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USING

Music is a kind of counting performed by the
mind without knowing that it is counting.

G.W. Leibnitz (1714)

Mathematics is music for the mind.
Music is mathematics for the soul.

Anonymous (18th century)

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Music Imaging Technologies®

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Notices

Using SmartScore 5.0 **was written by**
Christopher Newell.
SmartScore was designed and developed by
Christopher Newell and Wladyslaw Homenda.
Programming by ICT, S.A., Warsaw, Poland.

Introduction to SmartScore

Chapter 1 Introduction to SmartScore

1.1 What SmartScore does...

1.1.1 Scan and play

With SmartScore, you are able to scan, recognize and playback sheet music in just minutes. To listen, just hit the space bar! Assign different MIDI sounds to each instrumental part and recreate a band or an orchestral performance. Assign different sounds to contrapuntal voices to create interesting and unusual textures of sound or to emphasize inner voices in complex arrangements. Recognition of dynamics, articulations, repeats and endings gives added nuance and realism during playback. Students can listen to an unfamiliar piece before learning it. Practice along while playing back at various tempos without altering pitch or key. Mute or solo one or more parts on the fly. Parts selected by name are automatically assigned proper MIDI instruments and maintain playback continuity even with optimized scores. Transposed instruments notated in different keys will play back in tune. Automatically add drum tracks to playback... choose from many preset styles or create your own drum tracks from imported MIDI files. You can even record playback to audio-CD with the built-in CD burner.

1.1.2 Scan and work

While playback of sheet music has its uses, it is just the beginning. SmartScore has intelligent tools that will enable you to transform your scanned score into virtually any configuration. You can transpose and print out your music into a new key including any changes of key, time and clef. Transpose globally or by selected region; by key or by clef. Transform a viola part in C to a horn part in F. Recognized guitar frets and chord symbols automatically transpose along with notes and key symbols. Instrumental parts or contrapuntal voices can be extracted to new SmartScore documents using Visibility in the ***System Manager***. Solo part scores can be scanned in and joined into a conductor's score with *drag-and-drop* ease using ***Score Structure***. Preserve proper playback of instruments that appear and disappear throughout the score by

using ***Part Linking*** tool. Printed output can be reformatted by resizing staffline, staff and system spacing and page margins. It's all possible with SmartScore.

1.1.3 Turn MIDI files into music notation

Transform your favorite MIDI files into engraver-quality music notation. If the MIDI file contains complex voicing in a track, SmartScore can separate them into independent voicelines. If voices are joined into chords, use SmartScore's voice-splitting tool to separate them into discrete contrapuntal voices.

1.1.4 Create scores from scratch

By selecting one of 15 templates, you can create musical scores from scratch. Drop in one key and time signature, press a button and the entire score is updated. Need more space between staves? Change one setting and apply to the current system, subsequent systems, page, part or entire score. For easy score editing, refer to the Quick Key card.

1.1.5 Sequence and record

View and edit the MIDI data of your scanned music in the familiar Overview, Piano Roll and Event List format. Record your MIDI performance either as an accompaniment to your scanned music or in layered tracks and transform it into musical notation. Record drum tracks from your computer keyboard while listening to the playback using ***Virtual Drums***.

1.2 So, what do you want to do?

- Scan and play back sheet music?

  Scan > Recognize > Playback > Karaoke

- Transpose

  Edit > Transpose > Print

- Create score from scratch?

  Choose Template > Assign Instruments

- Create score from MIDI keyboard?

Choose real-time or step time

- Create score from imported MIDI or NIFF files?

  Choose Import MIDI or NIFF

- How would you like to output your score?

  Print ENF file / Create PDF file / Export to Finale® / Export MusicXML files to other scorewriter programs / Export MIDI files / Export to NIFF files / Record playback to CD

1.2.1 What Edition does what.

Not all SmartScore editions can accomplish everything listed above. Excluding SmartScore Pro, all other editions have limitations. The following chart lists the limitations of each edition.

Table 1: SmartScore Edition Limitations

Limited Edition Feature Set	Number of Staves processed	Text & Lyrics	Print	Guitar and Chord Symbol	Score Structure	MIDI / Drum Tracks / Virtual Drums
SmartScore Pro	32	Yes	Yes	Yes	Yes	Yes
Songbook Edition	3	Yes	Yes	Yes	Yes	Yes
Piano Edition	2	No	Yes	No	No	No
Guitar Edition	1	No	Yes	Yes	No	No
MIDI Edition	4	No	No	No	No	Yes

1.3 How to use this manual

An excellent way to start using SmartScore is to turn to the **Quick Tour** on page 7. As you *scan*, *recognize*, *play back* and *edit* your files, turn to the corresponding chapter in this manual. Later chapters will help you to work with text and symbols, to change the structure of your score, to do detailed editing and to operate in a MIDI environment.

This manual is fully indexed and cross-referenced. The easiest method of obtaining information on any topic is to look it up in the Index on page 254 then turn to listed page(s). Detailed descriptions of SmartScore menu items can be found in Reference chapter on page 221.

1.3.1 What Edition symbols mean

This manual is written for all editions of SmartScore. Features described that do not apply to all editions will have a symbol in the left margin.

- **SmartScore Pro Edition**

No restrictions. All features and descriptions in this manual apply to SmartScore Pro Edition.

- **Not found in MIDI**

Indicates the feature or description does not apply to MIDI Edition.

- **Not found in MIDI or Guitar Editions**

Indicates the feature or description does not apply to either MIDI or Guitar Edition.

- **Not found in MIDI or Piano Editions**

Indicates the feature or description does not apply to either MIDI or Piano Edition.

- **Not found in Piano or Guitar Editions**

Indicates the feature or description does not apply to either Piano or Guitar Edition.

1.4 What to do when this manual does not help...

When you register your copy of SmartScore, you become eligible for technical support for as long as you own the product. But before you reach for the phone, try to solve your issues first by referring to this manual. E-mail is the most efficient method of communicating with Musitek Technical Support. It is likely that we will ask you to e-mail us any scanned image files and/or SmartScore files along with a brief description of the problems you are encountering.

Technical Support E-mail address is: tech@musitek.com

Telephone Support number is: 805-646-5841

Musitek's Support mailing address is:

Musitek Technical Support
410 Bryant Circle, Suite K
Ojai, CA 93023

If you must phone in for help, we ask that you have a few things ready before calling Technical Support:

- Please have your computer on with SmartScore up and running
- Please have the following information ready to give the support technician:

Customer ID:_____ Serial Number:_____

- SmartScore Version Number
  (found under Help > About SmartScore)
- Windows or Macintosh operating system of your computer.
- Make and model of scanner you are using
- The type of music you are scanning (orchestral, pop song, piano score, etc.).
- Your e-mail address.

Installation and Quick Tour

Chapter 2 Installation and Quick Tour

2.1 Installation

SmartScore will operate correctly only when the original installer is used. Copying either the download or the CD installer will not work. You are allowed to install SmartScore up to 5 times before it will be necessary to contact Musitek Technical Support at 805-646-5841 or by e-mailing tech@musitek.com for a reset. CD installation is as follows:

a. Make sure you are connected to the Internet prior to installing SmartScore. If you do not have Internet access or if online verification / confirmation fails, contact technical support at tech@musitek.com.

b. Insert the SmartScore CD into your computer's CD drive.

c. *(Windows)* Inserting CD should launch ***Auto-run***. If not, Push **Start > Run** and Browse to find your CD drive in the "***Look In***" pull-down. Double-click SS5INSTALL.EXE.

d. *(Macintosh)* Double-click SmartScore CD icon on your desktop. Double-click SS5INSTALL.

e. Follow all installation steps including entering Serial Number, Customer ID and registering your copy of the software.

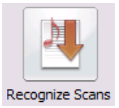
f. Installation requires online registration and verification. File saving and printing will be disabled after 30 days if registration is not completed. If you are unable to register online, please contact support at 805-646-5841 or tech@musitek.com.

g. Launch SmartScore by double-clicking its icon.

2.2 Recognition of Sample Files

SmartScore includes several pre-scanned TIFF files. Normally, you will use your scanner to capture and recognize your own sheet music. For instructions on scanning, turn to page 27.

For the purpose of this tutorial. we will start with sample file, *Fandango.tif*.



a. If the SmartScore **Task Window** is open (**Ctrl** + "**W**" will open it at any time), push the "Recognize Scans" button. The **Navigator** and the SmartScore toolbar also have a **Recognition** button.

NOTE: The Task Window opens automatically only at program start. It can be launched at any time with **Ctrl** + "**W**" or by selecting it from the **Windows** menu.

The ***Begin Recognition*** window opens. This is the window you will use to select previously-scanned music for recognition.

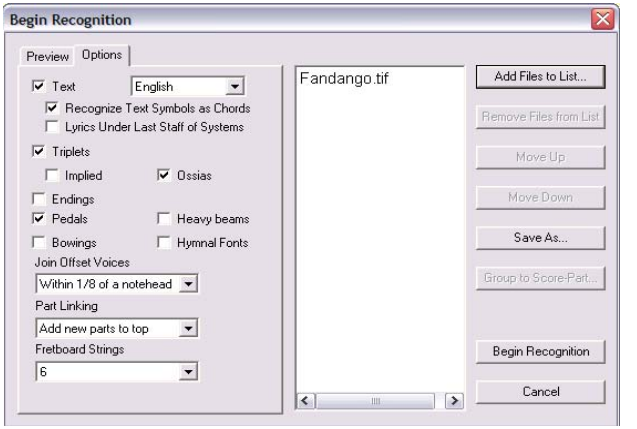


FIGURE 2 - 1: Begin Recognition window

b. Press **Add Files to List**. In the **Open** dialog box, double-click on the sample file, *Fandango.tif*, inside the SmartScore folder. This will add the pre-scanned file to the list.

c. Press **Begin Recognition**.

2.2.1 Unfiy Key and Time

A Unify window opens (Default = Key signatures based on the topmost staffline in each system). Click **OK** to accept. See "Unify Score ("U")", Section 8.6.4, on page 144 for more details on Unify Key and Time.

2.2.2 System Report

This window will list the total number of systems found as well as the largest and smallest number of parts found in all systems. This information may reveal problems with broken systems / missing parts often due

to incorrectly scanned pages. If the information in the report does not agree with the original score, check your scanned pages in the Image Editor or quickly scroll through the ENF file to locate problem systems.

If part / system inconsistencies are due to mis-scanned pages, relinking parts is possible in the ENF editor, but we usually recommend re-scanning poorly scanned pages instead. Refer to "Removing, replacing and re-saving scanned pages", Section 3.4.2, on page 39 for information about replacing individual pages in your multiple-page TIFF files. See Section 3.2.2 on page 35 for more details on interpreting the System Report. See “Re-linking parts” on page 78 for information on how to re-link broken or irregular systems.

- Press **Open ENF** to open the SmartScore ENF file.
- Press **Open Image Editor** to view and/or edit the scanned image file.
- Press **Open Super System** to view all parts located during recognition. If more parts appear in the score than are found in the Super System, they can be added. See "Super System", Section 8.10.5, on page 158 for more details.

NOTE: You can choose to disable the system report and Unify notices by clicking “Do not show this window again.” Disabled windows can be restored at any time by going to **Edit > Program Preferences > User Interface**.

The name ***Fandango.enf*** will appear in the ***Save As*** filename window. SmartScore’s ***filetype*** is listed as ENF (Extended Notation Format). The ENF extension will automatically be added to all filenames after recognition. Click on **Save**.

2.3 Notes on Basic ENF Editing

2.3.1 Macintosh / Windows shortcut conventions

Most SmartScore keyboard shortcuts are identical on both Windows and Macintosh computers. Since most Macs do not have a right mouse button, the Windows right-click function is performed on the Mac version of SmartScore by holding down the “**alt**” (Option) key and clicking the mouse.

2.3.2 ENF Display

The original scanned image is displayed in the upper window and the newly recognized ENF file appears below it. Use the scroller bars, mouse wheel, or arrow keys on your keyboard to scroll up and down the page. Notice the image and ENF windows are synchronized for comparison.

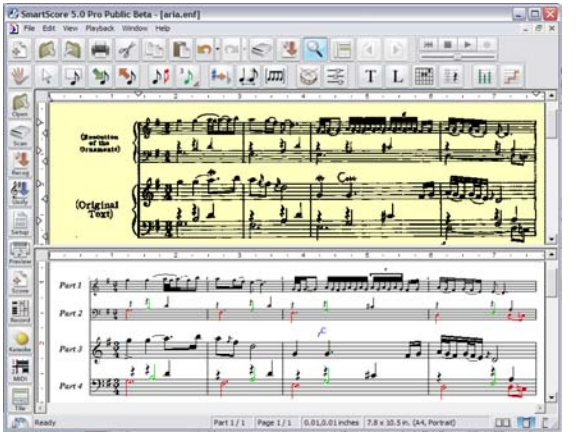


FIGURE 2 - 2: Sample TIFF / ENF view

In ENF, only one staff line is active at a time. The active staff displays black while inactive staff lines display as grey. To make a staff line active, move your cursor to within the boundary of the staff until it highlights black. If you want all staves to display in black, go to the **View** menu and uncheck **Show Active Staff**. If you do this, remember to move your cursor within a staff line first before doing any editing within a staffline.

NOTE: In this manual, ***Quick Keys*** (keyboard shortcuts) are indicated in bold parentheses: e.g. (**C**).

As accurate as SmartScore is, you should always check for errors in recognition. Sometimes only a few simple edits are all that is required.

TIP: To see all staff lines in black, check "**Show Active Staff**" in the **View** menu. Since editing is done a staff-to-staff basis, turn this back on if you are unsure which staff line you are editing.

2.4 Editing Sample Files

2.4.1 Editing Fandango

- **Remove unwanted text**

While the triplet in the 2nd measure was recognized properly, a large "3" was also recognized as text.

a. With the **Select** tool active, drag a small box over the large "3" in the 2nd measure so it highlights yellow. Be careful not to select the triplet itself. Let go of the cursor button and notice the selected object appears in grey.

b. Hit the **Delete** button on your keyboard to remove the "3".

- **Changing note values using *Quick-select* method**

a. Place your cursor over the first beamed 8th note of the triplet which was correctly recognized in Measure 2. Notice that it becomes highlighted in yellow.

b. Hold down the **Ctrl** button to ***Quick-select*** the first beamed note. Your cursor will inherit all the attributes of an object which is clicked on. You will probably find ***Quick-select*** the fastest and easiest method for selecting objects.

c. Position your cursor over the first 16th note in the 3rd measure until it highlights yellow. Click on the note to change it to an 8th note.

NOTE: If the target note turns light blue, a new note will be inserted. Only objects that highlight yellow will become changed. If a mistake is made, push the **Undo** button or **Ctrl** + "**Z**" (**Cmd + "C"** for Macs).

d. Repeat the same ***Quick-Select*** action on the last two beamed notes in Measure 2 and change the remaining incorrectly recognized beam notes in Measure 3. Notice the red "error" color outlining the measure disappears after the final correction is made.

e. Push the **Space** bar to begin playing the piece. To stop, hit **Space**.

- **Correcting ties**

Ties in Measure 19 to 21 were mis-read and became slurs.

a. Push the **Select** tool in the SmartScore toolbar (or the "**O**" key).

b. Click or drag over the slur found towards the end the top staff in Measure 19. Hit **Delete** on your keyboard.

c. Hit the "**V**" key on your keyboard. This activates the **ties** tool. Click on the head of the last note in the top staff of Measure 19. Notice the tie connects with the first note in the next system.

d. Repeat on the misread slur between Measures 21 and 22.

- **Inserting accidentals**

a. ***Quick-Select*** on the sharp found in the top staff of Measure 23.

b. Click on the head of the recognized grace note in Measure 24.

- **Transposing the key**

a. Push the "Transpose" button in the SmartScore toolbar (or select **Edit > Transpose**).

b. In the **Transpose** window, click the scroller upwards to change the target key signature from 1 flat (***Dm***) to 1 sharp (***Em***).

c. Push **OK** to effect the key transposition.

- **Unifying irregular staff sizes**

This piece comes from an older edition with somewhat irregular sized staff lines. In the last system on the page, notice the bass staff is slightly larger than the treble staff. Since SmartScore measures exact distances between staff lines and systems, the ENF display will reflect this also.

a. Select **Properties** tool.

b. Move your cursor over the last system at the bottom of the page.

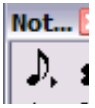
c. Right-click **(alt + click** for Mac) and select ***Line/Staff Spacing*** from the **System Options** menu. Notice that Line Distances in Part 2 (bass clef) is larger than in Part 1 (treble clef).

d. Change line distance of the bass clef to match that of the treble.

e. With ***All Systems*** selected in the **Copy Setting To** pull down menu, push the Copy button. All systems in the score will update.

- **Insert beamed grace notes**

A beamed grace note was missed in the top staff of Measure 1.



a. Move your cursor to the “Notes” tool palette on the left of your screen. Hold the “note” button down and select a 16th note (with 2 flags) from the expanded palette. (The number “**5**” key on your computer keyboard will also select a 16th note).

b. Hold the ‘beam direction” button down and select the “right beam” icon. (Toggling he “**A**” key will cause the cursor to alternate beam directions i.e. right / middle / left.

c. Click he “Grace note” button in the “Notes” palette.

d. Move your cursor into Measure 1 and position the notehead of the grace note on *D*. Notice the cursor stem is in the down position. Press the “**S**” key to flip the stem up. Click to insert the first grace note. Notice the cursor’s beam direction has gone from right to left. Position the cursor notehead on *F* and click to insert the second grace note.

- **Prepare for printing**

a. Push the “**Setup**” button in the Navigator or select **File > Page Setup**. Notice default **Document Layout** is ***From Recognition***.

b. Change document layout to ***Center on Page***. The print preview pane in the background will change to reflect actual page size. Push **Apply.**

c. Push the **Print** icon at the top of the Page Setup window.

d. To compare the quality of the SmartScore output with the original, print out the Fandango image file... Push the Open File button and in “**Files of Type**” window, select ***Image Files***. Select Fandango.tif. In the Image Editor, select **File > Print**. Compare.

- **Visualizing contrapuntal voices**

Turning on voice color will display contrapuntal voices in different colors. This allows you to view secondary voices (both notes and rests) in red and tertiary voices in green. Notes in 4th voice will appear in blue.

a. In Page Setup view, push “**Main View**” button at top of screen.

b. In the SmartScore Toolbar, push the “**Voice Visibility**” button.

Notice in each staff how notes and rests appear as either black or red. They represent two of the four possible contrapuntal voices.

c. Push the **Console** button to open the **Playback Console** or use the keyboard shortcut, **Ctrl + 9 / Cmnd + 9**.

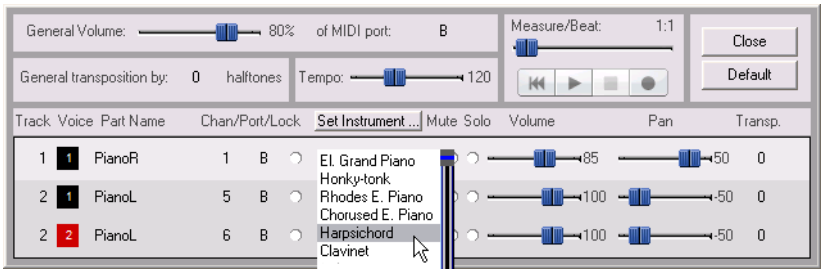


FIGURE 2 - 3: Playback Console with Voice Visibility on

- **Changing Instrument sounds in Playback Console**

The left and right-hand piano parts have been automatically recognized as piano and assigned the General MIDI patch of *Grand Piano*.

a. In the Instrument column of Track 3, click on *Grand Piano* and scroll down to select *Harpsichord*. Press the spacebar or **Play** button. The secondary voice of the left hand will have a different sound than the other voices.

b. Move volume slider left or right to increase or decrease volume on one or more parts. **Close** Playback Console.

2.4.2 Editing Gluck

NOTE: **Piano users:** skip to page 19. **Guitar users:** skip to page 22.

a. Push the **Recog** button in the Navigator. In the **Begin Recognition** window press ***Add Files to List***. Double-click the file ***Gluck.tif*** inside the SmartScore folder.

b. Press **Begin Recognition** button to start the recognition process. Press ***Open ENF*** in System Report then **Save** the ENF file.

c. To listen to *Gluck*, simply press the ***spacebar***.

- **Shift note pitches,**
  - An eighth beamed note in the flute part of Measure 3 ought to be one pitch higher. While holding the **SHIFT** button down, drag the notehead of the first beamed note up from A to B.

- **Quickly delete objects,**

  - Activate the **Select** tool ("**O**" key). Click and drag to highlight slurs above Measures 9 and 10. Hit the **Delete** to remove them.

- **Using *Quick-select* to copy and insert objects**

  a. Hold down the **Ctrl** button and ***Quick-select*** the dotted half note in Measure 9.

  b. Hit the "**S**" key to toggle the stem direction of the note. Move the cursor to the beginning of Measure 10 and click to insert the dotted half note.

  c. Hit the "**V**" to activate ties. Click on the dotted half notes in Measure 9 and again in Measure 10 to insert ties across measures.

  d. There is a spurious dot in the eighth note beam group of the right hand piano part in Measure 10. Toggle the "**D**" key until the cursor appears as a greyed-out dot and arrow. Click on the notehead to remove dot.

  e. Hit the "**D**" key again and click on the half note chord in Meas. 8.

  f. In Measure 18, ***Quick-select*** on the natural sign in the right-hand piano part. Move the cursor into the flute part and click on the half-note to insert the natural.

  g. Push the **Select** button (or hit the "**O**" key). Holding down the right mouse button (**alt + click** for Mac), drag over a range of measures until they highlight blue. Hit the **Space** bar to play back the selected range of measures.

- **Using Properties tool to change playback characteristics**

In Measure 20, the word "***rit.***" (ritard) was recognized and applied to gradually slow playback down for that measure. The word "***poco***" (a little bit) was also recognized, but not applied, so playback probably slows more than it should. Default playback characteristics can be changed by using the Properties tool.

a. With Properties tool active, click on the word "***rit.***".

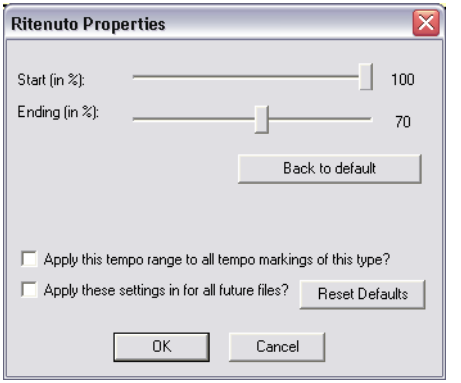


FIGURE 2 - 4: Ritenudo Properties window

b. Change the tempo value of the **Ending** of the measure by moving the slider to something like 70 or 80% of the current value.

c. Push **OK**. The measure will slow a bit as indicated by "***poco rit.***".

NOTE: With Properties tool active, try clicking on the "***tr***" and "***f***" signs in Measure 19 to get a sense of how this tool can work.

- **Selecting a few measures for playback**

You may want to hear back only Measures 19 through 20 to test the playback settings which you changed using the Properties tool.

To playback a small range of measures,

a. Push the **Select** tool in the Toolbar.

b. Hold down the **right** mouse button (**alt + click** for Mac) and drag inside a selected range of measures. Measures will highlight blue and become staged for playback using **Spacebar** or the **Play** button.

c. Press the Spacebar again to replay the selected range from the beginning.

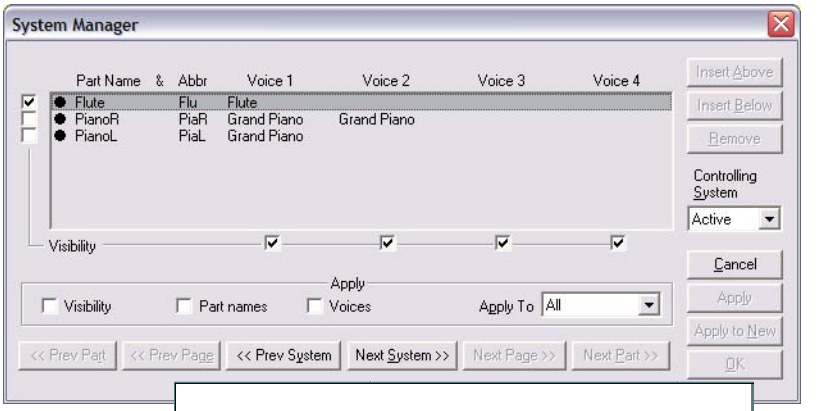
d. Click anywhere outside of the range of measures to deselect range.

NOTE: Use the menu item, **Playback > Set Play Range** to select a wider range of measure or to continuously loop playback.

- **Extracting a part in System Manager**

MIDI users: Skip to page 22, "Editing Guitar".

a. Hit (**Ctrl + M / Cmnd + M**) or select **System Manager** from **Edit** menu. Part and voice visibility is controlled in this window.



Flute part extracted from the original ENF document.

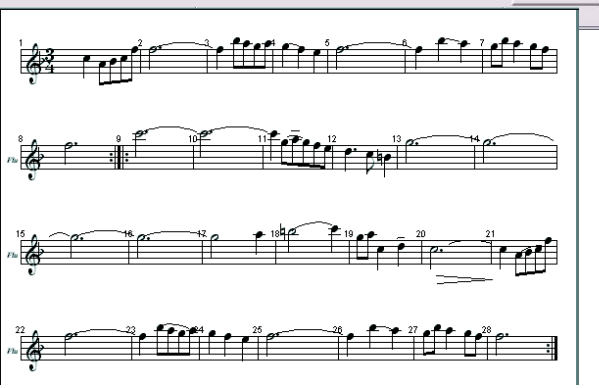


FIGURE 2 - 5: Extracting a part in System Manager

b. Remove "**Visibility checkmarks**" for *PianoR* and *PianoL* parts in the far-left column. Check "**Visibility**" in the ***Apply*** region. Push **Apply to New** to create a new document which will include only the part(s) selected by visibility checkmarks.

c. Play the flute part, then close this newly created document.

- **Changing Parts and MIDI instruments in System Manager**

You can use the System Manager to select parts and assign MIDI sounds. MIDI instrument assignments can be changed in the System Manager either by choosing one of a number of preset Part Names or by changing the MIDI instruments assigned to any particular voice.

a. Return to the original Gluck score. Press **Ctrl + M / Cmnd + M**. Go to the **Part Name** column and click on the first **Part Name**, *Flute*. Scroll down the list and select *Oboe*. Notice **Voice 1** becomes *Oboe*. NOTE: Default instrument names and linked sounds are obtained from **Instrument Templates** (Page 160).

FIGURE 2 - 6: Changing MIDI instruments by selecting new Part Name

b. Even more interesting is to assign different instrument sounds to contrapuntal voices within a single part (staff line). Refer to the next figure, *Changing MIDI Instrument of a voice in System Manager.*

c. Select Harpsichord instrument for **Voice 2** of the *PianoR* part. Each voice (V1, V2, V3 or V4) can each be assigned a unique MIDI sound simply by clicking on its current instrument name and selecting one of 128 MIDI instruments. Click outside menu.

FIGURE 2 - 7: Changing MIDI instrument of a voice in System Manager

d. Press **OK** to apply the change and close System Manager.

e. Now hit the spacebar to play back. Whenever the secondary voice in the right hand is played, you will hear a harpsichord sound. This technique is ideal for distinguishing “inner voices” of parts that are written contrapuntally.

NOTE: Changing MIDI instrument assignments of parts and voices can also be accomplished in the Playback Console (**Ctrl + 9** / **Playback Menu > Console**).

