

Understanding Transposition

INTRODUCTION

One of the questions often asked in conducting classes (invariably by vocalists, pianists, or string players) is: "Why do instruments transpose? Why can't everyone just read it in concert key?" As you can probably guess, this question always seems to pop up around the "Score Study" section of the class, when musicians who have only ever dealt with concert key are suddenly inundated with instruments in B-flat, E-flat, F, or even (infrequently) more exotic keys.

Musicians who have only ever read C parts find score study and transposition to be quite difficult at first, but with practice and a bit of application, even the most "C-centric" musician can learn how to transpose with ease. In any case, there are several unrelated reasons why we (still) have transposing instruments, and they have nothing to do with making a student conductor's life harder.

HISTORY

THE ORGAN

Before pitch was standardized at A440 (1936 in America, 1955 by the International Organization for Standardization), pitch in any given locale was often dictated by the local church organs. This often created the need for traveling musicians to transpose parts on-the-fly. Bach himself notated certain transpositions for out of town musicians who visited the Thomaskirche (St. Thomas Church) in Leipzig. Likewise, instrument makers in those towns would most certainly make instruments that conformed to the pitch set by the town's organs.

THE VOICE

Vocal practice has always been to notate music within the staff as much as possible, in order to keep things simple. When instruments began to have notated music, the parts were written within the staff as much as possible (using only one or two ledger lines below or above the staff) in order to simplify reading of the music. Of course, instruments are not all created equal. To account for the various ranges and tessituras of different instruments, transposition became the norm.

BRASS INSTRUMENTS

Before the advent of valves, brass instruments were built in many different lengths (keys) so that they could play the harmonic series of the particular fundamental note they were built in. Once valves were introduced in the early 1800s, rendering instruments fully chromatic, musicians (and publishers) had a choice to make: Rewrite all the music written prior to this, or transpose the old parts that had been written in concert pitch. Needless to say, publishers were in favour of whatever was going to cost less, and since engraving by hand was time-consuming and expensive, performing musicians were the ones left with the burden of transposition.

"With music, one's whole future life is brightened. This is such a treasure in life that it helps us over many troubles and difficulties. Music is nourishment, a comforting elixir. Music multiplies all that is beautiful and of value in life." – Zoltan Kodaly

WOODWIND INSTRUMENTS

Some woodwind instrument families (saxophones, clarinets, double reeds) have variants which change the instrument range by something other than an octave. To make it easy to switch between instruments in the same family, the parts for these instruments are transposed so the same written note has the same fingering, but *produces* a different actual pitch. Even when the range of two possible tunings of an instrument are basically the same, the two tunings are often kept around for instruments like woodwinds where playing in a key too far removed from the instrument's "native key" is difficult. The pieces for these alternate tunings are transposed for the same reason.

LOGISTICS

Consider this as well: Music is very much like history; it is the sum total of everything that has come before. We already have a *huge* body of work written for transposing instruments, and virtually all musicians playing those instruments have trained extensively in their transposed keys. If we were to say, "OK, from now on, we'll teach all new entering middle school students in concert pitch and do away with all this transposing", we'd have to go back and transpose ***every piece of music*** that has ever been written for those instruments.

Then, all the existing master instrumentalists would have to re-learn how to read music for their instrument. For the next fifty years or so you would have to differentiate between "concert key" versions and "transposed key" versions of each part for each transposing instrument and each piece. This would have to continue until all of the traditionally-trained musicians retired or died off! Needless to say, it would be an extremely painful transition, and we (Americans, at least) do not like changing basic learned patterns, even when it would ultimately make our lives easier (this is one of the reasons the United States still has not fully switched to metric, and most of us still type on QWERTY keyboards, even though they are difficult to use by design).

TRANSPOSITION FOR CONDUCTORS

Transposition tends to be one of the most neglected aspects of score study. Since many instrumentalists ***do not*** sound at concert pitch, it is necessary to understand the means by which we transpose instrumental parts *from* concert pitch, bring instrumental parts *back to* concert pitch, transpose parts from one instrument to another, and derive correct key signatures for each transposed instrument. Without these skills, it is simply impossible to study and correct scores/parts with any degree of musical authority.

