

The Metronome... *The Musician's Best Friend*

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The metronome is the most basic tool for the working musician from student to teacher to performer. It is a tool, which never leaves the side of good musician: a tool that trains and then maintains a musician's sense of pulse. Therefore, it affords them the ability to listen, maintain rhythmic and metric continuity, and perform with precision. In fact, it is required that each student registered at the Bethlehem Music Settlement own a metronome and use it in every practice session. I explain to the young students that "Mr. Metronome" is "their best friend" because he always tells the truth. He lets them know when they are right and when they are wrong. Furthermore, I explain that the metronome is not a toy or a gimmick, but a serious tool for establishing and maintaining a consistent beat, an accurate tempo, and rhythmic continuity.

The metronome is a mechanism that divides a minute into a given number of segments and marks that division with a tick. There are manual metronomes that function by way of a main spring, which must be wound and digital metronomes that run on a battery. The number of segments on a traditional metronome, the one I recommend range from 40 to 208 but are only accessible by a set number of increments. They begin as multiples of two in the 40's and 50's then 3 in the 60's then 4 from 70 to 120. From 120 to 144 the multiples are in 6's and they switch to eight from 144 to 208. These precise set divisions allow each number on the metronome to have a multiple or a division of two. This permits the musician to find and play a given tempo twice as fast or twice as slow quickly and accurately. However, on a digital metronome, each number is accessible from 5 to 500. If the performer is playing at 105 for example, it is impossible to evenly divide by two since fractions are not accessible. In addition, the digital metronomes produce a very soft and often annoying sound. The new Clavinova metronomes are a great improvement since the volume can be adjusted, and the tick can change to counts in German, French, Italian, or Japanese or to a wide variety of percussion sounds.

The word metronome is taken from two Greek words: "metron" meaning 'a measure' and "nomos" meaning 'a law'. Ever since Galileo had determined the laws of vibration of pendulums and realized the possibilities of some form of pendulum as a timekeeper, musicians and inventors have been struggling to develop a portable device that could keep accurate time at a variety of speeds.

In 1696, Etienne Loulie made the first recorded attempt to apply the pendulum to a metronome. His "machine" was merely an adjustable pendulum with calibrations but without an escapement to keep it in motion. He was followed by a line of inventors, including Sauveur, 1711; Enbrayg, 1732; Gabary, 1771; Harrison, 1775; Davaux, 1784; Pelletier, Weiske, 1790; Weber, 1813; Stockel, Zmeskill, Crotch, Smart, 1821. Most of these attempts were unsuccessful owing to the great length of pendulum required to beat some of the slow tempos used in music (say 40 to 60 per minute), which made the metronome too large to carry.

Finally, in 1812, Dietrik Nikolaus Winkel (b.1780 Amsterdam d. 1826) found that a double weighted pendulum (a weight on each side of the pivot) even when at a short length, would beat slow tempos, and thus make the metronome portable. After having seen the invention in Amsterdam, Johann Nepenuk Maelzel, a Frenchman, appropriated Winkel's idea through some questionable practice. He used Winkel's design, but included the scale of divisions or segments discussed earlier, and then patented the device under the name 'metronome'. In 1815, he began manufacturing "Maelzel's" Metronome in a factory just outside of Paris. It has been in highly successful use to this day. Swiss, German, French, and American manufacturers who vie with each other for the limited business available continue to manufacture it. Following a lawsuit, Winkel did gain recognition as the original inventor of the instrument; however, Maelzel never lost the prestige as its creator. In fact, composers indicate the desired tempo by a symbol for a note value per minute, e.g. (♩) preceded by 'M.M.', which means "Maelzel's" Metronome. The entire symbol usually looks like this: (MM ♩ = 72)

According to most reports, Ludwig Van Beethoven (1770-1827) was the first important composer to use Maelzel's metronome. However, recent scholarship indicates that Beethoven's markings are not reliable tempo indications since he frequently changed his mind about them and more importantly, his publishers often misprinted or altered his instructions. This finding is true for most other composers at the time and for some time to follow.

There is reluctance especially on the part of the transfer student to use the metronome. They sometimes find it annoying and therefore distracting. They often express how it seems to distort their playing and they often say that something is wrong with their metronome: "it does not stay in time with the piece." In the beginning, students have difficulty hearing the tick of the metronome and how it relates to the rhythm in the music. This is why slow practice of small sections, repeated several times is essential. Some practical steps

are listed below to help when first learning a new composition and/or working on scales and arpeggios.

LEARNING THE COMPOSITION

Identify where the tick will sound in the music (each quarter, eighth or sixteenth note.) Set the metronome to the shortest duration in the composition. It helps eliminate any problems with beat division and subdivision. It is far easier to add beats than to divide them. Later on, the clock can be set at the actual beat note value (usually the quarter note) once the student is competent at dividing and subdividing the beat.

To alleviate any potential anxiety, set the metronome to a comfortable and practical speed. Anxiety tends to distort the nervous systems' responses and diminish ones concentration and focus. Set the metronome into motion and listen for a while to gain a sense of the rhythmic pulsation. Clapping or tapping along with the tick will help the sensation to settle in.

Begin to play and check if the tick matches each of the designated note values. If difficulty persists, slow down or play hands alone then hands together.

Eventually, with patience and time, the nervous responses regulate while the muscles strengthen, resulting in a beautifully controlled musical performance. The sense that one is practicing against the metronome gradually develops into a sense of working with the metronome. Soon the student's listening skills develop and the natural sense of tempo begins to take hold. Finally, the metronome not only remains a regulator and controller but also becomes a barometer and reference.

Once a composition is learned completely and one is able to play from beginning to end without major problems, the metronome may then be used to build tempo gradually over a short period of a day to a week and to check if the performance of a piece of music is remaining at a consistent tempo.

BUILDING THE TEMPO

Before playing set the metronome to the same speed as your learning tempo or what I refer to as the base tempo. This tempo should allow you to play through the entire piece without any sense of anxiety or errors. Do that three times. Then move the weight of the metronome down three segments or notches and repeat the entire piece. Check for any sense of anxiety or difficulty or loss of concentration. If there is any sign of anxiety, set the metronome back up one or two notches. Gradually increase the speed of the piece by moving the weight down one, two or three notches at a time until you can perform the composition at the desired performance tempo without any anxious feelings, nervousness, or tension. Always be sure to maintain your concentration and accuracy throughout the entire process.

CHECKING THE PERFORMANCE

Set the metronome into motion being sure the desired speed is matching the appropriate note value. Stop the metronome and try to imagine the metronome's ticking sound and begin the piece.

Once the piece is completed, return to the metronome and check if the tempo has remained steady. More than likely, the tempo has sped up rather than slowed down since most human beings have a tendency to pick up speed especially in very rhythmic passages or very slow moving passages.

If not satisfied, try again, but stop at several points in the piece and check the tempo. This will help to identify those places where the tempo may be unsteady. If possible, have a friend stop and start the metronome throughout the performance of the piece. The Clavinova is perfect for this exercise since you can program the computer to turn the metronome on and off with any one of the three pedals.

If tempo problems persist, return to "Building the Tempo." Obviously, you moved through the notches of the metronome too quickly and forgot about accuracy. However, remember that the metronome is exact and that no human being can be 100% accurate 100% of the time nor do we want to be. The slight imperfections you carry join your skills and musicianship to make what we know as your music.