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# Texas School for the Blind & Visually Impaired Outreach Program

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**T S B V I**  
Outreach Program

## Music Braille

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Presented by

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Developed by

Texas School for the Blind & Visually Impaired  
Outreach Program



## **TOPICS TO COVER**

- Why Music Braille
- Teaching Music Braille
- Music Braille Resources
- Creating Music Braille
- Working with Music Teachers
- Student Creation of Music Braille

## **WHY MUSIC BRAILLE**

- Article
- NFB Video Measure for Measure: Achieving Equality through Braille Music Literacy

<http://www.youtube.com/watch?v=P8Ti1dlrud4>

## **TEACHING MUSIC BRAILLE**

- Music Teacher or TVI
- How
- When

## **MUSIC BRAILLE RESOURCES**

- Classes
- RNIB Course
- Books
- Networking
- Braille Through Remote Learning: Music Braille Overview  
<http://www.brl.org/codes/session09/overview.html>
- Royal National Institute of Blind People: Music books and braille transcription  
<http://www.rnib.org.uk/livingwithsightloss/leisureculture/music/readingmusic/Pages/musicbooks.aspx#H2Heading5>

## **CREATING MUSIC BRAILLE**

- Braillist
- TVI
- Music Teacher
- Band Director or Staff
- Dancing Dot's Goodfeel:  
<http://www.dancingdots.com/main/goodfeel.htm>
- Finale software: <http://www.finalemusic.com/Finale/>

## **STUDENT CREATION OF MUSIC**

- Lime Aloud with JAWS
- Print or Braille
- Braille Display
- PC Keyboard
- MIDI Keyboard
- Lime Aloud: A Whole New Way for the Blind to Read and Write Music [www.dancingdots.com/prodesc/limealoud.htm](http://www.dancingdots.com/prodesc/limealoud.htm)

## WHY BRAILLE MUSIC?

*"For those who don't know, the stupidity of braille music is that a literary D equals a music C, a literary E is a music D and so forth."*

It is important to remember that Louis Braille, a brilliant teenager from a small town near Paris, spent his teenage years perfecting a unified system using a six-dot cell to faithfully represent literary, mathematical and musical information. At the age of twenty, he published his code which is essentially the same today as it was in 1829.

I would love to have the chance to ask him why he chose dots 1-4-5 to represent the pitch we call C. I suspect that his choices for dot patterns had more to do with geometry than any correspondence to literary braille. But one thing is for certain, he himself did not call that pitch C. He called it what people in France and many non-English-speaking countries still call it today, that is, DO (pronounced doe).

So, we can speculate that he may have been thinking D for "doe". One thing is for certain: he *\*was\** thinking! Today, Braille is buried in the Pantheon of Heroes in Paris because he made blind people literate using a system so well suited to the way they perceive the world. Many credit him for designing the world's first dot matrix printer, a device for embossing patterns of dots to form print characters, which he called raphigraphy.

During his lifetime he was praised for his musicianship as an organist and cellist by many, including Felix Mendelssohn. Before his premature death at the age of 43 he was nominated for one of France's highest national Medals of Honor but never received the acclaim he deserved in his own day. At a time when the career choices of the vast majority of blind people were to work as professional beggars or worse, he led a distinguished career as a teacher, performing musician and inventor. In his will he left significant sums to his family, friends, school and church.

But, back to his system! The seven degrees of the western scale are represented in Braille's system by seven combinations of the top 4 dots in the six-dot braille cell. The bottom two dots indicate the rhythm for that pitch. So, beneath the tip of one finger, we can read the two most important attributes of a note. The braille music code is well defined and capable of faithfully representing extremely complex pieces of music. In some ways, it is more logical than staff notation.

In the venerable solfege system, the seven degrees of the scale are called (I will spell phonetically so screen reader software will pronounce properly) doe, ray, me, fa, sol, la, and ti. The sequence representing the corresponding braille characters for these pitches is the same as the letters d through j in the literary braille code. When I teach music braille to a beginner, though, I insist that they refer to the solfege names for the scale degrees to prevent code confusion between music braille and literary braille until they are completely comfortable with the code switching required by the brain as one reads the braille. So, if the student reads dots 1-4-5, he must read it as "doe". If dots 2-4, it must be called LA. 2-4-5 is called TI and certainly not J. Again, the most important thing to remember when we read music braille code or math code or any braille code that's not literary code, is that it is indeed not literary material but rather a total redefinition of those 64 unique patterns we can make from the six-dot cell.

With practice, blind musicians can sing melodies "at sight" and participate fully in classes on sight singing. If a student is proficient in reading literary braille there is no reason why he or she cannot learn to read music braille. A braille score provides not only the pitches and rhythms to be performed but also all of the dynamic marks, articulations and directions from the composer.

Unfortunately, most of the people who tried to teach us to read music in braille really had no idea just how to teach us. Sadly, many of them did so half-heartedly with the preconceived notion that we would never learn it. Many of us learned to repeat their uninformed position that braille music is just too hard for us to learn. Through his courses and numerous articles and presentations, Richard Taesch has been a

positive force in our time in changing attitudes about braille music. I started Dancing Dots to find ways to increase the amount and variety of braille music and thus encourage more people to use it. I like to think that our work carries on the spirit of Mr. Braille and his quest for literacy, inclusion and independence for blind people.

I say: Long live braille! I do believe strongly that, especially in an educational situation, blind musicians who can read literary braille ought to learn to read music braille. In a school where sighted students are expected to read music to satisfy course requirements, the presumption should be that a student who reads literary braille can and should learn to read and write music in braille. And now, with our access solutions to notation programs such as Sibelius and Lime, blind people can also learn to print their musical ideas for sighted performers, teachers, students and colleagues.

An admirer of M. Braille and his brilliant system,  
Bill McCann  
Founder and President of Dancing Dots since 1992

# MUSIC BRAILLE

## Music Braille I: Overview

Welcome to music braille! Music braille represents a challenge beyond even other specialized codes such as mathematics! The complexity of most print music requires significant skills on the part of the transcriber, the most important being the willingness and ability to think through the transcription before sitting down at the braille or computer.

There are some who will argue that the brailist need not be able to read print music, but, like mathematics braille, the music brailist who has some abilities in music is clearly at an advantage. Before getting into specifics, this reading works to point out some key generalizations about braille music:

1. Unlike print music, braille music is not written on a staff.
2. There are three "styles", or methods, of formatting braille music:
  - bar-over-bar
  - line-by-line
  - single line

Each of these methods will be explained in detail in the appropriate sessions.

3. Clef signs are generally omitted in braille, replaced by octave marks.
4. There is specific formatting/layout rules for vocal, strings, percussion, winds, etc. that the braille music transcriber must learn.
5. Bar lines between measures are indicated with a space.

## Resources

There are a number of resources available, in addition to these lessons, to help you with your learning of braille music. In an order of most useful (at least to me!), these resources are:

- How to Read Braille Music: An Introduction, by Bettye Krolick, available at Opus Technologies
- Primer of Braille Music, Edward Jenkins, American Printing House



for the Blind

- An Introduction to Braille Music, Edward Godfrey, National Braille Association
- Handbook for Braille Music Transcribers, National Braille Association

In addition, the New International Manual of Braille Music Notation, published by the Braille Music Subcommittee, World Blind Union is currently being prepared for publication on the Web through this site.

As with the textbook code, the Braille Authority of North American (BANA) has recently (Fall 1998) approved changes in the braille music code. Most of the code is unchanged, but there are some changes. Several examples are listed below, and they will be re-stated in the appropriate sessions:

1. No contractions should be used in music title pages
2. Texts of songs, excepting songs and chants in hymnals and school materials for grades K-6, should be in grade 1 braille. When song texts are in grade 1 braille, all directions and indications of tempo and mood, and all transcriber notes should also be uncontracted.
3. Words that in braille are placed above the music line are to be enclosed between word signs. Parentheses that are not included in print must not be added in braille.
4. All transcriber-added signs such as "understood" rests and accidentals must be preceded by a Dot 5. This practice has been optional in the past, but is now mandatory.

## Music Braille: Notes and Rests

There are seven notes in a musical scale, typically beginning with the note "C", followed by: D E F G A B. These notes are also sometimes designated "do re mi la so la ti", but you will probably not encounter that notation. The braille equivalents of the seven basic notes must be memorized, using these guidelines to help:

1. Eighth notes have no dots 3 or 6
2. Quarter notes have a dot 6

- 3. Half notes have a dot 3 but no dot 6
- 4. Whole notes have both dots 3 and 6

For example, the scales for quarter notes and whole notes are shown below, followed by a table of all of the notes:

Braille representation of the quarter note scale:

```

- - - - -
. . . . .
. . . . .
C D E F G A B
do re mi fa so la ti

```

Braille representation of the whole note scale:

```

. . . . .
. . . . .
C D E F G A B
do re mi fa so la ti

```

[Note: the example above is slightly incorrect, in that octave marks are needed, but are not used as they have not been presented to the student yet!]

Type	C	D	E	F	G	A	B	Rest
Wholes or 16ths								
Halves or 32nds								
Quarters or 64ths								
8ths or 128ths								

Some notes are also "dotted", meaning they have an extra time value.

The dotted braille notation is a dot 3  $\dot{\cdot}$ .

A simple example should help:



For smaller notes and rests, such as 128ths, the brailist should use this chart. Basically, you use the same symbols as for eighth, quarter, half, and whole notes:

Regular value	Smaller value	Braille
Eighth note (1/8)	128th note	$\dot{\cdot}$
Quarter note (1/4)	64th note	$\ddot{\cdot}$
Half note (1/2)	32nd note	$\text{⠠}$
Whole note	16th note	$\text{⠡}$

## Octave Marks


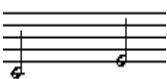
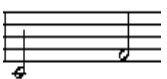

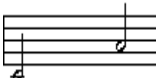
Now comes the really tricky part of writing notes! Notes come in octaves, units of seven notes. You can have the same note name but in several different octaves. For example, the note "C" can be found in many different octaves. We need some way in braille to represent the same note as seen in the various octaves. Octave marks serve that purpose.

1st (bass)	::	
2nd (bass)	::	
3rd (bass)	::	
4th (treble)	::	
5th (treble)	::	
6th (treble)	::	
7 <sup>th</sup>	::	

There are, as you might suspect, a list of rules for the use of octave marks:

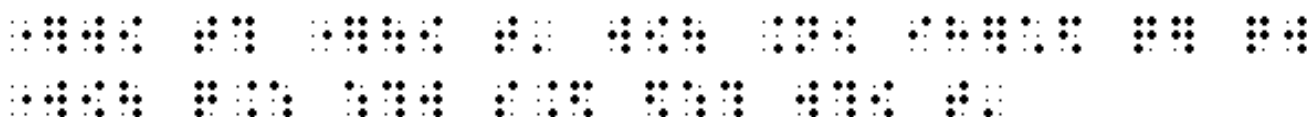
1. an octave mark is always required before the first note in a line of music
2. When the interval between two notes is a **second** or a **third**, no

octave mark is required. To figure out an interval, count the spaces and lines between two notes, making sure to include the notes themselves. For example:

Interval name	Interval	Description
Second		Starting on middle C, the interval goes up one whole step to a D. Counting both the C and the D, the interval is a second
Third		Starting on middle C, count the C, the space after the C, and the E note on the first line. This interval is a third.
Fourth		Starting on middle C, the interval goes up to an F, the first space on the staff. C-d-e-F gives you an interval of a fourth. The lower case notes in the previous sentence indicate skipped notes.
Fifth		C-d-e-f-G, a fifth
Sixth		C-d-e-f-g-A, a sixth

3. When the interval is a **fourth** or a **fifth**, an octave mark is required only when the second note is in a different octave.
4. When the interval is a **sixth** or **greater**, the octave mark is always used.