As a starting point, when first learning transposition, the sounding interval of each instrument in relation to concert pitch must be memorized. It helps for the budding conductor to think of the size of the various instruments: Instruments that are "small" in size sound *above* concert pitch, and instruments that are "larger" tend to sound *below* concert pitch. This is a rule of thumb only, but can be useful for those who have a mental picture of all the instruments. Using this logic, it is obvious the piccolo sounds above concert, and the alto saxophone sounds below concert.

All instruments written in the nonstandard clefs (normally alto, tenor and bass) sound at concert pitch *regardless* of their name (except for the string bass and contrabassoon, which sound an octave below concert pitch). This fact should be easy to understand and memorize, but it sometimes becomes confusing because many students do not understand that the pitch name of non-treble-staff brass instruments refers to the *lowest open tone* (i.e., a trombone, which is a C instrument, but has a Bb fundamental), and not to any aspect of transposition.

To learn transposition, one must understand that it is a mathematical process, not a "musical" one. To become knowledgeable about transpositions, a rather large amount of memorization must take place. A proper understanding of transposition comes about when one sees that the intervals represent an equation, just as in mathematics. If the correct names and numbers are entered in the first half of the "equation," the second half of the equation is automatic and always correct. You can use the following sentence as a template to memorize transpositions:

The [*instrument name*] sounds a [*major/minor/perfect*] [*above/below*] concert key, and is written a [*major/minor/perfect*] [*above/below*] concert in the [*treble/bass/etc.*] staff.

So, for example: The **Bb Soprano Clarinet** sounds a **Major 2nd below** concert key, and is written a **Major 2nd above** concert in the **treble clef** staff.

The second half of the sentence simply reverses the direction of the interval, and tells the music reader/writer what to do in order to make a proper part. In this case, every note of the part in concert pitch must be raised a Major 2nd to be played *correctly* by the clarinetist. The new key signature for the part is derived in the same way, utilizing notes which represent the names of each key. Assuming a concert-pitch key signature of E-flat (represented by the note E-flat in any octave), the new key signature will be a Major 2nd above, in this case F. No sweat, no strain, no guesswork.

If an error in the clarinet part necessitates returning the note to concert pitch in order to check it with the underlying chord structure, simply lower the note back down a major 2nd to concert pitch (since you raised it a major 2nd above concert for purposes of transposition). Remember, the sentence in its entirety tells the writer how to transpose for the instrument and derive the new key signature. Reversing the direction brings the transposed note back to concert pitch.

Sometimes while on the podium, the conductor, must react quickly to questions and problems that necessitate transposition. "*My note sounds wrong. Do I have a misprint?*" is a typical rehearsal question. To answer it, it is necessary to transpose the student's note back to concert pitch, immediately find the underlying chord by transposing many other parts, and make an instant judgment as to the correctness of the questioned note. It is not enough just to compare the student's note to the score, since that note may simply duplicate an error already in the score.

Here is another common problem: A piece of music has a prominent English Horn solo, but that instrument is not available in the ensemble, and the solo is not cued. The conductor first must make the choice of an alternate instrument (possibly the alto saxophone), and then write out a transposed part for the performer on that instrument. In this case, the matrix reads as follows:

"The E-flat Alto Saxophone sounds a Major 2nd below the English Horn in F and is written a major 2nd above the English Horn in F in the treble staff."

First, take whatever key signature is in the English Horn part and raise the note name for that key signature a major 2nd, utilizing the new note to name the new key signature. Then raise all notes in the English Horn part a major 2nd so they can be read correctly by the alto saxophonist.

An astounding amount of confidence in score study will be acquired by musicians who take the time to learn transpositions. The more these are studied, the easier they get. Now, instead of guessing (sometimes wrongly), or deferring answers to a later date, solutions come readily to the tongue, and are clear to both the giver and the seeker.

READING TRANSPOSING INSTRUMENTS IN A SCORE

C Instruments

Clearly, the easiest staves to read will be the instruments that are pitched in C. With this grouping of instruments, the only thing that needs to be remembered is which instruments sound an octave or two below (or above) written pitch (e.g., piccolo, celesta, glockenspiel, string bass, guitar, etc.)