2.4.3 Editing Chorale

Many scores are written with multiple voices within a single staff line. Solo piano, guitar and choral music typically include different voices moving independently in and out of measures. “Voiceline threading technology” allows you to isolate and manipulate voices easily.

The sample file, ***Chorale.tif***, is a famous Lutheran hymn with four voices: *Soprano, Alto, Tenor* and *Bass* written in two staff lines.

NOTE: SA/TB scores usually have voices separated either by opposing stems or by multiple noteheads joined to a single stem.

a. Push the **Recog** button on the Navigator. Press the **Add Files to List** button in the ***Begin Recognition*** window. Select *Chorale.tif* from the SmartScore folder

b. In the Options tab window, leave *Triplets, Endings* and *Text Recognition* unchecked.

c. Press the **Begin Recognition** button. Once Recognition is complete, press “***Open ENF***’ and save the ENF file, *Chorale.enf*.

d. Hit the **spacebar** to hear the playback.

- **Correct playback of pickup and closeout measures**

Pickup and closeout measures are commonly found in hymns and other vocal scores. Recognition of notes is correct even though the first and last measures are highlighted red (error). Because they are incomplete, playback hesitates at those measures.

a. Push the **Properties** tool in the SmartScore toolbar and click on the barline at the beginning of the first measure. In the Barline Properties window, change the selection in **Playback** pull-down menu from ***Current time signature*** to ***As written***.

b. Click again on the barline at the beginning of the last measure and change **Playback** to ***As written***. The piece will playback and repeat without hesitation and error highlights will be removed.

- **Apply different MIDI sounds to each part**

In the upper staff, the *Soprano* voice is black (Voice 1) and the *Alto* voice is red (Voice 2). In the lower staff, the *Baritone* voice is black and *Bass* is red. Up to four voices are possible within each staff.

c. Hold down the **Ctrl** key and hit the "**9**" key. This opens the Playback Console. Or push the "Console" button in the toolbar.

d. Change MIDI Instrument assignments of the two voices in the top part, **PianoR (Track 1)**. Change Voice 1 (black) to *Choir Aahs* and Voice 2 (red) to *Voice Oohs*.

e. To hear differentiated voices, push the **Play** button, manipulate the volume sliders and the solo or mute buttons. Press **Close** to close the Playback Console.

- **Extracting Parts using Score Structure**

a. From the **Edit** menu, choose **Score Structure**.

b. Check the **Show Voices** box to view voices.

c. In the **Parts** column, click to highlight the box titled "*PianoL*" and push the **Remove** button.

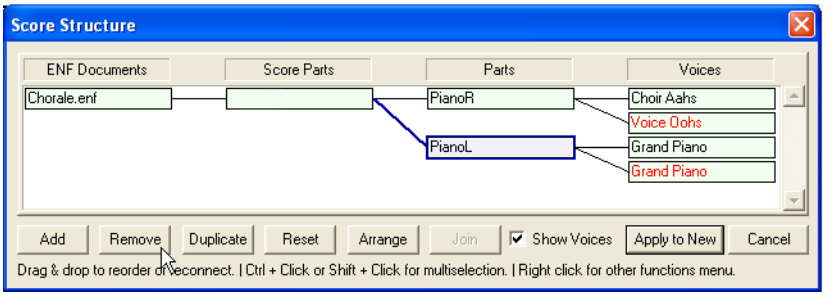


FIGURE 2 - 8: Eliminating a part in Score Structure

d. Now push the **Apply to New** button. This creates a new ENF document containing only the soprano and alto voices. The original *Chorale.enf* document will remain unchanged.

e. Press the spacebar to hear only the women's voices. The next step is to extract a single voice from this document using the **System Manager**.

- **Extracting Voices in System Manager**

a. With the current document visible, hold down **Ctrl** + "**M**" (**Cmnd + M** for *Mac*) keys to open the **System Manager**. Select the **PianoR** part by clicking on the black dot to the left of the part name. ***Voice Visibility*** check boxes become active.

b. Uncheck the box under Voice 1 to make the soprano part invisible. In the ***Apply*** region below, check the *Visibility* box since the change we are making will only affect visibility.

c. Press **Apply to New** to create a new ENF document containing only the alto voiceline.

d. Press the spacebar to hear just the *alto* line.

2.4.4 Editing Songbook

a. Select **Recognition**.

b. Press the **Add Files to List** button in the ***Begin Recognition*** window. Select ***Songbook.tif*** and press **Open**. In the *Option*s area, check the box to the left of *Text*.

c. Press the **Begin Recognition** button. Once Recognition is complete, accept "***Open ENF***" and save the ENF file, *Songbook.enf*.

- **Insert missing time signature**

The original score is missing a time signature. Its actual meter is in 3/4.

a. In the Clefs and Signatures tool palette, locate the time signature button (**4/4**). Press and hold until all available signatures expand to the right. Select the **3/4** signature.

b. Move you cursor to the any part and click anywhere in the first measure. A **3/4** sign will insert into all the parts.

- **Change system margins**

Because the first system of this piece is not indented, part names overlap the first system. All system margins can be modified.

NOTE: **Show Part Name** options are found under the **View** menu.)

- In the horizontal ruler, drag the upper tab (margin control) to the right. If necessary, drag the bottom tab (part name control) too.

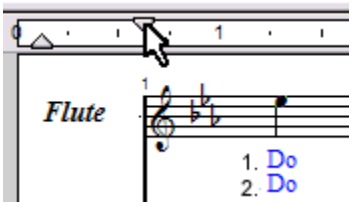


FIGURE 2 - 9: Controlling System Margins

- **Working with lyrics**

The lyrics in the first system are not aligned to their verse numbers.

a. With **Shift** button down (**Nudge** mode), locate the small yellow box along the left-hand bracket to the left of the lyics.

b. Click and drag the box up or down to move lyrics vertically.

In Measure 4, an “e” was dropped from the word “remember”

c. Push the **Lyric** button in the Text and Controllers toolbar.

d. Click on the “r” in the top lyric line. Once positioned in the lyric field, click to the right of the “r” (or use the right arrow key) and type “e”. Push the **Lyric** button again to exit Lyric mode.

2.4.5 Editing Guitar

- **Editing three or more voices**

Solo classical guitar and solo violin scores are unique in the world of published music. In most music, usually no more than two voicelines are present; each being distinguished by notes having opposite stem directions. In solo guitar notation, the four plucking fingers of the right hand can be represented in as many as four voices. In solo violin music, notes with stems in opposite directions represent the four strings of the instrument.

a. Push the **Recognition** button in the Navigator. In the ***Begin Recognition*** window, push **Add FIles to List**. Double click on the file, GUITAR.TIF in the SmartScore folder to add the file to the list of recognized pages. Press **Begin Recognition**.

b. Save the file with the default name given.

c. Notice measures have notes in three colors, including green. The green notes represent the third or tertiary voice. Push spacebar to **Play**. Hit spacebar again to **Stop**.

- **Adjust default tempo**

The original tempo is marked “*Poco allegro*”. SmartScore recognized the word, “*Allegro*” which has a default tempo of 150 bpm. It’s too fast.

a. Select the Properties tool and click on the mark, *Allegro* in Measure 1. Move the slider to change the speed to something slower.

NOTE: With "**Apply this tempo to all similar marks**" checked, all ***existing*** marks of *Allegro* will become updated to the new tempo after you push **OK**. Subsequent *Allegro* marks will insert with the default tempo of 150 unless you permanently change the default tempo by checking "**Apply these settings to all future files.**" **Return to Default** restores 150 bpm.

- **Adjusting staff (system) widths, controlling part names**

You may see the part name (***Nylon Guitar)*** overlapping the first measure. You can either adjust the width of the single staffline (system) or choose not to display the part name itself.

To adjust the width of the system,

- Position your cursor over the first measure then drag the upper margin tab inside the ruler bar to the right. Moving the lower tab to the left will nudge the part name horizontally.

To remove visibility of part names,

- In the **View** menu, select ***Show Part Names > Do not show.***

- **Working in Hidden Mode**

Notice that Measure 4 is highlighted red. This indicates an rhythmic error. There ought to be a rest in the upper voice in the fourth beat.

To insert a hidden rest,

a. Push the "Hide/Show Symbol" button in the Text and Controllers toolbar. Anything entered now will not be printed or seen in "normal" view mode.

b. Locate a quarter rest from the Notes and Rests palette. In Insert mode, position your cursor above the second-to-last note until it highlights blue (see "vertical event"). Click to insert the rest.

c. In Measure 6, there should be a quarter rest in the second (red) voice at Beat 3. Position your cursor just below the black quarter note and click to insert the rest.

NOTE: Some vertical nudging of the quarter rest and/or horizontal nudging of the notes in the 1st and 2nd voice may be necessary. Hold the **SHIFT** button down to nudge symbols.

d. Repeat by inserting a quarter rest in the third beat of Measure 15.

e. Push the "Hide/Show" button again to exit Hidden Mode.

The last bit of editing required is to insert a quarter note in Measure 13 that was dropped in recognition.

a. With the **Ctrl** button down, click on a quarter note.

b. Ensure the stem of the cursor is downward. The "**S**" key toggles default stem direction of the cursor.

c. Position the notehead indicator over the "*F*" space and click.

- **Assigning different instruments to voices**

d. Open the **Playback Console** (**Ctrl + 9 / Cmnd + 9**). Click into Instrument selection for **Voice 2**. In the Instrument pull-down menu, change *Nylon String Guitar* to *Tango Accordion.*

e. Change **Voice 3** to Acoustic Bass or some other instrument.

f. Push the spacebar and listen to how contrapuntal voices become more distinct when they are assigned to different instrument sounds.

2.4.6 Opening MIDI View

a. In the Navigator, push the **MIDI** button. This will open the MIDI environment for the guitar score.

b. With view Type of *Overview* selected, push **OK**. Overview displays all ENF staff lines represented as MIDI tracks.

c. Right-click (**alt + click** for Mac) in the Track number (**1...**) column to the far left of the screen. Click on the button marked "Piano Roll".

d. A new window opens to display MIDI data in a "piano roll" configuration where note lengths appear as long bars in discrete boxes that indicate measures and beats. Velocity, Tempo and other controllers will be visible in the controllers bar at the bottom of the screen.

e. Use the Zoom tool to zoom in and out of the view. Notice that contrapuntal voices still maintain their color.

2.4.7 Viewing all open windows using Tile

a. Click on the “Tile Windows” button in the Main Toolbar to view all windows that are open in SmartScore.

NOTE: All open documents may be visible and they will tile too. To view just the Guitar document, close unwanted windows and then push “Tile Windows” button again.

TIP: When comparing ENF and MIDI views, it is helpful to change the ENF display to “long” horizontal view. In the ENF window, simply push the elongated staff in the lower right corner of the window, or in the View menu, select **View mode > Long view**.

b. Clicking into any window activates it. You may zoom, edit and scroll as you would if it were the only open window.

Viewing both the ENF and MIDI windows simultaneously allows you to visualize both the graphical and the time-based structures of SmartScore. Whenever you have a playback problem that doesn’t appear to be resolved in ENF view, open MIDI piano roll view, tile the views and compare data. Often you will visualize the problem in MIDI; e.g. Incorrect note or rest values may cause MIDI to create more beats than what is written in the ENF view.

2.4.8 Two-way MIDI and ENF Editing

Both MIDI and ENF environments are tightly integrated. It is possible to make certain changes in a MIDI view and have that change update the ENF view.

- In Measure 1 of an open MIDI view window (either Piano Roll or Overview), position your cursor over any note until the cursor displays a double cross. Click and drag the note up or down while viewing the associated ENF display. Notice that as the MIDI event changes pitch, so does the corresponding ENF note.

Scanning and Recognition

Chapter 3 Scanning and Recognition

3.1 Scanning Music

Be sure you have the necessary scanner drivers installed before attempting to scan from inside SmartScore. Most scanners come with software that enable programs such as SmartScore to control them. TWAIN and Windows (WIA) scanning drivers are normally installed from the CDs packaged with scanners. It may be necessary for some users to install TWAIN or WIA drivers separately. This is usually done by selecting a "Custom Install" option from the install menu of the CD packaged with the scanner.

3.1.1 Choosing a scanner

Some scanners work better with SmartScore than others. For an updated list of recommended scanners, visit:
http://www.musitek.com/ScannerComp.html

NOTE: Scanner drivers are often updated by scanner manufacturers and posted on their web sites. If problems occur during scanning, it is always a good idea to check the Internet for updated scanner drivers before calling Musitek Technical Support.

3.1.2 Selecting your scanner and interface in SmartScore

a. Check **File > Scan Music > Choose Interface = SmartScore's**.

b. Go to **File > Scan Music > Select Scanner.** With your mouse, click on the driver that corresponds to your scanner.

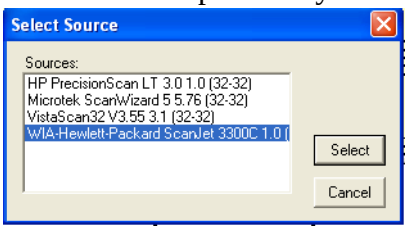


FIGURE 3 - 1: File > Scan Music > Select Scanner

c. **Windows HP / Visioneer Users**: Select “WIA xxxx xxxx” (the Windows scanning utility) if it’s available and try scanning with that first. Do not select “PrecisionScan”®, etc. if a WIA driver is available.

d. **Other scanners (Epson, Canon, etc.):** Whenever possible, always install and use a TWAIN driver. TWAIN is often more reliable than third-party WIA drivers.

Always reboot your computer after installing drivers. If you do not see your scanner listed in the **Select Scanner** window, the driver is probably not installed. Install or replace TWAIN or WIA drivers from your scanner’s CD or from ***Download Drivers*** area of the scanner manufacturer’s website. If your scanner still does not operate properly with SmartScore scanning interface, turn to "Scanning Outside of SmartScore", Section 3.3, on page 36.

e. Push the **Scan** button in the Navigator or in the Main Toolbar.

3.1.3 Using the SmartScore Scanning Interface

Your scanner will begin to operate with **Scan** or **File > Scan Music > Acquire**. A low-resolution pre-scan will appear in the Preview window along with a black bounding box surrounding the music. The bounding box should encompass the entire image area that you wish to scan. Edges of the box should be about 1/4” away from the printed image.

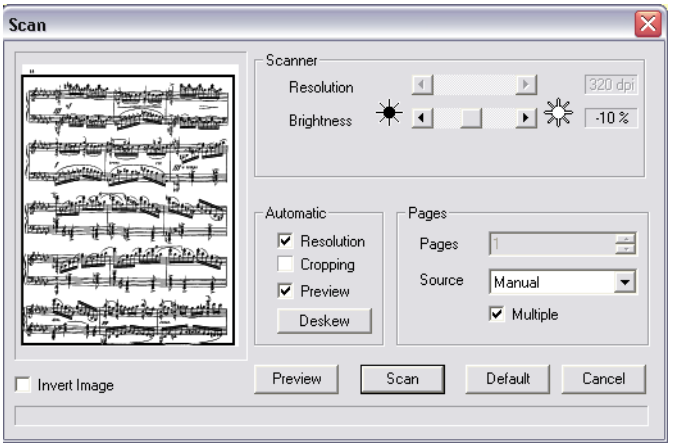


FIGURE 3 - 2: SmartScore scanning interface

NOTE: If the preview image appears with white notes on black background, this means your scanner is reversing image polarity. In this case, you will want to check the box, **Invert Image**, below the Preview window.

f. If necessary, select a scanning region, drag your mouse to create a box around the music leaving at least 1/4" of white space between the bounding box and the music which you are scanning.

g. Push the **Scan** button to create a final high-resolution scan of first page. You will be prompted to scan additional pages or finish scanning. Make sure "**Multiple**" is checked if you have more than one page to scan.

h. Push **Next Page** and continue to preview, deskew and scan until you have finished scanning in your song, project, section or movement. Select **Finish** when done.

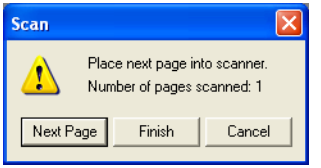


FIGURE 3 - 3: Scan Next Page / Finish window

NOTE: Selecting **Next Page** activates your scanner. Before selecting it, position your next page onto the scanner and wait until the scanner bar resets. If you push too soon, you may get an error message that "Scanner is not ready."

NOTE: If the piece you are processing exceeds 24 pages, divide it into smaller, discrete sections, e.g. Intro, Part1, Part2, etc.

The following section lists image-enhancement and scanner settings which you can control within the SmartScore scanning interface. If you understand and/or accept the default settings in the **Scan** window, turn to "Recognition Sequence" on page 32 to complete scanning and to begin the recognition process.

3.1.4 Automatic image-enhancement functions

The SmartScore interface has 4 automatic image-enhancement functions all designed to assist you in creating the best possible image for recognition.

- **Auto Resolution**

This feature takes the guesswork out of choosing the correct resolution (dpi) setting for each scan. When selected, the image is analyzed and sized in order to obtain an optimum image resolution, thus achieving the highest possible recognition accuracy. Use this whenever possible.

- **Auto Cropping**

The cropping region can be automatically selected by checking this box. The cropping region can be resized by dragging any edge with your mouse. The cropping rectangle should not intersect or interfere with any part of the music. Leave at least 1/4" of white space between the cropping region and your music. After the preview scan is completed on each page, check that the image in the preview window is straight and properly cropped.

- **Auto Deskew**

After an image is previewed, toggle this button on and off and choose the setting that gives you the straightest possible image. If you are unable to make the image appear straight in the Preview window, auto deskew failed. Reposition your music in the scanner and preview again.

3.1.5 Scanner settings

- **Darkness / Brightness**

The default darkness setting is -15%. For typical printed music, this setting should be fine. If beams smear together and whole and half notes appear closed or "blobbed", then brighten the scan. If the original music is faded, if it is a weak copy or if it has become degraded, you may want to scan even darker than the default setting. SmartScore wants to see solid, well-defined lines that are neither razor-thin nor smeared together.

NOTE: If recognition accuracy is poorer than expected, examine the file in the Image Editor. Zoom in close and determine the following:

- If stems and stafflines are thick and continuous but objects appear small and lack detail, re-scan with increased resolution.

- If note stems and staff lines are broken, thin or appear to be only one pixel wide, re-scan with -20% to -30% increased darkness.

- **Resolution**

It is recommended that you use Auto-Resolution whenever possible. If you choose to set resolution manually, check Auto-Resolution off. For most printed music, the recommended resolution is around 350 dpi.

If the original music is printed in smaller type, you can increase resolution to 400 or 500 dpi. For miniature scores, try 600 dpi. Scanning at too high or too low a resolution may actually reduce recognition accuracy. It is not recommended to scan music below 250 dpi or higher than 600 dpi.

- **Manual or Automatic Source (Document feeder)**

Normally, you will preview and scan one page at a time. Some scanners have automatic document feeders. If you choose **Automatic** option, you will be able to scan multiple pages at once. However, you will only be able to preview the first page. If you select **Automatic,** make sure when you preview the first page that the entire page is selected and not cropped. Remaining pages will be scanned and fed without preview checking.

3.1.6 Choosing an alternative scanning interface

If your scanner fails to respond properly to the **Scan** command in the SmartScore interface or your scanned image is unacceptable (partially scanned, distorted, color, etc.) your alternative is to scan using the software provided with your scanner. See "Scanning Outside of SmartScore", Section 3.3, on page 36 for details.

3.1.7 Scanning in Macintosh®

Some Mac scanners are not fully TWAIN-compatible. In order for SmartScore to control a scanning device, it must be TWAIN-compatible. Otherwise scanning will have to be done outside of SmartScore using the software provided with your scanner. See “Scanning Outside of SmartScore” on page 36 and “Selecting Pre-scanned Files for Processing” below for details.

3.2 Recognition Sequence

When scanning pages is done, choose **Save As and Begin Recognition** to initiate the recognition process or choose **Open Pages in Image Editor** to view scanned pages and to make alterations such as cropping, deskew, line drawing, cutting and pasting, etc. **Cancel** will exit.

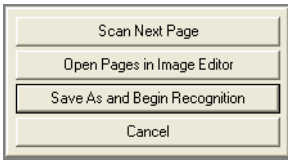


FIGURE 3 - 4: Scan Next Page / Finish window

NOTE: Turn to “Image Editor” on page 44 to learn about editing scanned images (**Open Pages in Image Editor**).

To save your scanned image file and begin recognition sequence,

a. Push the **Save As and Begin Recognition** button.

b. Browse to a location for saving your SmartScore working files. You may wish to add a unique directory at this time.

c. Give the image file a name. If you are using Windows, the extension “.TIF” will be added automatically.

d. Push **OK** to begin the recognition process.

The image file you have just saved contains all pages you scanned. The default filetype is “Compressed TIFF” (CCITT Type 4), a multi-page, single-file TIFF compression format. This type of TIFF file is approximately 10 times smaller than an uncompressed TIFF image file.

NOTE: If you are going to open the scanned image in Adobe Photoshop, you may want to save in the larger, uncompressed TIFF format; Photoshop does not currently support CCITT Type 4 files.

TIP: When you **Save** a file, SmartScore will continue to save to that directory until you change it. The same is true when you **Open** a file. Remember that SmartScore will look in one directory when opening a file and may default in a different one when saving a file. Once changed, the new path becomes the default.

3.2.1 Recognition Options

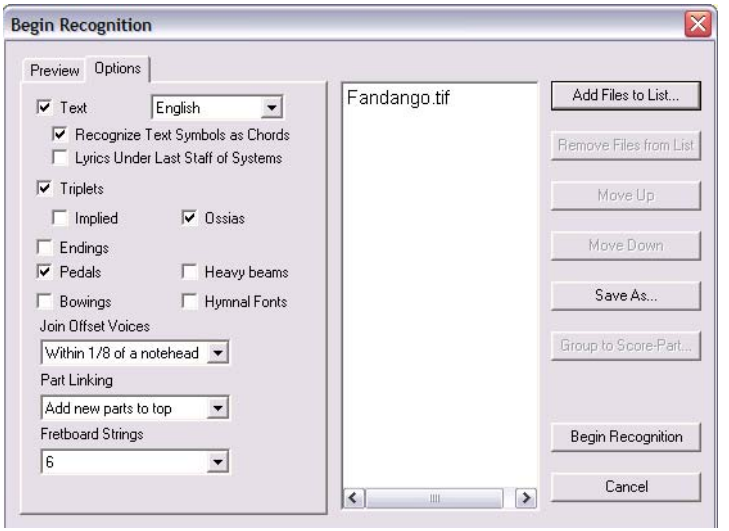


FIGURE 3 - 5: Recognition - Options

The following section describes options you can choose for recognition. When satisfied with your choices, push **Begin Recognition.**

NOTE: If Recognition fails, refer to “Troubleshooting Guide” on page 42.

- **Text**

Check this box if you wish to recognize lyrics and text in the music.

TIP: If you are scanning in single-line parts for the purpose of joining them into a conductor’s score, it is recommended not to recognize text. Otherwise, text from every score-part will be overlaid on the pages of the conductor’s score.

- **Recognize Text Symbols as Chords**

Check this box if your score has chord symbols written as text instead of guitar fret symbols. Chord names will be linked to guitar fret library.

- **Lyrics Under Last Staff of Systems**

Check this box if you are recognizing a choral or orchestral score that has dissimilar lines of lyrics written under every staff line, including the last staff line of each system. Otherwise, leave unchecked.

- **Triplets**

Check this box if the score contains triplets that are indicated with the number “3” along with an arc or bracket.

- **Implied Triplets**

Check this box if the score has many repeated groups of three beamed notes with the first group being marked with a triplet. This is a common convention used to simplify reading of repeated triplet beam groupings without marking them. They are “implied”. The exception will be scores with “tripled time” signatures: 3/x, 6/x, etc.

- **Endings**

Check this box if you want to automatically recognize multiple endings marked 1_, 2_, etc.

- **Pedals**

If pedal markings are written into the music, check this box.

- **Bowings**

If up/down bowing marks are written into the music, check this box.

- **Heavy beams**

Some printed music is written with especially thick note beams. If single beams are recognized as double or triple, re-recognize the music again with this option selected.

- **Hymnal Fonts**

If you are scanning in music from a hymnal (with stubby flags and short stems), check this box. NOTE: “Shaped notes” do not apply.

- **Join Offset Voices**

Often you will see notes belonging to different voices appear horizontally offset, even though they sound at the same time. It is necessary for the recognizer to decide which notes to join and which notes not to join to a “vertical event” (See “Correcting Vertical Alignment” on page 69). Normally, offset notes belonging to different voices have no more than 1/4 of a notehead’s space between them.

- If your music has offset voices which regularly exceed this distance, choose another distance. Distance is determined by the white space between note heads.
- If your music has dense polyphonic texture, like that found in solo guitar music or tightly-spaced orchestral passages, it may be necessary to “tighten up” the allowable distance between offset voices. In these case, choose a distance less than 1/4 of a notehead.

- **Part Linking**

When a score is “optimized”, parts appear (as staves in a system) only when played. Otherwise, parts are not visible. Optimized systems can be referred to as either “collapsed” or “expanded”. Sometimes parts are added to the top, e.g. after a piano introduction, the vocal line will appear above the piano part. Other scores may have parts are added to systems in a “bottom-up” fashion, e.g. existing staves are bumped upwards. If your score is structured in this way, change default to “**Add Parts to Bottom**”. Orchestral scores, being grouped by instruments, may have no pattern. For details on re-linking, see "Re-linking parts", Section 4.15, on page 78

- **Fretboard Strings**

The default fretboard for recognition is the six-string guitar. If your music has ukulele fretboards (4 strings) or some other configuration, change the selection to the correct number of strings.

3.2.2 Post-Recognition

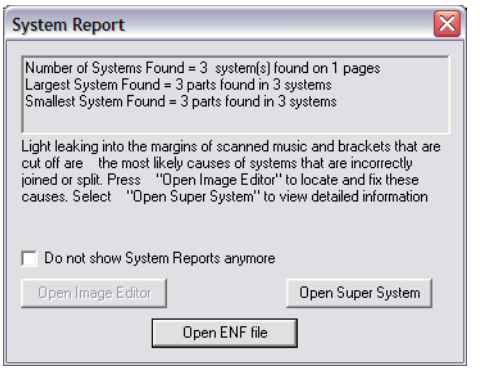


FIGURE 3 - 6: Post-recognition System Report

The scanned file will be saved prior to recognition. Following the recognition process, a System Report will be displayed indicating the number of systems found and on how many pages. The System Report reports the largest and smallest systems including the number of parts found in each. If any of these do not agree with the original music, investigate the cause before spending a lot of time editing the score... it could be difficult to restructure parts and systems later on.

- If you select either ***Open ENF*** or ***Open Super System***, the first thing to be saved is the image file (scanned pages). Type a name in the ***Save As*** > ***Image*** window.
- Following that, another ***Save As*** window will open. This is for the ENF file (the SmartScore file). It acquires the same name as was given the image file. It may be changed in the name field. Select a destination directory and press **Save** to save your new ENF file.
- If you select ***Open Super System***, you will be able to scroll from system to system and locate any systems containing an incorrect number of parts. See “System Manager” on page 155 for details.
- If you select ***Open Image Editor***, you will be taken to the image editor where you are able to correct certain flaws in the scanned image. See “Image Editor” on page 44 for more details.