An example is certainly useful at this point!



A measure-by-measure analysis:

1. This measure starts with an octave 4 mark (dot 5), since it is the first measure
2. no octave mark
3. this measure starts with an octave 4 mark, since the last note in the previous measure (the C) is a fifth away from the first note in Measure 3 (an F). The "fifth" rule says to use an octave mark when the second note is in a different octave. The C is in the fifth octave, and the F is in the fourth. Why didn't we use the octave 5 marker for the C? Because it only had an interval of a second (B --> C) from the previous note.
4. no octave mark here, still in Octave 4
5. no octave mark here, still in Octave 4
6. This measures starts with an octave 5 mark, since the C is a fourth from the preceding G. We do not need an octave mark before the A, since its interval is a third
7. no octave marks here
8. no octave marks here
9. no octave marks here
10. no octave marks here

11. Measure 11 uses an octave 5 marker, since the interval from the F to the D is a sixth.
12. no octave marks here
13. The interval skip of a fifth from the A to the E, spanning Octaves 4 and 5, requires the use of the octave 5 marker.
14. no octave marks here
15. no octave marks here
16. no octave marks here

## Time Signatures

Time signatures in music represent a way of expressing the number of beats in a measure and how much each beat is worth. For example, a "4/4" time signature means that there are four beats in a measure, and each beat has a value of a quarter note. A time signature of "12/8" means there are 12 beats in a measure, and each beat has the value of an eighth note.

Time signatures are very straight-forward. The table below shows some examples:

Symbol	Braille notation
	⠠⠠⠠⠠⠠⠠⠠⠠
	⠠⠠⠠⠠⠠⠠⠠⠠
	⠠⠠⠠⠠⠠⠠⠠⠠
	⠠⠠⠠⠠⠠⠠⠠⠠
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	⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠
	⠠⠠⠠⠠⠠⠠⠠⠠
	⠠⠠⠠⠠⠠⠠⠠⠠

If you are new to music, the "C" with the bar is called "cut time", and basically is equivalent to 2/2 time. The "C" is known as common time, and is equivalent to 4/4 time.

Time signatures are normally centered above the first line of music or words, in combination with the key signature. Often in music there is a change in time signature -- this is represented in braille where it appears, with a space preceding and following the time signature.

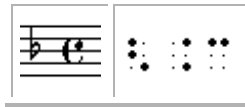
### Key signatures

Key signatures in music represent the number of sharps and flats that are "common" throughout a piece of music. For example, a piece of music written in G major will have one sharp (an F sharp). The musician assumes that any F he or she encounters is sharp, unless the music specifically says otherwise!

Key signatures, like time signatures, are also easy:




In the first example, to combine the key signature with the time signature, the braille would be:



Again, this information is normally centered above the first line of music.

## Accidentals

Accidentals in music are the sharps, flats, and naturals that are placed in front of a single note to change its pitch. If you recall from the previous reading on key signatures, each piece of music is written with a "generic" set of notes that are sharpened or made flat. For example, in the key of G, the F is always sharp, unless an accidental changes it.

You should recall the braille notation of sharps, flats, and naturals from the reading on key signatures:

Sharp: ♯

Flat: ♭

Natural: ♮

A simple scale shows how to use this notation:





Fortissimo	<i>ff</i>	
Fortississimo	<i>fff</i>	
Mezzo-forte	<i>mf</i>	
Mezzo-piano	<i>mp</i>	
Piano	<i>p</i>	
Pianissimo	<i>pp</i>	
Accelerando	accel.	
Rallentando	rallen.	
Ritardando	rit.	
Ritenuto	riten.	
Pause (fermata)		
Tenuto (pressed tone)		
Comma (break in rhythm)	,	
Staccato (detached note)		
Staccatissimo (very detached note)		

Some notes on usage of expression marks. The expression mark goes

in front of the note it is affecting. In the case of "multiple-note" expressions (such as the graphic crescendo and decrescendo), the beginning the expression goes in front of the first note affected, and terminates after the last note affected. The multiple expression can also be cancelled by another expression marking, such as in this example:

The image shows a musical staff with a graphic crescendo line above it. The staff contains four quarter notes: B2, C3, D3, and E3. A fortissimo (*ff*) marking is placed above the E3 note. Below the staff is the corresponding Braille notation: a first cell with dots 1-2-3-4-5-6, a second cell with dots 1-2-3-4-5-6, a third cell with dots 1-2-3-4-5-6, and a fourth cell with dots 1-2-3-4-5-6. The *ff* marking is represented by a Braille cell with dots 1-2-3-4-5-6.

In this example, the crescendo that starts on the B in the first measure is terminated by the fortissimo expression mark on the E in the second measure.

The note following an expression mark must have a new octave mark. If the braille cell following the expression mark contains dots 1, 2, and/or 3, there must be a dot 3 following the expression mark. An example:

The image shows a musical staff with a fortissimo (*ff*) marking above the first note. The staff contains four staccato notes: G4, A4, B4, and C5. Below the staff is the corresponding Braille notation: a first cell with dots 1-2-3-4-5-6, a second cell with dots 1-2-3-4-5-6, a third cell with dots 1-2-3-4-5-6, and a fourth cell with dots 1-2-3-4-5-6. The *ff* marking is represented by a Braille cell with dots 1-2-3-4-5-6.

In this example, the expression mark for the fortissimo is "closed" with a dot 3, since the next cell contains the dots 2-3-6 notation for a staccato note. Since that notation has left-dots (2 and 3), the expression mark must be closed off with the dot 3. In this example, we also take advantage of **doubling** -- since we have four staccato notes, we can put a double staccato symbol in front of the first staccato note, and then a single staccato symbol in front of the last staccato note. Doubling can be used if you have **four consecutive** notes that contain the same notation. Doubling is not interrupted if you have rests between the affected notes.

In this example, we could actually do the braille much more simply.

Since there are four notes that have staccato marks, we can use the "double" staccato mark. Put a double staccato mark (dots 2-3-6) where the consecutive notes begin, and one before the last staccato'd note. If there are rests between consecutive notes, you can still use the doubling notation.



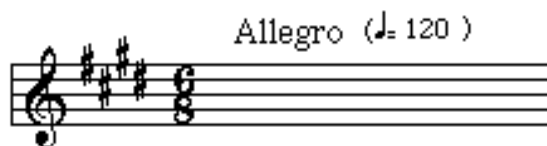
## Words of Expression

In addition to some of the expression markings shown above, print music routinely includes notations such as "a tempo", "allegro", "moderato", and the like. These often indicate tempo and mood. When these words are printed above the music at the beginning of the piece, they are transcribed on the same line as the key and time signatures, preceding them and centered.



No contractions are used for foreign words, but can be used for words such as "Moderately fast" or "quickly."

More difficult are metronome markings. These indicate how quickly a particular note value is to be played. For example, the sample below suggests that this music is to be played reasonably fast, 120 quarter notes per minute!



Often times there will be a variety of markings at the beginning of the piece. Tempo markings are usually brailled first, then dynamic markings. Follow, however, the print notation, brailing things that

appear first (farthest to the left) first. There must be a period (dots 2-5-6) after the tempo or mood word.

Musical notation showing a treble clef, key signature of two flats (B-flat and E-flat), and a 3/4 time signature. The tempo marking is "Lento (♩- 60)" and the dynamic marking is "mp". The mood marking "dolce" is written below the staff. The first measure contains a quarter note on G4, followed by a quarter rest, and then a quarter note on B-flat4.

Braille representation of the musical notation above, showing the tempo, dynamic, and mood markings followed by the first measure of music.

In the above example, the "larger" tempo indicator and metronome marker are centered along with the key and time signatures. The dynamic and mood markers ("mp" and "dolce") are placed on the first line of music, followed by the first measure of music (in the example, the groups of dot 3's just mean more stuff comes after the first measure!).

One more quick example. Occasionally you will see an expression followed by a series of dashes or lines, showing the musician where the expression modifies the music. To show this, we use two dot 3's for the beginning, and a word sign and one dot 3 following the note where the continuation is discontinued:

Musical notation showing a treble clef and a common time signature. The expression marking "rit. e dim." is written above the staff, followed by a dashed line. The first measure contains a quarter note on G4, followed by a quarter note on A4, and then a quarter note on B4. The second measure contains a quarter note on A4, followed by a quarter note on G4, and then a quarter note on F4.



Braille representation of the musical notation above, showing the expression marking followed by the first measure of music.

We will try to include lots of different examples of expression markings with the various examples!

## Ties and Slurs

### Ties

Ties are notations in music in which two notes (usually the same note) are "tied" between two measures. In the example below, the E at the end of the first measure is "tied" to the E at the measure of the second, giving it a sense of being a half note.

	Single note tie
	Chord tie



An example and its braille notation:


### Slurs

Slurs are notations that indicate to the musician that the music is to be sung or played smoothly. In braille music, you can have a "short" slur and a "long" slur. A short slur if the slur covers four or less notes and a long slur covers five or more notes.

The basic notation is shown in the table below:

	Short slur
	Long slur
	Bracket slur

Some examples:

Simple slurs, no more than four notes each:

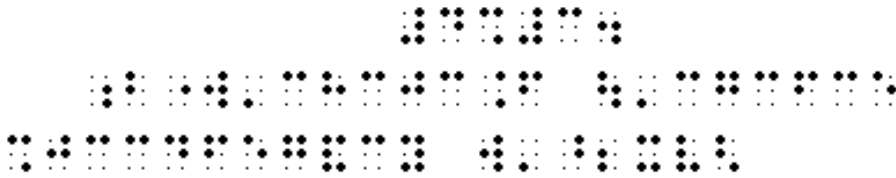


Long slur covering eleven notes. There are actually two techniques to handle this: the first shows the use of doubling, and the second shows the use of the bracket slur.

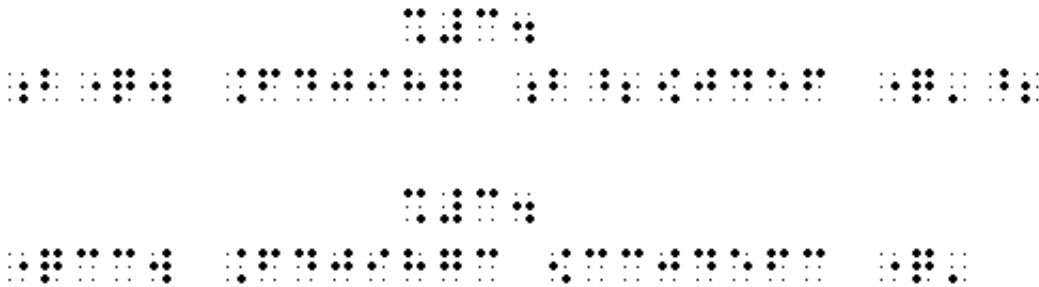


Several short slurs and a long slur. Notice that when you have "overlapping" slurs, the bracket slur sign is used instead of the "doubling" technique.





Overlapping slurs (ending on one note, another slur starting on that ending note). As in example 2 above, there are two choices on how to braille this, the first with brackets and the second with doubling of single slurs:



In Example 5, we see a long slur overlapping two tied quarter notes. We only show this brailled using bracket notation, but you could also use doubling of single slurs.