B-flat Instruments

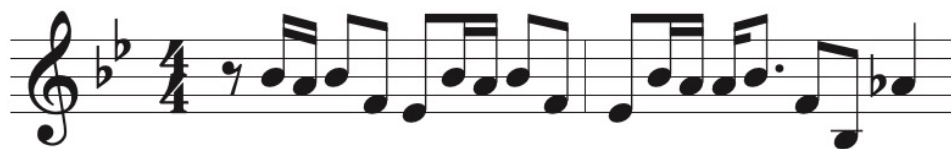
The second easiest grouping of staves to read will be the instruments that are pitched in B-flat. One can easily “do the math” and transpose a major second down from any written pitch (e.g., a written E-flat would sound a D-flat, a written G would sound an F).

However, if you are comfortable with tenor clef, you can also pretend that you are reading notes in tenor clef rather than in treble clef. The only catch is that you would need to modify the key signature by subtracting two sharps (or adding two flats). Also keep in mind that these notes would sound one octave higher than written. Here’s an example:



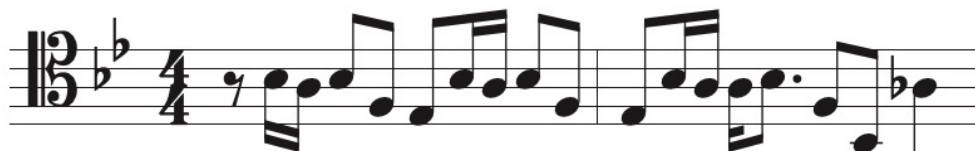
Written Melody for B-flat instruments

If this were our melody, and it was played by a B-flat instrument, it would sound a Major second lower than written (and it would have a corresponding key that was a Major 2nd lower). In other words, it would *sound* like this:



Sounding Melody if played by a B-flat instrument

So...if we go back to the written melody, and *pretend* it was in tenor clef instead, we get:



Reading the part as if it were in tenor clef

If you are familiar with tenor clef, then this method might be easier for you. Do not forget to use the key that is a major second lower than the written melody.

A Instruments

As with B-flat instruments, you can choose to simply “do the math” and transpose a minor third down from any written pitch. If you do so on an A-pitched instrument, then the original melody (first example above) would sound:



Sounding Melody if played by an A instrument

Note that you also have to transpose the key – since the original key was C Major, transposing it down a minor would give you the key of A Major, which is three sharps. However, if you are comfortable with movable clef, you can also choose to pretend you are reading in soprano clef:



Reading the part as if it were in soprano clef.

Again, it all depends on which method you are most comfortable in using. Some people are more comfortable reading movable clefs than mathematically transposing pitches up or down in their head. Try using both methods and stick to the one that you are more comfortable with.

G Instruments

Starting with the G instruments, it gets a little more difficult for some to simply “do the math” (sounds one Perfect 4th below written). Luckily, the only instrument likely to be encountered by most students will be the Alto Flute.



Sounding Melody if played by a G instrument

You can also choose to read the melody in *baritone clef*, where the top line of the staff is middle C. Don't forget that you would need to “borrow” and apply the work's sounding key signature.



Reading the part as if it were in baritone clef.

F Instruments

Despite the “math” being somewhat easy (everything sounds down a Perfect 5th), F instruments are often difficult for beginning teachers. Here is a written F part:



Written Melody read by F instruments



Sounding melody when read by F instruments

You can continue thinking of the transposition in the above manner...or you can read the music as if it were in mezzo-soprano clef. Looking at the original melody once again, we can pretend to read it as if the second line were middle C (i.e., mezzo-soprano clef), and we get this:



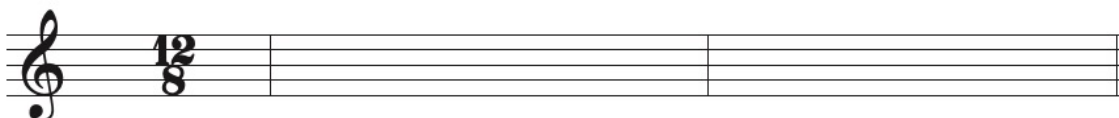
Reading the F part as if it were in mezzo-soprano clef

Is this easier to read for you? There is only one more thing we must do...we must take the key signature of the “concert key” and apply it (instead of the transposed key that the original written part is in). For example, in this excerpt, the written key is F. That means the concert key is B-flat, so we must apply that key to what we are reading. That will also mean that the “natural” you see on the second note is actually applying to the E-flat (that we cannot see and are pretending is there), and the sharp you see on the fifth note is actually raising the (pretend) B-flat up a half-step, so it is essentially a natural.