You can choose to permanently view or not view System Report and Save As dialog following recognition. To reset these options, go to ***Edit > Program Preferences > User Interface > Recognition.*** When recognition is complete, the screen will split between an image pane and the ENF pane which displays a representation of what was recognized. As you scroll down and page, the image and ENF panes remain synchronized. An alternative to the “split screen” view is the “Zoom Window” view. See “Split-screen and Scan View reference views” on page 125

3.3 Scanning Outside of SmartScore

An alternative to operating your scanner when TWAIN or WIA drivers don’t work properly with SmartScore is to scan in another application. You can use your scanner’s software or a third-party imaging program like Photoshop® to scan and save images. Then, inside SmartScore, you will be able to **Recognize** the saved images.

a. Check that your scanner is on and that the proper driver is installed (**File > Scan Music > Select Scanner)**. If a compatible driver is not present, you will have to reinstall your scanner's software either from the original CD or by downloading the most recent scanner driver from your scanner manufacturer's web site. If the above is true and pushing the **Scan** button in the Navigator still causes problems, your driver is probably incompatible with SmartScore's scanning interface.

b. Switch to the scanning software that was installed with your scanner. To do this, go to **File > Scan Music > Choose Interface > Your Scanner's.** When you push the Scan button, you will then be handed off to the software that came with your scanner.

If you are using your scanner's interface, follow the following guides:

- Place your music in the scanner as squarely as possible.
- Look for ***Scan type*** or ***Output*** option. Set scanning to **Grey** (Greyscale). Do not scan in "Color" or in "Black and White" (*Line Art, 1 bit* or *OCR).* NOTE: This is new in Version 5.
- Set ***Resolution*** to 300-400 dpi for average printed music.
- Set ***Darkness*** to -10 or -15% for average printed music.
- Crop around but not on the music to be scanned in preview pane.
- Scan between 300-400 dpi (for average-sized printed music). Scan at higher resolutions for music printed in smaller-than-average print size. Do not exceed 600 dpi.
- Save as TIFF (*Uncompressed*) or BMP file. Each page will be about 1 MB per page. Use a unique filename for each page... e.g. Page1.tif, Page2.tif, etc.

TIP: Optimum resolution is achieved when the distance between staff lines is about 20 pixels. Zoom into the image. Referring to the mouse position readout in the status bar, measure the distance between two lines in a stave (measure white space only).

3.4 Selecting Pre-scanned Files for Processing

Pre-scanned images must be properly prepared. For detailed information on basic music scanning procedures, see “Scanner settings” on page 30.

To create an ENF file from pre-scanned images of printed music,

a. Push one of the **Recognition** buttons (in the toolbar or Navigator) or select **Recognize** under the **File** menu.

b. A file-selection window ***Begin Recognition*** will open. This is where you list your pre-scanned files for recognition by selecting them, rearranging them, removing or reordering them.

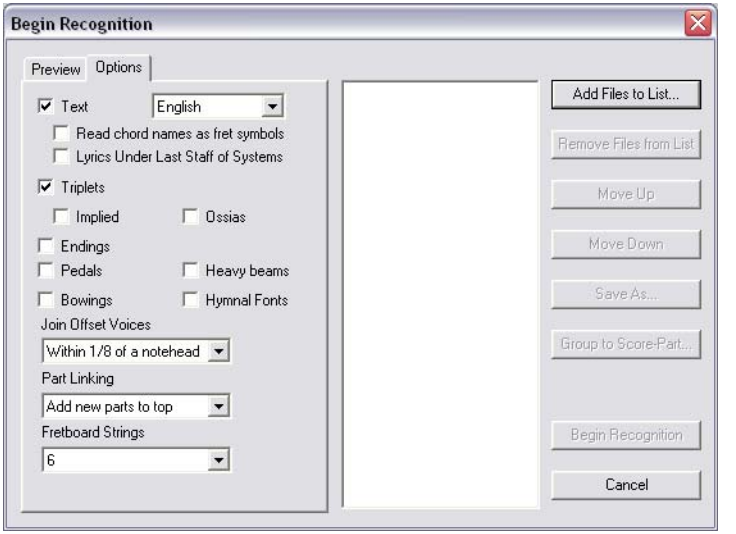


FIGURE 3 - 7: Recognition - Selected Files / Options / Preview

c. In the ***Begin Recognition*** window, push **Add Files to List**.

d. Browse to where your images are stored. Click on an image file to select. If more than one page was scanned in the SmartScore scanning interface, the file will appear as a multi-page list.

NOTE: SmartScore can recognize BMP or PDF files provided they are a minimum of 200 dpi and not RGB or CMYK color.

NOTE: You may click on and drag image icon(s) to the selected files list of the ***Begin Recognition*** window. Some older Windows operating systems may not support drag-and-drop.

e. Preview pages prior to recognition to check that pages were scanned completely and that no page is severely skewed. Any of these issues will affect recognition results. Select the **Preview** tab and click on each page to view your pre-scanned pages.

f. Click on the **Options** tab to return to the File Selection and Options window. Options assists the recognizer to "hone in" on specific symbols and helps to remove any "false positives".

g. Refer to "Recognition Options" on page 33 for details on how recognition options operate.

3.4.1 Reordering the File List

If you scan more than 9 pages, you may notice "Page10" is listed before "Page2". This is because most operating systems list files according to the first character of the filename. Click on any page and hit **Move Up** or **Move Down** to reposition. Hitting **Remove Files from List** will cause that page to be skipped during Recognition.

3.4.2 Removing, replacing and re-saving scanned pages

If one page of a scanned group is incorrectly scanned or is missing altogether from a multi-page image file (Page group), you may reselect individual pages to form a new page group.

a. Select (or drag) the original multi-page file inside the selected files list of the ***Begin Recognition*** window.

b. Highlight a page to remove and push **Remove Files from List**.

c. To add a replacement or additional page to the original page group, select or drag the page(s) to the selected files list.

d. Reorder pages as necessary.

NOTE: If pages were reordered, added to or deleted from the original image file, you will be able to re-save the newly listed pages.

*To **Save** a modified list of grouped pages as a new image file,*

- Select all pages so they are highlighted and push Save As.
- Select the existing name to over-write or type in a new name.

3.5 Scanning Part Scores (Score-Parts)

SmartScore allows you to process and combine scanned pages of solo parts, duets, trios or quartets and play them back simultaneously. They may also be recombined into a conductor's score.

TIP: If you are scanning in Score-parts for the purpose of joining solo parts into a conductor's score, it is recommended not to recognize text.

To scan and combine Score-parts into one ENF file,

a. Scan in all pages for each part. For easiest identification, give a unique name or number for pages belonging to one part, e.g. FluteP1, FluteP2, GuitarP1, GuitarP2, etc.

b. In the ***Begin Recognition*** window, arrange files in order of parts then pages: e.g. Part1/Page1, Part1/Page2, Part2/Page1, etc.

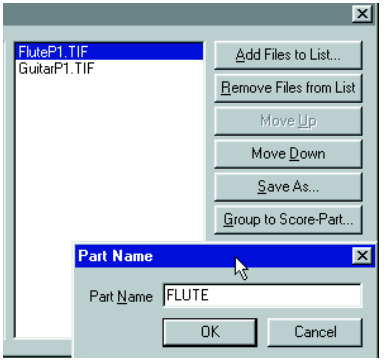


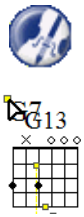
FIGURE 3 - 8: Grouping pages to Score-Parts

c. Highlight the first set of pages that make up the first Score-Part.

d. Push **Group to Score-Part.** In the Part Name window, give the selected pages belonging to a score-part a unique name.

e. When all pages are properly grouped to score-parts, push the **Begin Recognition** button.

SmartScore will internally organize score-parts following recognition. The ENF window will display pages for the first part followed by pages of the next part. Parts will play back simultaneously. For more information on creating conductor's scores, refer to page 121.



TIP: Following recognition, guitar chord fret symbols may overlay chord names recognized as text: “Dumb” text chord names will not transpose. To remove “dumb” text fields, use **Nudge** mode (**Shift**) and drag the control handles of each text field upwards. Use the **Select** tool and “group delete” all selected text fields.

3.6 Recognition Accuracy

If recognition accuracy is not as good as what you expected, examine the image up close by zooming into the image pane of your ENF view. You may also view Image Editor (**FIle** > **Open** > **Image *filetype***).

Determine the following by zooming close up:

- If objects lack detail, re-scan with Auto-Resolution = On or increase scanning resolution manually. Optimum distance between horizontal stafflines is 20 pixels. Use the cursor and readout in the Status Bar (pixel coordinates) to measure distance.
- If objects such as note stems and staff lines are broken or lack thickness, re-scan with increased darkness to fill in gaps.
- If the source document is poorly printed or is faded and weak, try locating a better print copy of the music.

NOTE: Recognition accuracy is directly related to the quality of the source document as well as the quality of the scanned image. Cheaper scanners, including Fax-Scan-Copy combos, are known to create poor images. Remember the old saw: “Garbage in / Garbage out”. You may want to contact Musitek Tech Support for scanner recommendations.

If after examining the image and consulting the Troubleshooting chart, you are still unable to achieve good recognition results, we invite you to send us your TIFF file(s) for detailed analysis by our technicians.

You can attach your image (TIFF) files to e-mail along with a short description of the problem you experienced to the following address:
tech@musitek.com

We will as reply soon as possible. Most likely, we will be able to locate the problem and offer a solution or recommendation.

3.6.1 Troubleshooting Scanning and Recognition

Table 2: Troubleshooting Guide

Problem	Probable Cause	Fix
Scanner does not operate.	Scanner drivers not installed properly.	Install TWAIN software and/or scanner Plug-in.
	Scanner not selected in SmartScore.	Ensure proper scanner driver is selected (**File > Scan Music > Choose Scanner**).
	Scanner not connected or not turned on.	Check cabling and power. Use scan test program.
Automatic resolution returns inconsistent resolution choices on the same page.	Music has irregular staff widths. Scanner may be distorting regions of page.	Re-scan in SmartScore's scanning interface with *Auto Resolution* = off.
	Scanner model used does not support variable DPI (1 pixel increments)	Re-scan with *Auto* ***Resolution*** = off. Manually set resolution acceptable to scanner (300 to 600 dpi).
"Cannot process color images."	Scanner was set to scan in Color.	Scan in SmartScore's scanning interface (**File > Scan Music > Interface**).
		Re-scan in greyscale.
"Recognition failed for this page."	Scanner set to screen resolution of 50-100 dpi.	Scan again accepting **Auto-resolution** settings for best results.
		Manually set resolution to 300-600 dpi. Scan again.
	Page was scanned with too light a setting.	Re-scan with -20% to -25% darkness
	Scanner was forced to create a black & white image with "dithering".	Re-scan in **Your Scanner's interface:** Greyscale / 350 dpi.

Table 2: Troubleshooting Guide

Problem	Probable Cause	Fix
"Recognition failed for this page." (cont'd)	Music not fully scanned or is severely skewed.	Re-scan making sure all the music is selected. Scan music straight or use "**Deskew**" function.
	Image too large for selected resolution.	Re-scan ensuring *Auto Resolution* = On.
Scanner hangs or crashes.	TWAIN driver conflict.	Ensure latest scanner drivers are installed.
		Scan outside of Smart-Score using software that came with your scanner.
Poor recognition results.	Missing barlines due to light obscuring right margin or to right margin having been cut off during scanning.	Open image file in Image Editor. Use **Select** Tool to delete obscured regions and the Line Draw tool to restore barlines on right side of systems.
	Image too small for selected resolution.	Scan again accepting **Auto-resolution** settings for best results.
	Handwritten or non-standard notation. Poor print.	Scan well-printed, standard-sized sheet music.
	Poorly printed music.	Increase **Darkness** level. Find better original.
	Image not straight (skewed).	Open file in Image Editor (**File > Open > Image**). Use **Deskew** tool to straighten each page.
	Stafflines and note stems of canned file are broken or too thin.	Re-scan page(s) with increased darkness setting.

3.7 Image Editor

- **Begin Recognition or Open in Image Editor**

Following the final scan of music pages, you may choose to "Begin Recognition" or "Open Image Editor". This choice will stop the Recognition process and open the scanned images in the Image Editor.

NOTE: The image will not be saved until **File > Save As** is selected.

- **Load an image file**

To open an image file you have previously scanned,

a. Press the **Open** button on the Navigator or choose **Open** (**Ctrl + O)** (**Cmnd + O** for Mac) from the **File** menu.

b. Change ***Files of Type*** pull-down menu to **Image Files**.

c. Browse and highlight an image file from the listed saved files. Press **Open**.

- **Image Information**

Select **View > Image Information** to display characteristics about the current scanned image including resolution, file type and page size.

- **Zoom**

To Zoom in and out click the Zoom Tool in the Main toolbar (**Ctrl + Q**). Click inside the image will increase the scale of your view (Zoom In), while right-click (**alt / option** + click for *Mac)* will decrease the scale of your view (Zoom Out).

- **Page**

To view pages of an image file, use the paging buttons in the Main Toolbar or select **Next Page**/ **Previous Page** from the **View** menu.

- **Image Toolbar**

Crop **Select** **Delete** **Line** **Color** **RotateR**
Deskew **Invert** **Brush** **Thickness** **RotateL** **Threshold**

FIGURE 3 - 9: Image Toolbar

3.7.1 Page Tools

- **Select**

Used for selecting a region for cropping, deleting, cutting or copying.

- **Crop**

To crop an image file (trimming unwanted portions of your image from outside a marked frame),

a. Press the **Select** button in the Image Toolbar.

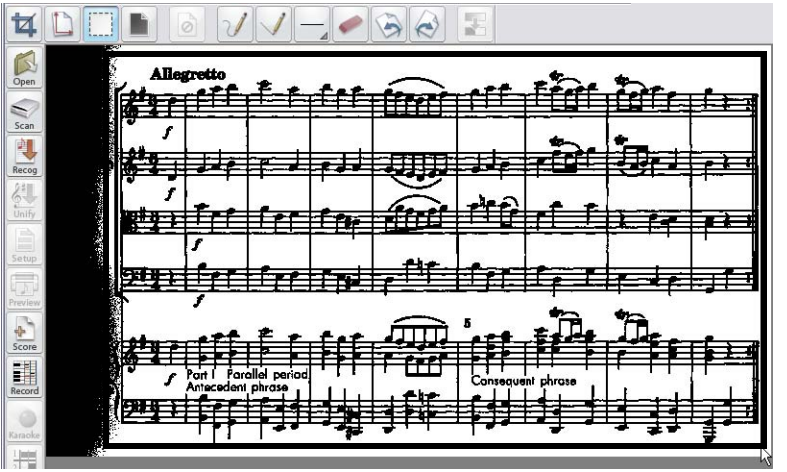


FIGURE 3 - 10: Selecting Crop Region (Removing severe light leakage)

b. With your mouse, drag a box around the area you wish to keep. If you want to extend the cropping region outside of the display, keep dragging; the page will scroll as you drag up or down.

c. To adjust the marked bounded area, move your cursor over a boundary line, click and drag the boundary to a new position.

d. Select **Crop** from the Edit menu OR press the Crop button in the Image Toolbar. The resulting image will be reduced to the area inside the bounded frame. Remember to Save when done.

- **Correcting Skew**

Page through each scanned image and check for relative straightness of each image page. If a page appears tilted or *skewed*, recognition accuracy will be compromised. The **Deskew** tool rotates the image slightly to correct skewed pages and will optimize recognition accuracy.

a. Press the **Deskew** button in the Image Toolbar or select **Deskew** from the **Edit** menu.

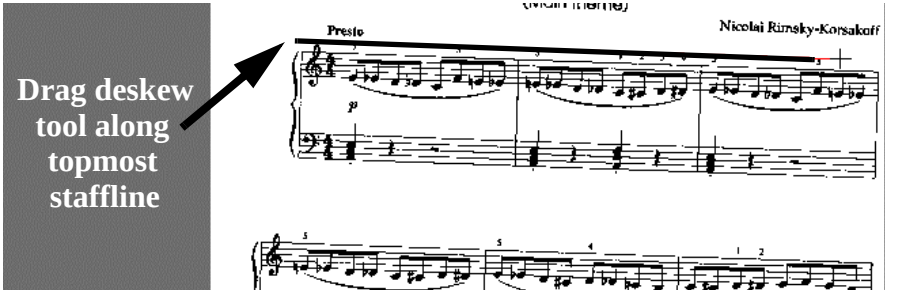


FIGURE 3 - 11: Manual Skew Correction

b. Position the cursor over a staffline. Starting from the left side, click and drag the mouse along the length of the staffline. A red "skew angle" line will display as you drag the mouse. When you are certain the red "skew angle" line parallels the staffline, let go. The page will automatically straighten. Repeat for each page. Remember to **Save** when done.

NOTE: If the page becomes incorrectly rotated, undo with **Ctrl + z / Cmnd + z** for *Mac* (or select **Edit > Undo**).

- **Invert**

If the image you open in SmartScore is white-on-black (instead of the normal black-on-white), then you should reverse the image output in your scanning software. SmartScore defaults to 0=white polarity.

If your scanned image appears white on black, choose **Edit > Invert** or choose the **Invert** button from the toolbar.

- **Delete Page**

If there is more than one scanned page in the image file, the **Delete Page** function is active. Use it to remove poorly scanned or duplicated pages. To re-scan and restore deleted pages, see "Removing, replacing and re-saving scanned pages" on page 39.

- **Paint Brush (Free draw)**

To draw free hand lines in your image file, select **Brush** from the **Edit** menu OR press the Brush button in the Image Toolbar. Choose a line width then click and drag to paint.

- **Line Draw**

Some printed scores have weak or missing stafflines and/or brackets that can create problems during recognition and may result in missing or incorrectly bracketed systems. Sometimes, by accident, brackets and/or barlines are cut off during scanning. If this is the case, you can manually draw in staffline and brackets or enhance their thicknesses.

To restore cut-off or missing system brackets,

a. Select **Edit > Line** or choose **Line Draw** in the Image Toolbar.

b. Push the **Pen Color** push button in the Image Toolbar, if necessary, to choose Black Color.

c. In the **Width** pull-down selector, choose a fairly wide thickness (10-20 pixels).

d. Click and drag the mouse to draw a line along the missing or broken bracket along the left margin of the music.

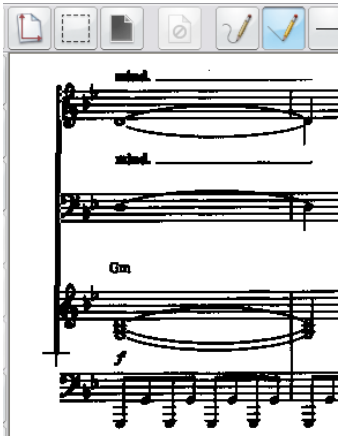


FIGURE 3 - 12: Using Line Draw tool to restore missing bracket

e. When finished modifying the image. Select **File > Save As** and give it a name. You may then **Recognize** the file with corrections.

- **Line / Brush Thickness**

To change the width of brush or line tool, select a new size from the Width menu in the Image Toolbar. Select from 1 to 50 pixels.

- **Black / White Color toggle (Eraser)**

Push the “Eraser” button to activate white color. Push again to deactivate it for black color. Or choose **Pen Color > Black** or **White** from the **Edit** menu.

- **Rotate Left / Rotate Right**

To rotate an image file (for landscape formatted scores or upside down scans), go to the **Edit** menu and highlight **Rotate** OR press one of the Rotate buttons in the Image Toolbar.

- Rotate the image Left (90 degree rotation).
- Rotate the image Right (90 degree rotation).
- Select **Edit > Rotate > Any** to rotate at angles other than 90 degrees.

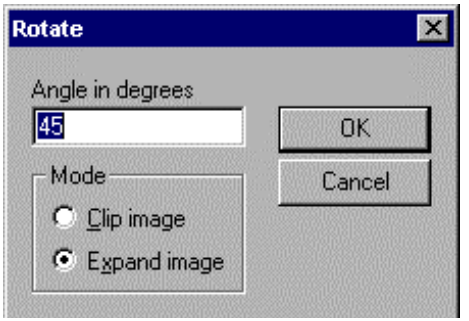


FIGURE 3 - 13: Image Rotation

- Choose **Clip Image** mode to maintain the original page size and orientation of the image file.

NOTE: Be careful that none of the music is clipped with this option. If so, choose **Edit > Undo (Ctrl + z / Cmnd + z** for *Mac*).

- Choose **Expand Image** mode to increase the page size, if necessary, to include the entire image.
- Remember to Save when done.

3.7.2 Cut / Copy and Paste functions

- **Cut (Edit > Cut)**

To cut an area from the scanned image, hit **Delete** button. Or use the **Select** tool and drag a box. Cut with **Ctrl** + “**X**”.

- **Copy**

To copy an area without removing it from the image, use the **Select** tool and drag a box with the mouse. Select **Edit** > **Copy** (**Ctrl + C** (Win) / **Cmnd + C** (Mac)).

- **Paste**

To Paste the cut or copied region into an image file, select **Edit** > **Paste** (**Ctrl + V / Cmnd + V** (Mac)). The cut or copied section will drop into the image. With the mouse, drag the fragment anywhere within the image and release the left mouse button. To fix the fragment in place, click outside the pasted fragment.

3.7.3 Manually converting greyscale images

- **Threshold (Convert to Black and White)**

This tool manually converts greyscale images to black and white for SmartScore recognition processing. It is helpful if the original scan was created in greyscale (recommended when scanning outside of SmartScore). See "Scanning Outside of SmartScore", Section 3.3, on page 36 for details.

If recognition is poor and examination of the image shows broken stems and/or broken staffline,

a. Re-scan the music and instead of choosing **Begin Recognition**, choose **Open in Image Editor.**

b. Push the Convert to Black and White button.

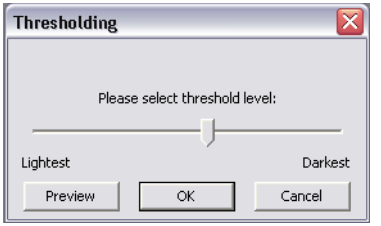


FIGURE 3 - 14: Greyscale Thresholding

c. In the Thresholding window, choose a darker level and re-examine the image for line integrity. **Undo** and repeat if necessary.

NOTE: After modifying pages in the Image Editor, remember to **Save** the modified image file.

Playback

Chapter 4 Playback

4.1 MIDI Setup

It is necessary to identify the MIDI device attached to your system in order for SmartScore to play through it. Selecting the MIDI device is similar on both Windows® and Macintosh®. Fortunately, computer operating systems now provide built-in *MIDI synthesizers.* This allows you to select and play General MIDI (GM) sounds without installing an outboard synthesizer or soundcard.

To set the MIDI input and output devices,

a. Select **MIDI Devices** from the **Playback** menu. The MIDI Devices window will open.

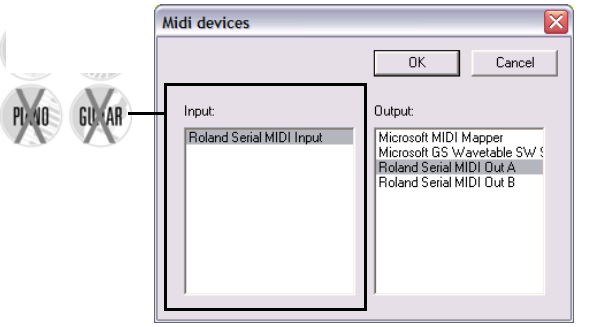


FIGURE 4 - 1: Playback > MIDI Devices

b. Click on the **MIDI Output** device you wish to use for MIDI playback. The MIDI device window will display all installed MIDI device drivers.

c. If you intend to record in SmartScore, select the desired MIDI recording device/interface in **Input** window.

NOTE: If the desired device is not listed in the MIDI Devices window make sure your MIDI device driver has been properly installed.

d. Press **OK** to set the selected MIDI devices as your MIDI sources.

NOTE: You may need to close any open MIDI programs. Some MIDI programs prevent playback by blocking the MIDI Out port.

4.1.1 Audio MIDI Setup (Macintosh)

To access Audio MIDI Setup in Mac OS X, locate “Utilities” folder inside the “Applications” folder. Double-click on Audio MIDI Setup.

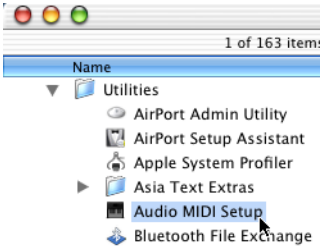


FIGURE 4 - 2: Applications > Utilities > Audio MIDI Setup (Mac)

If you have external MIDI devices installed such as an external synthesizer module and MIDI interface, they should appear as icons in the window. Using your mouse, drag the “Out” arrow of the source device to the “In” arrow of the receiving device and vice-versa. Internal connections should then be established. Close Audio MIDI Setup.f

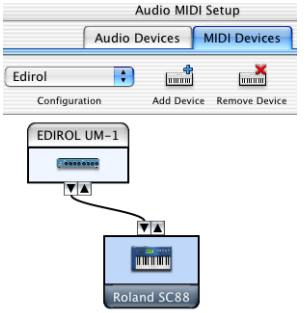


FIGURE 4 - 3: Connecting MIDI Devices in Audio MIDI Setup

With SmartScore ENF file open on your Mac, go to Playback menu, click and select Playback at the bottom of the list. Choose **CoreMIDI Playback** to activate devices connected in Audio MIDI Setup. To activate built-in *soft*-synthesizer (Macintosh QuickTime Musical Instruments), choose **QT Internal Playback**.

4.2 Quick Play

To play back an open ENF file quickly, use the spacebar,

a. Press the spacebar to start playback. Press again to pause. Press again to resume play.

b. Press the comma key (“**,**”) to rewind to start point.

4.2.1 Mini-Console

No MIDI Recording

The Mini-Console transport controls ***Play, Rewind*** and ***Stop.*** The ***Record*** button will launch a new MIDI recording session to record additional tracks (see page 196). The “spring-loaded” slider will accelerate or decelerate playback depending on how far the slider is dragged. The slider will snap back to the default tempo once it is released.

FIGURE 4 - 4: Mini-Console

4.3 Playback Console

In the Playback Console, you can make changes to MIDI instrument assignments, tempo, transposition, muting, soloing, volume and pan settings.

To open the Playback Console,

- Press the **Playback Console** button in the SmartScore Toolbar. Or hold down **Ctrl + 9** (Win) / **Cmnd + 9** (Mac). The console is also accessible from the menu: **Playback > Console**.

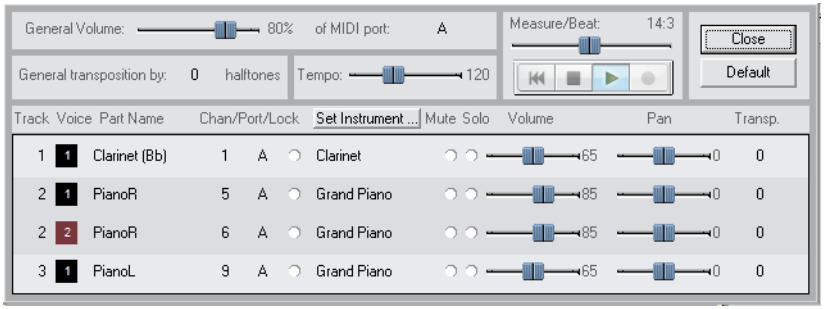


FIGURE 4 - 5: Playback Console

4.3.1 Playback Console controls

The playback transport control works exactly as does the **Mini-Console**. The **General Volume** slider controls overall volume. **Tempo** controls default tempo (if no metronome value was assigned in ENF). **Measure/Beat** slider resets playback position to desired measure and beat.

Each horizontal MIDI track is linked to a contrapuntal voiceline found in a staff. Tracks are grouped with light or dark grey shading representing one part / staff line. Each track has its controls arrayed in columns:

Column 1: **Track** shows the MIDI track assigned to the staff. MIDI Tracks are assigned automatically and cannot be changed.

Column 2: **Voice** lists the contrapuntal voice number (1 thru 4) given to each voiceline. Voice colors are assigned automatically and cannot be changed in the Playback Console. Voices are editable only in the ENF view. See “Working with Contrapuntal Voices” on page 151 for details.