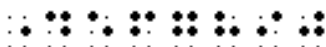


## Groupings

In music, notes with smaller values are often "grouped" into beats corresponding to the time signature. In the example below, the eighth notes are grouped to fit the quarter note:



The braille for this notation is simply a series of eighth notes. There is no special notation to show the connections between each pair of eighth notes:



In music that involves smaller notes -- specifically 16ths, 32nds, and 64ths (but not 128ths!), the transcriber can group chunks of notes into beat-equivalent unit. Let's look at the example below, looking first at the print notation. We have four groups of 16th notes, each group signified by a heavy double horizontal bar. For the sighted musician, this grouping helps him or her to identify the "beat". Typically, the first 16th note of each group is the "strong" beat, and it is often emphasized that way. We need a way to capture that sense in braille as well.

If you look at the first row of braille, we have simply brailled each note as a 16th note. We have "lost" the sense of a first strong beat, or a sense of four groups of 16 notes (rather than 16 individual 16th notes). The second row of braille "recaptures" that sense. In that braille, we have brailled the first note as its true value, a 16th note. The next three notes in the group are each then brailled as an eighth note. Each 16th note at the beginning of each group is brailled as its true value, followed by a series of 8th notes. This notation helps the braille reader to "pick out" the beat, just as the print reader gets his or her cues from the horizontal bars.

A musical staff in treble clef with a common time signature (C). It contains a single measure of eight eighth notes: C4, D4, E4, F4, G4, A4, B4, and C5. Below the staff is the corresponding Braille notation, consisting of two rows of 16 Braille characters each, representing the notes and their rhythmic value.

The rules (with examples) for grouping are as follows:

1. The group must have at least three notes
2. All notes in the group must have the same value, which means that if one of the notes in a group is dotted, you cannot use grouping

A musical staff in treble clef with a common time signature (C). It contains a single measure of eight eighth notes: C4, D4, E4, F4, G4, A4, B4, and C5. The eighth note G4 is dotted. Below the staff is the corresponding Braille notation, consisting of two rows of 16 Braille characters each.

3. If the group of notes is followed by an eighth note or eighth rest in the same measure, you may not use grouping. If, however, the eighth notes are in a new measure or in a divided measure, then you can group

A musical staff in treble clef with a common time signature (C). It contains two measures of eighth notes. The first measure has seven eighth notes: C4, D4, E4, F4, G4, A4, and B4. The second measure has one eighth note: C5. Below the staff is the corresponding Braille notation, consisting of two rows of 16 Braille characters each.

4. A rest can be the first note of a group, but if the rest is elsewhere, grouping cannot be used.
5. All notes of the group must be on the same braille line. (NOTE: a dot 5 is used to divide a measure between lines, if the complete measure cannot fit on a braille line.)
6. If a bar line or music hyphen interrupts a group, do not use grouping.
7. If you have brackets, slurs, expression marks, accidentals, ties, it is permitted to use grouping.
8. Notes in a group cannot "cross the beat", meaning that all of the notes in a group must be in the same beat. Use this table below as a guide:

<b>Time Signature</b>	<b>Groupings</b>
2/2 3/2 4/2 2/4 3/4 4/4	16ths, grouped by fours 32nds, grouped by fours 64ths, grouped by fours
3/8 4/8 4/16 5/16	16ths, grouped by the measure 32nds, grouped by fours for 3/8 and 4/8 time 32nds, grouped by the measure for 4/16 and 5/16 Smaller values unlikely
6/8 9/8 12/8	16ths, grouped by sixes (compound beat) 32nds, grouped by fours (simple beat) 64ths, grouped by fours (half beat, simple)
6/16 9/16 12/16	16ths, grouped by threes (compound beat) 32nds, grouped by sixes (compound beat) 64ths, grouped by fours (simple beat)
6/2 6/4 9/4 12/4	all values grouped by four

9. Simple time occurs when the top number of the time signature is 2,3,4,5, or 7. Compound time occurs when the top number is 6, 9, or 12.
10. An example is shown below. In this example, we have two measures of 3/4 time. According to the table, we should have groups of four for the sixteenth notes. Notice also that the notes cross the beat -- the first two 16th notes are in the first beat, and the second two 16th notes are in the second beat.



There also exists what are known as "irregular" groupings. The most well-known (and the only one presented here) is the "triplet":



Some observations about triplets:

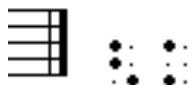
- If you have a series of four or more triplets in a row, you can use the double triplet sign (two groups of dots 2-3) in front of the first triplet (with a single triplet sign in front of the last triplet).
- Triplets can contain rests, and may or may not have the slur sign over top. Continue to use the appropriate triplet sign
- be careful not to mistake a triplet printed "3" marking for a fingering sign (a notation used to show which finger to use to play the note, common in instrumental music)

## Repeats and Bar Lines

### Bar Lines

Bar lines are quite straightforward:

Heavy double bar (shown at the end of the piece or movement):



Light double bar (shown at the end of a section):



Bar lines are brailled after the last measure without a space. If more measures appear after a light double bar, a space is placed between the light double bar and the next measure.

### Repeats

The repeat sign -- ♯ is used in braille music to indicate that the preceding measure is repeated exactly. The repeat sign is preceded and followed by a space:









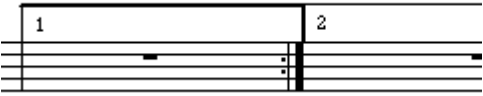

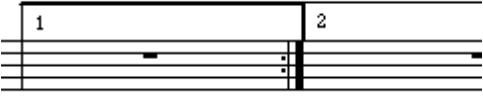
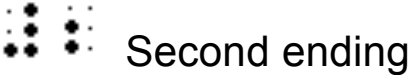





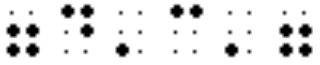

You can also use the repeat sign to replicate the first half of the measure:



Repeat signs can also be used to replicate chords, which will be presented in the reading on chords. Music also has repeats, indications that a specific section of the music is repeated for some number of

times.

The music notation and their braille equivalents are shown in the table below:

Print Music Notation	Braille Music Notation
	
	
<p><i>Fine</i></p> 	
	
	
	
	
<p><i>D.S.</i> Da Segno, repeat from the sign</p>	
<p><i>D.C.</i> Da Capo, repeat from the beginning</p>	
<p><i>D.S. al Fine</i></p>	

<i>D.S. al Coda</i>	
<i>D.S. al</i>	
<i>D.S. al</i>	

A simple example shows several of the notations shown in the table:

Moderato  
*ff* *Fine*

*D.S. al Fine*



# German Dance in C

Beethoven

The image shows a musical score for 'German Dance in C' by Beethoven. It consists of two systems of music. The first system has four measures. The tempo is marked as quarter note = 132. The first measure has a piano (*p*) dynamic and a fingering of 2. The second measure has a sforzando (*sf*) dynamic and a fingering of 1. The third measure has a slur over it and a fingering of 3. The fourth measure has a sforzando (*sf*) dynamic and a fingering of 3. The second system has four measures. The first measure has a slur over it and a fingering of 3. The second measure has a forte (*f*) dynamic and a fingering of 3. The third measure has a slur over it and a fingering of 1. The fourth measure has a slur over it and a fingering of 3. The left hand part is in 3/4 time and consists of chords and single notes.

The teachers' copy includes:

- staccato markings
- dynamic markings - *p*, *sf*, *f*
- phrase markings

Note also:

1. In the pupils' copy, the bar numbers are given above the right hand part throughout whereas in the teachers' copy they are at the beginning of each line.
2. Each bar is numbered in the pupils' copy, first bar in each line in the teachers'.
3. Bar repeats are used.
4. Fingering appears in the pupils' copy as this is essential from the start of rehearsal.
5. Note in the teachers' copy the clarification of the clef used in the left hand: vital information for a teacher who is blind working with a sighted student, who is using stave notation.

6. The metronome marking is given as a stem sign instead of a C crotchet: this is customary in English transcriptions, but this course uses the agreed US standard now adopted.
7. Tracker dots are used in the left hand where otherwise there would be more than seven blank cells.

## **BRaille MUSIC RESOURCES**

### **Braille Music Course**

Course for teachers of Braille music at UMASS Boston Website:

<http://www.nercve.umb.edu/index.php?page=080326>

### **National Federation of the Blind**

National Federation of the Blind Musicians Listserv

<http://www.nfbnet.org/mailman/listinfo/musicltk>

### **Music Education Network for the Visually Impaired (MENVI)**

MENVI is a coalition of parents, educators and students. Operated by blind musicians and teachers for blind musicians and their teachers, MENVI is an information network and resource.

Music Education Network for the Visually Impaired (MENVI)

Southern California Conservatory of Music

MENVI Headquarters

8711 Sunland Boulevard

Sun Valley, CA 91352

Phone: (818) 767-6554

Fax: (818) 768-6242

Website: <http://www.menvi.org/>

### **National Resource Center for Blind Musicians**

Articles, lists of resources, and information about summer training in Braille music and technology for blind music students

Website: <http://www.blindmusicstudent.org>

### **National Resource Center for Blind Musicians**

Articles, lists of resources, and information about summer training in Braille music and technology for blind music students

Website: <http://www.blindmusicstudent.org>

## **National Braille Association, Inc.**

NBA maintains a collection of braille music in addition to their other services. See their website for pricing information or to order a free catalogue.

National Braille Association, Inc.

Three Townline Circle

Rochester, NY 14623-2513

Phone: (716) 427-8660

Fax: (716) 427-0263

Website: <http://www.nationalbraille.org/>

[NBA Forums http://www.nationalbraille.org/Forum/](http://www.nationalbraille.org/Forum/)

## **Braille through Remote Learning (BRL)**

They have the 1997 braille music code online <http://www.brl.org/music>

## **BrailleM electronic mailing list**

BrailleM is a place for discussing and learning about all aspects of braille music code. The list is designed to help beginners in Braille music and give them a place where they can ask questions of more experienced braille music users. <http://brenthugh.com/braillem/>

## **Dancing Dots**

Software company that has developed "Goodfeel," a program that transcribes certain types of music notation files, including midi files, into braille music. It is available in different option packages, one of which includes Midiscan--a program that converts scanned printed music into a midi file.

Dancing Dots

1754 Quarry Lane

P.O. Box 927

Valley Forge, PA 19482-0927

Phone: 610 783-6692

Fax: 610 783-6732

Website: <http://www.dancingdots.com>

## **Music and Arts Center for the Handicapped (MACH)**

This organization holds an annual Summer Institute for Blind College-bound Musicians. They also have a National Resource Center that you can contact with questions about braille music or music technology and they provide workshops and basic music technology training to teachers and college students throughout New England.

Music and Arts Center for the Handicapped (MACH)

National Resource Center for Blind Musicians

600 University Avenue

Bridgeport, CT 06601

Phone: (203) 366-3300

Fax: (203) 368-2847

## **NLS**

The special music collection consists of more than 30,000 braille and large-print music scores, texts, and instructional recordings about music and musicians on cassette. Some items are purchased from national and international commercial sources. Other materials are selected and produced in braille and audio formats by NLS, with permission of composers, authors, and publishers. Also, some titles are originally developed for the NLS program. The collection includes materials from elementary to advanced levels. <http://nlscatalog.loc.gov>

A growing number of braille music scores is available in an electronic format via the Internet. The music files can be browsed online or downloaded for later reading or embossing. A list of available titles is on the web [www.loc.gov/nls/braille/musiclst.html](http://www.loc.gov/nls/braille/musiclst.html), and there is a link to each music file from its record in the online catalog

## **Opus Technologies**

A Software company that developed the program Opus Dots Lite-- software that converts scanned print music into braille. They also distribute Optek Systems' Toccata software. Toccata transcribes braille music from scanned printed music and from midi files. You can also enter music into a file directly.