Some people (like me!) find this method much, much, much faster at a glance. However, it is something that must be practiced, like anything else. You may begin by thinking that doing the math is faster, and over time come to find the movable clef idea to be easier and quicker. Try writing these notes out for practice:



Written melody read by F instruments



Write in the correct sounding note and key for practice.

E-flat Instruments

The E-flat instruments tend to be the hardest ones for beginning teachers (except, of course, for Alto or Bari sax performers). However, there is hardly ever any need for you to “do the math” on this transposition...all you have to do is read the part as if it were in bass clef, which should be a familiar enough clef for almost everyone!



Written melody read by E-flat instruments



Reading the E-flat part as if it were in bass clef

There is only one step left to do – do you remember what is needed? We must take the concert key and apply it to our “cheat” – the original written melody is again in the key of F. On an E-flat instrument, that will mean the concert key is A-flat. You will also have to adjust the octave upwards, but that won’t affect the actual note names for the sake of score studying.



Reading the E-flat part as if it were in bass clef with the concert key added

It is not a perfect system, of course – and taking the concert key may be more challenging depending on what key we are playing in at any given time...but when it comes to a quick reading of the score and figuring out what note is what, it will be a fast way to read a score.

All of the above methods are merely suggestions – if you figure out an easier way that allows you to be accurate and works faster for you, then by all means, use it! The important thing is to be able to quickly diagnose any issues, either while on the podium or while in the process of score study. Relying solely on “the math” is probably the easiest at first, but it does not lend itself to quick transposition, especially when the conductor is on the podium, and someone has just asked a question about the notes in their parts.

As with anything else musical – the more time you put into the above transpositions, the more you will get out of it, until reading a score will be second nature. The following appendices should be of great help in memorizing, remembering, and practicing the transpositions for each instrument you are likely to encounter as a conductor. Do not get frustrated if you have trouble at the start – almost all conductors face this daunting task, and the only way through it is via repetition and practice.

APPENDIX I: RANGES & TRANSPOSITIONS

Note: A word about the given ranges is in order. The “practical” range of the instrument encompasses the ranges **most** likely to be encountered in a typical orchestral or band work. The advanced range encompasses ranges likely to be found in solo literature and are achievable by advanced performers. **All ranges are written ranges.**

WOODWIND INSTRUMENTS

☞ The **Piccolo** is a C instrument and sounds one octave higher than written.

Practical Advanced

☞ The **Flute** is a C instrument and sounds as written.

Practical Advanced

☞ The **Alto Flute** is a G instrument and sounds a Perfect 4th lower than written.

Practical Advanced

☞ The **Bass Flute** is a C instrument and sounds an octave lower than written.

Practical Advanced

☞ The **Oboe** is a C instrument and sounds as written.

Practical Advanced

☞ The **English Horn** is an F instrument and sounds a Perfect 5th lower than written.

Practical Advanced

☞ The **Bassoon** is a C instrument, set primarily in bass clef (though at times tenor and treble clef are also used) and sounds as written.

Practical Advanced

☞ The **Contrabassoon** is a C instrument, set in bass clef, and sounds an octave lower than written. It is sometimes referred to as a “Double Bassoon.”

Practical Advanced

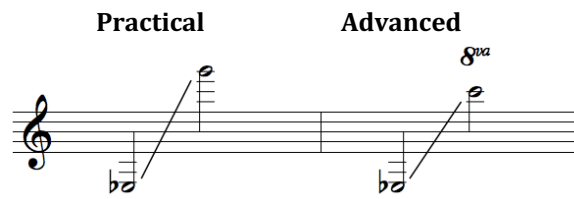
☞ The **E-flat Clarinet** sounds a minor 3rd higher than written.