Column 3: **Part Name** is given to each part (staff). Names are derived from the **System Manager** and are automatically assigned and cannot be changed in the Playback Console. Part Names can be changed in the System Manager. For details, see page 155, "System Manager".

Column 4: **MIDI Channel Number** A unique MIDI channel number is assigned to each voice within every part. If **Voice Visibility** is activated, MIDI channel numbers appear inside colored boxes representing one of 4 possible voices (black, red, green and blue). The **Voice Visibility** button is found in the SmartScore toolbar. MIDI Channel numbers are automatically assigned and can be changed by clicking onto any Channel Number of any track.

NOTE: If a score contains more than 15 total voices, voices in each part will automatically be reassigned to the same MIDI channel. The result will be that each part (track) will play the same MIDI instrument. This avoids the problem of MIDI playback being limited to no more than 16 channels per port.

Column 5: **MIDI Port** displays the current port to which MIDI playback data is being sent. If more than one MIDI device is available, the port assignment can be changed. The **Lock** radio button will prevent the MIDI Port from being changed by mistake.

Column 6: **MIDI Instrument**: A MIDI Instrument will be assigned to each track. The default instrument is “Grand Piano”. Some recognized scores, depending on their structure, may have other instruments assigned. The Instrument controls found in the Playback Console and in System Manager can be changed in either place and will be linked.

Set Instrument: See page 182.

Column 7/8: **Mute / Solo** buttons control whether a track should be muted while all other tracks play or soloed, muting all other tracks.

Column 9: **Volume** slider controls the default volume of each track

Column 10: **Pan** slider controls the Left/Right balance for each track.

Column 11: **Transpose** transposes the MIDI instrument in specific tracks up or down.

4.3.2 Playing back a selected section

The quickest way to play back a snippet of the score is to use the “Select” tool and drag the mouse over a region of the page while holding down the **right** mouse button (**Alt + click** for Mac). Measures selected for playback will highlight light blue. Hit **Space bar** to play.

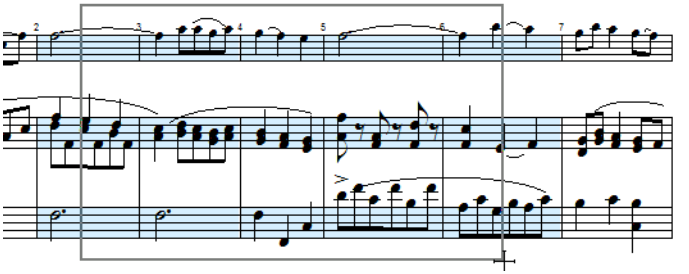


FIGURE 4 - 6: Selecting measures for limited playback

For playing larger sections and for looping, go to **Playback** menu and select **Set Play Range.**

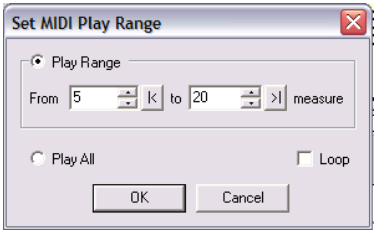


FIGURE 4 - 7: Set Playback Range

c. In the **From** field, choose a starting measure. To establish a range for playback, select an end point in the **To** pull-down box.

d. To repeat playback over the range, check the **Loop** box.

4.4 Dynamics and Articulations

4.4.1 Dynamics

You can use any of the tools in the “Dynamics” palette to alter playback velocities.

Inserting dynamic, crescendo / decrescendo markings or hairpins will alter the velocity of associated notes in the ***active staffline*** only. See “To Insert a Dynamic marking,” on page 132 for details on inserting dynamics.

To apply dynamics and/or dynamic markings to more than one staff, enter the dynamic in each active staff that you wish to apply the effect. If you do not wish to have so many dynamics visible in every staffline, you may enter symbols in the ***Hidden Symbols*** mode. For more details, see “Hidden Symbols” on page 162.

4.4.2 Articulations

Numerous note articulations including slurs, trills, turns, mordents, staccatos, tenutos, accents, arpeggios, glissandos and tremolos can be applied from the “Articulations” palette. For information on modifying articulation playback characteristics, see “Articulations” on page 56. For information on editing these marks, see “Articulations and Trills” on page 134.

4.5 Tempo

Default tempo for all time signatures is 120 beats per minute (120 bpm) except for “cut-time” and 2/2 time, which play at 60 beats per minute. Tempos can be modified by inserting one or more metronome marks, by inserting a tempo marking or with the ENF Tempo Controller.

4.5.1 Metronome mark

.The Metronome tool in the “Tempo” palette (also activated in **Edit** > **Default Tempo**) sets the tempo at the point the mark is inserted.

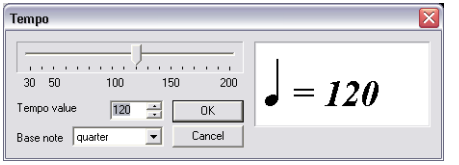


FIGURE 4 - 8: Setting Default Tempo

4.5.2 Tempo Markings

Tempo Markings are found in the “Tempo” palette. Clicking anywhere inside a staffline will insert the selected Tempo Marking above the staff. Tempo will be altered at that point. Note that **Expressions**, found in the “Articulations” palette, can be used but will not alter playback.

FIGURE 4 - 9: Selecting Tempo Markings from Tempo palette

4.5.3 Change of tempo

Creating a change-of-tempo is accomplished by inserting a tempo mark or metronome mark at the point where you want the tempo to change.

4.5.4 Tempo controller

Another method of changing tempos is to use the Tempo Controller.

To activate the interactive Tempo Controller,

- Push the Tempo Controller button in the Text and Controllers toolbar. Clicking the orange line changes the default tempo value. For more details, see “ENF Graphical controllers” on page 63

4.5.5 Tuplets and Slurs (Legatos)

While in the **Insert** mode, select a triplet (“**T” key**) from the “Notes” palette or select Legato from the “Articulations” palette.

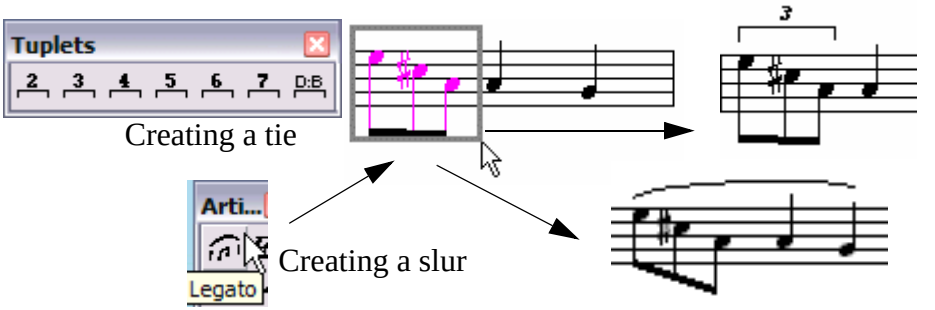


FIGURE 8 - 10: Creating a Tuplet or Slur (legato)

a. Click and drag down to insert the tuplet or legato above the notes to be selected.

b. Click and drag up to insert the tuplet or legato below the notes to be selected.

c. To delete a tuplet or articulation, **Ctrl+click** on it, press the “**X**” key then click again on the object. The Select tool (“**O**” key) can also be used to highlight and delete one or more tuplets and/or legatos.

NOTE: To resize or move a tuplet bracket, use **Nudge** mode and drag the control point located on either end of the tuplet.

- **User-defined Tuplet (Rhythmic group button in “Note” palette)**

The **D:B** tool button allows for custom tuplets. **Divisions** = The number of beats to be applied to the tuplet. **Value** = The total number of (equal) notes that would be in the group **if no** tuplet were applied.

For example: The septuplet (-5-) has a default D:B ratio of 5:4. When applied to a group of 5 eighth notes, its total duration value would equal 4 “normal” eighth notes.

- **Nested tuplets (tuplet within a tuplet)**

Choose the value required from the “Rhythmic Groups” palette. Click and drag the cursor to select a tuplet group within another tuplet. A bracket will drop identifying the nested tuplet.

4.6 Playback Properties

Playback values of dynamic and articulation markings can be altered by use of the “Properties” tool. Changes can be applied individually to the marking itself or globally to all similar markings in the score. Finally, default values can be reset for that particular mark in all future files. Certain changes to barline properties will also affect playback.

To activate the Properties window of an object:

- Hit the “**Esc**” key or select the **Properties** icon from the SmartScore toolbar and click on one of the objects below to open and modify its playback properties and in some cases, its display:

4.6.1 Note Properties

Clicking on any note head will open the Note Properties window where a number of note duration properties can be changed.

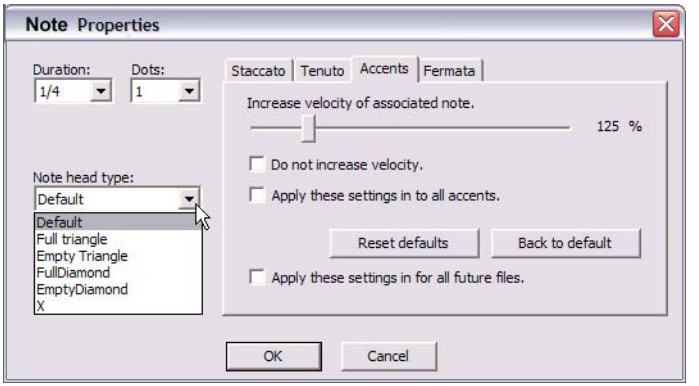


FIGURE 4 - 11: Note Properties

- **Note duration:** Change basic note value.
- **Dots:** Add or change dots of prolongation.
- **Staccato:** Change default duration when staccato is applied.
- **Tenuto:** Change default duration when tenuto is applied.
- **Accents:** Change default duration when accent is applied.
- **Fermata:** Change default duration when fermata is applied.

Note heads can be altered to several alternative “shaped note” configurations including triangle, empty triangle, diamond, empty diamond and “x” shaped from the ***Note Head Shape*** pull-down menu.

4.6.2 Property Options (All Properties windows)

- **Apply (changed property) to All:**
  Selecting this option will update playback properties of the same mark throughout the score.
- **Apply Setting(s) to All Future Files:**
  Selecting this option will permanently reset the default value for the selected property to its new values for all future ENF files.
- **Back to Default:**
  This will reset values to ***application launch*** defaults.
- **Reset Defaults;**
  This will return values to ***new installation*** defaults.

4.6.3 Slur (Legato) Properties

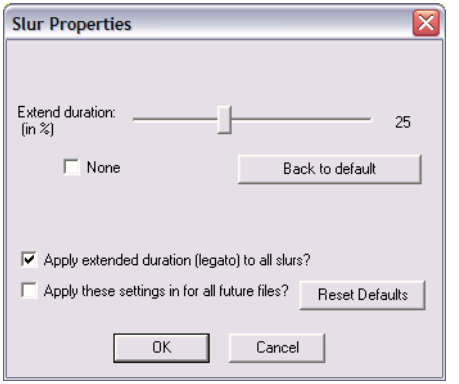


FIGURE 4 - 12: Dynamic Marking Properties

- **Extend duration:** Duration of notes associated with the slur.
- **None:** No increase of note duration.

4.6.4 Tempo Marking Properties

Tempo values can be changed by clicking any tempo marking with the Properties tool. Changes can be applied to all tempo marks in the document or to all future instances of the selected tempo mark**.**

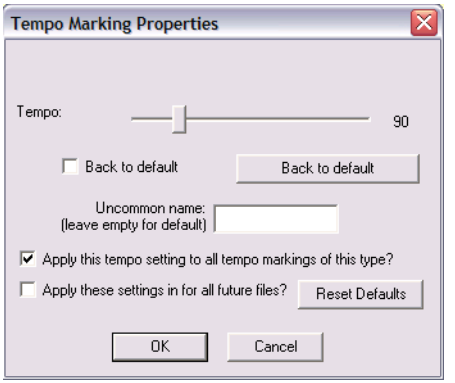


FIGURE 4 - 13: Tempo Marking Properties

- **Tempo slider:** Reset tempo value.
- **Uncommon Name:** Enter an alternative name for the tempo marking.

4.6.5 Hairpin, Cresc. and Decresc. Properties

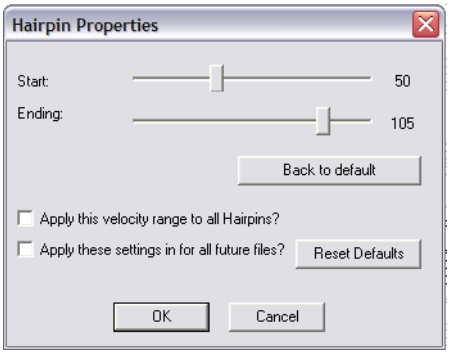


FIGURE 4 - 14: Hairpin Properties

- **Velocity sliders:** Start value and Ending velocity values.

4.6.6 Trill Properties

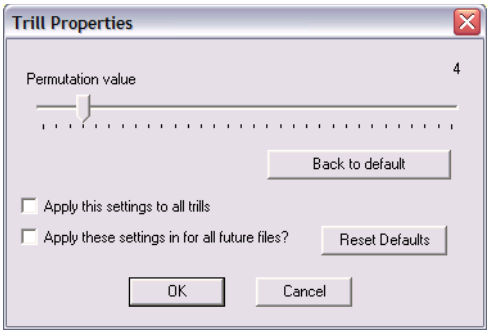


FIGURE 4 - 15: Trill Properties

- **Permutations:** The number of half-step movements.

4.6.7 Dynamic Marking Properties

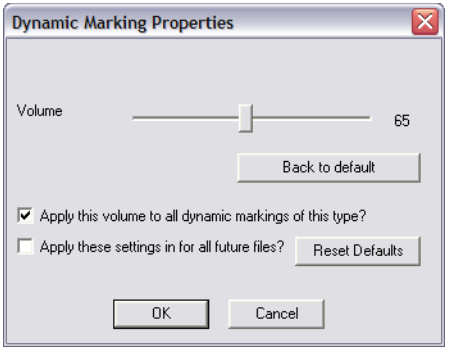


FIGURE 4 - 16: Dynamic Marking Properties

- **Volume slider**: Resets the volume for the current part.
- **Range**: 10 to 127 (General Volume)

NOTE: To view the selected range of accelerando/descelerando, push the **Hidden Objects** button. Range is shown with dotted line.

4.7 ENF Graphical controllers

With the Velocity graphical controller you can vary note velocities of each note cluster quickly and smoothly. With the Tempo controller, you can "draw in" tempo variations smoothly over time. Controllers can be accessed either in the ENF *Text and Controllers* toolbar or below the Piano Roll window in MIDI view.

FIGURE 4 - 17: Text and Controllers Toolbar

4.7.1 Velocity Controller

In ENF score view, push the "**Velocity controller**" button to activate. Click and drag your mouse along the vertical bars which represent each note's velocity. The higher the bar, the more the velocity.

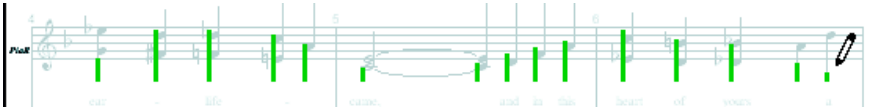


FIGURE 4 - 18: ENF Velocity Controller

4.7.2 Tempo Controller

Push the "**Tempo controller**" button to active. The horizontal line in the *topmost staff* represents default tempo. To vary tempo, click and drag your mouse up or down. The last tempo point will be fixed until changed.

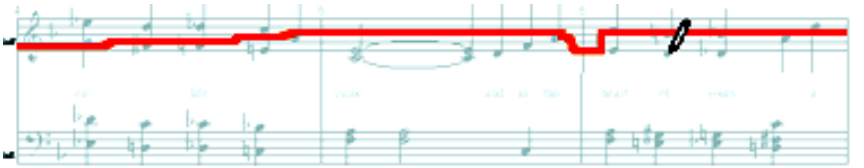
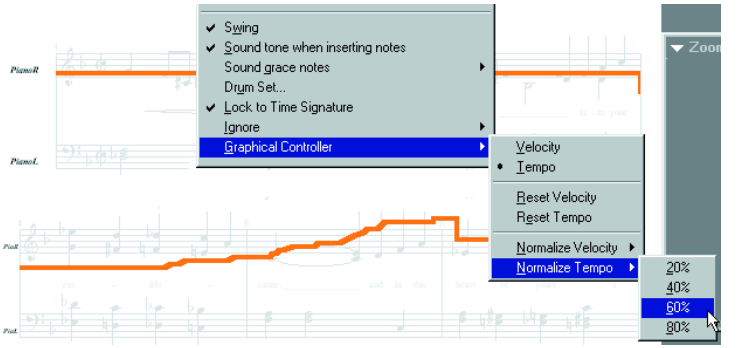


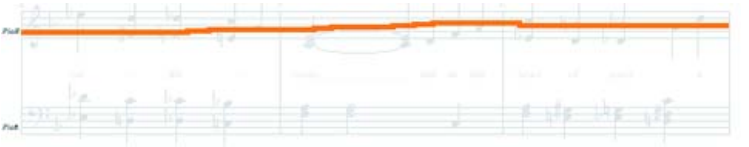
FIGURE 4 - 19: ENF Tempo Controller

4.7.3 Normalize controllers

After making changes to Tempo or Velocity controllers, you may find you have created greater-than-desired changes to playback. If so, you may globally reduce the effects of either controller by applying ***normalizing***.



Normalize Tempo controller (Before)



Tempo controller after normalizing by 80%

FIGURE 4 - 20: Normalizing Tempo

To reduce effects of either Tempo or Velocity graphical controllers

a. Choose **Playback > Graphical Controller**

b. Select either **Normalize Tempo** or **Normalize Velocity**.

c. Choose amount of reduction desired: 20% / 40% / 60% or 80%. Controller display and playback will change accordingly.

d. Choosing **Reset** removes all controller changes and resets the default settings. Tempo markings inserted into ENF will still take effect. The end result is an averaging of all tempo values.

4.8 Other ENF Playback Controls

4.8.1 Barline Properties

You can correct playback of pickup and split measures, create system breaks (Codas) and page breaks with **Barline Properties**. Select **Properties Tool** and click on the barline that begins a measure of interest.

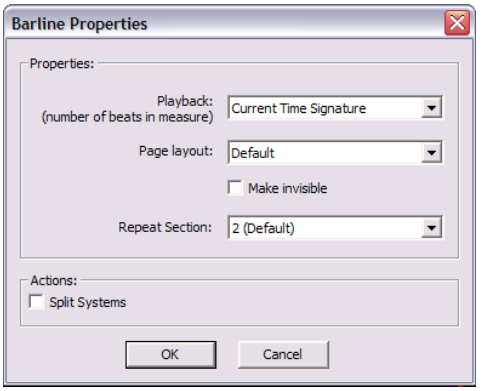
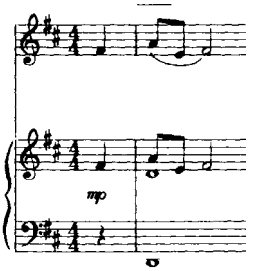
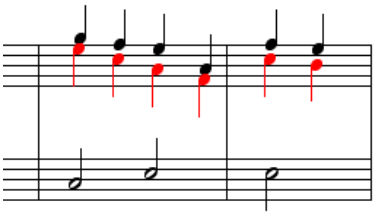


FIGURE 4 - 21: Barline Properties

Pickup measures and split-measures (measures split between two systems) can be made to playback without pauses.



Pickup Measure (typical)



“Split” Measure (typical)

FIGURE 4 - 22: Pickup and split measures

To correct playback of pickup and split measures,

- In the **Playback** pull-down menu, select “***Play as written***”.

To create a page break at a particular barline

- In the **Page Layout** pull-down menu, select “***Break Page at This Barline***”. To keep measures from separating during reformatting, select “***Never Break System at This Barline***”.

To create a Coda (Split system)

- Codas (split systems) can be created at by clicking the appropriate barline with Properties tool and checking Actions > "***Split System***".

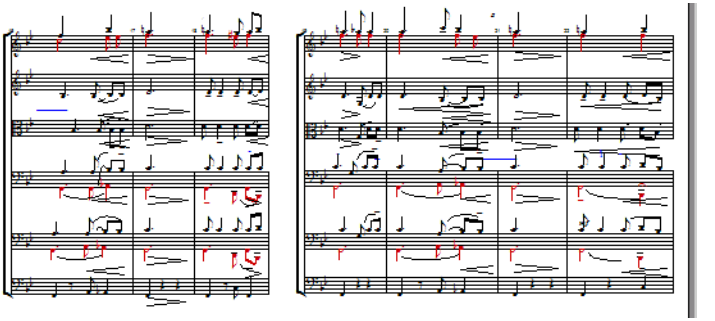


FIGURE 4 - 23: Creating Codas (Split Systems)

4.8.2 Pickup and split measures

Incomplete measures are sometimes written as "pickup" and "closeout" measures or they may be "split" between the last measure of a system SmartScore can correct playback for incomplete measures (pickup and split measures) by use of the **Barline Properties** tool.

For pickup measures or measures split between lines to play smoothly,

a. Select **Properties Tool** and click on the barline that precedes the measure in question. The Barline Properties dialog box will open.

b. In the **Playback** combo box, choose "***As written***". Playback will ignore current time signature. Make sure rhythm values are consistent in all parts.

4.8.3 Karaoke View

Feel like singing out loud? Hey, you only live once...

To view moving lyrics with familiar bouncing ball,

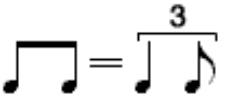
a. Press the **Karaoke** button in the **Navigator** palette.

b. The **Options** menu allow for changes in the Karaoke display. These options are also available in **Edit > Program Preferences**.

c. Open the Playback Console (Ctrl + 9 / Cmnd + 9 for *Mac*) to adjust tempo and change instrument assignments for parts and voices.

4.8.4 Swing

This very *cool* feature applies standard swing rhythm to straight 8th and 16th notes notated in beamed groups. SmartScore will modify playback and the underlying MIDI representation as follows:



To apply swing to playback,

- In the **Playback** menu, click on **Swing**.

4.8.5 Add drum tracks

Adding an automatic drum track will add more pizazz to the mix.

Push the **Drum Pattern** button in the SmartScore toolbar to select an appropriate pattern for your piece. For more information on adding or creating drum tracks, go to “Automatic Drum Patterns” on page 207.

4.9 Voices and Playback

Control of contrapuntal voices is key to proper playback of your score.

4.9.1 Voice Visibility

To view contrapuntal voices as colors, push the **Voice Visibility** button in the SmartScore toolbar. Each ENF Part (each staffline of the score) can contain a maximum of 4 voices (represented by 4 colors, black, red, green and blue). For scores to play back correctly, it is important that voices appear correct and be properly manipulated. See “Working with Contrapuntal Voices” on page 151 for additional details about editing voices.

4.9.2 Voice Splitting (Select + “H”)

Many hymnals and choral scores have voices grouped into chord clusters as opposed to notes with stems in opposite directions. Chord clusters are treated as one voice in SmartScore (usually black). Music

ministers and choir directors will find this tool extremely handy in order to split two-note clusters into 2 contrapuntal voices. Then, assign each voice a unique instrument or extract each voice to a separate file. See “Extracting Voices” on page 157 for more details.

To separate a two-note cluster to two separate voices,

a. Hit the “**O**” key or **Select** button to activate the Select tool.

b. Drag a box around any number of two-note clusters in the staff.

c. Press the “**H**” key to separate two-note clusters into 2 voices.

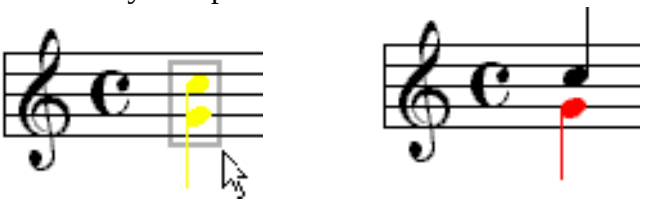


FIGURE 4 - 24: Splitting two-note chords into 2 voices

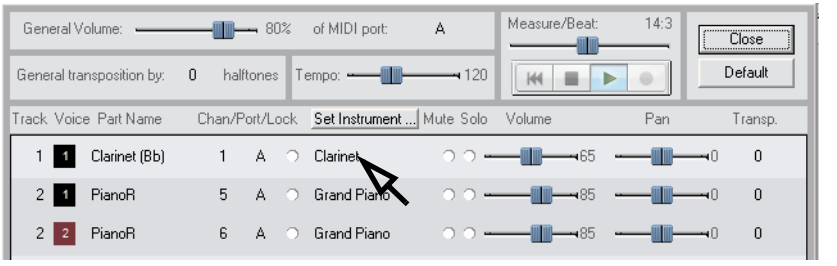
TIP: If you wish to split clusters containing three or more notes, select and delete the least desirable notes until you are left with two notes in each cluster. Only two note clusters will split.

4.9.3 Assigning instruments to voices

Assigning unique MIDI instruments adds richness and allows the user to distinguish contrapuntal voices during playback. There are two areas where you can change MIDI instrument assignments for voices: inside the Playback Console and inside the System Manager.

To change an instrument assignment of a voice in the Playback Console,

a. Push the **Playback Console** button in the SmartScore toolbar to open it. The console may be opened with quick-keys (**Ctrl+9 / Cmnd+9**) or from the menu by selecting **Playback > Console**.



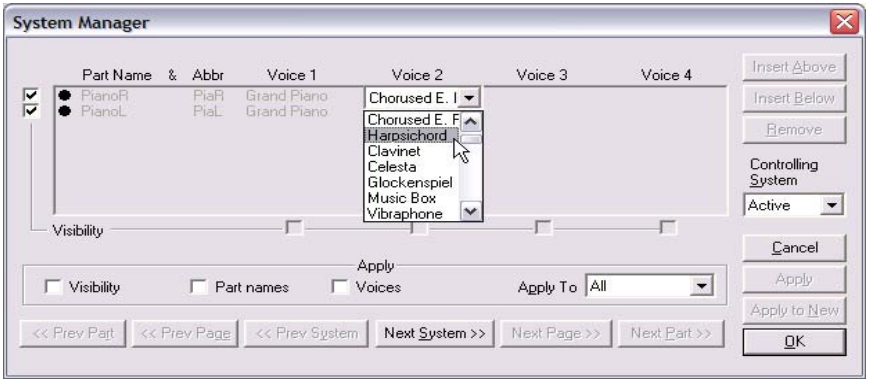


FIGURE 4 - 25: Changing MIDI instrument of a voice in Playback Console

b. In any of the **Voice** column, click to select a new MIDI instrument.

To change an instrument assignment of a voice in the System Manager,

a. Open the System Manager (**Ctrl+M / Cmnd+M**) or select **System Manager** from **Edit** menu. All staves are displayed in horizontal rows as “Parts”. Voices are arranged in columns above each part (1 thru 4).

b. Find the voice number within the part you want to change. Click the MIDI instrument name assigned to that voice in the pull down menu. Select an alternative instrument. During playback, you will hear voices stand out from other voices provided you chose instruments with different timbres.

FIGURE 4 - 26: Changing MIDI instrument of a voice in System Manager

4.9.4 Correcting Vertical Alignment

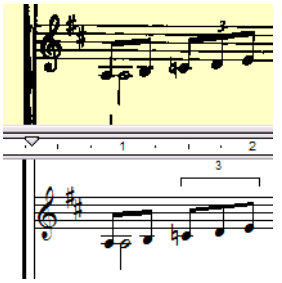
In printed music, noteheads belonging to different voices may appear side-by-side even though they are meant to sound simultaneously. During recognition, horizontal distances between offset noteheads are measured to determine whether to “glue” them to the same MIDI time event or not. It is possible that offset notes will not become glued due to excessive distance between the noteheads. It is also possible that notes will become incorrectly glued if they are too close. The default distance for joining noteheads to the same vertical event is 1/8th of a notehead. This can be changed prior to recognition. See page 33 for details on resetting this default note distance.