Opus Technologies

13333 Thunderhead Street

San Diego, CA 92129-2329 USA

Toll-free Phone: (866) OPUSTEC or (866) 678-7832

Telephone: (858) 538-9401

Fax: (858) 538-9401

Website:

<http://www.opustec.com/>

## **Tack-tiles**

An interesting system for learning braille, they have a music code set available

Tack-Tiles

P.O. Box 475

Plaistow, NH 03865-0475

Tel. (603) 382-1904

Fax (603) 382-1748

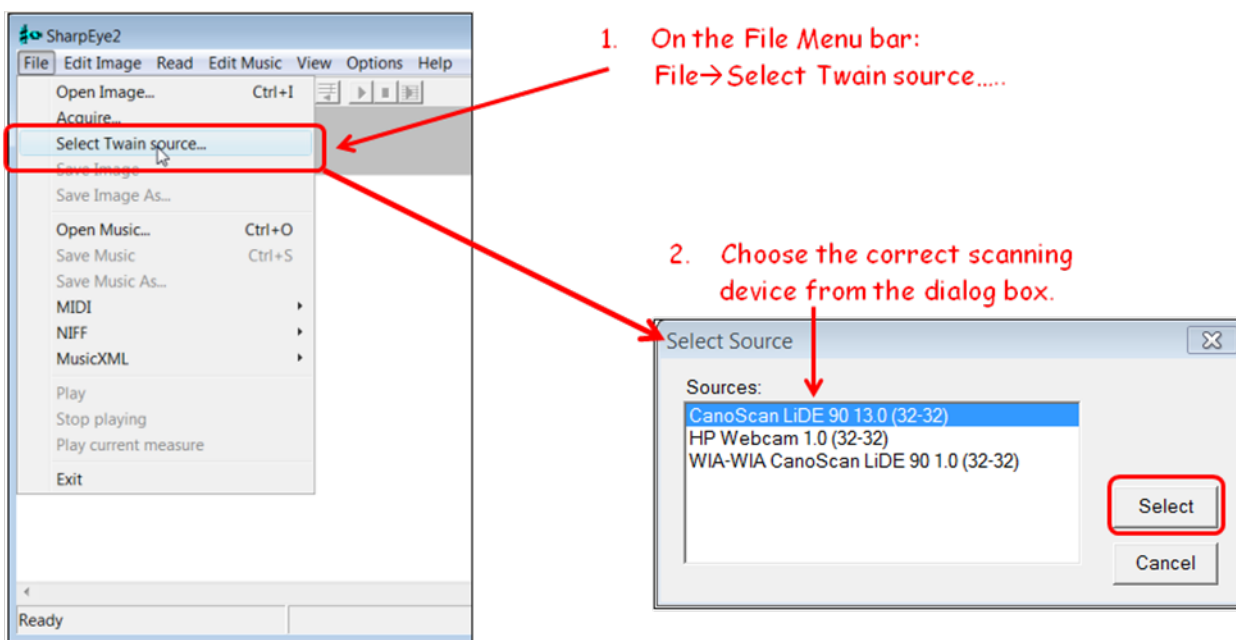
Website: <http://www.tack-tiles.com>

# BRAILLE MUSIC TRANSLATION WITH DANCING DOTS SOFTWARE

## Using Sharp Eyes, Lime and Goodfeel Software

### Selecting the Scanning Source

From the File Menu select the twain source. Pick your scanner from dialog box, and press the Select button.

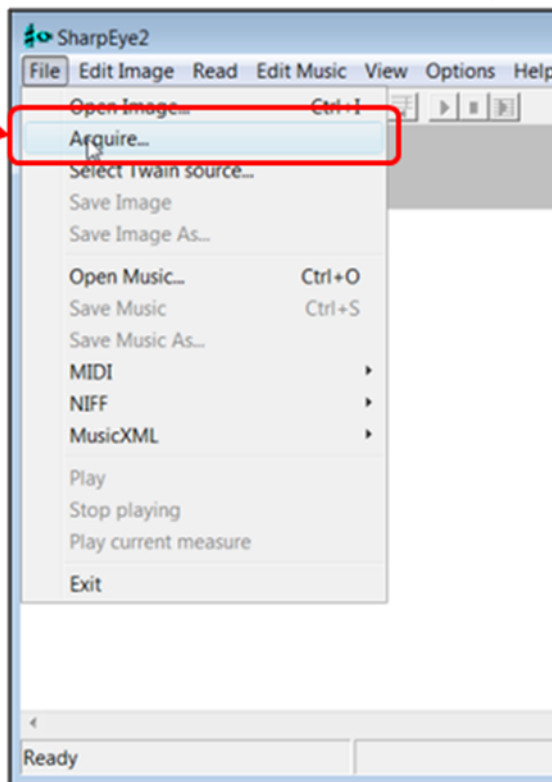


## Starting the Scanning Process

From the File Menu select Acquire to begin the scanning process.

File Menu Bar: File→Acquire

Select "Acquire" to start the scanning process

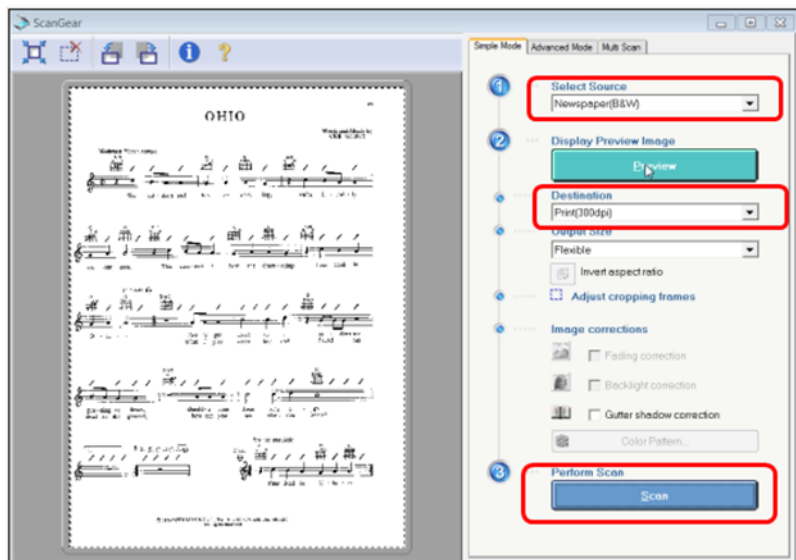




## Scanning Settings

From the scanning settings dialog box, choose Newspaper (B&W), and Print 300 Dpi. Then press scan.

# Scanning Settings



Select "Newspaper (B&W)"

Select "Print (300dpi)"

Press "Scan" when ready.

## The Scanned Image

The scanned image is a .TIFF, and cannot be edited.

# The Scanned Image

OHIO

C

G

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nd Nix - on com - ing; we're

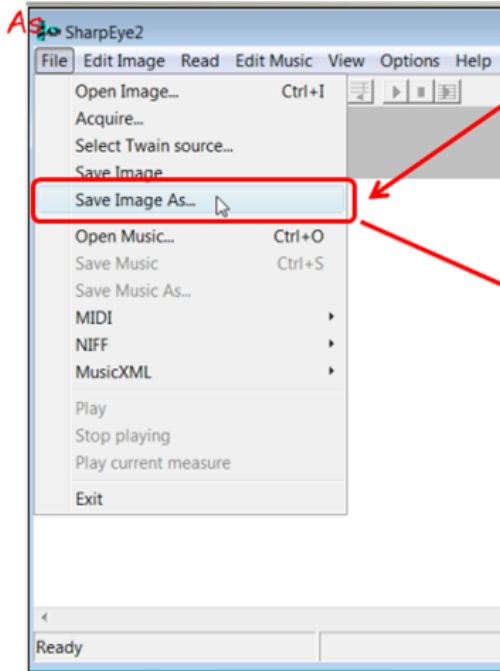
The scanned image produced is a .tiff image.  
No editing can be done in this file type.

## Saving the SharpEye Image (.tiff file)

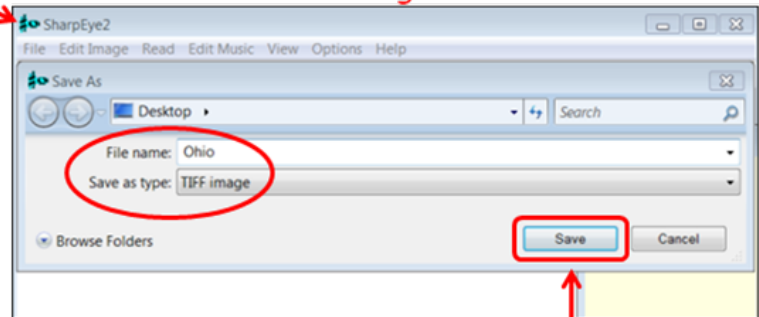
Open SharpEye, and from the File Menu choose Save Image As... Then save the image as a .TIFF image, remember to press the Save button.

1. File Menu Bar: File→Save Image

2. Select "Save Image As..."



3. Save as a TIFF image

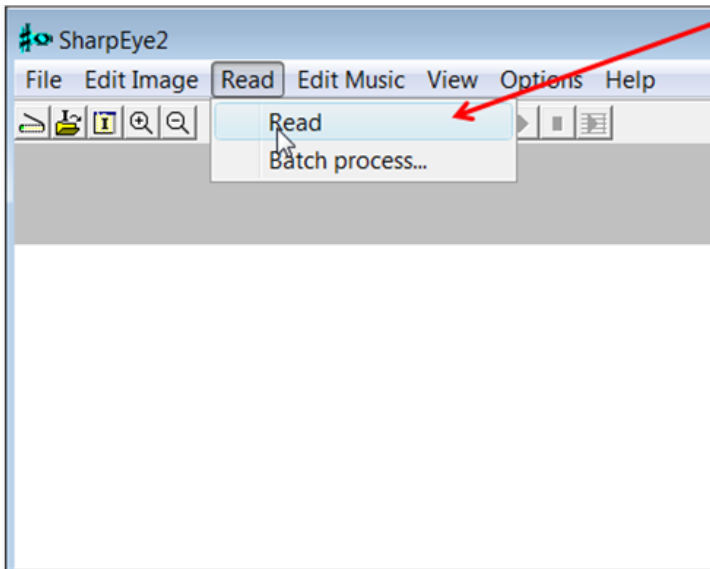


4. Be sure to press "Save"

## Acquiring the Musical Score for Editing

Still in SharpEye, Choose Read from the Read Menu. This will process the image into music text which can be edited.