Practical Advanced

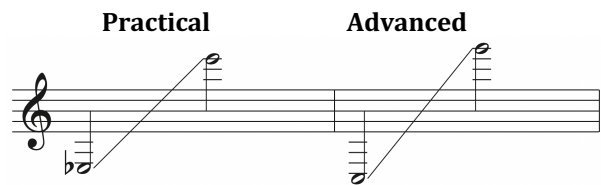
☞ The **A Clarinet** sounds a minor 3rd below written.
The **B-flat Clarinet** sounds a Major 2nd below written.

Practical Advanced

☞ The **Alto Clarinet** is an E-flat instrument, and and **sounds a Major 6th lower than written.**



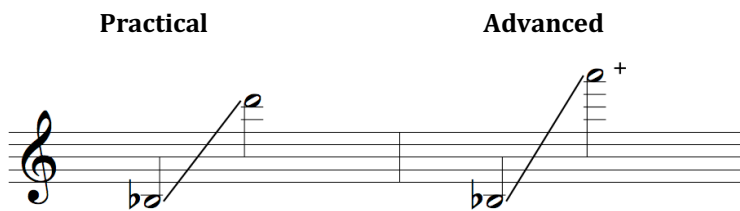
☞ The **Bass Clarinet** is a B-flat instrument and **sounds a Major 9th lower than written.**



☞ The **Contra-Alto Clarinet** (sometimes *erroneously* referred to as the E-flat Contrabass Clarinet) is an E-Flat instrument, set in treble clef, and **sounds a Major 13th (a Major 6th plus an octave) lower than written.** The practical (written) range is the same as that of the B-flat Bass Clarinet.

☞ The **Contrabass Clarinet** is a B-flat instrument, set in treble clef, and **sounds a Major 16th lower than written** (a Major 2nd plus two octaves below the written pitch - thus putting it two octaves below the B-flat soprano clarinet and one octave below the B-flat Bass Clarinet). The practical (written) range is the same as that of the B-flat Bass Clarinet.

☞ All of the **Saxophones** have the same basic written range (*notes in the altissimo register - up to written G8- are possible by advanced performers on all the saxophones*).



☞ The **Soprano Saxophone** is a B-flat instrument and **sounds a Major 2nd lower than written.** It is most often found in jazz and commercial music, though it can also be found in orchestral and wind band literature.

☞ The **Alto Saxophone** is an E-flat instrument and **sounds a Major 6th lower than written.** It is mostly found in jazz, commercial music, and wind band literature, though it can also be found in some orchestral scores.

☞ The **Tenor Saxophone** is a B-flat instrument. It is set in treble clef and **sounds a Major 9th (a Major 2nd plus an octave) below the written pitch.** It is mostly found in jazz and wind band music, though it can also be found in some orchestral scores.

☞ The **Baritone Saxophone** is an E-flat instrument. It is set in treble clef and **sounds a Major 13th (a Major 6th plus an octave) below the written pitch.** It is mostly found in jazz and wind band music.

☞ The **Bass Saxophone** is a B-flat instrument. It is set in treble clef and **sounds a Major 16th lower than written** (a Major 2nd plus two octaves below the written pitch - thus putting it one octave below the Tenor Saxophone).

NOTE: While there exist other woodwind instruments not listed above, these are the ones most likely to be encountered in a chamber, orchestral, or wind band score, and thus should be studied and memorized.

BRASS INSTRUMENTS

☞ The **B-flat trumpet** sounds a *Major Second* lower than written. The **C trumpet** sounds as written.

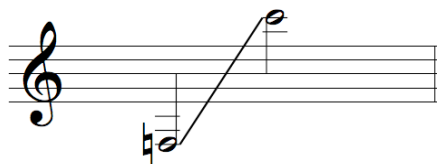
Practical Advanced

☞ The **Piccolo Trumpet** is typically in B-flat, but can also be converted to A, making it easier to read in sharp keys. It sounds a *minor 7th higher than written* (*Major 6th* higher if using the A lead).

Practical Advanced

☞ The **Cornets** and **Flügelhorns** have the same range as the B-flat Trumpet.

☞ The **Bass Trumpet** is an E-flat instrument, *sounding a M6 lower than written*. There also exist varieties in C and in B-flat. The bass trumpet is equipped with a fourth valve, allowing it to play down to the written F.



