

## Binary Bar Count

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I do not remember receiving any formal training in how to count bars rest while playing orchestral parts. Experience has shown that a physical method of keeping one's count seems to help, as otherwise the mind, when momentarily distracted, (Is he in two or four here? Was that another downbeat? Shall I order Smithwick's or Guinness tonight? etc.) can easily lose track. Neither owning nor understanding the abacus left me with fingers as the obvious counting crutch. Flick over five fingers twice on one hand registering ten bars gone by and mark this with the first finger of the other hand; repeat the process for measures eleven to twenty and flick over finger number two on the off hand. With this aid I kept track of half a career's worth of rests.

The method is fairly obvious and easy to do, but not foolproof, as after a count of fifty you need more digits, and the patterns are repeats of earlier counts. Also, there is no difference between the first five and second five unless you use half fingers on the hand registering the ten's column. This part of the process is also vulnerable to distractions. (Where does she get all those good/bad reeds? Does the fourth horn realize how sharp/flat that note is? Twenty six? Sixteen? etc.). The second bassoon part of Chopin's *Piano Concerto Number 1* for instance, has well over 1080 bars rest and there are countless other examples of parts where the opportunities to slip into reverie or coma are myriad.

Then one day, while we were auditioning to choose between two fine contra players for the orchestra, one of them commented "I use the binary system to count bars rest." Eureka! Brilliant! The base-2 number system (base-10 is the way we count normally) mirrors the way music is written in two, four, eight, sixteen and thirty-two bar groupings. There are only two digits, one and zero, which is why computers use binary, as on and off are natural states for a machine to use as digits. A finger up and down, or bent and straight, can be used to register a one or zero easily.

If this seems daunting, let me point out that I do not share the fabled musical person's flare for mathematics. Beyond balancing a cheque book (most months) and knowing that "the sons

of the squire of the hippopotamus are equal to the sons of the squires of the other two hides" I have little mathematical bent. With unlimited opportunity to practise counting bars, (second bassoonists will understand) and the motivation of having a pattern that tells you exactly which bar you're counting, it didn't take long to incorporate binary counting into my routine. It's actually fun to learn. I taught it to my wife Teda, who is a math teacher, and she in turn has taught it to her students, to demonstrate the mathematical concept. Another advantage over decimal arises when binary becomes familiar enough that your fingers do the patterns automatically. Then if your mind goes on autopilot for a while and thinks about the wrong bar (Maybe I'll order a Sam Adams Ale tonight) you have only to look at your hand for the running count.

I hold the instrument with my right hand while resting and thus use my left hand (palm down) for counting. In base ten each successive column to the left represents ten times the column to the right. There is the one's column, ten's column, hundred's, thousand's et cetera, moving from right to left. In binary, or base two, each successive column to the left represents two times the column to the right. There is the one's column, two's column, four's, eight's, sixteen's et cetera also moving from right to left. It is not unlike the old system of notating multi-measure rests where rest symbols for 1, 2, and 4 bar rests are combined to give symbols for one to seven bar rests. The one and two bar symbols combine to show three measures rest. One and four combine for five; one, two and four combine to indicate seven measures.



Similarly, the left thumb represents the one's column, index finger the two's column, middle finger the four's column, ring finger the eight's and little finger sixteen's. (Reverse this or count with palm upwards to use the right hand). Using

only one hand, this allows a unique and therefore recognisable pattern for each number from zero to thirty one, most times an adequate total. If a thirty-two or sixty-four column is needed for 33 to 63, or 64 to 127 measure rests, merely conscript a finger or two from the other hand. In practise having the higher column digits out of order on the other hand doesn't bother me and larger rests are usually divided up to indicate rehearsal letters and key changes anyway.

The thumb toggles back and forth between odd and even numbers and the other fingers are added in and out as required for successive numbers. The columns are combined to add up to the desired number. For example, fourteen is formed with the ring finger, (eight) the middle finger, (four) and the index finger (two).

In binary notation the number fourteen is written 1110, (i.e. eight + four + two, and nothing in the one's column.)

Resting the hand palm down on the thigh eases the awkwardness of forming the shapes with the fingers. Alternatively the one and zero digit states can be realized by a light pressure on the "one" fingers or by slightly lifting up the "zero" fingers, if bending is uncomfortable.

Perhaps this bar count method will amuse or amaze you, possibly even proving useful and heaven sent. I find it an invaluable aid in remaining oriented as to time and place, musically speaking. Please be careful not to offend your colleagues while counting bars four and eighteen however. Bar-keep, a pint of Creemore ale!