1. File Menu Bar: Read→Read



2. Select "Read" to translate image of the music to actual music text that can be edited.

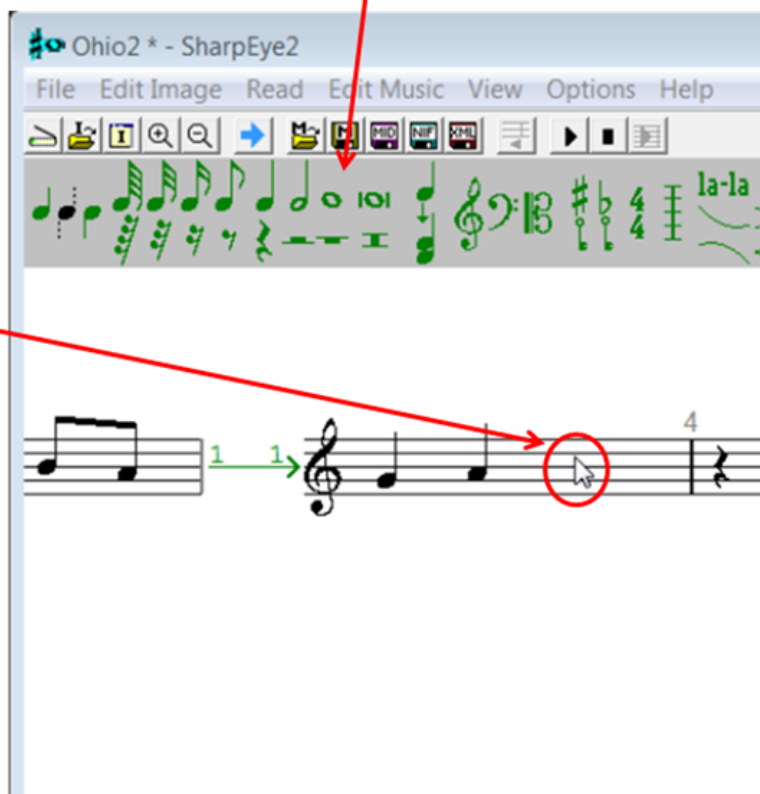
## Adding Notation (Activating the Notation Ribbon)

The music notation ribbon will now be present. You can place the cursor on the score to edit and use the right click button on the mouse to replace with the correct note or symbol.

3. The music notation editing section will turn to green. It is ready for adding notation on the score.

1. Place the cursor somewhere on the score.

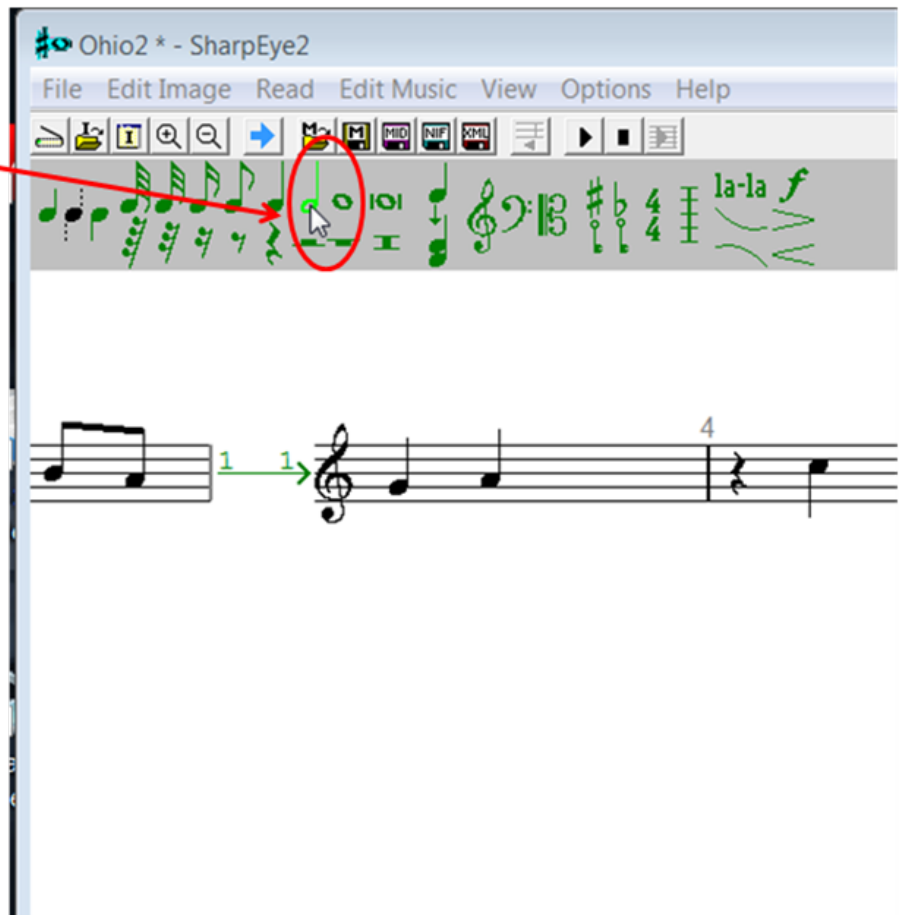
2. Press the right click button.



## Adding Notation (Selecting A Notation)

To select a note or symbol on the music notation ribbon, you left click the mouse on the note or symbol needed.

Press the left mouse button on a music notation to select it.

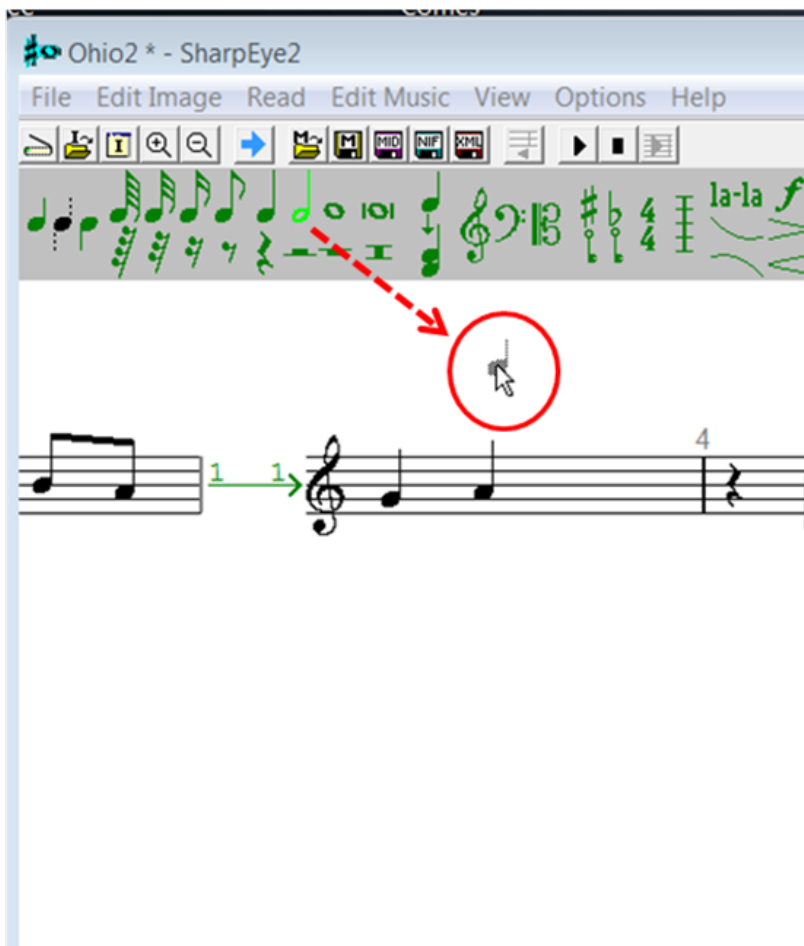


## Adding Notation (Dragging The Notation to the Score)

When the note or symbol is selected with the left mouse click from the music notation ribbon, it can then be dragged down into the correct location on the score. You do not need to hold the mouse button down while dragging, it is trapped to the selected notation.

Drag the selected notation down to the score for entering.

You do not have to hold the mouse button down while dragging it to the score. The cursor is "trapped" to the note.

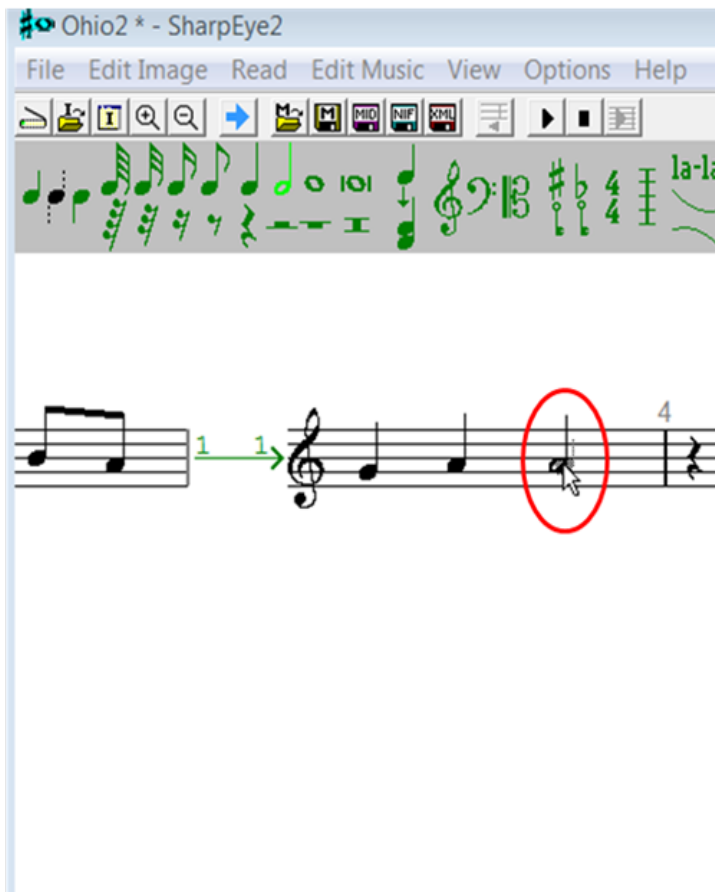


## Adding Notation (Setting the Notation on the Score)

Once the notation is on the preferred position on the score, press the right mouse button to release the note or symbol. The note or symbol is now part of the musical score.

Once notation is at its preferred position on the score, press the right button on the mouse to "release" the cursor.

The notation is then written on the music score.