☞ The **Horn in F** sounds a *Perfect Fifth lower than written*. It is most often set in treble clef, though it is sometimes set in bass clef as well. When set in bass clef, the practice is to notate the desired pitch a Perfect 5th higher (as it is read in treble clef). However, older practice was to notate the pitch a Perfect 4th lower than the pitch desired. This practice is now defunct, but careful study of a score is sometimes necessary to ascertain the correct methodology.

Practical Advanced

☞ The **Tenor Trombone** is a C instrument (with a B-flat fundamental), *and sounds as written*. It is often set in bass clef, but can also be found in alto and tenor clefs.

Practical Advanced

☞ The **Bass Trombone** is a C instrument, with a B-flat fundamental, *and sounds as written*. Most often set in bass clef, it can also be found in tenor clef.

The practical ranges are similar to that of the tenor trombone, but there are some upper range limitations, mostly caused by the mouthpiece, not the instrument itself.

☞ The **Tuba** is a C instrument with a B-flat fundamental. Tubas with a C fundamental also exist, as do tubas with F, G, and E-flat fundamentals. Regardless of fundamental, transposition is the responsibility of the performer.

Practical Advanced

☞ The **Euphonium** is a C instrument, with a B-flat fundamental. It can be found in both bass clef and in treble clef, and this affects the transposition.

When found in bass clef, the Euphonium *sounds as written*. However, when found in treble clef, the euphonium *sounds a Major 9th lower than written*. It is most often set in bass clef, but you can also find parts in tenor clef. The practical and advanced ranges are similar to the trombone.

PERCUSSION/MALLET/KEYBOARD INSTRUMENTS

Note: The mallet instruments come in a variety of sizes, and may not include (or may surpass) all of the ranges presented herein. All mallet instruments are non-transposing (pitched in C), though some have octave transpositions.

☞ The **Xylophone** sounds *one octave higher than written*.

☞ The **Marimba** sounds *as written*. A grand staff can be used when needed.

☞ The **Glockenspiel** sounds *two octaves higher than written*.

☞ The **Vibraphone** sounds *as written*.

☞ The **Tubular Bells (chimes)** sound *as written*.

☞ The **Crotales** sound *two octaves higher than written*.

☞ The **Timpani** is a C instrument, and *sounds as written*. Each of 4-5 drums has a limited range that effectively combine to put the timpani's range at the following:

Note: The most appropriate sound on each drum occurs roughly in the middle of its potential range. For more information on the ranges of the individual drums, it is advisable to check with percussion reference books.

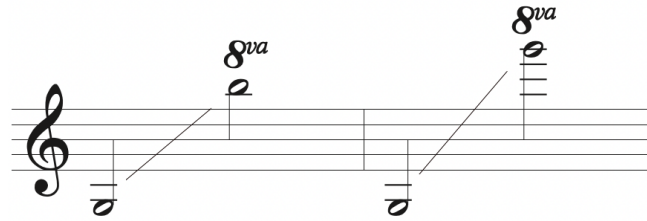
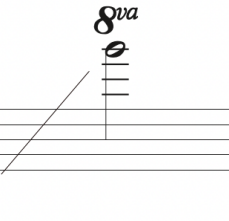

☞ The **Piano** is a C instrument. It can be written in bass or treble clef, and a grand staff is typically used.

☞ The **Celesta** is a C instrument. It *sounds one octave higher than written*. It can be written in treble or bass clef, and a grand staff may be used.

STRING INSTRUMENTS

Note: The string instruments are non-transposing (pitched in C).

☞ The **Violin** sounds as written. The four strings of the violin are tuned in fifths.

Practical	Advanced	String Tunings
		


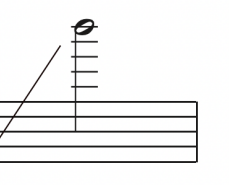

☞ The **Viola** sounds as written. It uses alto clef primarily, but can also be found in treble clef. The four strings of the viola are tuned in fifths.

