# POLYRHYTHMS

## *Part 2*

### Create tension and resolution with polyrhythms.

*Teeth Clenching By Norman Weinberg.*

LAST MONTH, WE looked at the most common polyrhythm in music, 2 against 3. This time, we'll dive in a little deeper with a few of the more complicated polyrhythms. So, let's get started with 4 against 3!

Like any other polyrhythm, the first order of business is finding the common denominator. Remember that the common denominator is a number which can be divided by both of the rhythms used in the polyrhythm. For most polyrhythms, the easiest way to find the common denominator is to multiply the polyrhythm numbers together. Try it, and you'll see that the common denominator of 4 against 3 is 12.

The second step in playing the 4 against 3 polyrhythm is to come up with some type of time signature that will allow twelve attack points. How about a bar of 3/4 time with 16th notes? Perfect! Once the measure is divided into twelve equal parts (see **Figure 1**), it's a simple matter to finish the computations. In order to divide that measure into three equal parts, play every fourth note (the second measure of the example). To divide the measure into four equal parts, play every third note (the third measure of the example). The last bar of Figure 1 shows how these two rhythms look when written one on top of the other.

An interesting aspect of this particular polyrhythm is that the measure can be divided into three or four parts without having to resort to "false" notation. In other words, both rhythms are simply different groupings of the sixteenth notes in the measure. The "3" rhythm is 4+4+4 while the "4" rhythm is 3+3+3+3.

Even though we've been looking at this rhythm in 3/4 time, you can apply this polyrhythm when playing a tune in common time. It's possible to take the first three beats of the 4/4 bar and imagine that you're "floating" a 3/4 measure on top of them. Take a look at **Figure 2** and you'll see how these fills work. The bass drum will play the quarter notes that become the "3" part of the 4 against 3 polyrhythm while the hands play the "4" part. The third bar of the example lays the 4 against 3 rhythm on top of the last three beats of the bar.

> ***"For most polyrhythms, the easiest way to find the common denominator is to multiply the polyrhythm numbers together."***

In **Figure 3a**, this particular idea is strengthened by carrying the hand's rhythm out for three full measures. Just a second... Since there are four repetitions of the hand's pattern during three measures of time, aren't we looking at another 4 against 3 polyrhythm? That's right! The polyrhythm is on the deeper level of the measure as well as the beat. By repeating the 4 against 3 figure, the listener tends to hear the upper line (the "4") as four measures of 4/4 time. If you play the pattern on a few of the toms (like **Figure 3b**), you can drive home this polyrhythmic relationship in a much stronger way. Try using these three bar polyrhythms as the first or last measures of a fill. You can also test them out as ideas for basic beat patterns like the one in **Figure 4**. Just add some of your own touches and see how you like them.

So far, we've been looking at the 4 against 3 pattern as laying four attacks on top of three beats. It's also possible to look at this polyrhythm from another perspective. Remember when we decided to create twelve attacks from a measure of 3/4 time? Well, you can come up with twelve attacks in common time if you use 8th note triplets. **Figure 5** shows the relationships required for playing three notes on top of four beats.

### But Are They Musical?

Ok, so now you know how to perform the 4:3 polyrhythm. But, musically, how do polyrhythms work? What function do they serve? Why would you choose to play a polyrhythmic figure in the first place?

Answer... Polyrhythms create rhythmic consonance and dissonance. Consonance can be described as those harmonies which help to define the tonality. Dissonance, on the other hand, describes harmonies that work against the tonality. Dissonant harmonies help to create musical tension while consonant ones resolve the tension. During the course of a piece of music, consonance tends to "win out" over dissonance, just as good often wins out over evil in the plot of a Hollywood movie.

This harmonic theory can be applied to rhythm. Polyrhythmic dissonance tends ►

► to obscure or hide the basic rhythmic line; resolving the polyrhythm on, say the downbeat, creates consonance, which tends to support, nurture, and validate the metric pulse.

A good reason for creating rhythmic dissonance is to strengthen the rhythmic resolution. In a way, it's almost like that joke about hitting yourself in the head with a hammer because it feels so good when you stop. If you play a fill with strong rhythmic dissonance, then the effect of the fill's resolution to rhythmic consonance will seem that much stronger. Polyrhythmic fills similar to the one in **Figure 6** create torrents of tension due to their density.

Another interesting polyrhythm is five against three. Just like the other polyrhythms we've discussed, the first step is to find the common denominator. In this case, the number we're looking for is fifteen. What kind of measure will allow fifteen attack points? Well, you could use a measure of 5/4 that has 8th note triplets, or a measure of 3/4 that has quintuplet 16ths. Since triplets might be the more familiar rhythm, let's use the first option for now.

