexities because they wanted to save a few pen-strokes! Their reasoning was sound reasoning at the time, but times and technology have changed considerably since then!

Who am I to challenge Bach, Beethoven and the boys? Who are **we** to challenge the traditions of their genius? It'll take a rather bold soul to stand-up against their ideas and say, "**Enough is enough!**"

Just the same; when tradition has become antiquated and actually silly, it's time to challenge tradition! At age 72 after a long life and career as a working drummer and teacher, I alone accept the challenge. I've known all this and copyrighted it long, long ago. Will there be followers? Only time and **common-sense among the masses will tell**. (Is there any such thing as **common-sense amongst the masses?** If History is an example the answer is probably no.)

Now, it's time for your final exam . . .

We need to make sure if you are seeing the complete picture . . .

***** Final Exam *****

Problem #1:

How many other ways is it possible to write 9/8, and '8th triplet 3/4, if we use the current time-signature formulas as they have existed since the late 1500's? Here are a couple suggestions to help put your brain in gear . . .

9/1: Actually write it with real pen or pencil, using real whole-notes on real paper. Write some variations and Permutations too!

9/64: Write this with pen or pencil too, using real 64th notes with flags.

Also write; 9/2, 9/4, 9/8, 9/16, 9/32, etc, etc. Write each as a Waltz.

Problem #2:

Now . . . Write 8th-note 10/4. This one is my personal favorite! It's wide-open for many awesome, harmonious, pleasing, odd/even possibilities. Remember! 5/4 + 5/4 = 10/4. Also; 4/4 + 4/4 + 2/4 = 10/4! Compose a song that simultaneously includes all that. Imagine a 5 X 2/4 walking-bass-guitar, with a drummer playing a funky (even) permutation of '8th 4/4 + 8th 4/4 + 8th 2/4', While a third rhythm-instrument maintains (an odd) '8th 5/4 + 8th 5/4', simultaneously, within the **same song**.

Do you see the possibilities? How else 'could' it be written? This one could keep us busy for years. I'm not finished looking at it yet!

In a Nutshell:

To totally comprehend time signatures as the formulas currently exist, the secondary pulse, (or the hi-hat) 1 through 32 . . . (OR 64 and above, if we choose to go there) starting with: One-note, on the hat: That's 1/1 (which actually equals 4/4) time. Or; 1/2 time (equals 2/4). It goes on and on to 1/4, 1/8, 1/16, etc., etc. These very short time signatures would normally only be used to describe a one-count-exercise in a music manual, or something similar. They're probably too short for any other practical use. Possible exceptions might be 1/1 and 1/2, but why use them if the same exact rhythmic figures can be expressed as 4/4 or 2/4, respectively? (**Ans:** the only point or excuse would be to **confuse** the reader!) Inspect it. Challenge me if you discover I am in error!

Two-notes, on the hi-hat (or secondary pulse). That's, 2/1, 2/2, 2/4, 2/8, 2/16, etc., etc. (All permutations included.) It keeps going that way . . . as high as we choose to go.

Anyway . . .

That's all there is to time signatures and odd-time. It's easy as pie, once we see it from the perspective of the hi-hat . . . (or **secondary pulse**), then account for the many and numerous confusing redundancies, by **seeing everything as X/4, first**.

Keyboardists, guitarists, or other musicians (without a hi-hat) . . . will need to think in terms of 'secondary pulse'. It may just a simple, soft, consistent, background rhythm, that holds everything else together. It needn't be a hi-hat, specifically.

First, we have the **downbeat/upbeat** pulse, which is the (apparently arbitrary) positive-negative flow. It apparently doesn't have to be evenly spaced, though our ears and sensitivities would prefer, and like it to be.

Then; there's the secondary pulse, which is the consistent and repetitious, one through any number count (on the hi-hat for drummers) . . . It's the underlying-repeating-flow (secondary pulse or count) for the other musicians. It flows beneath the primary downbeat/upbeat flow (Also called 'on and off' beats, positive-negative and other descriptive words.)

Rhythm: Is the way we alter or vary the accents or tones within that consistent (flowing) secondary pulse. There are no other solid rules as far as my eye can see! It's virtual anarchy from there to infinity! :>) (Is that a song lyric?) Anyway; it's absolute freedom . . . as long as the band stays together.

We (in the band) must all stay within that secondary pulse or count. After that . . . there are few additional, solid and dependable, (technical) rules. I would dearly love to state that the backbeats should remain consistent and evenly spaced, but that would be an *opinion*, not a rule.

This knowledge may help all of us create the most beautiful music ever written . . . or it may also offer us the most offensive sounds on the planet. Sometimes the beauty (or lack of it), is in the ear of the beholder. There's just something unbelievably free, utopian, and beautiful about that!

Now for the Real Truth

In the final analysis, we rarely use any of the odd-time knowledge. Why? Because, currently 99.999999% of all popular music is composed within 'even' signatures. That which is 'odd', will usually not be very popular at all, because it tends to be unsettling. It tends to offend the ear, rather than please it! That which isn't popular, usually won't make a lot of money. If people can't make money, then there's little incentive or reason to experiment and explore! It's just a sad fact of artistic life. Who is to say? I encourage you to experiment for art's sake.

Question of the day . . .

Is there a pleasant, harmonious listening-experience within all these mazes of odd time? Could it become a popular trend to use these sometimes strange and odd beat patterns, then make them more popular? I say yes . . . but I guess it's up to you and the remaining public to do the deciding.

Almost everything popular in music, will usually occur within those first 5 basic dance beats in 4/4 time, (with the exception of an occasional Waltz, now and then).

This brings us back to square-one. Or is it square-18,446,744,073,709,552,000 (18.4 Quintillion)?

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Lesson 7: Final Thoughts

The remaining X/X time signature modifications could go on to 64ths, 128ths, 256th, etc., etc., indefinitely. There are so many ways to configure the back-beats and permutations within all those frameworks that it boggles my mind totally! My best guess is; almost anything could be acceptable as long as the entire band focuses on the same general permutation or permutations simultaneously and maintains the secondary pulse. I'm not sure at this point. It might take several lifetimes to investigate every option.

In the final analysis, our music may simply become music that's totally out-of-time and offensive to the ear! We all want to hear music that's within reasonable harmony with itself, don't we? Isn't that what music is all about?
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If music upsets our sense of rhythmic balance . . . Is it music, or noise? At what point does it become noise? I suppose the public decides by purchasing or ignoring.

After awhile . . . all this odd-time stuff may become totally absurd if our music has no flow or 'feel'. If our music is not danceable and if, we can't pop our fingers to it, it may stop being music. If music has little hypnotic affect, or if it has an opposite, repelling effect, on the average ear, it's probably noise.

Just the same . . . this permutation, odd-time and time-signature knowledge is priceless in the creation of music that is unexplored, potentially harmonious, innovative and creative. Maybe the final assessments above should ultimately be assigned to the public at large, after we musicians have explored each of the 18,446,744,073,709,552,000 (18.4 Quintillion) individual possibilities.

Other short courses:

Drumming enthusiasts! Visit my web site online. I now have 5 separate drumming courses online including this one. The primary course is a 125-lesson course that will take you from a wannabe-beginner to playing drums live-onstage. Drop in and take a few of the free lessons. Say hello.

Drop me an e-mail note at: <billp@studydrums.com>

Do you have a pre-schooler, age 4 to 7, you would like to start on drum set? They're special to me too! Drop me a note and ask about my special course for parents of pre-schoolers.

Now take what you've learned and go write a song that is truly innovative.

The End