Practical	Advanced	String Tunings
		

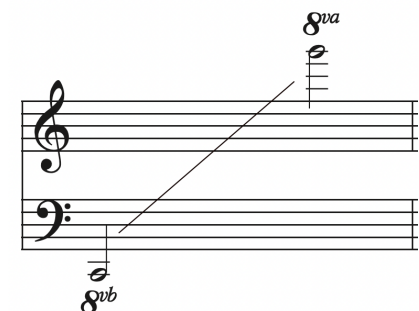
☞ The **Cello** sounds as written. It uses bass clef primarily, but can also be found in tenor and even treble clef. The four strings of the cello are in fifths.

Practical	Advanced	String Tunings
		

☞ The **Contrabass (String Bass, Bass Viol, or just Bass)** sounds an octave lower than written. It uses bass clef primarily, but can also be found in tenor clef. The contrabass is not technically a member of the violin family, but rather of the older viol family. Its four strings are tuned in fourths instead of fifths.

Practical	Advanced	String Tunings
		

☞ The **Harp** is a C instrument, and *sounds as written*.



Note: All of the string ranges may be extended upward via the use of harmonics. They may be expanded downward by use of scordatura.

APPENDIX II: TRANSPOSING INSTRUMENTS IN SCORE ORDER

- The **Piccolo** is pitched in C and *sounds one octave higher than written.*
- The **Flute** is pitched in C and *sounds as written.*
- The **Alto Flute** is pitched in G and *sounds a Perfect 4th lower than written.*
- The **Bass Flute** is pitched in C and *sounds an octave lower than written.*
- The **Oboe** is pitched in C and *sounds as written.*
- The **Oboe d'Amore** is pitched in A and *sounds a minor 3rd lower than written.*
- The **English Horn** is pitched in F and *sounds a Perfect 5th lower than written.*
- The **Heckelphone** is pitched in C and *sounds one octave lower than written.*
- The **Bassoon** is pitched in C and *sounds as written.*
- The **Contrabassoon** is pitched in C and *sounds an octave lower than written.*
- The **E-flat Clarinet** is pitched in E-flat and *sounds a minor 3rd higher than written.*
- The **A Clarinet*** is pitched in A and *sounds a minor 3rd lower than written.*
- The **B-flat Clarinet*** is pitched in B-flat and *sounds a Major 2nd lower than written.*
- The **Basset Horn** is pitched in F and *sounds a Perfect 5th lower than written.*
- The **Alto Clarinet** is pitched in E-flat and *sounds a Major 6th lower than written.*
- The **Bass Clarinet** is pitched in B-flat and *sounds a Major 9th lower than written.*
- The **Contra-Alto Clarinet** is pitched in E-flat and *sounds a Major 13th lower than written.*
- The **Contrabass Clarinet** is pitched in B-flat and *sounds a Major 16th lower than written.*
- The **Soprano Saxophone** is pitched in B-flat and *sounds a Major 2nd lower than written.*
- The **Alto Saxophone** is pitched in E-flat and *sounds a Major 6th lower than written.*
- The **Tenor Saxophone** is pitched in B-flat and *sounds a Major 9th lower than written.*
- The **Baritone Saxophone** is pitched in E-flat and *sounds a Major 13th lower than written.*
- The **Bass Saxophone** is pitched in B-flat and *sounds a Major 16th lower than written.*
- The **C Trumpet*** is pitched in C and *sounds as written.*
- The **B-flat Trumpet*** is pitched in B-flat and *sounds a Major 2nd lower than written.*
- The **Flugelhorn** is pitched in B-flat and *sounds a Major 2nd lower than written.*
- The **Bass Trumpet*** is pitched in E-flat and *sounds a Major 6th lower than written.*
- The **Horn*** is pitched in F and *sounds a Perfect 5th lower than written.*
- The **Trombone** is pitched in C, has a B-flat fundamental, and *sounds as written.*
- The **Treble Clef Euphonium** is pitched in B-flat and *sounds a Major 9th lower than written.*
- The **Baritone/Euphonium** is pitched in C, has a B-flat fundamental, and *sounds as written.*
- The **Tuba** is pitched in B-flat and *sounds as written.*
- The **Timpani** is pitched in C and *sounds as written.*
- The **Glockenspiel** is pitched in C and *sounds two octaves higher than written.*
- The **Xylophone** is pitched in C and *sounds one octave higher than written.*
- The **Vibraphone** is pitched in C and *sounds as written.*
- The **Marimba** is pitched in C and *sounds as written.*
- The **Crotales** are pitched in C and *sound two octaves higher than written.*
- The **Tubular Bells/Chimes** are pitched in C and *sound as written.*
- The **Harp** is pitched in C and *sounds as written.*
- The **Piano** is pitched in C and *sounds as written.*
- The **Celesta** is pitched in C and *sounds one octave higher than written.*
- The **Guitar** is pitched in C and *sounds one octave lower than written.*
- The **Violin** is pitched in C and *sounds as written.*
- The **Viola** is pitched in C and *sounds as written.*
- The **Violoncello/Cello** is pitched in C and *sounds as written.*
- The **String Bass/Contrabass** is pitched in C and *sounds one octave lower than written.*