Following recognition, check that Voice Visibility is on (See Section 4.9.1 on page 67). If two notes with opposing stems both appear black and are meant to play simultaneously, they can be aligned as follows:

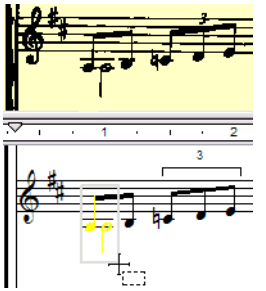
To vertically align offset voices,

a. Use the Select tool ("**O**" key) and highlight both horizontally offset notes or rests.

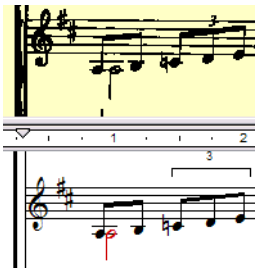
b. Press the "**Y**" key to group the selected, offset notes into a single vertical event. Selected voices may move a bit and change color.



Offset voices not "glued" following Recognition (half note appears in black)



Using **Select** tool to highlight offset voices



"Y" key "glues" offset voices to a single time event. Select and "Y" again "unglues" voices.

FIGURE 4 - 27: Correcting offset voices not "glued" after recognition.

Similarly, if you see notes bunched together each displaying different colors (usually black and red and sometimes green), but which actually belong to only one voice, they are probably "glued" to the same vertical event. Joined notes can be "unglued" as follows:

To "Unglue" offset notes not intended to play simultaneously,

a. With the Select tool ("**O**" key), carefully select the incorrectly glued notes (NOTE: they will each have different colors). Be sure to select only the notes which are incorrectly joined.

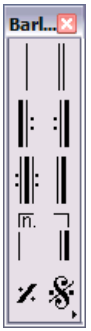
b. Hit the "**Y**" key. Joined notes will separate and change color.

See "Join Offset Voices" on page 34 for changing recognition defaults. See also "Working with Contrapuntal Voices" on page 151.

4.9.5 More about voices and playback

Refer to "Working with Contrapuntal Voices" on page 151 for more information on editing voices and their affect on score playback.

4.10 Jumps, Repeats and repeat symbols



To insert a repeat barline, repeat measure or any other repeat symbol,

- Toggle the "**C**" key to enter **Insert** mode. Select any repeat symbol from "Barlines & Repeats" palette and click to place it.

To change any current barline to a repeat barline,

- Select a repeat barline from the "Barlines" palette. Click on any existing barline to change it to the selected barline.

To delete any barline,

- **Quick-select** (Ctl+click) on a barline (or select any barline from the "Barlines" palette). Hit the "**X**" key and click on the barline to delete it.

NOTE: Deleting a barline at the end of a system will cause the proceeding measure to roll to the next system. A notice warning of this effect will open whenever the last bar of a system is deleted.

To insert a "Repeat Previous Measure" mark,

a. Select the **Repeat Previous Measure** mark from palette.

b. In **Insert** mode, click into an empty measure.

All notation present in the previous measure will automatically repeat itself during playback.

4.10.1 Repeated verses

Many scores have multiple verses that repeat several times even though they may not contain repeat barlines (e.g. hymnals). Other scores have sections marked only by single repeat barlines but are intended to repeat several times (e.g. the ending of a song with "repeat and fade").

To set how many times a score or section of a score should be repeated,

a. Make sure the score or the section is bounded by a left and right repeat sign. If not, select a ***Left Repeat*** sign from the **Repeats** tool palette and click on the single barline that begins the repeated section. The single bar will become the repeat bar.

NOTE: Do not delete a barline to change it; measures will reformat. Select a new barline and click on an existing barline to change. If the barline begins a system, a repeat barline will insert to the right and symbols will nudge to make room. This is normal. The two barlines will still behave as one.

a. With the **Properties** tool selected, click on the Left Repeat barline that begins the section. The Barline Properties window will open.

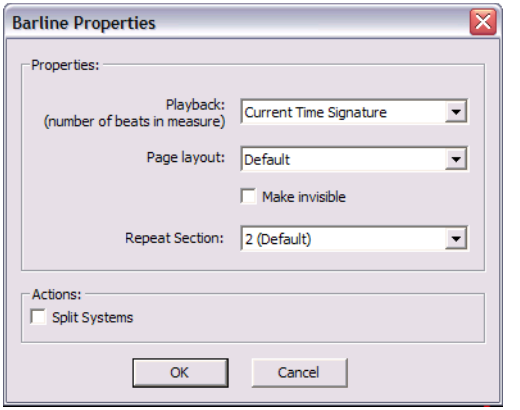


FIGURE 4 - 28: Selecting the number of verses to be repeated

b. Select the number of desired repeats in the **Repeat Section** pull-down menu. Choices are from 1 to 8 repeats.

4.10.2 Change of key/time and the double barline

Usually, changes of time and key signatures at the end of a system are preceded by a double barline. If for any reason playback hesitates after a change of key or time signature, make sure the barline preceding the signature is actually a double barline.

4.11 Endings

Endings can be simple or complex. SmartScore can cope well with most endings, repeats and jumps, but if the logic is ambiguous or faulty (e.g. “bowl of spaghetti”), playback may have unexpected results.

4.11.1 Simple endings

To create a simple ending,

a. Select **Start Ending** tool from the “Barlines and Repeats” palette and click on the appropriate barline to insert the first ending.

b. The **Repeats** window will open. Choose “1” as the sequence number of the first ending.

c. The **Close Ending** tool will appear on the cursor. Click on the last barline that terminates the first ending. The cursor then switches again to the **Start Ending** tool.

d. Click on barline that starts the second ending (it may be the same barline that closes the first ending). Choose “2” as the sequence number of the second ending.

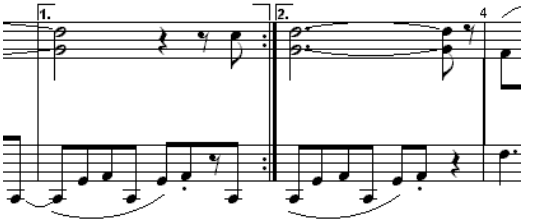


FIGURE 4 - 29: Multiple Endings

e. Finally, click the barline that “closes out” the last ending.

4.11.2 Repeated Endings

Some endings are repeated multiple times before continuing. And some endings may play out of strict linear sequence (e.g. 1,3 for the first ending and 2,4 for the next).

To create repeat endings,

a. Select the **Start Ending** button. Click on the measure that begins the first ending. In the Repeats window, select the number of repeats and/or the sequence order numbers. Sequences do not have to be in strict order.

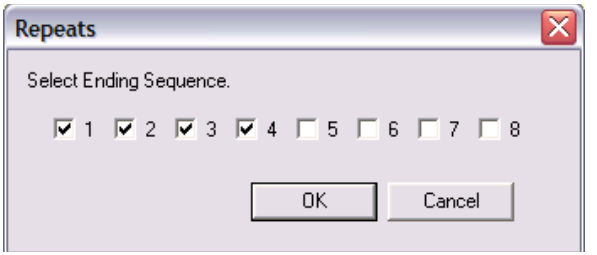


FIGURE 4 - 30: Ending Sequence

b. Click the last barline to close out the second ending.

c. Repeat above steps as necessary for subsequent endings.

Playback will attempt to play repeated sequences in the order selected.

4.12 Jumps

4.12.1 Working with the *Coda*

A **Coda** sign marks the conclusion of a piece. A Coda is generally used to repeat a theme or variation outside repeated endings.

To mark the beginning of a Coda and to insert a "jump to Coda" sign,

a. Select ***Coda*** sign from the "Barlines and Repeats" palette. In Insert mode, click on the barline where the *coda* is to begin, usually at the end of a repeated section or numbered ending.

b. Select the ***To Coda*** sign and in **Insert** mode, find the point in the *last* passage or ending where playback is to "jump" to the Coda and click the barline where the jump is to occur.

NOTE: The ***Coda*** will not be played back until it is activated by the ***To Coda*** or ***d.s. al Coda*** sign.

4.12.2 Working with the *Segno*

Segno means "sign". It marks the beginning of a final repeat or ending. Segnos are usually positioned early on in the piece, after a repeat.

To mark a final repeat with Segno,

a. Select ***Segno*** from the "Barlines and Repeats" palette.

b. **Insert** the ***Segno*** by clicking the barline that begins the *last* repeated ending or section.

c. To stop a *final* repeat or ending, return to the ***Segno*** and continue on to the ***Coda,*** select ***d.s. al Coda*** (meaning "from the sign to the Coda").

*To have a final repeat or ending return to the beginning of the piece and terminate at the **Segno** sign,*

- Select ***d.c. al Segno*** (meaning "from the beginning up to the sign") and insert it by clicking on the barline in the last ending or

repeat where playback is to return. The repeated section will return to the beginning of the score and play through to the ***Segno***.

NOTE: ***To Coda***, ***Segno, d.s. al Coda, D.S., D.C.*** and ***d.s. al Fine*** signs are all ignored until an ending or repeat is played once.

4.12.3 Working with the *da Capo* (*D.C.*), *dal Segno (D.S.)*, and *Fine* signs

D.C. (**da capo**) means "from the beginning" or "return to the beginning".

To have playback return to the beginning of the piece and play through to the end,

- Select the ***D.C.*** button from the "Barlines and Repeats" palette.

D.S. (**dal Segno**) means "from the sign" or "return to the sign".

To have a final repeat or ending return to the Segno and play through to the end,

a. Select the ***D.S.*** button from the "Barlines and Repeats" palette.

b. Click on the desired barline to insert the ***D.S.*** sign.

Fine means ending. It is usually placed in the middle of a repeated ending and terminates the song.

*To have the last repeat stop, return to the **Segno** and continue on to the end of the piece,*

a. Insert a ***Fine*** sign by clicking on the barline that marks the final end point.

b. Select ***d.s. al Fine*** (meaning "from the sign to the end") from the "Barlines and Repeats" palette.

c. **Insert** either the ***d.s. al Coda*** or ***d.s. al Fine*** mark by clicking the barline where the *last* repeat is to begin.

*To have the final repeat or ending return to the beginning and play through to the **Fine,***

- Place the ***Fine*** sign at the appropriate barline. Select and insert ***d.c. al Fine*** in a measure *following* the ***Fine*** sign.

Repeat signs, ending markings (including *Coda*s and *Segno*s) are found in the “Barlines and Repeats” palette. Using repeat signs properly will alter playback accordingly.

4.13 Instrument Templates

The Instrument Templates environment makes up the “pool” from which instruments are assigned to stafflines in *System Manager*. To open Instrument Templates, select **Edit > Instrument Templates** or hit **Ctrl + F** *Win* **(Cmnd + F** *Mac***)**. Most common musical instruments are listed in the **Names** column. Abbreviations, MIDI instruments and transposed playback have been preassigned, but may be changed.

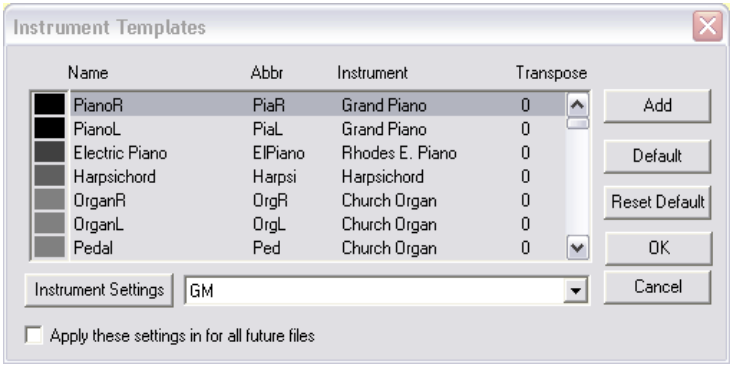


FIGURE 4 - 31: Instrument Templates

Part Names in System Manager are directly linked to instrument ***Names*** in Instrument Templates. When a ***Part Name*** is selected in the System Manager, all playback parameters are derived from Instrument Templates.

4.13.1 Transposed instruments

Since transposed instruments do not actually play the pitches notated in the score, to play them back in tune with the other non-transposed instruments, they must have their playback adjusted up or down by certain intervals. This “playback transposition” is already preset in Instrument Templates for most transposed instruments. The number in this column represents the amount of pitch change (+/-) in half-step increments.

4.13.2 Adding instruments

You can add new instruments with unique names and playback parameters as well as change existing names and parameters in any template. For more information on Instrument Templates, turn to “Instrument Templates” on page 160. For more information on the System Manager, turn to “System Manager” on page 155.

4.14 Broken Parts

Parts (staves of the system) may loose playback continuity for several reasons, e.g. system braces/brackets were cut off during scanning.

4.14.1 Merging Systems

For parts to be joined to single system (and to play simultaneously), an adjoining bracket along the left-hand margin must be visible. If during scanning, brackets are cut off by mistake, one or more parts become separated and will appear in ENF as single-line systems themselves. In this case, it is possible to rejoin them; forming larger, corrected system.

To merge two systems into one larger system,

It is important to properly re-assign part links before joining systems. Re-linking parts opens a window to the ***Super System*** (see page 158). Also, make sure systems to be merged have the same number of bars.

a. Position your cursor over the first broken system / staff line. Hit **Ctrl+L / Cmnd+L** (*Mac*) to open the **Re-link Parts** window.

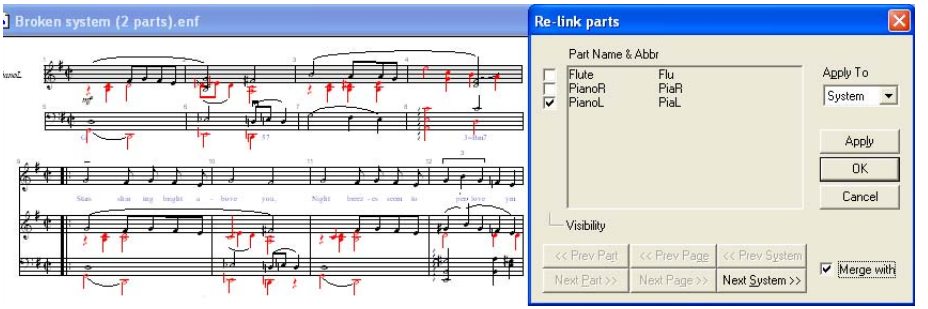


FIGURE 4 - 32: Merging Systems

b. The active system highlights in grey. Using the checkboxes, reassign each highlighted staff to its correct part name and position in what will become the final, reformed system. ***Apply to = System***.

c. Press the **Next System** button and reassign each highlighted staff line to its correct part name as you did above. Return to the first staff of the final, reformed system by selecting **Previous System**.

d. Now, check the **Merge** checkbox. When the **Next System** button is pushed, the two systems will join into a single system. Continue using **Next System** again until all separated parts are correctly joined. Review Part Name checkboxes for correctness.

4.15 Re-linking parts

Occasionally, scores will contain collapsed or expanded systems (sometimes referred to as “optimized systems”). Unless you re-link parts, these systems will not playback with the correct instrumentation.

The **Re-link Parts** function allows you to reassign each visible part with the correct **Part Name** found in System Manager. By re-linking parts of optimized scores, parts will play back correctly as they disappear and reappear throughout the score.

NOTE: Parts listed in **Re-link Parts** window are derived from the Part Name column of the System Manager (see “System Manager” on page 155 for more information). Checked boxes identify which parts are assigned to the active system. Before re-linking, make sure all possible parts have been created.

To re-link parts in a system,

a. Hit **Ctrl+L** (Win) / **Cmnd**+**L** (Mac). Or with Properties Tool selected, right-click (**alt / option** for Mac) over any staffline in a system that requires re-linking and select “***Part Linking*”.** This will open the **Re-link Parts** window.

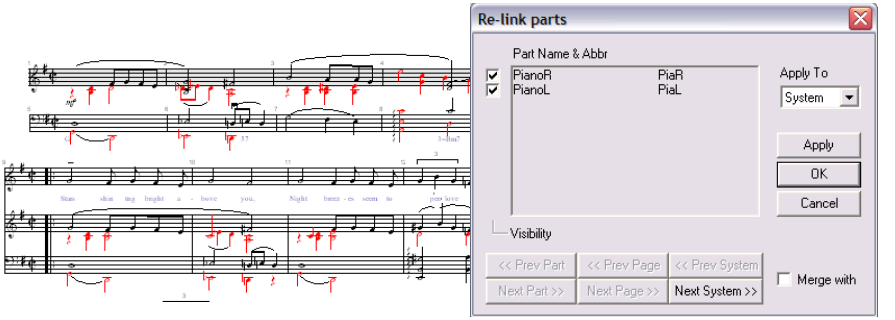
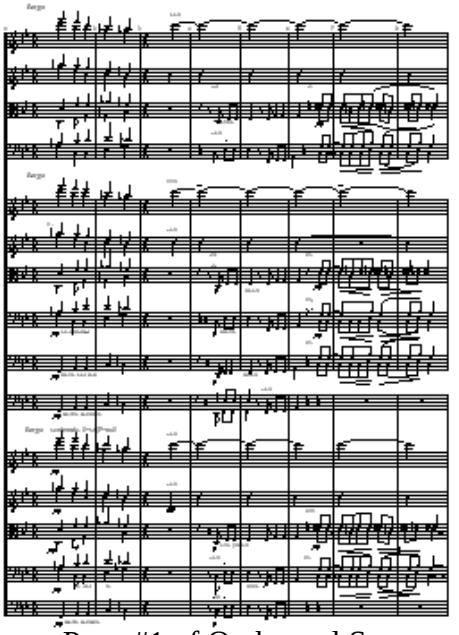


FIGURE 4 - 33: Re-link Parts window

b. Check the part names that are actually associated with the active system. Be sure to remove checks from parts that are not associated with the active system. Larger systems may require scrolling down the list. The program will not allow you to select more or less parts than actually appear in the active system.

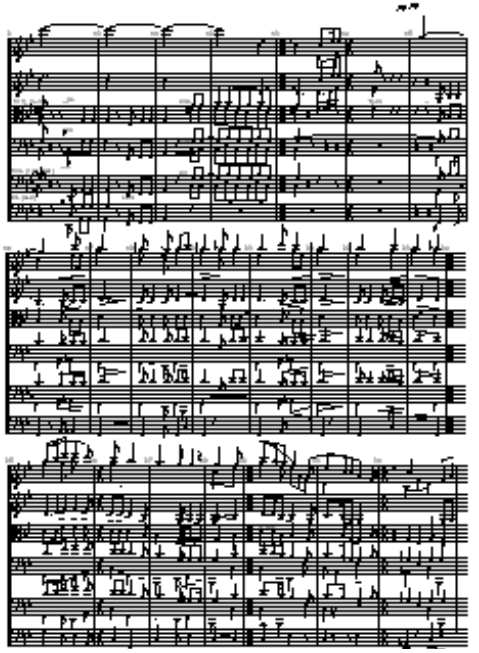
c. To view adjacent systems, press *Next* or *Prev* S*ystem*.

d. In the **Apply To** box, press **Apply** to apply to active system. ***System+*** will apply to the active system plus all subsequent systems.



Page #1 of Orchestral Score

In this example, the first page consists of one system having 15 parts (15 staves per system). With the cursor positioned over the system and Re-link Parts opened, 15 parts will be checked.



Page #2 of Orchestral Score

The second page contains 3 systems each with 6 staves. Many parts that appeared on the first page have dropped out. With the cursor positioned over one of the systems, 15 Part Names will be listed but only 6 will be checked in the Re-link Parts window. In this case, it was necessary to remove all check marks and then check the top six parts to reestablish proper part linking. See Figure 33 on page 78. Notice that the re-linked parts were applied to all subsequent systems (System+) from the topmost active system.

FIGURE 4 - 34: Re-linking an orchestral score

4.15.1 Adding a staff when missed by recognition

Occasionally, a staff inside a system may not be localized during recognition due to flaws in the original score (or if the scanned page is severely skewed. If there is a missing staff line in the ENF display, it can be reconstructed quite easily as follows:

a. First, you want to re-link parts in the shorted system. Position the cursor inside the system and hit **Ctrl + L** to open **Re-link Parts**.

b. Put a check next to the appropriate *visible* parts. Leave the missing part unchecked. Make sure the parts you check correspond to the visible staffline and the missing part is unchecked. Hit **OK**.

c. Select the **Properties** tool. Yellow arrows along the left system bracket will indicate all known parts, visible or invisible.

d. In the affected system, click on the yellow arrow of any staff and put a check mark next to “Visibility”. Make sure “Show Staff” is also selected.

e. In the “Apply To:” pull-down menu, select “***Current Staffline or System***”.

f. Hit the “**U**” key and select ***Unify Key Signatures (based on First System)***. Hit **OK** and the key signatures of the score will become unified. Now you need only to fill in the missing notes. Remember you can always use **Copy** and **Paste** to clone measures of notes at a time whenever possible.

Basic ENF Editing

Chapter 5 Basic ENF Editing

SmartScore files (or ENF files for Extended Notation Format) are fully editable. This section describes the most commonly-used ENF editing features. For information on advanced editing techniques such as part extraction, optimized scores, managing systems, applying or changing instrument templates, reformatting, respacing, page setup and part linking, turn to Section Chapter 8, "Detailed ENF Editing" on page 125. Many editing and playback default settings are accessible in either ***Document Preferences*** or ***Program Preferences*** under the **Edit** menu. See Section 11.1, "Preferences" on page 213 for details.

5.1 Navigating Inside an ENF Document

5.1.1 Active staffline

Only one staff can be edited at a time. Positioning your mouse over a staff will cause it to highlight black. Objects associated with the staff (including text and lyrics) can then be edited. You can choose to highlight just the active staff or to all staves in black. But only the staff with the cursor inside is active.

To display all staff lines in solid black,

- Go to the **View** menu and uncheck **Show Active Staff.**

5.1.2 Scan View and Long View

Following Recognition, the upper pane (in yellow) displays the scanned image associated with the ENF file (in white). The **View > Split** tool allows for resizing the horizontal split-pane.

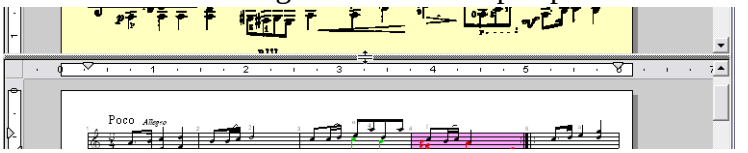


FIGURE 5 - 1: Window pane control tool (View > Split)

Scores with multiple pages can be displayed in the workspace in several different ways: **Vertical, Horizontal** or, if binding is required, by **Facing Pages**. A score can also display in one continuous **Long View**.

To select a different page view layout,

- Click on any one of three page view buttons in Status Bar

It is possible to display your score in one, long continuous system.

To display your ENF score in a single, long unbroken system,

- Select **Long View** page view button at bottom right of Status Bar. Otherwise, select **Show Long View** in the **View** menu.
- To return to normal page layout, select one of page view buttons in the Status Bar or uncheck **Show Long View** in the **View** menu.

NOTE: Whenever the ENF and TIFF view panes loose synchronization, e.g. in **Long View** mode or after score reformatting, the TIFF display pane will close and a floating “Scan View” window will appear instead. The region shown in the scan window is relative to cursor position in ENF.

To change zoom level of the floating Scan view window,

- Select one of 3 zoom levels in **View > Scan View window**.

5.1.3 Zoom

To Zoom in and out,

- Click the Zoom icon in the Main Toolbar or press **Ctrl + Q**.
- Left click will increase the scale of your view (Zoom In), while right-click (**Option + click** for *Mac*) will decrease the scale of your view (Zoom Out). **Ctrl** + scroll wheel works as well.

For additional information on navigating inside an ENF document, go to “More ENF navigating” on page 125.

5.1.4 Paging

To page forward or backward in an ENF document,

- The Next / Previous page control buttons are located to the far right of the ENF Toolbar.

To add a new page with empty systems,

- Push the **Add New Page** button in the Status Bar.

5.1.5 Status Bar options

The status bar in the lower right corner of the SmartScore window contains information about the current page being viewed such as Part Number, Page Number, Cursor Position, Page Size and Zoom View. Clicking inside any of these fields will open a control window: **Go To** (Part, Page, Cursor), **Page Setup** (Page Size) or **Zoom Level** (Zoom).

5.2 Editing Symbols

NOTE: It is recommended that you use the “left-hand-on-keyboard” technique as shown below. You will find editing fast and easy once you begin working with this “Quick Keys” method:

FIGURE 5 - 2: Left-Hand Position for ENF Editing

5.2.1 Pitch shift (Nudge mode)

To change the pitch of any note,

Click into an active staff. Hold down the **“**Shift**”** key, click on control point in the center of the notehead. Drag the note head up or down to shift its vertical position in the staff.

To change the pitch of several notes at once,

a. Press “**O**” key to activate the **Select** tool in SmartScore toolbar.

b. Click and drag a box around any series of notes.

c. Hold down the “**Shift**” key and drag the notes up or down.

5.2.2 Inserting Notes and Rests (F2 / R keys)

Musical symbols can be selected from one of several floating tool palettes normally positioned on the left side of the screen. Symbols with multiple values are grouped inside a single “master’ button identified with a small arrow. By holding down any button containing an arrow, the entire set of selectable symbols will expand to the right.

FIGURE 5 - 3: Expandable Palette Buttons (Notes and Rests)

5.2.3 *Quick-select* (Ctrl + Click):

You can select any symbol from the active ENF display without having to search inside a palette. Hold the **Ctrl** key down and click on any object in the active staff. The cursor will inherit that object’s properties.

To insert a note, rest or other symbol

NOTE: Press the “**F2**” to open ***Notes*** palette or “**R**” key for the ***Rests*** palette. “**Shift + “R**” will select an eighth rest.

Quick-select (Ctrl+click) is usually the easiest way to select objects for editing. Hold down the **Ctrl** key and click on any nearby object. The cursor will become that object and inherit its attributes. Of course, objects are also found in palettes.

d. Select any note or rest from either of the expanding ***Notes*** or ***Rests*** buttons located “Notes” palette.

e. Press the “**C**” key to activate **Insert** mode.

f. The cursor will display the selected symbol along with a grey dot which indicates the line or space on the staff. Click to insert.

Refer to “Tool Palettes” on page 215 or to the Index on page 254 for details on other SmartScore tool palettes.

5.2.4 Insert/Change mode

The "**C**" key on your computer keyboard activates Insert/Change mode as does the **Insert** button on the Main Toolbar. Insert/Change mode is automatically activated when a symbol is selected from a palette. Inserting a symbol and changing an existing symbol is essentially the same... point and click.

To change the value an existing note, rest or other symbol:

a. Select a note or rest within the same symbol class but with a different value.

b. Position your cursor over the note or rest to be changed until it highlights **yellow**.

NOTE: When a note highlights light blue, a new note will be inserted in another *voice* at the same *vertical event*). (See"Working with Contrapuntal Voices" on page 151 for more information about vertical events.

5.2.5 Stem direction

In **Insert** mode, the default stem direction of a note is determined by its position on the staff. Stem direction automatically switches when your cursor crosses the middle staffline.

To override the stem direction as displayed by your cursor, insert any note with a right-click (**option + click** *for Mac*). This will cause the note to insert with the opposite stem direction as shown.

To reverse the stem direction of one or more selected notes,

- Select one or more notes with the **Select Tool** ("**O**" key). Hit the "**S**" key to change stem direction.

To change the stem direction of an existing note,

a. In **Insert** mode, right-click (**option + click** *for Mac*) on any yellow-highlighted notehead. The stem direction will change.

