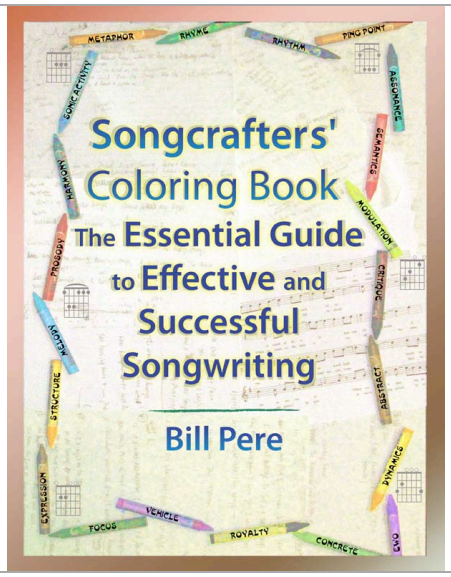

The concepts discussed in this article are a part of the comprehensive analysis of songwriting presented in the complete book "Songcrafters' Coloring Book: The Essential Guide to Effective and Successful Songwriting" , by Bill Pere. For additional information or to order a copy, visit http://www.songcrafterscoloringbook.com

(More on this topic in the complete Songcrafters' Coloring Book)

SONGCRAFTERS COLORING BOOK *by Bill Pere*

Rhythm and the Theory of Relativity

Not only does *e=mc2* reveal many secrets of the universe, but it reveals the secrets of rhythm as well. In the decades that I have been teaching guitar, music theory, rhythm and composition, I've seen hundreds of students struggle with two particular areas of music. One is the concept of musical distance, called intervals, however it seems that with the right teaching approach and some good visual aids, most students can master this concept. The more difficult stumbling block is rhythm, because unlike musical distance, which is a learned set of rules, rhythm is something that is largely internal and is felt intuitively. One can be born with a great sense of rhythm, as it is both mathematical and tied to the way we perceive and process time internally. It is possible to teach the mechanics of rhythm, but if the natural internal process is absent, it often lacks the fluid feel and flow of a natural born rhythm sense. Another way to say it is that if you ask some people to let you know when an hour has passed, they will just "know" because of an internal clock, while others must rely on an external clock. The former cannot be taught, as it is an innate ability. But there are ways of thinking about rhythm that may help make it less mysterious.

Just as there are ways that our eyes group small units into larger ones, our ears can group units of time into patterns as well. This property of our visual sense is studied in the area of Gestalt psychology. In the world of the auditory sense, it is rhythm. On a TV screen, where pictures are made up of hundreds of dots and lines, we perceive the patterns as meaningful images. If you look real close at the TV screen, you see the individual dots and lines. The strings of letters on this page are grouped as words because of the space between them.

If you look at the following figure: • • • • you probably first see two units, implying two
• • • •

squares, as opposed to • • • • • • • • where you see eight individual dots (or a line). Similarly, our hearing system groups pulses of time into units of twos or threes, and strings them together to make larger patterns and different levels. Thus, a song can have each musical "beat" consisting of two smaller notes, with three of those groups per measure, as in 3/4 time, or each beat consisting of three, smaller notes, with two of those groups per measure, as in 6/8 time, or any other combination of twos and threes (4/4, 12/8. 9/4. etc.) The top number tells us how many beats are in the whole measure, and the bottom one tells us which kind of note gets one full beat, but the subdivisions of that basic note value are not told to us. We have to hear or feel them in the rhythm. Three-four time and six-eight time both have six eighth notes per measure, but their feel is quite different.

One of the reasons that this grouping process can cause so much trouble for people is that it cannot occur by itself. It only has meaning as rhythm when it is simultaneously compared to another frame of time. Here is where the theory of relativity can help us understand what the problem is and how to address it. Let's look at two examples before we look at rhythm: Consider two men, each holding a tennis ball. They are floating motionless in the air in a state of weightlessness. They let go of the tennis ball, and it just floats there where they let go of it. Obviously, it sounds like these men are in outer space, where such a thing would happen. Well, one of them is, but the other is in an elevator which has just broken loose from its cable and is free-falling from the top of the World Trade Center. Since the man in the elevator cannot see the outside world (i.e., no external reference), it seems to him that he is floating motionless in the air, and since the tennis ball falls at exactly the same rate, it appears to float, and the man feels weightless. But to an observer outside the elevator, it is clear that the man is on the expressway to the Pearly Gates. The man in outer space can be said to be motionless, or floating slowly with respect to the earth and stars, but to an observer very far away (i.e., in the next galaxy), the man and the tennis ball are moving very rapidly along with the entire Milky Way Galaxy, as it spins (i.e., the entire galaxy is like the elevator). Thus, two scenes which appear the same are in fact different, but only when viewed from perspectives relative to another frame of reference. This is the theory of relativity, and the example is a physical equivalent of rhythm perception. Now let's look at an example which is the visual equivalent of rhythm.