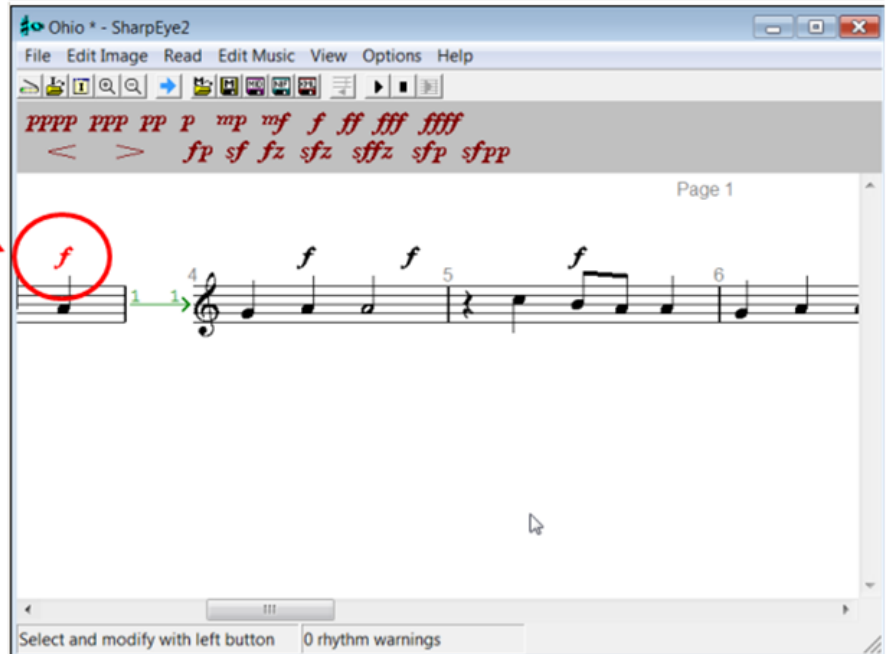




## Deleting A Musical Notation

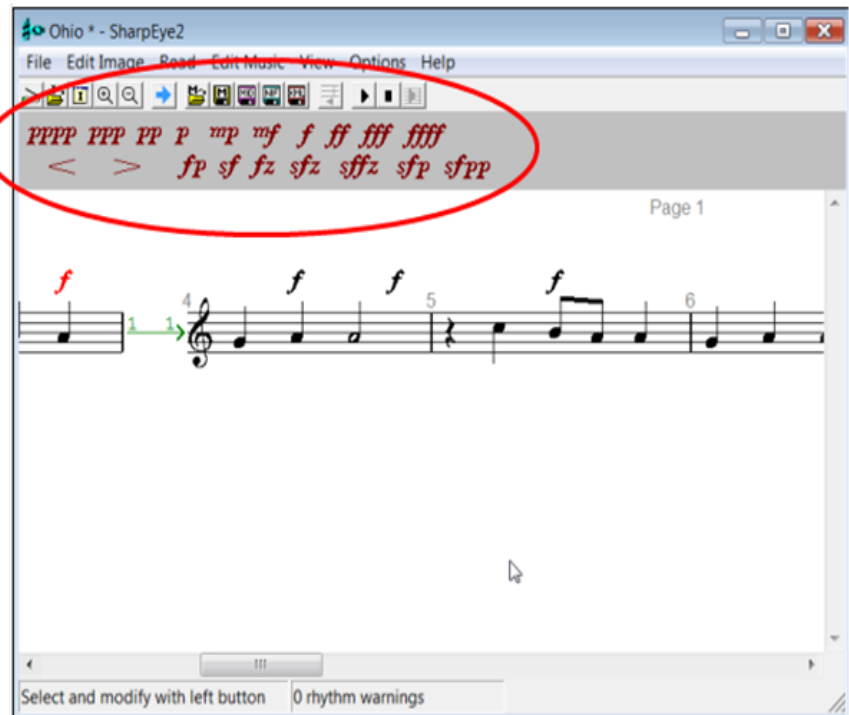
To delete a note or symbol press the left mouse button while on the preferred notation, which will turn red when selected.

Pressing the left mouse button down while on a notation will turn the character into red. It is now selected.



## Replace or Deleting a Notation

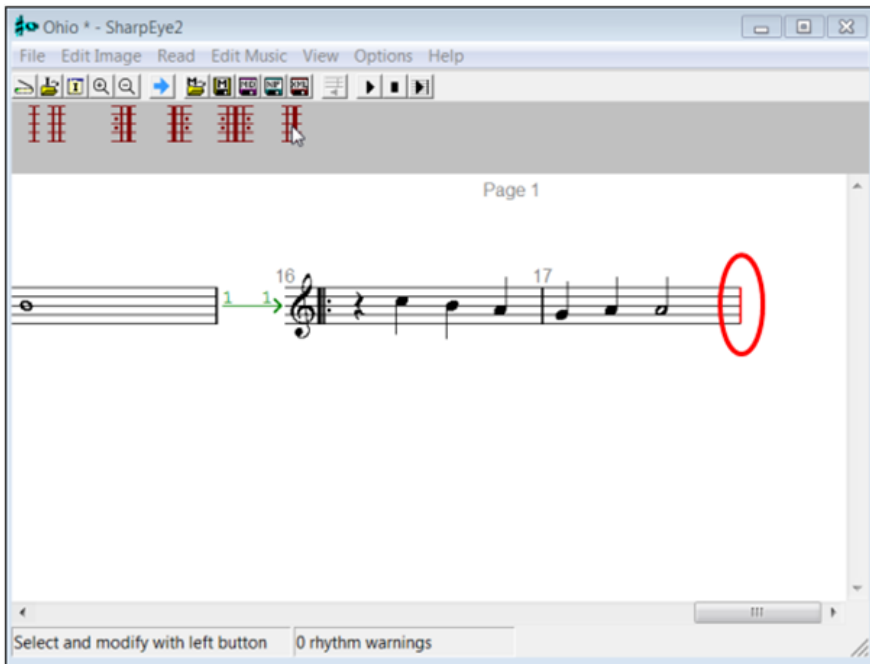
Simply pressing the backspace key on the keyboard will delete the selected note or symbol from the musical score.



Or.....simply pressing the backspace button on the keyboard will delete the notation from the score without any replacement.

## Ending the Musical Score

There needs to be an ending notation bar on the score before sending the file to Lime. If there is not ending bar in the last measure of the musical score, Goodfeel will not allow the embossing process to occur.



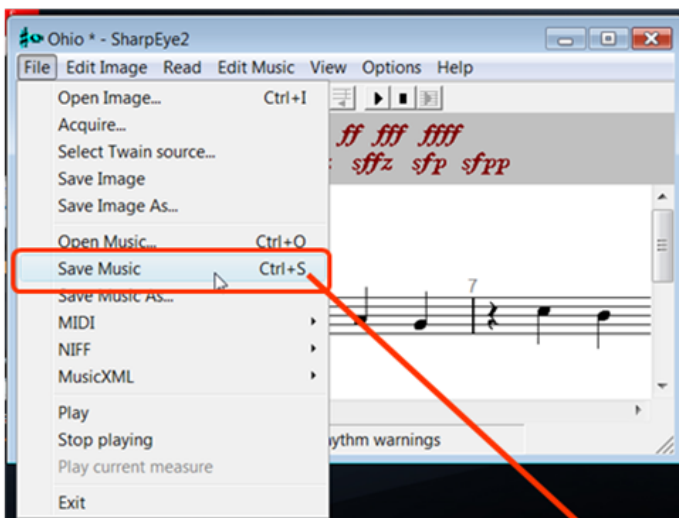
There needs to be an ending notation to the score before sending it to Lime.

If there is no ending on the last measure of the Sharp Eyes OCR production then Goodfeel will not emboss it into Braille.

## Save As A SharpEyes Music Document

From the SharpEye File Menu choose the Save Music option, and then save as type SharpEye format. It is important to save the file in SharpEye format before saving as a NIFF file, just in case you need to come back to SharpEye form more editing.

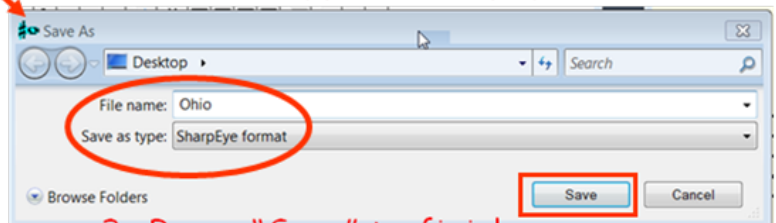
## Save As A SharpEyes Music Document



1. File → Save Music

2. Save as type: "SharpEye format"

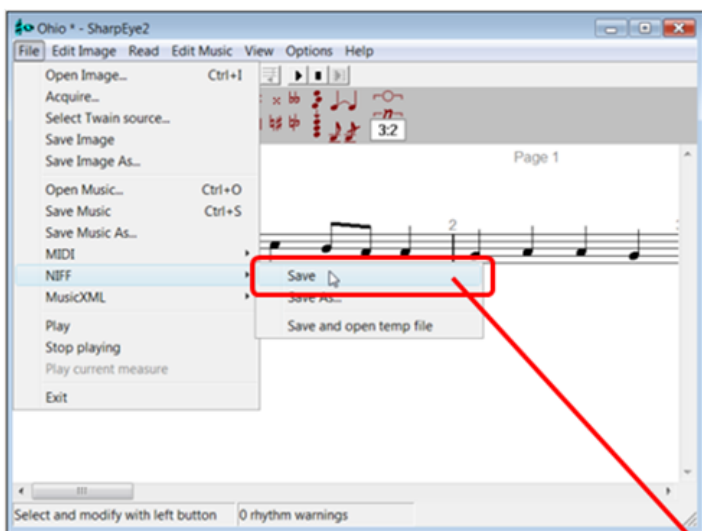
It is important to save the file in the SharpEye format before saving as a Niff file just in case more editing is needed in the score.



3. Press "Save" to finish.

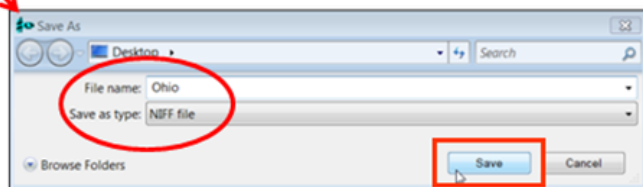
## Save As A NIFF File (For Import into Lime)

Then from the SharpEye File Menu choose NIFF, the Save, and the file will be saved as a .nif file for Lime.



1. File Menu Bar: File→NIFF→Save

2. Save as type: "NIF file"

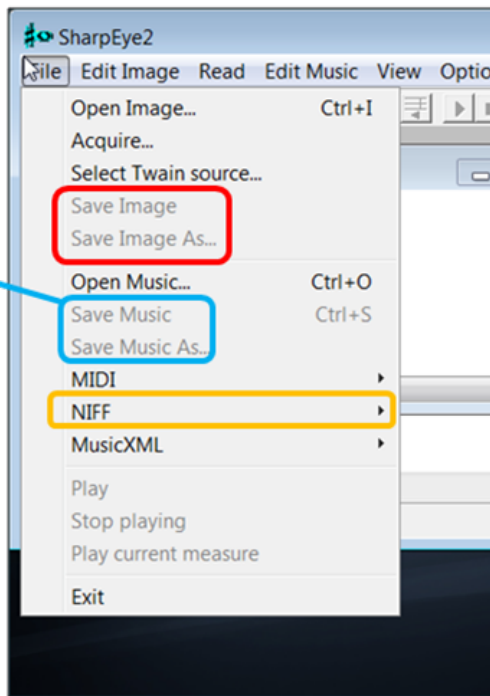
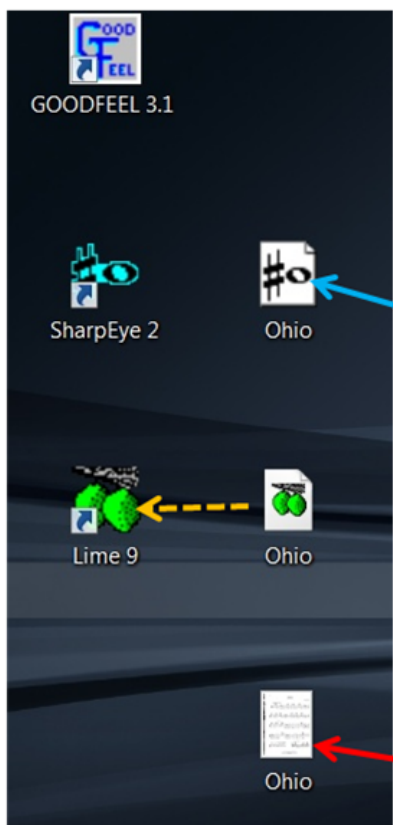


3. Be sure to press "Save"

## The SharpEye-Lime-Goodfeel Connection

You will now have your music score saved as a graphic file (TIF), a SharpEye file, and a NIFF file. The NIFF will be opened by the Lime software for editing before sending the file to Goodfeel to produce hard copy braille.

## The SharpEye-Lime-Goodfeel Connection



The SharpEyes music file is saved just in case more editing is needed.