5.2.6 Deleting objects

Objects must first be selected before being deleted. The 2 methods are:

- **"Click Delete"** method**:** ***Quick-select*** (Ctrl+click) a symbol. Hit the "**X**" key. Click on any similar object to delete it.

NOTE: You will be able to delete any object belonging to the selected symbol class. e.g. all notes will delete when a note of any duration is selected. The last selected object always appears when "**X**" key is hit.

- **"Delete Group"** method*:* Use the **Select** tool ("**O**" key) and drag the selector box over one or more objects highlighting them in yellow. Release the mouse. Selected objects will appear grey-green. Hitting the "Delete" key will remove all selected objects.

5.2.7 Undo / Redo

To undo any single action,

- Click the **Undo** or **Redo** button to reverse the last editing action. Or hold the **Ctrl** down and hit the "**Z**" key (**Cmnd** + **Z** for *Mac).*

To Undo or Redo one or more previous actions

- To select one or more actions to be reversed, click the small arrow to the right of the Undo or Redo buttons. Drag to select multiple actions. Push "Undo Actions" or "Redo Actions".

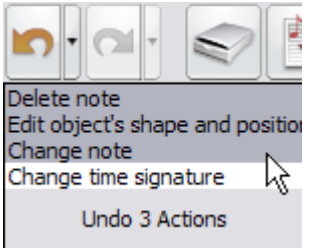


FIGURE 5 - 4: Undo multiple actions

TIP: The **Reset Workspace** button (or **F1** key) will reset all windows and palettes to their default "startup" positions. It's useful if your workspace gets messy.

5.2.8 Accidentals

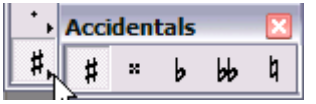


FIGURE 5 - 5: Accidentals (in Notes palette)

To insert an accidental,

a. Select any accidental from the expanding accidental button located in the "**Notes**" palette.

b. Toggle the "**C**" key to activate **Insert** mode.

c. Click on the notehead that is to receive the marking.

To change an accidental,

- Select an accidental from the "Notes" palette. Toggle the "C" key until a white arrow appears and click on a notehead to change.

To delete an accidental,

- ***Quick-select*** (Ctrl + click) any accidental, press the "**X**" key and click on a notehead to remove its associated accidental.

A courtesy accidental is bounded by parentheses and acts as a reminder that a note has an accidental.

To insert a courtesy accidental,

- Press the parentheses button when any accidental is selected before clicking a notehead.

5.2.9 Rhythmic errors

Measures highlighted in a reddish color indicate that one or more rhythmic errors has been located in a voicelines.

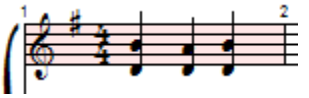


FIGURE 5 - 6: Measure with rhythmic error (1 beat is missing)

For neatness, many scores intentionally truncate second and third voicelines. Normally, truncated voices will not cause playback problems provided notes on the same beat are vertically aligned.

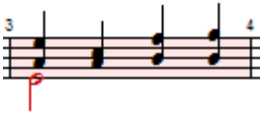


FIGURE 5 - 7: Voice #2 (stem down) is truncated causing rhythmic error

Pickup measures and measures split between systems can be made to play back without pauses very easily (see "Pickup and split measures", Section 4.8.2, on page 66). The red highlight color used to flag error measures can turned off by unchecking “Show Error Measures under the **View** menu.

5.2.10 Dots of Prolongation

- Select the “**D**” key, dot or double dot from the “Notes” or “Rests” palette. Click on any notehead to attach a dot of prolongation.
- To **Delete** a dot of prolongation, press the “**D**” key again and click on the notehead.

5.2.11 Ties

Ties connect contiguous notes of the same pitch causing the first note to sound for the duration of both notes. Ties are *not* the same as slurs.

a. While in the **Insert** mode, hit the “**V**” key or press a **Tie** button in the “Notes” palette.

b. Click on the notehead of the first note of a tied pair to insert the tie with a downward arc.

c. Right-click (**option + click** for *Mac*) to insert a tie with upward arc.

d. To delete a tie, hit the “**X**” key with a tie showing on the cursor and click the first note of the pair to delete.

5.2.12 Editing note clusters

To insert additional note heads to existing note stem:

- In **Insert** mode, additional noteheads can be added to an existing note stem simply by clicking above or below an existing note ***provided*** the selected note value (displayed by the cursor) is the same as the existing note stem. Position the cursor on the correct line or space and when the note highlights yellow, click to insert.

- To add a notehead to any existing note stem (regardless of what is shown on your cursor), hit the “Z” key (“Cluster tool”). When the existing note highlights yellow, click to insert new notehead.

To delete a notehead from existing cluster:

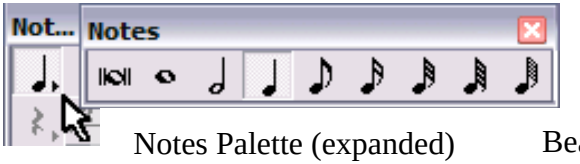
- Select Cluster tool from the Notes palette (“**Z**” key). Then hit the “**X**” key Clicking on any notehead in a cluster will remove a single notehead. The Delete cluster tool also works to delete single-headed notes.

NOTE: Always use the Cluster tool to remove single note heads. The single greyed note and arrow will delete entire note cluster.

5.2.13 Inserting, changing and deleting beamed notes

To edit beamed notes:

Hit the “**C**” key (or click on the **Insert** button for **Insert** mode) and select a flagged note from the “Notes” palette. Then choose a beam direction from the “Beams” palette or the “**A**” key on your computer keyboard. If a similar beam note is nearby, **Ctrl +** click on it to select it.



Notes Palette (expanded) Beams Palette (expanded)

FIGURE 5 - 8: Editing Beamed Notes

- To form a beamed group, insert the selected beamed note by clicking into a staff (not adjacent to another beam group). Repeated clicks will form successive 2-note beam groups when “left” or “right” beam direction is selected. One continuous beam group will be created when the “middle-beam” is selected. **Auto-Beam** can be used, but it may also cause re-coupling of other beams in the measure. See “Auto-Beaming” on page 147 for more details.
- Inserting a “right” or “middle” beam to the left of an existing beam group will cause that note to attach itself to the beam on its right. Likewise “left” and “middle” beams will attach to the right of an existing beam. Clicking inside an existing beam group with the “middle” beam selected will insert a beam note inside the beamed group.
- Clicking on an yellow-highlighted beamed note will change its note value and/or beam direction as indicated by the cursor.

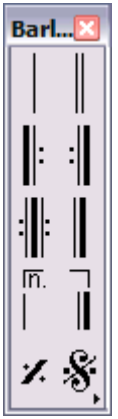
- To delete a beamed note, ***Quick-Select*** it, hit the "**X**" key and clicking again to remove it. Deleting an end beam will cause the beam to join to any adjacent beamed groups.

5.2.14 Forming beam groups (Select + "B")

To create a single beam group from adjacent flagged or beamed notes:

- Use the Select tool ("**O**" key) and highlight any number of adjacent flagged notes. Hit the **"B"** key to join the notes into a single beamed group. The "**B**" key will also join two or more adjacent beam groups that are selected.

5.2.15 Barlines palette (I)



While in the **Insert** mode, hit the "**I**" key (or select any barline from the "Barlines & Repeats" palette).

- Click anywhere in the active staffline to **Insert** a barline.

To change or delete a barline,

a. Select a desired barline from the "Barlines" palette or **Ctrl+click** on a barline nearby.

b. Click on a yellow-highlighted barline to change it to the selected barline.

c. To delete a barline, ***Quick-select*** it, press the "**X**" key and click on the barline.

NOTE: Deleting a barline at the end or beginning of a system will cause the proceeding measure to roll to the next system. A notice warning of this effect will open whenever the last bar of a system is deleted.

5.3 ENF Symbol Properties

The Properties tool is found in the SmartScore toolbar. Certain playback and display properties of most symbols can be edited by clicking with the Properties tool. Changes can be applied to all similar symbols in the score and even to all identical symbols created in future files.

Other symbol properties directly affect playback. To find out about editing those symbols, see "Playback Properties" on page 59.

5.3.1 Staff Line Properties

Click the yellow staff properties marker while the Properties Tool is activated. Editable properties include:

- **Part Name** (Directly linked to ***Part Name*** in System Manager (**Ctrl** + **M**)). Part Names are created in **Instrument Templates**.
- **Staff line visibility (**View or hide active staff line. NOTE: Turning off visibility may remove permanently remove symbols**)**
- **Set number of measures** (Set number of measures apply globally or locally)

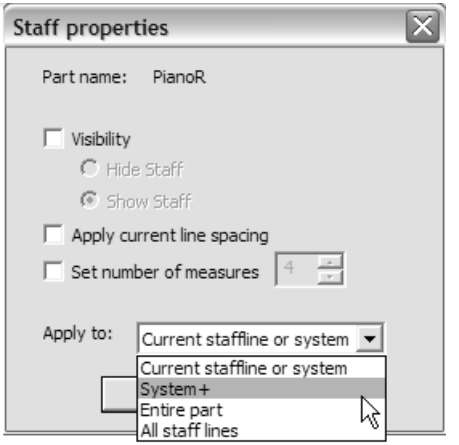


FIGURE 5 - 9: Staff Properties window

5.3.2 Staff Line Options (Right-click inside staff line)

Certain staff functions such as staff spacing, bracketing and part linking (for linking parts with expanded or collapsed systems) can be accessed by right-clicking (**alt / option** + click for Mac) in any staff line with the **Properties** tool active.

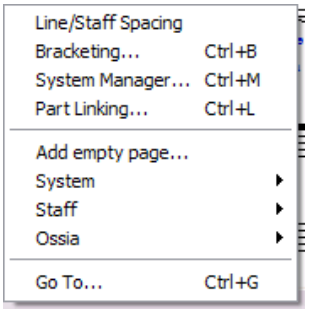


FIGURE 5 - 10: Staff Line Options (Right-click)

For detailed description of these commands, see “Globally applying line, staff and system spacing” on page 119, “Bracketing” on page 112, “System Manager” on page 155, “Re-linking parts” on page 78.

5.3.3 Barline Properties

- With the **Properties** tool selected, click on the barline preceding the measure of interest. For details on controls, see “Barline Properties” on page 65.

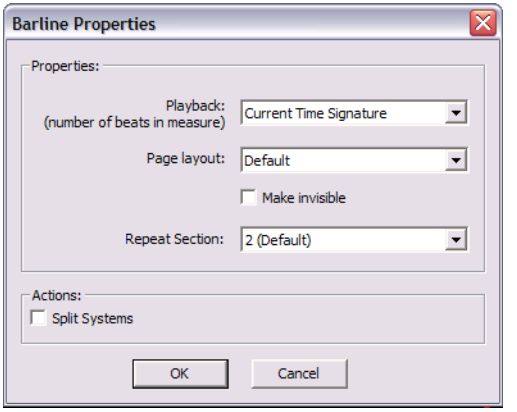


FIGURE 5 - 11: Barline Properties

5.3.4 Note Properties

- With **Properties** tool selected, click on any note head. Here you can change note values, dots and even the appearance of the note-head.

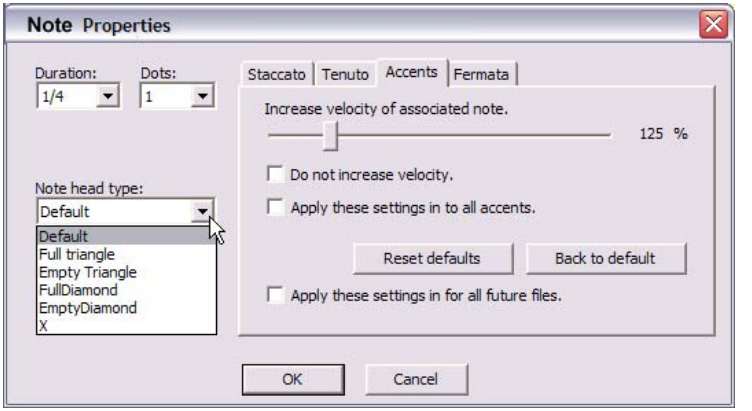


FIGURE 5 - 12: Note Properties

Refer to “Playback Properties” on page 59 for details on Note Properties and other playback properties including:

- **Articulations & Dynamics** (trill, arpeggio, dynamic marks, etc.)
- **Slur** (to shorten or extend legatos)
- **Tempo marking** (to change default tempo speeds)

5.4 Transposition by Key and Clef

Transposing all or part of a score can be accomplished in one of several ways. The most common is “transpose globally by key”, e.g. change an entire song from the key of E-Flat to the key of C.

Other transposition methods such as transpose-by-clef, transpose within a selected range and transpose-notes-only are all possible. To transpose the key of an entire score,

a. Push the **Transpose** button or hit **Ctrl +T** *Win* (**Cmnd**+**T** *Mac***)**.

b. The “source” key signature will appear in the main window with its signature name listed in both major and relative minor keys.

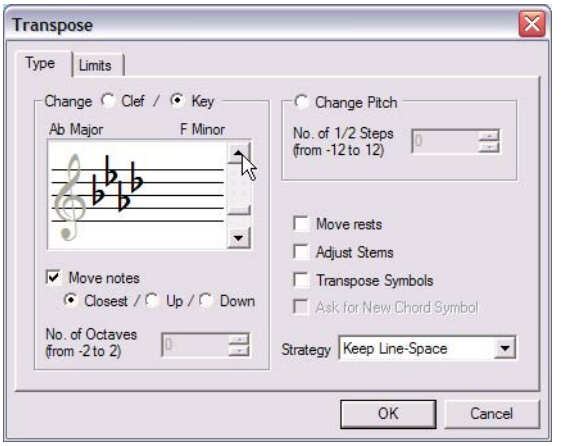


FIGURE 5 - 13: Key Transposition

c. Choose to transpose either by **Key** or by **Clef** or by **Pitch.**

d. Use the scroller to select a new key signature if by *Key* or a new clef sign if by *Clef.*

e. With **Closest** selected, SmartScore will transpose to the target key, up or down, with the least number of intervals. Choose **Up** or **Down** if you wish to make your own choice. Push **OK**.

For information on additional transposition methods turn to "Transposition", Section 8.8, on page 148.

5.5 Printing your final score

If your score was scanned, ENF pages will probably not be centered. **Page Setup** provides various tools for controlling print layout. The simplest way to center music on each page is to select the **Fit to Page** layout option.

To center ENF frames prior to printing...

- Open **Page Setup.** In the Document Layout pull-down menu, choose **Fit to Page**. Click **Apply**.

NOTE: Other document layouts can be applied in **Page Setup**. For example, you may want to have alternating left/right margins for bound scores. To explore other printing layout option, see “Selecting and creating custom document layouts” on page 164.

To print your score,

- Select **File > Print.**

To save your score as a PDF file,

- Select **File > Save As PDF** (Windows requires PDF 995 from installer).

5.5.1 Copying an ENF region to paste into other programs

To copy an onscreen region for pasting into another application (e.g Microsoft™ Word®, Adobe™ Photoshop®, etc.),

a. Press the “**O**” key to activate the **Select** tool.

b. Drag to select a region on an ENF page that you wish to copy.

c. Select **Edit > Copy** (**Ctrl +C** / **Cmnd+C**) to copy selected (highlighted) region to the clipboard as a ***bitmap image***.

d. Open application that supports bitmap graphics and select **Paste**.

TIP: Use this feature to take "snapshots" of musical snippets and **Paste** into word processors or other non-music programs.

5.6 Creating a New ENF Score from Scratch

SmartScore isn't only about scanning. It is also a full-featured score-writer as well. When creating a new score from scratch, certain defaults will turn on such as auto-beaming and auto-spacing.

5.6.1 New score

To create an empty ENF score using one of several basic templates,

a. Push the **Score** button on the Navigator or select **New** > **New ENF** under the **File** menu (**Ctrl + N** (Win) / **Cmnd + N** (Mac)).

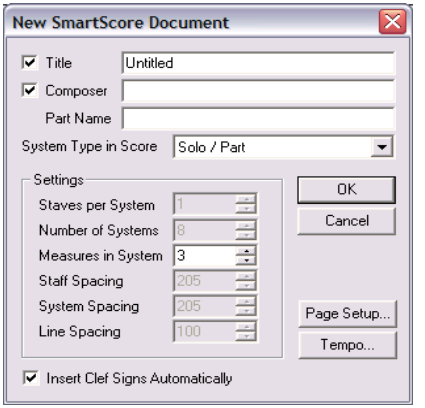


FIGURE 5 - 14: New score window

b. Type in a **Title** for the new score.

c. Add the **Composer**'s name for the first page score header.

d. Press the **Page Setup** button to change the basic page layout of your score. See page 222 for details.

- **Page Setup** opens document size and layout window.
- **Tempo** will insert a metronome mark for playback.
- Uncheck **Insert Clef Signs** automatically to create an ENF document without clefs**.**

5.6.2 Using Built-in Templates

SmartScore has 15 preset 2-page templates including solo instrument, piano, duet, common vocal and orchestral scores and a custom setup.

a. Select a desired template from **System Type in Score** window.

b. Once the score is open, you can edit normally.

To add a new page,

a. Push the "Add New Page" button on the right of the status bar.

b. Or, select "Add Empty Page" from the **System Options** menu by right-clicking on any system with Properties tool active.

To delete an empty page,

- With the **Properties** tool active, right-click (**alt** for Mac) into each system of the page you wish to delete. Select "System > Remove" in the **System Options** menu. Repeat as necessary.

5.6.3 Real Time Recording

An alternative to entering notes in by hand is to record MIDI-based performances using a MIDI keyboard or some other MIDI instrument. For more about this, see "MIDI Recording" on page 196.

5.6.4 Step Time Recording

An alternative to Real Time Recording is Step Time Recording. Step Time Recording is done in MIDI and can be a very fast method of entering in notes (when you can't scan it in of course!). For more, turn to "Step Time Recording" on page 200.

5.7 Saving and Exporting ENF Files

You can save the current ENF file at any time by pushing the **Save** button in the Main toolbar or by hitting **Ctrl + S** (**Cmnd + S** for *Mac***).**

5.7.1 Converting SmartScore files to other file types

To save SmartScore files in one of several different file formats.

a. In the **File > Save As (Filetype/Format)** pull-down menu, choose one of the following formats to save the ENF score to:

- **MusicXML** (.XML) MusicXML has quickly become the most widely used file format for the exchange of music notation files between scorewriters. Most well-known notation scorewriting programs now support importing and exporting MusicXML files including Sibelius®, Finale®, Notion®, Personal Composer® and others.

- .**FIN** files will import SmartScore pages into Finale® 2000 or better with graphical information and page layout intact. Use the **File > Import** selection in Finale to open a SmartScore .FIN file.
- **MIDI** files (.MID) will import playback data into most other music software programs with no page formatting. All graphical information about note position, stem direction, voices, etc. are lost. MIDI is to music what ASCII is to text.

- **NIFF** (.NIF) Notation File Format used by applications such as Lime.

b. Press **Save**. The proper extension will automatically be added.

Editing Text, Lyrics and Symbols

Chapter 6 Editing Text, Lyrics and Symbols

This section covers editing text, lyrics and chord symbols. SmartScore attempts to distinguish between chord symbols, lyrics and between "dumb" and "performance" text when music is recognized. Dynamic and tempo text markings become applied to playback when recognized. Only "dumb" text fields are editable in **Text** mode.

6.1 Text mode

*To enter **Text** mode for editing or creating "dumb" text,*

a. Push the "**T**" button in the Text and Controller toolbar.

Text fields are associated with the nearest staffline. To ensure text is associated with a particular staff, move the cursor over the staff first.

b. Click anywhere and begin typing.

NOTE: It will not be possible to do other sorts of editing other than text or lyrics in either of these modes. It will be necessary to push "**T**" or "**L**" again to exit the mode first.

To edit a text field,

a. While in Text mode, click anywhere inside a text field.

b. Drag left or right to highlight one or more characters within the field. Typing will replace the characters. Hit the **Delete** key to remove highlighted characters. Text can also be cut, copied or pasted elsewhere using standard **Ctrl** +"**X**", "**C**" and "**V**" short-cuts (**Cmnd** + "**X**", "**C**" and "**V**" *for Mac*).

To delete text fields,

a. To delete more than one text field, use the Select tool ("**O**" key) to select and highlight text in yellow. Hit the **Delete** (Del) key removes all highlighted text fields.

b. ***Quick-select*** (Ctrl+click) any text field, hit the "**X**" key (cursor goes grey) and click again on any text field to remove it.

6.1.1 Nudging text

To nudge text,

a. Hold the **Shift** button down to enter **Nudge** mode.

b. Each text field has a small yellow box to its left..

c. Click and drag the box to reposition the text field to where you want it.

To move multiple text fields,

a. Use the Select Tool and drag the cursor to highlight a multiple text fields. Release the mouse button. Selected text fields will turn from yellow to green-grey.

b. Hold the **Shift** button down to activate **Nudge** mode.

c. Dragging one control box of a highlighted text field will move all selected text fields together.

6.1.2 Score Header

Score headers are not considered “text”. They are unique tags.

To enter a Score Header at the top of the first page of the ENF file,

a. Select **Edit > Score Header**.

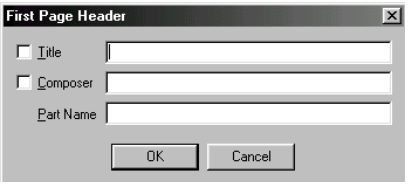


FIGURE 11 - 14: Score Header

a. Enter a name for the ENF document in the **Title** field.

b. Enter a **Composer** name if desired.

c. Type a part name if it is a Score-Part. For definition, see Score-Part on page 249.

To move a Score Header vertically,

- With Selector tool active, drag the positioning tab associated with the score header found in the left-hand margin up or down.

6.2 Lyrics

A lyric "block" is a string of characters equivalent to a spoken syllable. Out of recognition, a lyric block becomes associated with a single note or rest in the staffline immediately above it. Locating the note or rest associated with a lyric block is as simple as searching directly above the center-justified lyric block. All lyric blocks within stafflines are horizontally linked and are separated from each other by dashes, underlines and/or periods.

NOTE: Text and lyrics have different colors. Text black, lyrics blue.

NOTE: Lyrics may be found *below* a system (e.g. some choral scores) and a special option should be selected before Recognition. See "Lyrics Under Last Staff of Systems" on page 33.

TIP: Move notes in **Nudge** mode to verify lyric-to-note associations.

To edit lyrics,

a. Push the "**L**" button in the Text and Controllers toolbar to enter Lyric mode.

b. Click into a lyric block or on an associated note or rest. Once highlighted, text within the block can be edited like normal text.

c. Click and drag inside a lyric block to highlight characters for editing. Use the ***left arrow***, ***right arrow*** or *spacebar* on your keyboard to navigate within a lyric block. Once positioned, type normally.

d. To delete one or more characters in a lyric block, highlight one or more characters within the block to replace with new characters or . Characters can also be cut, copied or pasted elsewhere using standard **Ctrl** + "**X**", "**C**" and "**V**" keyboard shortcuts (**Cmnd** + "**X**", "**C**" and "**V**" *for Mac)*.

e. To edit a lyric block below the current line of lyrics, click into the topmost line of lyrics and use the ***down arrow*** key. Cursor will enter the next block in lyric line immediately below.

f. To create a new lyric line, hit **Return** anywhere in a lyric line. A new lyric line will be created at the first note of the system.

g. Push "**L**" again (Text and Controllers toolbar) to exit Lyric Edit.

To move lyrics up or down between staves,

a. Hold the Shift key down (**Nudge** mod)e, locate the yellow control handle along the left-most barline of the system.

b. Drag the control handle up or down to move entire lyric block..

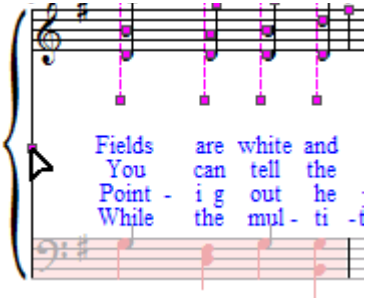


FIGURE 6 - 15: Nudge mode - repositioning Lyrics

TIP: You may also change lyric font size. See “Changing styles of Text and Lyrics” on page 105.

6.2.1 Dashes, spaces and underscores

Dashes, spaces and underscores are special characters used to separate lyric blocks. Typing any of these characters will move the cursor to the next block. The ***Backspace*** key deletes dashes, spaces and underscores.

In the following example, the block “*der-*” was missed in recognition. The cursor was positioned at the end of the previous block. A dash was entered to create a new “syllabic” block and the correct text was then entered.

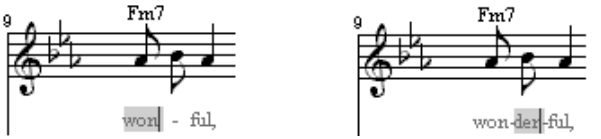


FIGURE 6 - 16: Editing Lyrics

- **Dash** = Moves the cursor to next lyric block and inserts a dash. Normally used to connect multiple syllables within a single word.
- **Space** = Moves the cursor to the next lyric block. Normally used to separate words. Does not insert a dash or an underline.
- **Underline** = Normally used as a “melisma”, an underline indicates that one vocal sound should be extended over two or more

beats. Inserting creates an underline up to the next block. Entering multiple underlines will string them together over several lyric blocks.

- **Backspace** = Deletes characters inside a lyric block. Also deletes hyphens when backspacing from one lyric block to the next.
- **Carriage Return** = Creates a new lyric line and positions cursor in the first lyric block below beginning note or rest of the staffline.

6.2.2 Verifying vertically aligned voices

Nudging note heads horizontally is a good way to verify that a particular lyric block is indeed associated with a note stem. In a similar way, **Nudge** mode is useful in verifying that vertical events are properly aligned. Refer to “Checking vertical alignment of voices” on page 153 for more information.

To verify vertical alignment of two or more voices in Nudge mode,

Horizontally nudge the upper note (Voice #1) of a vertically aligned set of notes and/or rests. All vertically aligned (joined) notes or rests will move together.

6.2.3 Changing styles of Text and Lyrics

Out of recognition, all text fields and lyric blocks are matched to the closest font type and size available on your computer. You can change the font type, size and color of text and lyrics. This is useful if lyrics appear too large. Modifying the style of any lyric block will change ALL lyric blocks because lyric blocks are tightly integrated and text fields are not (they’re “dumb”).

To modify font styles of text fields or lyric blocks,

a. Push the “**T**” button to enter Text mode. Click into any text field. While the cursor is blinking, right-click (**alt/option + click** for Mac) to open the Style window.

b. For lyrics, push the “**L**” button and click on either the associated note or rest or directly into a lyric field. Right-click to open the Style window (**alt / option + click** for Mac).

The current text style will be highlighted in the **Text Style** window. Other font styles found in the current document will also be displayed. All installed fonts and text styles (including non-Western symbols) are available for selection.

c. Click on the style you wish to change and then select “Modify Style”. “Add Style” and “Delete Style” options are also available.

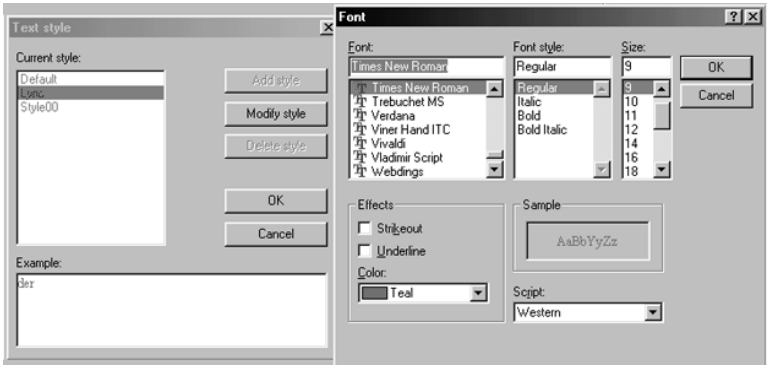


FIGURE 6 - 17: Changing Text and Lyric styles

The **Font** window is where the current font name, style, size and color are displayed. Choose an alternative font, style, size or color. **OK** will apply the change and exit the “Font” window. **OK** in “Styles” will close that window. Selected fields will then be updated.