*"**O**res Tabit Fortis Arare Placeto Restat"* This seems like an old Latin saying...or so most people believe at first. We clearly can group the letters into units that look like words, but we have no external frame of reference which gives them any sense. Well, let's just rearrange the grouping a bit...same order of letters, different spacing: "O rest a bit, for 'tis a rare place to rest at". Suddenly, old Latin becomes olde English and makes sense. The only thing that changed was the starting and ending points of the groups. In the language of rhythm, the starting and ending points of each musical measure must be clearly understood, or the percussion doesn't make sense to our ears.

Consider this: PSFT UBCJU GPSUJT BSBSF QMBDFUP SFTUBU. Nonsense of course...except if you shift the frame of reference. If the entire alphabet were shifted one letter to the left, such that C becomes B, B becomes A, etc., then the nonsense phrase becomes "Ores Tabit Fortis Arare Placeto Restat", the same as above. All that was different was its position relative to an outside frame of reference, in this case, the alphabet.

All of the above applies exactly the same way to pulses of time, which we call rhythm. As a rhythm is being listened to or performed, a constant unheard clock (metronome) is marking off each beat. We also need to know how many beats are in each measure (i.e., are we counting by 3 or 4 or 6?), what the subdivision of each count is (2 or 3) and also, where in the measure did everything start. This last point is very important because if a piece starts on the second beat of a measure, the first thing the

number of beats per measure, "one" in their mind is always falling where "two" should be, just like the above example where "B" was always falling where "A" should be. The result? Nonsense. I learned that lesson by experience. I had a song which started with an eighth-note rest. Thus, the first thing a listener would hear was the second eighth-note of the measure, and it took them several lines to finally get back in sync. Of course, in my head, I was providing the mental count of "one" to start things off, but I was the only one who had the right frame of reference (I was outside the elevator, the listeners were in it). How to solve the problem? Tap four beats on the guitar body before hitting the first chord. Then everyone has been given the same and correct external frame of reference.

If you look at the patterns : ♩ ♪♪ ♩ ♪♪ and ♪♪ ♩ ♪♪ ♩ they are the same except for where in the cycle they start. If first beat of the measure falls on ♩ instead of ♪ it is a different musical feel than the reverse. To line them up with an external frame of reference i.e., the metronome, you get:

1 + &+ 2 + &+ 3 + &+ 4 + &+ as opposed to 1+ & + 2+ & + 3+ & + 4+ &+
♩ ♪♪ ♩ ♪♪ ♩ ♪♪ ♩ ♪♪ ♪♪ ♩ ♪♪ ♩ ♪♪ ♩ ♪♪ ♩

An effect of this is that the middle of each beat (the "&") may be felt more strongly in the second rhythm, than in the first. The first rhythm is heard in the percussion intro to "Bend Me Shape Me" by The American Breed, and also is prominent in "No Time Like the Right Time", by the Blues Project. The second figure gets you "Jingle Bells".

Here is very striking example of the importance of the external frame of reference. Realizing the downbeat of a measure (i.e. the "1" count) always gets a slight mental emphasis, Take the simple rhythm ♪ ♪ ♪ . It doesn't matter how this is grouped, as all the notes are the same value. However, hearing this figure in different places against the external frame of reference produces significantly different results. In the Jim Webb song "What A Lot of Flowers" sung by Richard Harris on "The Love Album", the music is going along with a rhythm of :

1 + & + 2 + & + 3 + & + 4 + & + 1 + & + 2 + & + 3 + & + 4 + & +
♪ ♪ ♪ ♪ ♪ ♪

Then, Jim Webb inserts one measure of 5/8 time, and the odd eighth-note shifts the above pattern by one space to the left, compensating for the missing second half of the third beat, which would have made a 6/8 measure. This is just like the shifted alphabet in the above example. So now, the same rhythm figure has a new external frame of reference. (We've moved from inside the elevator to outside of it) and we see/hear things very differently.

& + 1 + & + 2 + & + 3 + & + 4 + & + 1 + & + 2 + & + 3 + & + 4 + & +
♪ ♪ ♪ ♪ ♪ ♪

It may not look much different, but the musical effect is radically different. Tap it out while you count aloud (keep the accent on the "1" count in both cases). This new rhythm (at twice the frequency) is what your hear in the bass intro to the Temptations "My Girl".

Rhythm need not be such a mystery, an if you look it in these new ways, you might find it less daunting than it really is. Albert Einstein played the violin, but then again, he knew something about the theory of relativity.

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Bill Pere was named one of the "Top 50 Innovators, Groundbreakers and Guiding Lights of the Music Industry" by Music Connection Magazine. With more than 30 years in the music business, as a recording artist, award winning songwriter, performer, and educator Bill is well known for his superbly crafted lyrics, with lasting impact. Bill has released 16 CD's , and is President of the Connecticut Songwriters Association. Bill is an Official Connecticut State Troubadour, and is the Founder and Executive Director of the LUNCH Ensemble (www.lunchensemble.com). Twice named Connecticut Songwriter of the Year, Bill is a qualified MBTI practitioner, trained by the Association for Psychological Type. He is a member of CMEA and MENC, and as Director of the Connecticut Songwriting Academy, he helps develop young talent in songwriting, performing, and learning about the music business. Bill's song analyses and critiques are among the best in the industry. Bill has a graduate degree in Molecular Biology, an ARC Science teaching certification, and he has received two awards for Outstanding contribution to Music Education.