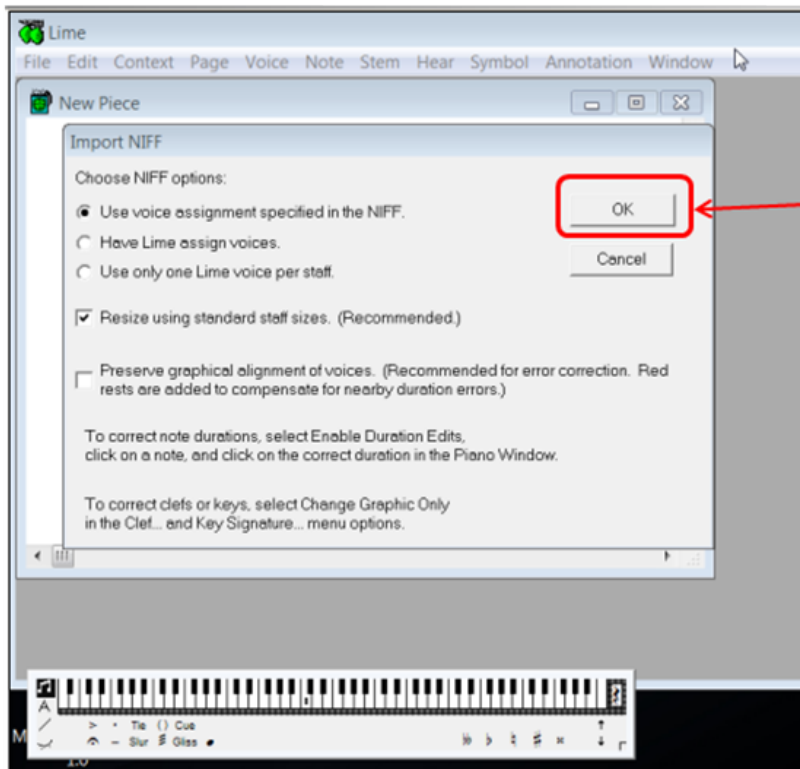
The SharpEyes document also needs to be saved as a NIFF file for it to open in Lime.

Goodfeel can only translate NIFF files into hardcopy Braille music documents.

May need to save an image file for the Music Teacher.

## Importing Into Lime

Double click on the NIFF file and it will open in Lime. Press the OK button from the dialog box to continue the processing of the NIFF file for Lime.

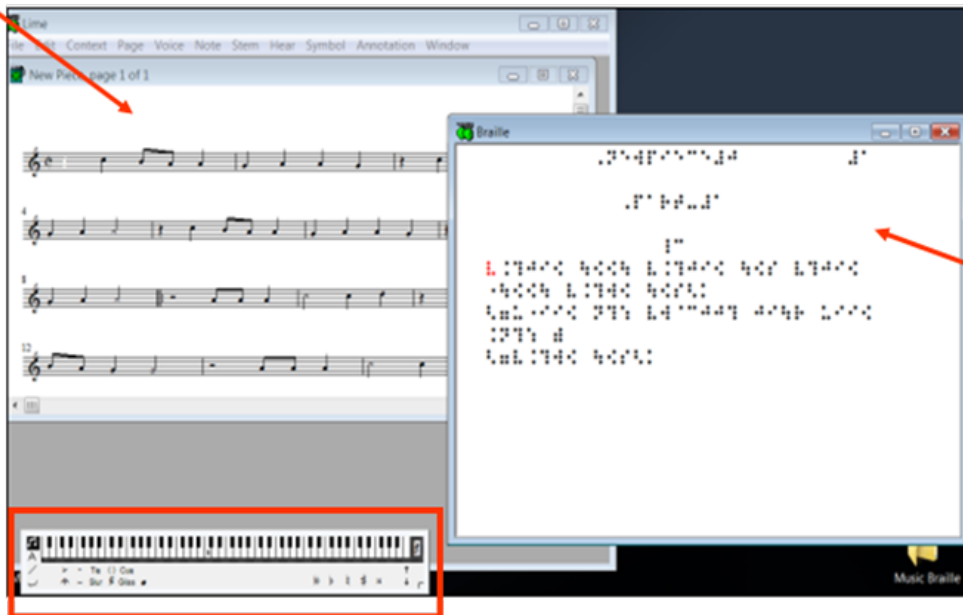


Press "OK" to continue opening the NIFF file in Lime.

## Lime 9.0 Windows

You will now have a musical score in the Lime software, which can be edited with a PC keyboard, mouse, or MIDI keyboard.

Imported score from SharpEyes



Translated  
Braille Music  
Score

Virtual Midi  
Keyboard for Editing



## Needed Before Going to Goodfeel

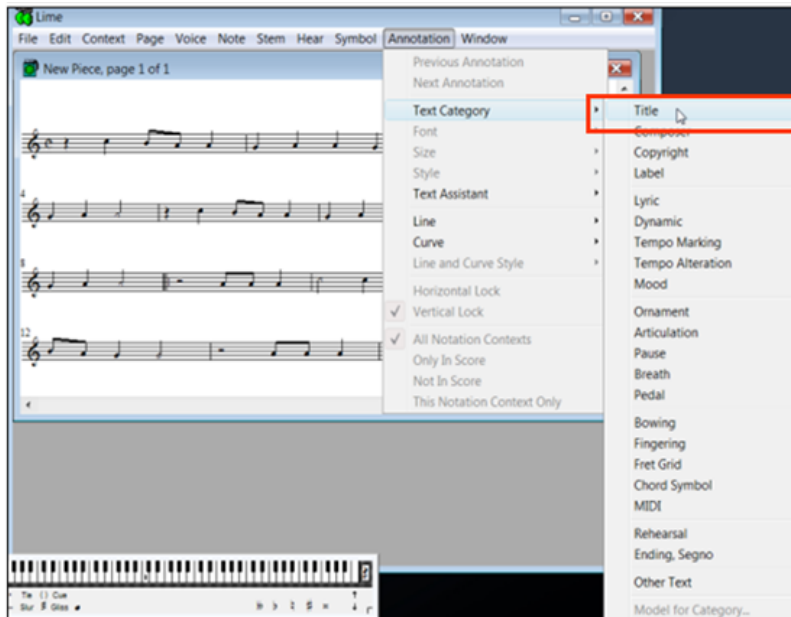
In order for Goodfeel to “accept” a Lime file for embossing, these editing tasks need to be completed.

- ✓ Voice Assignment (piano)
- ✓ Score Title
- ✓ Tempo Marking
- ✓ Score Ending Indicator
- ✓ Proper notation timing within measures

## Adding the Score Title

From the Annotation Menu choose Title, enter the title of the musical score. The title will always be uncontracted braille. This is the standard.

# Adding The Score Title

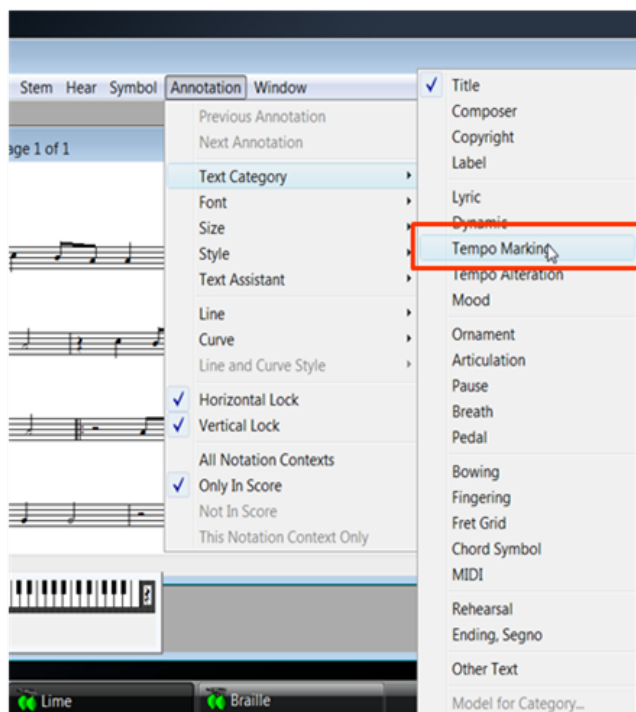


File Menu: Annotation→Title

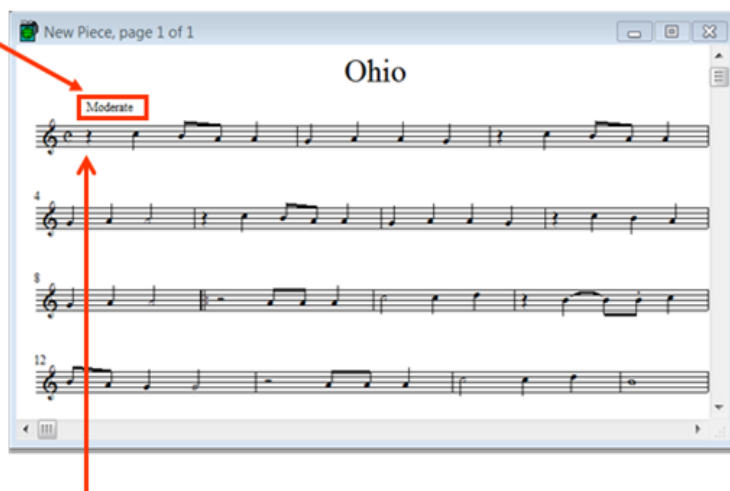


## Adding The Tempo Marking

From the Annotation menu choose Tempo Marking and place the cursor at the beginning of the musical score, then enter tempo, coda, forte, etc. To move the cursor to the beginning of the score with the keyboard, just right arrow to the first note before going to the Annotation Menu. This will not always be required by the music teacher or band director, so check with them first. You can dismiss this error in Goodfeel.



File Menu Bar: Annotation → Tempo Marking

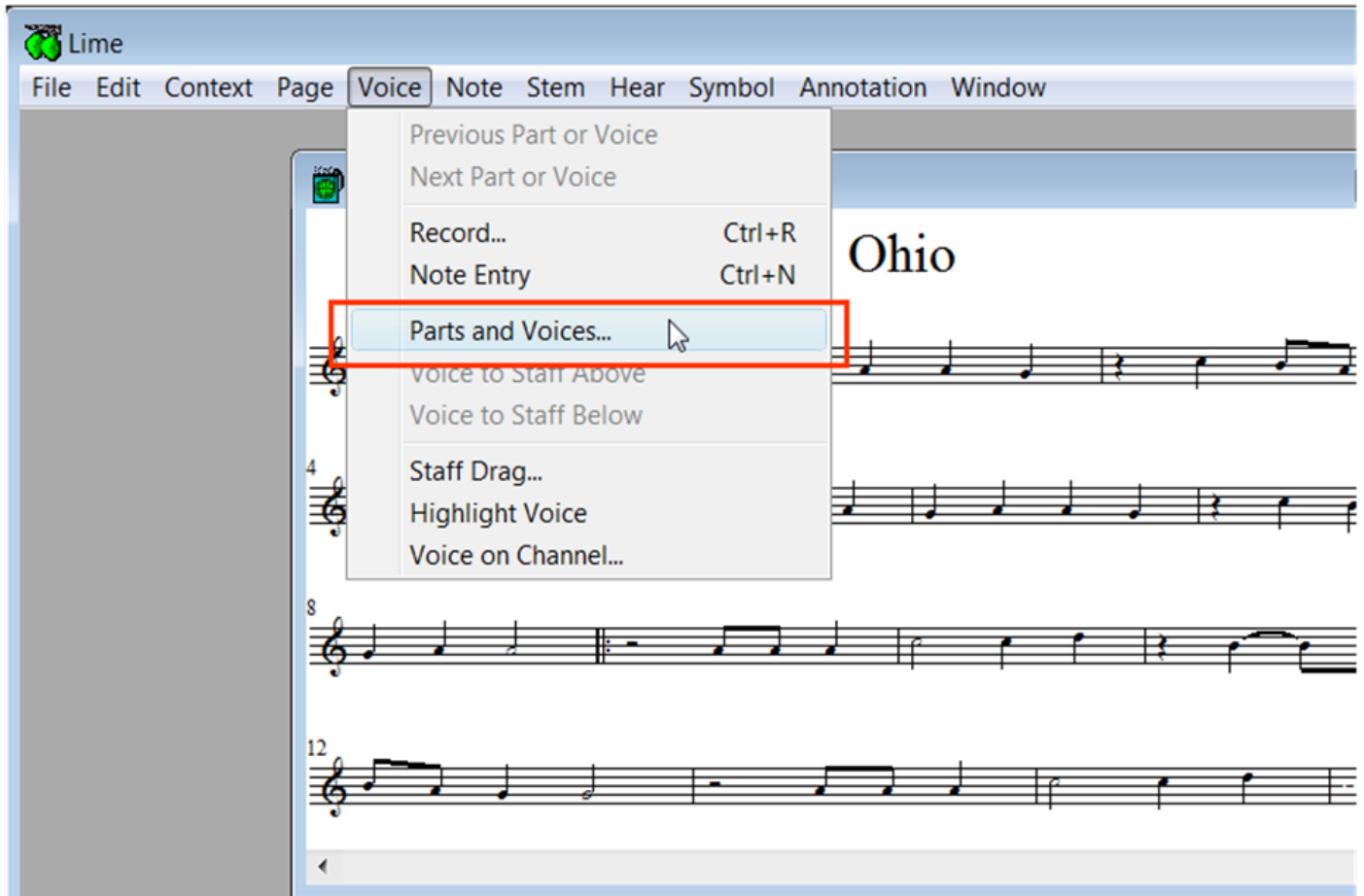


Be sure to place the cursor on the notation where you want the marking to go. (tempo, coda, forte, crescendo, etc.)