NOTE: The Text Sytles window is also accessible in Document Preferences (**File > Document Preferences**).

6.3 Editing Symbols in Document Preferences

Non-lyric and non-text symbols (e.g. dynamic and tempo markings) which appear as text are also editable.

To edit Text Symbols

Open **Edit > Document Preferences**. The ***Text Symbols*** tab appears as follows:

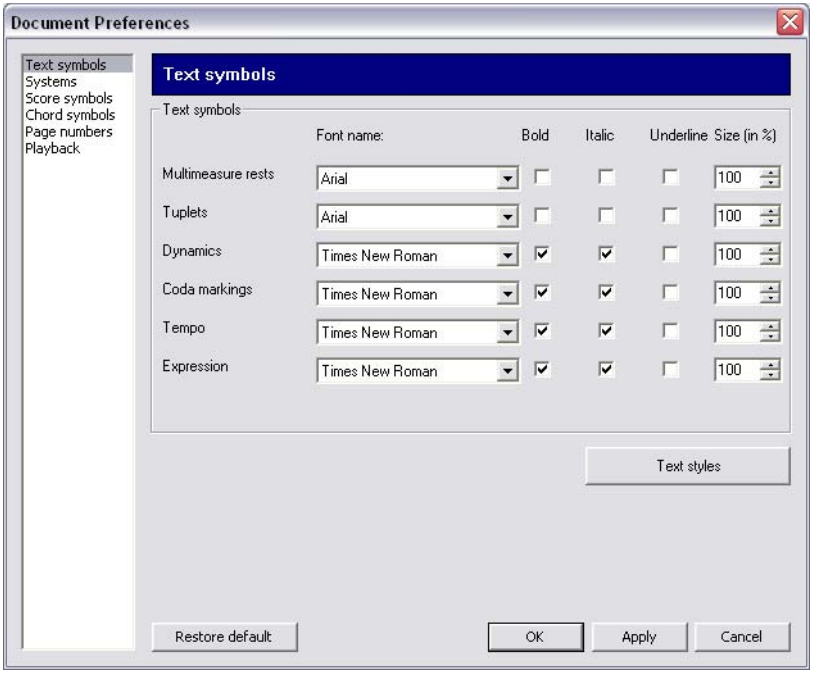


FIGURE 6 - 18: Document Preferences > Text Symbols tab

6.4 Guitar Fret and Chord Symbols

Guitar fret diagrams are recognized automatically. Even chord symbols written as text can be automatically converted to fret symbols. (See “Recognition Options” on page 33). You can display either the chord symbol or the fret diagram, or both. When transposing keys, the root of all chord symbols will automatically update. Only chord symbols associated with a guitar fret will be updated. Chord symbols alone, recognized without frets, are only “dumb” text. See “Tip” on page 41 for an easy method of removing “dumb” chord names recognized as text.

6.4.1 Choosing a fret / chord symbol from the library,

If no fret symbol was recognized, it can be selected and inserted.

a. Push the fretboard button in the **Text and Controllers** toolbar.

b. Click above the topmost staff where the symbol will be inserted.

c. The Guitar Chord Library and editor (**GCL**) will open.

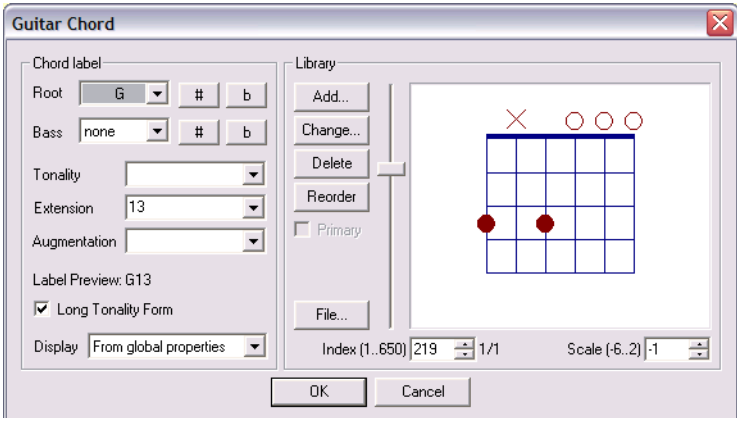


FIGURE 6 - 19: Guitar frets and chord symbols library

d. Select a **Root** chord name. Add a **Sharp, Flat, Tonality, Extension** and **Augmentation** as necessary.

e. If the selected chord name matches one stored in the library, a corresponding fret configuration will appear in the right window.

f. Push **OK**. The fret / chord symbol will appear above the staff.

6.4.2 Creating a new chord symbol / fret configuration

If the chord name you are creating does not exist in the library or if you want to create a new fingering configuration for the same chord name,

a. Push the **Add** button in the **GCL** window to open the fret editor.

b. In the **Label** tab window, select a **Root** chord name. Add **Sharp, Flat, Tonality, Extension** and **Augmentation** as necessary.

c. Press the **Frets** tab in the upper part of the window to open the fingering and symbols editor. Edit options are as follows:.

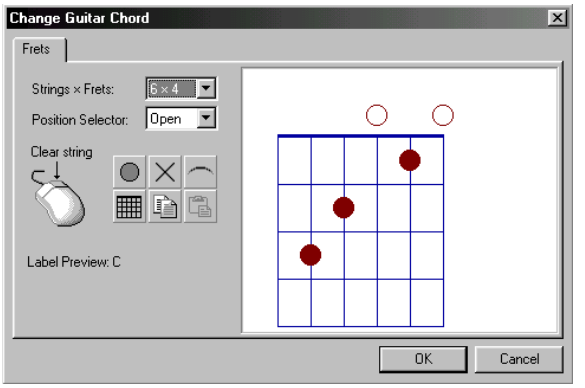


FIGURE 6 - 20: Guitar Chord Library - Fret Editor

- **Right-click (Option + click** for *Mac*) on any finger marker inside the fretboard to remove it.
- **Clear All** (*grid*) removes all current finger markers in fretboard.
- **String Marke**r (*dot*) places a finger marker on any string between frets on the fretboard. Clicking above the fretboard nut (*thick line*) places an open string symbol (open dot) at any string position.
- **Barre Marker** (*arc*) places a barre marker above the fretboard by dragging above the nut. When dragged across strings inside the fretboard, the barre marker is positioned between frets.
- **Mute-string marker** (*x*) places an X above any string position to indicate a muted string. When clicked above the nut, any finger marker of that string is deleted.
- For banjo, ukulele, bass or other non-six string fretted instrument or for chords that require more range than 4 frets, choose the configuration you wish from **Strings x Frets** combo box.
- To show fingerings in other than 1st position, choose from **Position Selector**. The solid line represents the fret position.
- Press **Copy** to copy the current fretboard to the clipboard.
- Press **Paste** to paste in the fretboard layout from the clipboard.

d. Press **Add**.

The newly created chord and symbol will be written to the library.

6.4.3 Changing an existing chord symbol's fingering

If you want to change the fingering / fret configuration of an existing symbol follow the steps in "Choosing a fret / chord symbol from the library," on page 107.

a. Push the **Change** button (not **Add**) in the main **GCL** window.

b. Make changes in the fret editor. Push **OK** and **OK** again.

To change a recognized guitar fret / chord symbol,

a. Choose the desired chord name from the **Root** pull-down menu.

b. Select **sharp, flat, Tonality, Extension** and **Augmentation**.

c. A corresponding fret configuration will appear in the window if the complete chord name matches one stored in the library.

d. Click **OK** if the chord name / fingering configuration is acceptable. The ENF fret diagram and chord symbol will update.

NOTE: Some chords have more than one fingering configuration. When ***Primary*** is checked, that configuration will appear before other chords having the same name.

6.4.4 Adding newly recognized chord symbol configurations,

Following recognition, you may see some fret symbols without chord names. To add these new configurations to the Guitar Chord Library,

a. Position your cursor over a fretboard without a chord name and **Quick-select** (**Ctrl** + **click**) it so the cursor becomes a "grid".

b. Click once again on the fretboard to open the **GCL** editor.

c. Push the **Change** button to open the fret editor and make necessary fingering and symbol changes.

d. Once fingering changes have been made, push **OK**.

e. In the main GCL window, push **Add** to open the **Add Chord** window. Select a **Root** name and any other extensions as necessary. When the new chord is completed, Push the **Add** button.

To delete existing chord symbol(s),

- ***Quick-select*** (Ctrl+click) on any existing chord symbol. Hit the "**X**" key. Begin clicking on any chord symbol (highlighted yellow) to delete them. To delete several fret symbols at once, use the **Select** tool, highlight as many fret symbols as you wish and hit the **Delete** key.

To move a chord symbol

Hold the **Shift** button down and click and drag the control point of a chord symbol to reposition it.

To move one or more chord symbols,

a. Use the Select tool ("**O**" key) and highlight desired number of fret symbols.

b. Click and drag control point of any fret symbol.

To change an existing chord or symbol in the Guitar Chord Library,

a. Push the **Change** button in the **Library** section of chord window.

b. Proceed to edit chord symbol as described above. When finished, press **OK** in Frets window. Chord symbol is automatically updated.

NOTE: You can page through symbols using either the scroller or clicking through the "index" window in bottom right corner.

To reorder all chords based on alphabetical order,

- Press **Reorder**.

To scale guitar fretboard / chord symbols,

- From the Scale window, change the size of fretboard symbol from +2 down to -6. All fretboard and/or chord symbols will resize to this scale.

To export, import, reset or clear a GCL library file,

- Press **File** in the Chord Library window.
- **Export Library** will save guitar chord library to a file. Choose the target directory and/or drive to save.

- **Import Library** will load a saved guitar chord library from a directory and/or drive. Locate the .GCL file and push OK to load.
- **Reset to Default** will reload original guitar chord library as initially loaded during installation.
- **Clear All Chords** deletes all current guitar chord library data.

6.5 Bracketing

Instrument families are grouped with the use of brackets. Grand staff and braces are recognized whenever possible. Use **Bracketing** to assign braces, grand staff brackets and to join selected parts into barline groups in an ENF document.

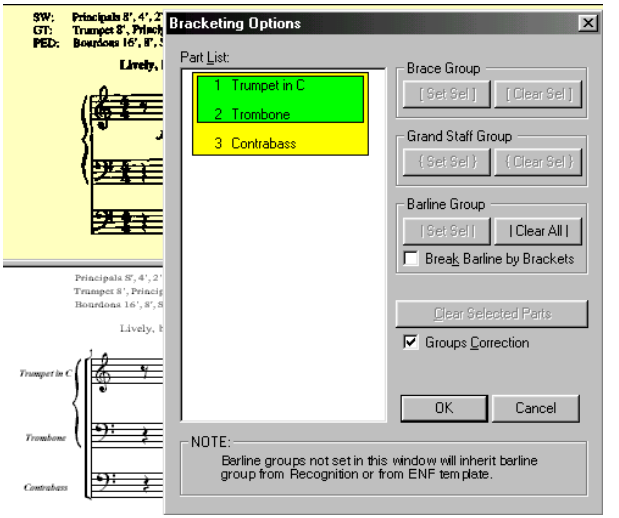


FIGURE 6 - 21: Bracketing window

To create braces, grand staff brackets and create barline groups,

a. Select **Bracketing** from **Edit** menu (**Ctrl** + **B (Cmnd** + **B** Mac).

b. Highlight two or more parts in list to select for grouping.

c. Choose **Brace**, **Grand Staff** or **Barline** Group set and press **Set Sel**.

d. Continue to select parts for any other type of group. Any selected group can overlap parts of another selected group.

e. Click "**Break Barline by Brackets**" checkbox to have barlines break according to instrument families which are already designated by braces, groups and grand staffs.

f. Choose **Clear Sel** or **Clear Selected Parts** in selected group or **Clear All** to remove groupings.

Changing Score Structure

Chapter 7 Changing Score Structure

Once you have recognized and edited your music, you can extract and recombine parts and voices, create a conductor's score from separate parts, resize staves and systems or reformat the entire score. This chapter covers various ways of altering the ENF score structure.

7.1 Reformatting the Score in System Manager

7.1.1 Extracting parts using Visibility

Below is an example of a vocal / piano arrangement. Here is how to extract the vocal line and open it in a fresh document.

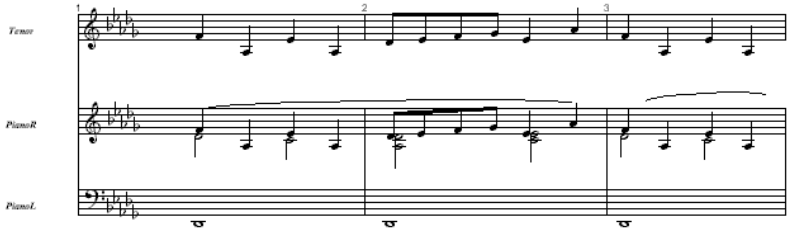


FIGURE 7 - 1: Three-part score (e.g. Gluck.ENF)

To extract a selected Part from within the System Manager,

a. Position your cursor over an ENF system that contains the part you wish to extract. Hit **Ctrl+M** (**Cmnd**+**M** for *Mac*). The System Manager will open.

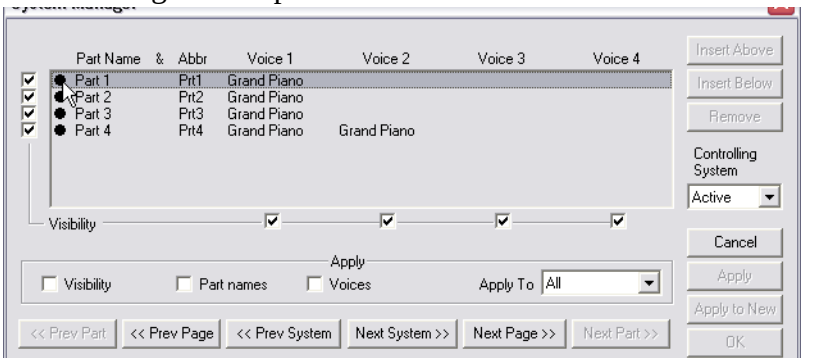


FIGURE 7 - 2: System Manager (displaying active system)

b. Check the box "**Visibility**" in lower left-hand corner of the window. This informs the System Manager of the kind of action we are taking.

c. Now we will choose which parts to extract. To the left of the parts you do *not* wish to extract, remove the visibility checkmarks. This leaves only the part(s) you wish to extract with checkmarks.

d. Press **Apply to New** to create a new score, leaving the current file unaffected. Or press **OK** to remove parts from the open document.

Below is the result of the extracting the part shown in FIGURE 7 - 2:

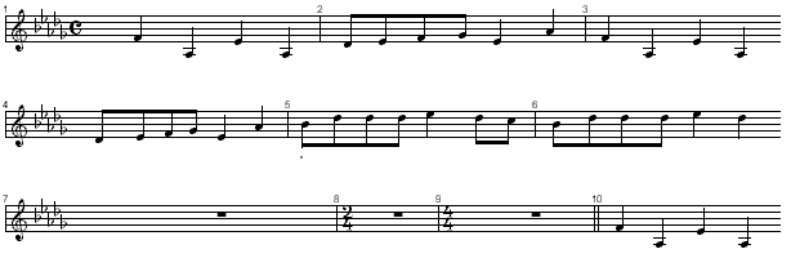


FIGURE 7 - 3: Extracted vocal Part

7.1.2 Extracting voices using Visibility

Let's go back to the original ENF document in FIGURE 7 - 1: (Gluck.enf / tif or any three part score). Let's say we want to extract a contrapuntal voice from the right hand part.

To extract a voice from an existing part,

a. Select **Edit > System Manager** (**Ctrl+M** (**Cmnd**+**M** *Mac*)).

b. Remove checkmarks of all parts and voices except for the part and voice you wish to target.

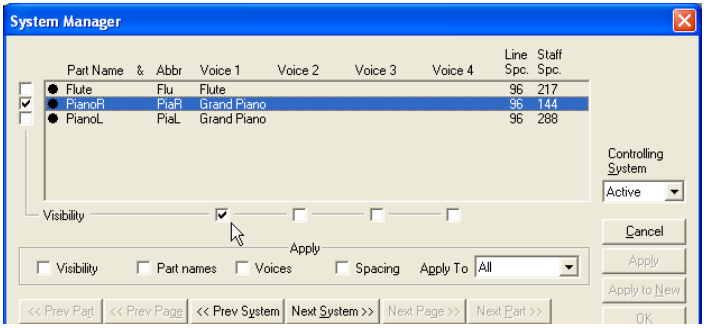


FIGURE 7 - 4: Selecting Voices to be extracted

c. Make sure "**Visibility**" in lower left-hand corner is checked.

d. Press **Apply to New** to create a new score, leaving the current file unaffected. Or press **OK** to isolate the part in the open document.

Here is the result of extracting Voice #1 from the right hand piano part:

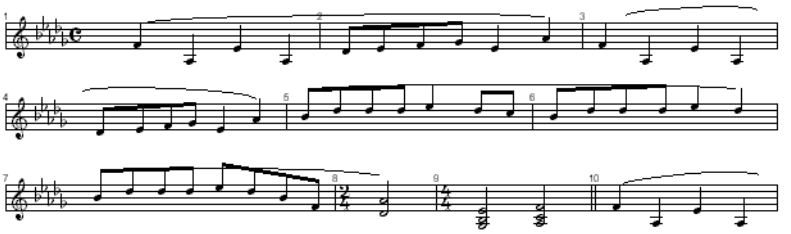


FIGURE 7 - 5: Extracted Voice

7.2 Reformatting scores in ENF view

Measures, staff lines and systems can be resized, compressed or expanded from the ENF view while keeping proper note spacing (punctuation) intact. Measures can be scrolled from one system to another both manually and automatically. When the time comes to print out the score, several page layouts can be selected, page margins can be modified and pages of the score can be previewed.

NOTE: Reformatting any part of the ENF view may cause a loss of synchronization with the original scanned image. If this occurs, the floating Scan View reference window will open. To open the Scan View window manually, check **Scan View window** in the View menu.

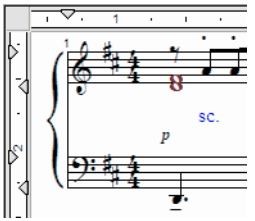
7.2.1 Changing staff and system spacing

Staff and system spacing can be changed by simply dragging distance tabs up or down. Settings can also be made numerically using a dialog box described on page 119, "Globally applying line, staff and system spacing". But that dialog is meant to apply changes to other systems.

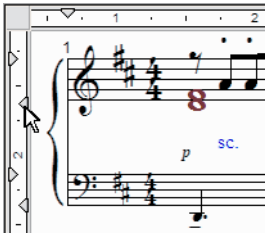
7.2.1.a Changing staff line spacing (Right-hand tabs)

To increase/decrease the size of individual staves...

- Drag the tab aligned with the bottom staff line of any part up or down. The staff will resize vertically.



Resizing staff lines
(Before dragging tab)



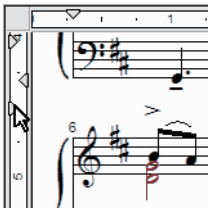
Resizing staff lines
(After dragging tab)

FIGURE 7 - 6: Using tabs to change staff distances and system widths

7.2.1.b Changing distances between staves and system (Left-hand tabs)

To increase/decrease the distance between staves...

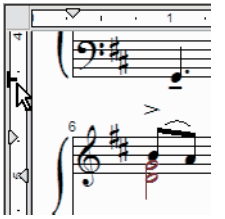
- Position the cursor over a staff to make it active. Drag the lowest tab up or down. The distance between the home staff and the staff below it will change. To change the distance between the active staff and the staff above it, drag the “T” tab (top).



Active
Staff

Changing staff distance
(Bottom tab)

Active
Staff



Changing staff distance
(Upper tab)

FIGURE 7 - 7: Using tabs to change staff distances and system widths

7.2.2 Globally applying line, staff and system spacing

Spacing of any system can be applied to subsequent or all other systems. For example, a piano accompaniment with smaller solo part can be easily created by reducing the staff height of just one system.

To apply line, staff and system spacing to all other systems...

a. Position your cursor over the "template" system. This will become the baseline to change other systems. Right-click (**alt + click** for Mac).

b. Click "**Line/Staff Spacing**" in the **System Options** window.

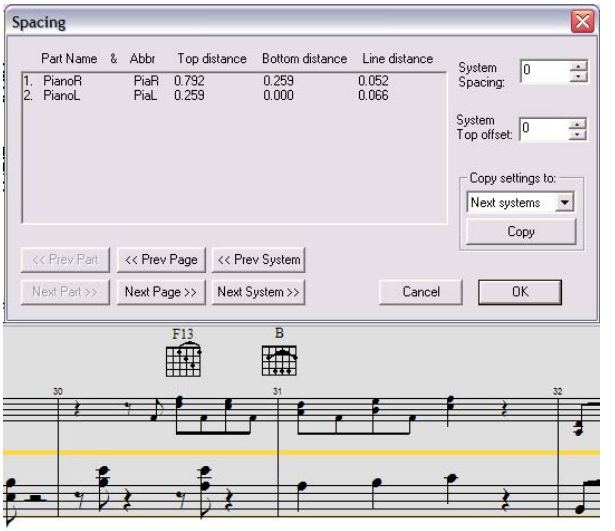


FIGURE 7 - 8: Line/Staff spacing window

NOTE: Distance, line spacing and offset settings simply reflect the position of graphical spacing tabs described on page 118. Normally, tabs should be used to change spacing parameters.

c. In the **Copy Settings To** area, select either "***Next Systems***" or "***All Systems***". Next Systems will change subsequent systems and All Systems will change all systems in the score.

d. Push **Copy** to apply the change. Push **OK** to close the window.

7.2.3 Horizontal Reformatting

7.2.3.a Adjusting system widths

System widths can be controlled in two ways: 1) adjusting individual systems by dragging either end point tab in the upper ruler margin or 2) changing document layout and/or page margins in Page Setup. See also "Document Page Setup" on page 163.

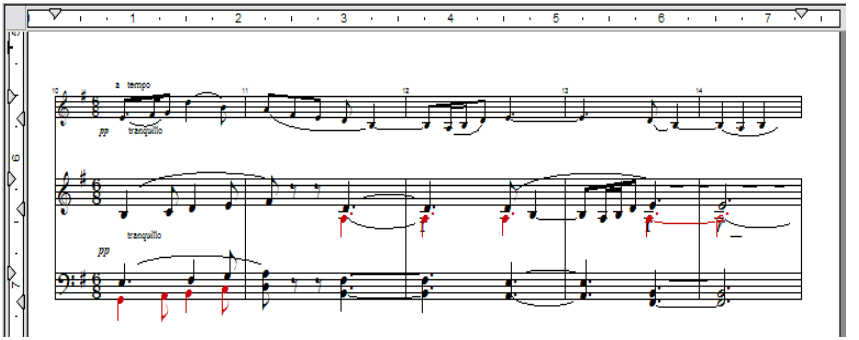


FIGURE 7 - 9: Using tabs to change staff distances and system widths

- **Nudge Mode (Barlines)**

Several interesting and useful reformatting possibilities can be applied when barlines are repositioned in Nudge mode:

- **Resizing adjacent measures by dragging barline horizontally**
  See Section 8.2, "Nudge mode (Shift button)" on page 126.
- **Shuttling measures in/out of systems by dragging last barline**
  See See "Nudge Mode (Barlines)", Section •, on page 120.

7.3 Score Structure

7.3.1 Structure and hierarchy

Score Structure (**Edit > Score Structure**) is a powerful tool that allows you to create entirely new scores by removing, creating and re-linking parts. By simply dragging links around, you have the ability to remove parts, extract parts and join individual part scores into multi-part “conductor” scores. See “Scanning Part Scores (Score-Parts)” on page 40 for more info.

7.3.2 Creating a Conductor's Score from Part Scores

An ENF file was recognized from 3 part scores (each having one Part per Score-Part). A "Score-Part" consists of all the pages of a single instrument in a part score. Some Score-Parts may contain more than one Part (a piano Score-Part has 2 Parts and an organ Score-Part has 3 Parts). Let's view the structure of a part score and then combine all parts into one document.

To view score hierarchy & create a conductor's score from score parts,

a. Select **Edit > Score Structure**.

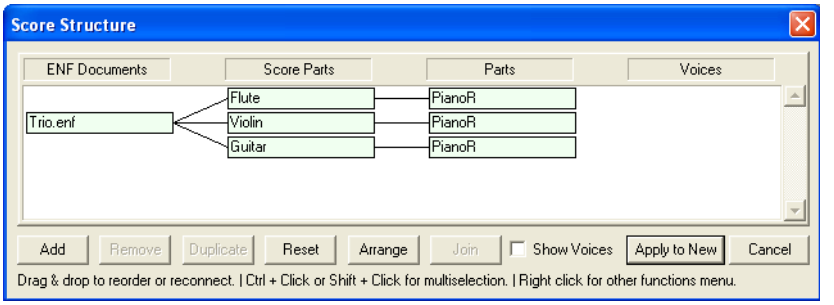


FIGURE 7 - 10: Score Structure (Typical Part Score)

b. Click on any Score-Part to highlight it and push the **Insert** button at the bottom of the window. You will see a blank Score-Part appear.

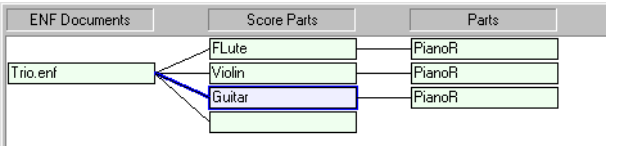
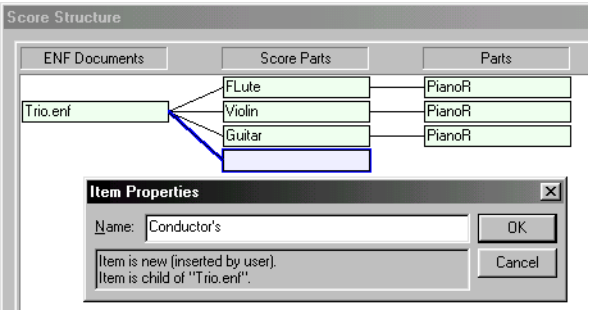
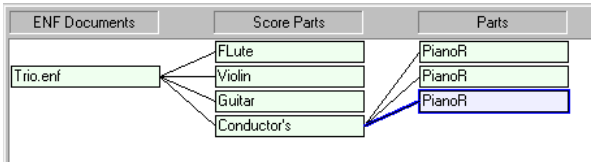


FIGURE 7 - 11: Inserting new Score-Part

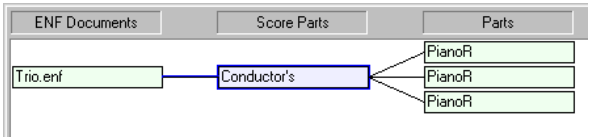
NOTE: Inserting a new ***ENF Document*** will work just as well. In either case, applying the change (**Apply to New**) will create a brand new ENF document, leaving the original file untouched.



Naming new Score-Part in **Properties**



Re-linking Parts to new Score-Part



New Conductor's Score (Apply to New)

To the left, a new, empty Score-Part was **Insert**ed (you could also re-link parts to an existing Score-Part). Here, the new Score-Part is given a name (Win: *Right-click* / *Mac*: **Option + click** to open its **Properties**).