APPENDIX III: TRANSPOSING INSTRUMENTS GROUPED BY KEY

C Instruments

Piccolo	-	Sounds one octave higher than written.
Flute	-	Sounds as written.
Bass Flute	-	Sounds one octave lower than written.
Oboe	-	Sounds as written.
Heckelphone	-	Sounds one octave lower than written.
Bassoon	-	Sounds as written.
Contrabassoon	-	Sounds one octave lower than written.
Trombone	-	Sounds as written.
Baritone	-	Sounds as written (or a M9th lower if set in treble clef).
Euphonium	-	Sounds as written (or a M9th lower if set in treble clef).
Tuba	-	Sounds as written.
Timpani	-	Sounds as written.
Glockenspiel	-	Sounds two octaves higher than written.
Xylophone	-	Sounds one octave higher than written.
Vibraphone	-	Sounds as written.
Marimba	-	Sounds as written.
Tubular Bells	-	Sounds as written (see entry for more information).
Harp	-	Sounds as written
Celesta	-	Sounds one octave higher than written.
Piano	-	Sounds as written.
Violin	-	Sounds as written.
Viola	-	Sounds as written.
Violoncello	-	Sounds as written.
Contrabass	-	Sounds one octave lower than written.
Guitar	-	Sounds one octave lower than written.

B-flat Instruments

Bb Soprano Clarinet	-	Sounds a M2 lower than written.
Bass Clarinet	-	Sounds a M9 lower than written.
Contrabass Clarinet	-	Sounds a M16 lower than written.
Soprano Saxophone	-	Sounds a M2 lower than written.
Tenor Saxophone	-	Sounds a M9 lower than written.
Bass Saxophone	-	Sounds a M16 lower than written.
Piccolo Trumpet	-	Sounds a m7 higher than written.
Trumpet/Cornet	-	Sounds a M2 lower than written.
Flugelhorn	-	Sounds a M2 lower than written.

A Instruments

Oboe d'Amore	-	Sounds a m3 lower than written.
A Soprano Clarinet	-	Sounds a m3 lower than written.
Piccolo Trumpet	-	Sounds a M6 higher than written.

G Instruments

- Treble Flute - Sounds a P5 higher than written.
- Alto Flute - Sounds a P4 lower than written.

F Instruments

- English Horn - Sounds a P5 lower than written.
- French Horn - Sounds a P5 lower than written.
- Basset Horn - Sounds a P5 lower than written.

E-flat Instruments

- E-Flat Flute - Sounds a m3 higher than written.
- E-flat Soprano Clarinet - Sounds a m3 higher than written.
- Alto Clarinet - Sounds a M6 lower than written.
- Contra-Alto Clarinet - Sounds a M13 lower than written.
- Sopranino Saxophone - Sounds a m3 higher than written.
- Alto Saxophone - Sounds a M6 lower than written.
- Baritone Saxophone - Sounds a M13 lower than written.
- Contrabass Saxophone - Sounds a M19 lower than written.
- Bass Trumpet - Sounds a M6 lower than written.
- Tubax - Sounds a M19 lower than written.

*In addition, there are many instruments that are custom built in different keys (such as Trumpets and Horns in D, E, F, G, etc). In each case, it is advisable to study the score to ascertain the correct transposition of the instrumental part.

*****If any errors are found, please contact me so I may revise/edit the document*****