## Adding Voice

From the Voice Menu choose Parts and Voices...

File Menu Bar: Voice→Parts and Voices...



## Parts and Voices Dialog Window

In the Parts and Voices dialog box, select the voice or part you want to use, choose rename by pressing the rename button, then label the part in the next dialog box voice, piano as needed, then press the OK button. At this point you must not forget to press the OK button on the main Parts and voices dialog box.

A voice assignment needs to be added here.

4. Press "OK"

3. Enter a voice.

2. This dialog field box is launched

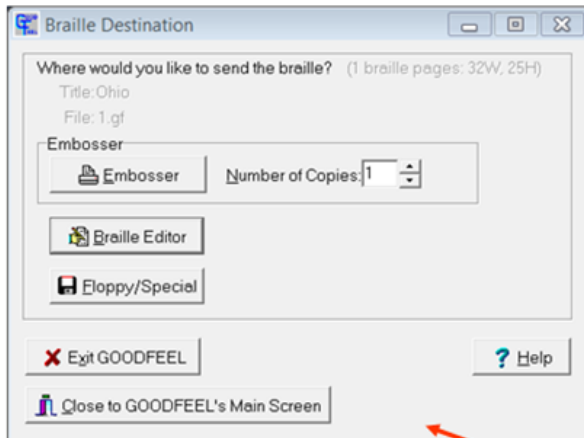
1. Click "Rename"

5. Also be sure to press this "OK".

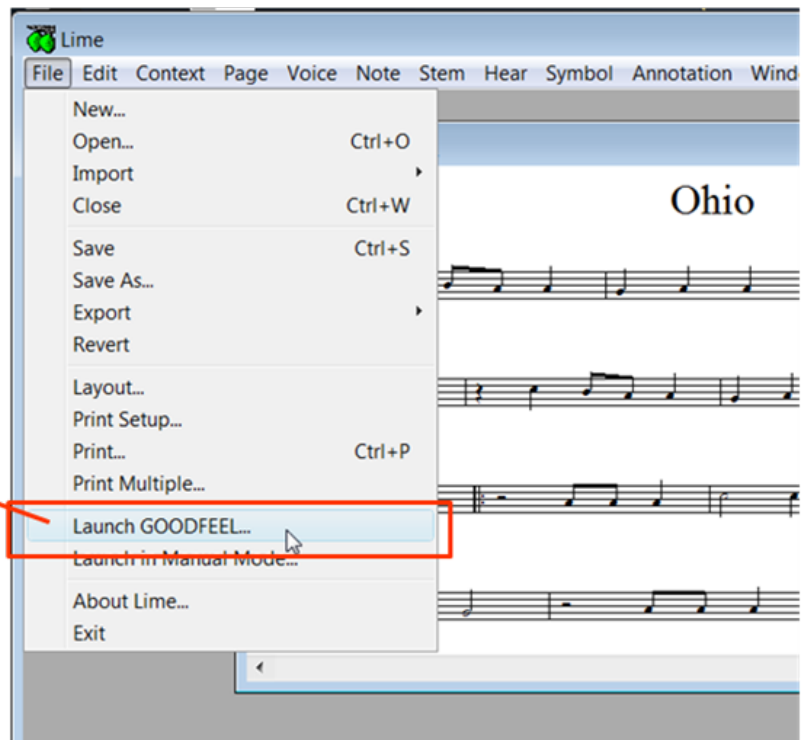
## Ready for Embossing

The file is now ready for embossing. Go to the File Menu and choose Launch Goodfeel. The Goodfeel software will now present a dialog box with button choices, Choose embosser to send the file for embossing, or you could send the file to The braille editor to view the braille file. I sometimes choose this so I can copy the musical score into Duxbury if I need to add any instructions. If Goodfeel gives you errors, click or press enter on the errors and a help dialog box will open. Then you can make the appropriate choices to ignore the error or go back to Lime for some more editing.

File Menu Bar: File→Launch GOODFEEL



The "Braille Destination" dialog box is launched.



## **Lime Aloud**

### **A Whole New Way for the Blind to Read and Write Music**

**Independently create print music scores with Lime Aloud, the newest software product from Dancing Dots.**

“It was the best feeling in the world to hear my teacher take a piece of music I had written, and sight-read it at the piano. There wasn't a choir singing, but I got shivers down my spine anyway, just knowing that now my music isn't just mine, I have the capability of sharing it with the whole world if I want.”

Sarah Outwater, blind college student

#### **WHAT IS LIME ALOUD?**

Lime Aloud marries access technology with the tried and true Lime notation editor software. For decades, musicians all over the world have prepared high quality editions of their musical ideas with Lime. Now blind music students, composers and arrangers can too!

Lime Aloud works together with the JAWS for Windows screen reader software. When you order Lime Aloud, you also receive two mainstream software titles: the Lime notation editor and the SharpEye Music Reader for music OCR. You can create and print editions of your own musical ideas or use Lime and Lime Aloud to study pieces from others. New material can be created using the Lime editor, imported from NIFF files made with SharpEye or via Lime's MusicXML import function. MusicXML files can now be exported from a growing number of music notation programs including Finale and Sibelius.

## **READING LIME NOTATION FILES WITH LIME ALOUD?**

With Lime Aloud, you can navigate through a musical score using standard cursor keys. Your PC plays each note or chord and verbally describes related annotations such as accents, staccato marks, lyrics and ties via the JAWS screen reader software.

Use Lime Aloud to learn new pieces. Play selected sections of any Lime notation file at a practice tempo to facilitate memorization. You can ask Lime Aloud to play a single note, all notes in a particular part, or even all notes in all parts at any given point in the piece.

Lime Aloud can report the current part, voice and staff, current bar and beat, name of current part and more whenever you ask.

## **CREATING AND PRINTING LIME NOTATION FILES WITH LIME ALOUD?**

Set your desired rhythmic value and then enter the desired pitch or pitches all from your PC keyboard. Optionally connect a musical keyboard to your system and play pieces in tempo to a metronomic pulse. Lime automatically converts what you play into the equivalent musical notation. Print the results for your teacher, your student or your colleague.

## **AUDIO PRESENTATION OF LIME ALOUD AVAILABLE FOR DOWNLOAD**

Listen to an MP3 audio presentation of Lime Aloud produced by Bill McCann of Dancing Dots, June, 2007. Listen as a blind musician briefly demonstrates how to review musical scores and how to create new ones using Lime with Lime Aloud.

### **Preparing Accessible Scores**

When you order Lime Aloud, you receive it together with the Lime notation editor and the SharpEye Music Reader music OCR software. Before you can study new material using Lime with Lime Aloud, it must be entered into Lime in one of three possible ways: scan print score using SharpEye, import the piece in the form of MusicXML exported from another notation editor

such as Sibelius or Finale, or entered directly into Lime by typing and/or playing on a musical keyboard.

SharpEye is an excellent music-scanning software but sooner or later it will make scanning errors. At that point, we need the help of a sighted assistant since we blind musicians cannot see the original print score to determine how to correct the errors. Of course, if we could do that, we probably would not be scanning the music in the first place! That being said, I have often successfully scanned and learned previously unfamiliar pieces using SharpEye independently. That is, it made no errors so I could pass the results to Lime and study the piece by listening and transcribing it to braille music.

Importing MusicXML, which is an emerging standard for notation interchange, promises to be the alternative which will afford blind musicians the maximum level of independence. However, programs that export MusicXML and programs that import it (including Lime itself) still do occasionally make omissions or errors. That being said, I have successfully learned pieces by importing the MusicXML into Lime. But, if you want to be certain that every detail of the print score has been imported, you will need to have a sighted assistant compare the original to what Lime shows on screen and make any necessary corrections. These days, it is extremely rare that notes or rhythms will be incorrectly imported from MusicXML. However, certain other details such as rehearsal markers or finger numbers may still be literally lost in the translation.

Lime does allow you to enter notes, rhythms and all necessary related annotations by typing on your PC keyboard. Adding an electronic, musical keyboard to your workstation vastly improves the ease of entering notes and even allows you to use Lime's Record Dialog to enter notes in tempo to a metronomic pulse.



## BRaille MUSIC CHART

Value	C	D	E	F	G	A	B	Rest
EIGHTH NOTE	⠠	⠠	⠠	⠠	⠠	⠠	⠠	⠠
QUARTER NOTE	⠠	⠠	⠠	⠠	⠠	⠠	⠠	⠠
HALF NOTE	⠠	⠠	⠠	⠠	⠠	⠠	⠠	⠠
WHOLE NOTE OR SIXTEENTH NOTE	⠠	⠠	⠠	⠠	⠠	⠠	⠠	⠠

	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>
Octave (Before Note)	⠠	⠠	⠠	⠠	⠠	⠠	⠠	⠠
Finger (After Note)	⠠	⠠	⠠	⠠	⠠			
Interval		⠠	⠠	⠠	⠠	⠠	⠠	⠠

Dot ⠠

Repeat ⠠

Phrase Marks ⠠ ⠠

Strain: Begin Repeat

⠠

End Repeat ⠠ ⠠

Sharp ⠠

Flat ⠠

Natural ⠠

Double Bar ⠠

Common Time ⠠

Cut Time ⠠

Fermata ⠠

Staccato ⠠

Accents ⠠ ⠠ ⠠

Word ⠠

Slur ⠠

Tie ⠠ ⠠ ⠠

Breath ⠠

Right Hand ⠠

Left Hand ⠠

Pedal ⠠

### TIME SIGNATURES:

2/2 ⠠ ⠠

3/2 ⠠ ⠠

4/2 ⠠ ⠠

2/4 ⠠ ⠠

3/4 ⠠ ⠠

4/4 ⠠ ⠠

5/4 ⠠ ⠠

6/4 ⠠ ⠠

2/8 ⠠ ⠠

3/8 ⠠ ⠠

4/8 ⠠ ⠠

5/8 ⠠ ⠠

6/8 ⠠ ⠠

7/8 ⠠ ⠠

9/8 ⠠ ⠠

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Figure 1 TSBVI Outreach Programs logo



Figure 2 U.S. Dept. of Education, Office of Special Education Programs (OSEP) logo

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