**Figure 7** shows how this polyrhythm is constructed in 5/4 meter. Once you've gotten the hang and feel for this rhythm,

**Figure 1.**

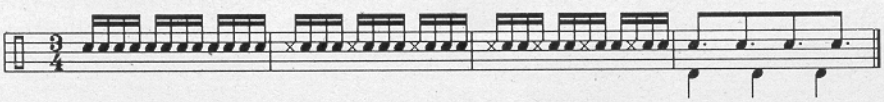


**Figure 2.**

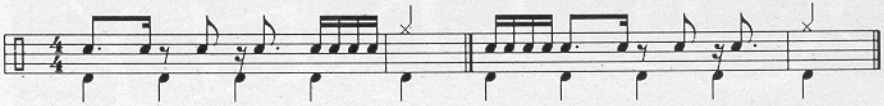


**Figure 3a.**

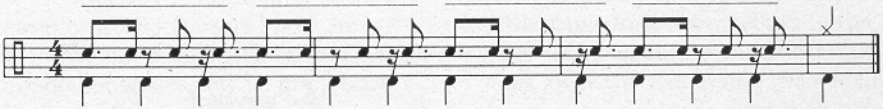


**Figure 3b.**

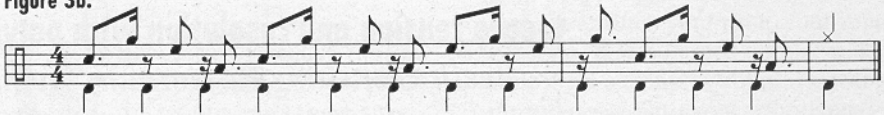


**Figure 4.**

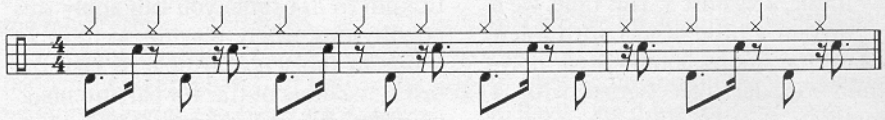


**Figure 5.**

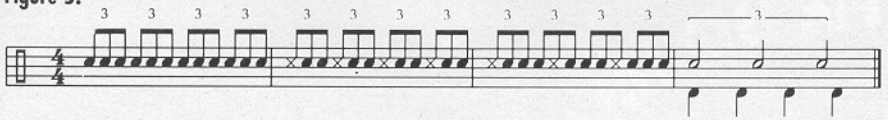


**Figure 6.**

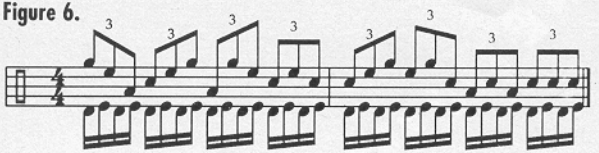


**Figure 7.**

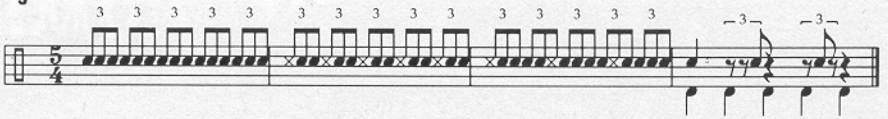


**Figure 8.**

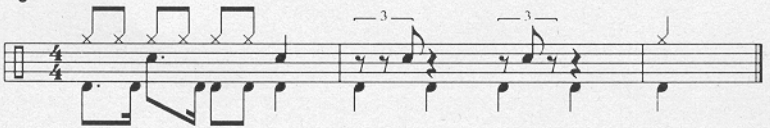
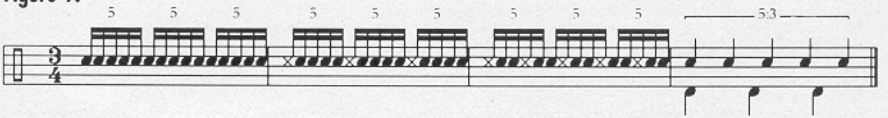


**Figure 9.**



you can try superimposing it on top of 4/4 time by starting the whole thing off on the fourth beat of a measure. **Figure 8** is just one of the many ways that you can achieve the 5:3 polyrhythm in common time. You might try thinking of the whole 5:3 polyrhythm in terms of 16th triplets against 8th notes to thicken the density and shorten the figure's time span.

If you build this polyrhythm in 3/4 time, it has the effect of turning the whole thing upside-down by laying five notes in the time of three. **Figure 9** shows how this would be done. Once you've got the feel for this figure, you can apply it in much the same way as the 4:3 polyrhythm – as a pattern for basic beats or fills.

Next month, we'll take a look at constructing additional polyrhythms and even nested polyrhythms. Until then, work with these and experiment with adding them to your bag of tricks. ®

**Norman Weinberg is an Associate Professor of Music at Del Mar College in Corpus Christi, Texas and serves as the principal timpanist with the Corpus Christi Symphony Orchestra.**

***All examples in this column were produced using Finale, courtesy of Coda Software.***