To relink any structural object, click on the object and drag it to another object in an adjacent column.

Here, the three existing parts are relinked to the newly created Score-Part (named *Conductor's*).

FIGURE 7 - 12: Creating a Conductor's Score

Highlight the unlinked Score-Parts and push **Remove**. Push **Apply to New.** The modified structure is transformed to a new ENF document.

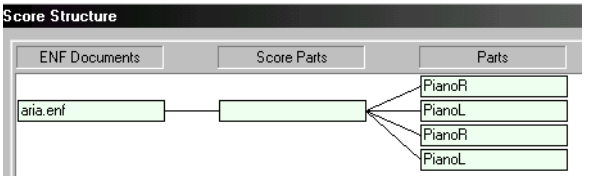
NOTE: Newly-created documents will have the same name of the source file plus "**1**", "**2**" etc.

7.3.3 Creating Part Scores from Ensemble Scores

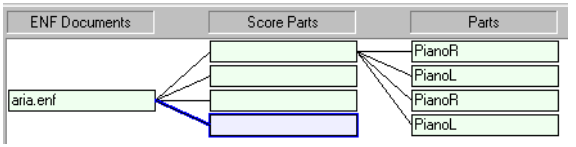
Extracting instrumental parts out of a conductor's score in Score Structure is similar to creating a conductor's score from score-parts, just reversed. NOTE: All SmartScore files (ENF documents) must contain at least one Score-Part linked to at least one Part.

a. Open an ENF file with 2 or more staves per system.

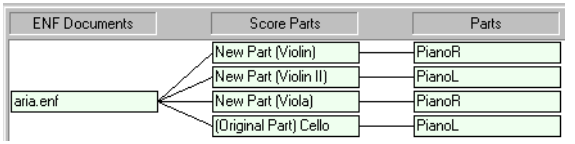
b. Select **Edit > Score Structure**.



Ensemble score having 4 parts



Inserting New Score-Parts



Naming and re-inking
Parts to New Score-Parts

Here is a typical "ensemble" score (ENF Document) which will contain one Score Part with several Parts linked to it.

Three new Score-Parts **Insert**. To name, Right-click **(option + click** for *Mac*) in **Properties**. Drag each Part (*child*) to new Score Parts (*parent*) to reconfigure each open ENF document. Push **Apply to New** to spawn off a new document with included data. This will create a file with 4 Score-Parts arranged in order. Playback remains synchronized and the original ENF document remains unchanged.

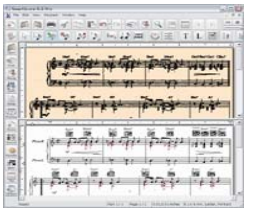
FIGURE 7 - 13: Creating Score Parts from Ensemble scores

Detailed ENF Editing

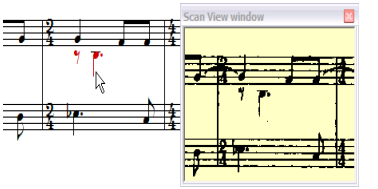
8.1 More ENF navigating

8.1.1 Split-screen and Scan View reference views

The default view is the “split screen” view immediately following recognition. An alternative view is the floating “Scan view window”.



Default Split Screen



Floating Scan View window

FIGURE 8 - 1: Scan Reference Views

To use the “Zoom Window”,

a. Go to **View** menu, select “**Zoom Window”** and “**TIFF**” view.

b. To increase or decrease zoom view of the window, choose a zoom magnification from View > Zoom Window selection. Available zoom levels are Normal (1x), 2x and 3x magnification.

8.1.2 Scrolling

Use the scroll bar and up/down arrows to the right of the ENF window. You may also use the arrow keys located on your computer keyboard to scroll up, down, left, and right in an ENF document.

8.1.3 Paging

To page forward or backward in an ENF document,

- Use the “Next page” / “Previous page” buttons located in the Main Toolbar or push the double paging arrows at the lower right-hand corner of the SmartScore window.

8.1.4 Go To…(**Ctrl +G** or **Cmnd**+**G** for *Mac*)

While editing, you can jump to any page or measure in ENF file.

To open the GoTo… window

a. Choose the **View** menu and select **Go To...** (**Ctrl+G** or **Cmnd**+**G** for *Mac*).

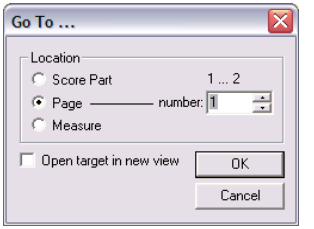


FIGURE 8 - 2: Go To window

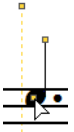
b. Select whether it is a Part, Page or Measure you wish to jump to.

c. Enter the Part, Page or Measure number.

d. Checking the **Open Target in New View** box will open a new ENF at the targeted Part, Page or Measure. Push **OK** to jump.

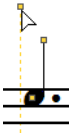
8.2 Nudge mode (Shift button)

By holding the **Shift** button down, the display switches to a special edit mode. Active control points are shown as orange boxes.



8.2.1 Changing note pitches

- Click and drag the control point (center of notehead) up or down.

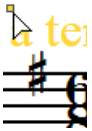


8.2.2 Moving notes and rests horizontally

- Each note contains two horizontal “pull points”; one above the staff and one below. Click and drag either control point to nudge a note or rest horizontally.
- To move multiple symbols horizontally, use the “**O**” key to select the objects. Drag the “pull point” of any object left or right.
- To compress or expand symbols within a measure or within an entire staff line, refer to “Repositioning measures using barlines” on page 127.

8.2.3 Resizing beam angles and note stems

- Dragging the endpoint of a beam or note stem will increase or decrease its length.



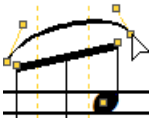
8.2.4 Repositioning text fields linked to an active staffline.

- All text fields are linked to an active staff line. To reveal the control point for each text field, position your cursor over its associated staffline and then locate the control point of the text field.

8.2.5 Reshaping arcs and slurs

Slurs (legatos) can be reshaped in two ways:
By moving end points of the arc and by controlling the shape of the curve with either Bezier control handles.

End points control the placement of the slur.



Bezier handles control the shape of the slur.

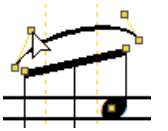
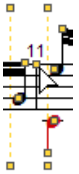


FIGURE 8 - 3: Reshaping slurs

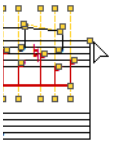
8.2.6 Repositioning measures using barlines

To horizontally reposition all symbols in adjacent measures:



- In **Nudge** mode, moving barlines to the left or right will reposition symbols in measures adjacent to the barline. Symbols will become more spaced out or more contracted depending on the direction. This is helpful when a particular measure becomes crowded. Try it! Notice that relative note spacing (punctuation) is retained when measures are expanded or contracted.

To horizontally reposition all symbols in a staff line:



- Moving the barline at the **end of a system** will compress symbols in the **entire system** and all relative note spacing will still be kept intact. If a barline at the end of a system is moved far enough to the left, the first measure of the following system will reposition itself to become the last measure of the active system.

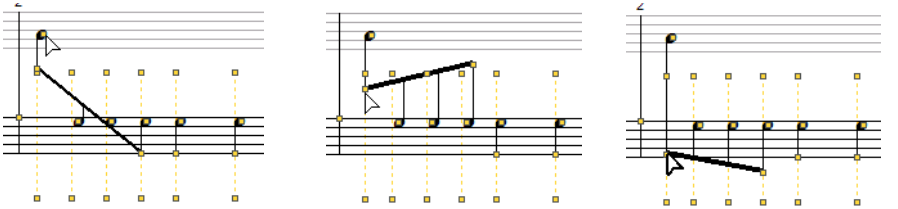
NOTE: For more details on horizontal formatting, see page 120.

8.2.7 Special fixes possible with Nudge mode

8.2.7a Fixing beam angles

Beam angles are a function of the length of note stems within the beam. By dragging note stems up or down, the angle of the beam will change. Control points at the end of beams can also be dragged up or down to adjust overall beam angle.

If a beam collides with note stems or appears at odd angles after moving or deleting notes, click & drag the control point on either beam end. Drag beam end until it is properly positioned. Stems of notes alternate as the beam angle is changed.



Beam colliding with note stems.

Drag beam control point to alter stem orientation

Drag beam control point to change beam angle

FIGURE 8 - 4: Controlling cross-staff beams

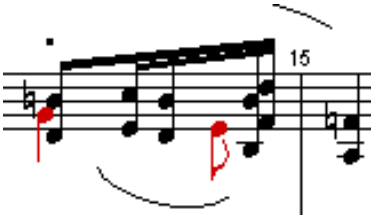
8.2.7b Fixing offset notes and rests belonging to two voices

Notes and/or rests belonging to different voices (within the same vertical event) will automatically offset when positioned next each other. This is meant to avoid collisions between the two. Depending on the situation, readjusting position offset objects is possible:

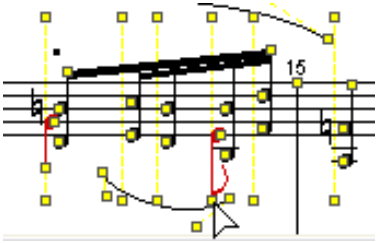
Offset rests due to close vertical proximity.

Offset corrected after dragging.

FIGURE 8 - 5: Offset due to rests too closely positioned



Flagged note in secondary voice causes offset in primary voice.



After dragging note stem control point downward, offset is corrected.

FIGURE 8 - 6: Offset due to note flag inteferring with nearby chord cluster

8.3 Tool Palettes (F2-F8 keys)

All notation symbols used in SmartScore can be selected from one of several Tool palettes. By default, up to 3 palettes remain open at one time. Palettes “recycle” by default, but you may have all open at once.

To replace an open Tool Palette with another,

a. Right-click on any open Tool Palette. (Mac: **Ctrl + click**).

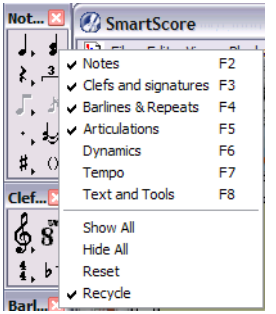


FIGURE 8 - 7: Tool Palette Selection

b. Click on a desired palette.

To see all palette options,

a. Right-click (**Ctrl + click** for Mac) onto any open tool palette.

b. At the bottom of the Palette window, you may choose one of 4 alternative modalities for palette behavior including.

- **Recycle (Default):**
  This changes the *secondary* open palette when a Quick Key is activated. The *Notes* palette remains open and does not cycle.Show All

opens all 9 SmartScore Tool Palettes.

- **Hide All:**
  This removes all Tool Palettes from view.

NOTE: The **F1** key (***Reset Workspace*** icon in SmartScore toolbar) always resets windows and palettes to their default positions.

For detailed functions of all tool palettes, see "Tool Palettes", Section 11.3, on page 215.

8.3.1 Dynamics Palette (P, < and >)

- Press the "**P**" key to select *p* (piano) dynamic marking.
- Hold down "**Shift**" + **","** to select the crescendo hairpin.
- Hold down "**Shift**" + **"."** to select the decrescendo hairpin.

The "Dynamics" palette will open as the secondary palette.

8.3.2 Tuplets (T)

The "**T**" key opens the tuplet (Rhythmic Groups) Palette. Triplet is selected as the default. Drag the mouse to box in the notes/rests to become the selected tuplet. Drag downwards to insert the tuplet above the selected notes/rests. Drag upwards to insert the tuplet below selected notes/rests.

8.3.3 Grace Notes

While in **Insert** mode, select a rhythmic value and press the **grace note** button in the "Notes" palette. Click before any note in the active staff to insert a grace note. ENF playback will insert the grace note and truncate the duration of either the following or the previous note.

To control how grace notes play back (including saved MIDI files)

- Select **Edit > Program Preferences > Playback**

Change default playback characteristics for grace notes:

- Before the beat
- After the beat (accaciatura)

All notation objects used in SmartScore can be selected from one of several Tool Palettes.

NOTE: For full description of all SmartScore tool palettes, turn to "Tool Palettes", Section 11.3, on page 215.

8.3.4 Dynamics, Articulations and Tempo Markings

NOTE: Dynamic, Articulation and Tempo markings affect ENF playback and change the resulting MIDI file. Playback properties of individual markings may be adjusted singly or globally with the use of the **Properties** Tool. See “ENF Symbol Properties” on page 92.

- Dynamic markings affect the volume of a range of notes in the active staff (MIDI track) to which they are entered.
- Articulation markings, such as trills, staccatos, tenutos, arpeggios, glissandos and mordents are note-specific.
- Tempo changes are global and cannot be applied to one staffline.

8.3.5 Tempo Markings (Metronome Mark)

NOTE: Inserting a tempo marking is generally used as a “change-of-tempo” indicator. Default tempo is normally set by going to the **Edit > Tempo** menu or to the **Playback Console** See “Tempo” on page 57 for more details.

To insert a tempo marking or change-of-tempo (metronome) mark,

a. Select a preset tempo marking in the “Tempo” palette or select a custom tempo by pushing the **Metronome Mark** button at the bottom of the palette.

b. If using a metronome mark, select a new tempo and baseline note value. Preset tempo markings ranges from 30 bpm (***Lento***) to 240 bpm (***Prestissimo***).

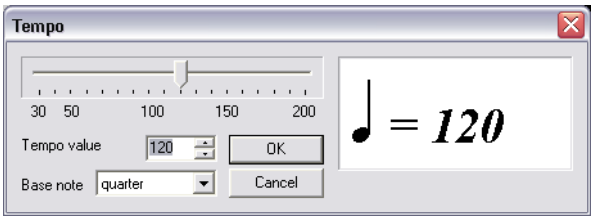


FIGURE 8 - 8: Tempo Change (Metronome Mark) window

c. In Insert mode, click anywhere above the topmost staff of a system to insert mark. Tempo will adjust accordingly at that point.

To edit a metronome or change-of-tempo mark in the score,

a. Select the **Properties** tool from the SmartScore toolbar.

b. Click on a mark in the score to edit its properties.

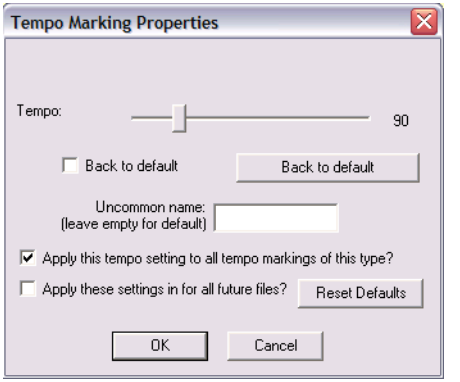


FIGURE 8 - 9: Tempo Marking Properties window

c. Using the horizontal slider, select a new tempo for the mark. Choose whether to apply the change to just the single mark, all similar marks or permanently apply the change for that mark.

8.3.6 Dynamics, Hairpins, Crescendos and Decrescendos

To Insert a Dynamic marking,

a. While in the **Insert** mode, select a dynamic marking from the "Dynamics" palette.

b. Click anywhere above the active staff. A change in playback volume (MIDI Volume) for that particular active staff (MIDI track) then will apply.

c. Changes in note volumes range as follows:
pppp = 35 / ***ppp*** = 45 / ***pp*** = 55 / ***p*** = 65 / ***mp*** = 75

mf = 85 / ***f*** = 95 / ***ff*** = 105 / ***fff*** = 115 / ***ffff*** = 125.

NOTE: Dynamics apply only to the active staffline. To apply dynamics and/or dynamic markings to more than one staff, enter the dynamic in each part in which you want the effect to apply. If you do not wish to have multiple dynamics visible, you may

enter dynamics in the Hidden Symbols mode. For more details see “Hidden Symbols” on page 162.

To insert a hairpin,

a. Toggle the “**C**” key to the **Insert** mode.

b. Select a dynamic hairpin from the “Dynamics” palette or hit **Shift + “,”** for crescendo hairpin and **Shift + “.”** for decrescendo.

c. Click and drag to select notes for which a hairpin is to be applied.

d. Dragging downward will insert the hairpin above the active staff. Dragging upwards will insert the hairpin below the active staff.

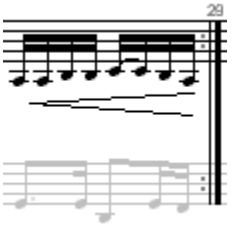


FIGURE 8 - 10: Hairpin crescendo (drag upwards)

To insert a crescendo or decrescendo,

a. Select ***Cresc.*** or ***Decresc.*** from the “Dynamics” tool palette.

b. In Insert mode, click and drag the mouse to highlight the range of notes over which you wish to apply the dynamic change.

FIGURE 8 - 11: Inserting a crescendo marking

c. Dragging downward while selecting the range of notes will insert the marking above the staffline. Dragging upward will insert the marking below the staffline.

d. The effective range of crescendos and decrescendos can be visualized in **Nudge** mode (***Shift***) and in **Hidden Symbols** mode.

NOTE: Playback properties of articulations and dynamics may be changed using the **Properties** tool. See “Playback Properties” on page 59.

To delete a dynamic or tempo marking,

- ***Quick-select***, press the "**X**" key and click on the marking. An alternative is to use the Select tool ("**O**" key), highlight the mark and hit **Delete**.

8.3.7 Articulations and Trills

Articulations affect the playback of selected notes. These include slurs, turns, fermatas, mordents, trills, accents and tremolos. For a complete description of each articulation's playback function, turn to "Articulations palette", Section 11.3.2, on page 216.

To insert a legato (slur),

a. Push the **Legato** button in the "Articulations" palette.

b. Drag to select range of notes to be associated with the legato. Dragging downward places the legato above notes. Dragging upward positions legato under the notes.

To insert expression marks,

- Many common expression marks can be inserted as text with the use of Expression tool. Available phrases can be found in English, Italian, French, German with English translation.

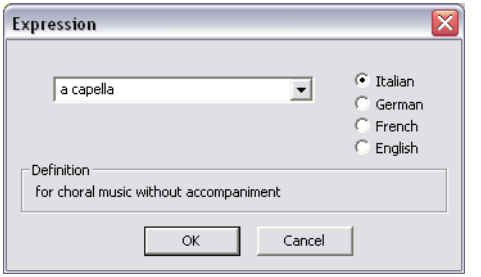


FIGURE 8 - 12: Expression Tool

a. Select the Expression button.

b. Choose a language and an expression from the pull down menu or type your own expression in the text field. Press OK.

c. Position the cursor anywhere in the active staff.

NOTE: Expressions are simple text and have no affect on playback.

To insert turns, fermatas, accents and mordents,

Turns, fermatas, accents and mordents can be inserted above or below notes by clicking near the top of a notehead or near the tip of note stem.

a. Select the articulation.
b. Click on a note head to insert the articulation above the note head.
c. Click on a note stem to insert the articulation at the tip of the stem.

To delete a turn, fermata, accent or mordent,

- ***Quick-select*** the articulation. Or use "**O**" key to select. Press the "**X**" key and click on the notehead or stem of the associated note.

To insert a staccato, tenuto or accent,

a. Select the articulation.
b. Click on a note head to insert the articulation above the note head. Click the stem tip to insert the articulation near the stem.

NOTE: Playback properties of Staccatos, Tenutos, Accents and Fermatas can be changed individually or globally by selecting the **Properties** tool and clicking on the associated note head.

To insert a trill,

- With ***tr*** **(**trill) selected, click on a note to insert a single trill.

To create an "extended" trill,

- Trills have a control handle to the right of the "***r***". In Nudge mode, dragging the control handle to the right will extend the trill's effect to all notes in the same staff below the extension.

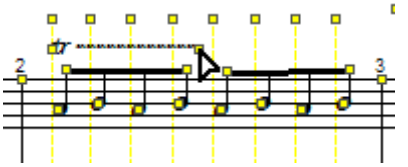


FIGURE 8 - 13: Extended Trill

NOTE: Playback properties of trills can be changed individually or globally. Select the **Properties** tool and click on a trill.

To insert a tremolo,

a. Select a tremolo from the Tremelo button of the “Articulations” palette. Available tremelos are single, double, triple or quadruple (Both single or beamed tremelos).

FIGURE 8 - 14: Tremelos (Articulations Palette)

b. Click on the head of the note to apply the tremolo value.

c. Adjacent half notes will join to become beam tremelos when the first half note is clicked with beam tremelo selected.

NOTE: Beam tremelos will playback only if the applied “half-beam” notes are positioned in measures as if they were quarter notes.

To change existing half notes to beamed tremelos,

- With a beam tremelo value selected, click on the first of two adjacent half notes. The notes will beam with tremelo mark inside.

To insert an arpeggio,

a. Select the **Arpeggio** button (squiggly line) from the palette.

b. Click and drag the mouse to select a chord cluster (can include more than one voice).

c. Dragging the mouse in an upward direction will cause the notes to arpeggiate in an upward scale.

d. Dragging the mouse in the downward direction will cause the notes to arpeggiate in a downward scale. A down arrow is added.

To insert a glissando,

a. Select the **Glissando** button (two notes connected with a line) from the palette.

b. Clicking on any single (non-chord cluster) note will insert a glissando to the following note belonging to the same voice. During play back, the *glissando* will be heard.

To delete any articulation associated with a note,

- ***Quick-select*** the articulation. Press the “**X**” key, and click on the note associated with the articulation.

NOTE: To delete any articulation that is not note-specific, use the Select tool ("**O**" key) to highlight it and hit the **Delete** key.

8.3.7a Inserting or Deleting Multiple Articulations

Any articulation can be applied to multiple notes at one time.

To assign an articulation to many notes at once,

a. Use the Select tool ("**O**" key) then drag to select a range of notes.

b. Select the articulation to be applied to all highlighted notes and insert it to any note.

To delete all articulation marks and slurs in a selected area,

a. Use the Select tool ("**O**" key) to drag a box around the area from which you wish to remove articulations.

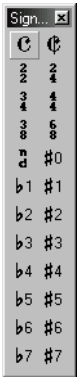
b. Once the area is selected, hit the "**G**" key to delete all articulations in the selected region.

8.3.7b Note values (Number Pad)

To quickly select note duration values,

- Use the keyboard Quick Keys number: **1** = whole note, **2** = half note, **3** = quarter note, etc.

TIP: See Quick Keys map on page 171 for a graphic of shortcut keys.



8.3.8 Signatures (Key and Time)

To change an existing key or time signature to another signature,

Entering or changing any time signature automatically updates time signatures in all parts of all systems; up to the first change-of-time signature if one exists. Entering or changing key signatures must be done one staff at a time.

NOTE: Once Key or Time signatures are fixed in one system, subsequent systems can be "cloned" by using the **Unify** command. For details see "Unify Score ("U")" on page 144.

a. ***Quick-select*** (Ctrl+click) a desired key or time signature nearby or select a new signature from the tool palette.

b. Click on a highlighted signature to be changed.

NOTE: The key of C major (A minor) does not have a visible sign to indicate its presence. If no key signature is visible in the first measure of the ENF display, the key signature will be C major (A minor) by default.

*To create a custom time signature to **Insert** or **Change**,*

a. Select the **Custom Time** button from the "Signatures" palette

b. Using numeric scrollers, select a new ***numerator*** (beats per measure) and a new ***denominator*** (note value receiving the beat).

c. Click to insert signature immediately following any barline.

To insert a new key or time signature in the body of a score,

- With a time or key signature selected from the "Signatures" palette, **Insert** mode, click to the right of any barline.

NOTE: The score will be parsed from the insertion point. Error measures likely disappear after correcting the new time signature.

To insert a new key or time signature at the end of a system:

According to the conventions of music notation, a change-of-key or a change-of-time signature that begins on a new line should be indicated at the end of the previous line.

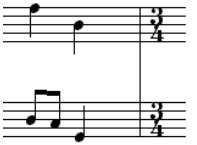


FIGURE 8 - 15: Time Signature at the end of a system

- Simply insert a new key or time signature at the beginning of the following system. The last measure of the appropriate staff in prior system will automatically update.

To delete a signature

- ***Quick-Select*** a key or time signature. Hit the "**X**" key and click on the signature to delete it.

8.4 System Options

System Options is useful for accessing important functions that control system behavior.

To activate System Options,

- With the Properties tool active**, Right-click** (**Alt + click** for Mac) inside any visible system.

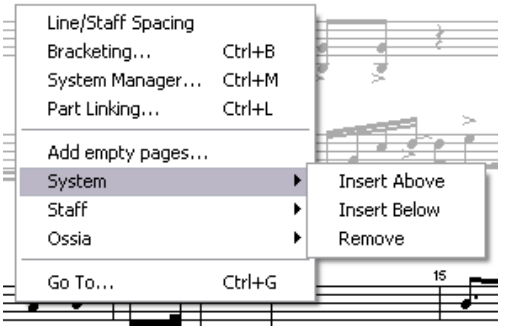


FIGURE 8 - 16: System Options

8.4.1 Line/Staff Spacing

Use to adjust line and staff spacing numerically (as opposed to dragging spacing tabs in left-hand margin). Changes can be applied to the active, subsequent or all system. Refer to Section 7.2.2 on page 119.

8.4.2 Bracketing

See “Bracketing” on page 112 for information on system bracketing.

8.4.3 System Manager

See “System Manager” on page 155 for more information.

8.4.4 Part Linking

To reconnect parts of optimized systems. See Section "Re-linking parts", Section 4.15, on page 78.

8.4.5 Add Empty Pages

Inserts an empty page with similar structure and bracketing of the active system. A window opens to allow you to change numbers of systems and measures per system.

8.4.6 System > Insert Above / Insert Below / Remove

Use to delete or insert a new system above or below the active system.

8.4.7 Staff > Insert Above / Insert Below / Remove

Use to delete or insert a new staffline above or below the active staff.

8.4.8 Ossia

Use this tool to delete or insert an ossia above or below the active staff. Inserted ossias are editable just as any normal staffline except that ossias are not played back.

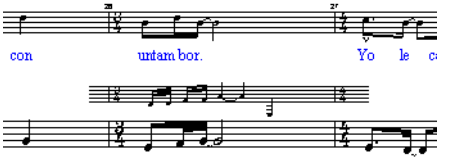


FIGURE 8 - 17: Ossia

To resize an ossia,

a. Hold the **Shift** key down (**Nudge** mode) and drag either of the control points at either end of the ossia. Barline, key and time signature information is inherited from its associated staffline.

b. Re-space ossias using tabs in the left margin just as any staffline.

8.4.9 Go to..

Use this tool to jump to a new page.

8.5 Quick Keys

TIP: Refer to the Quick Keys maps on page 171 for a graphic depiction of all SmartScore keyboard shortcut keys.

8.5.1 Quick-select (Ctrl + Click)

The fastest way to choose any object for inserting and changing is to ***Quick-select*** it. **Ctrl + Click** on any object inside the active staff and the cursor inherits all of that object's attributes.The cursor becomes any object that is ***Quick-Select***ed.

8.5.2 Inserting and changing notes and symbols (C)

To insert a note or rest anywhere in the active staffline,

a. Toggle the "**C**" key to activate the **Insert** mode.
b. Select any note or rest from the "Notes" or "Rests" palette.
c. Click anywhere in the active staff to drop the object.

To insert a multi-measure rest,

- Select the "n-measures" object from the "Rests" palette.
- Select the number of empty measures.
- Click in an empty measure of the active staffline.

To change the rhythmic value of an existing note or rest,

a. ***Quick-select*** (Ctrl+click) a nearby note or rest having the desired value. Or select a new value from the "Notes" or "Rests" palette.
b. Position the cursor over the symbol to be changed until it highlights yellow. Click to change it to the selected value.

NOTE: When you ***Quick-select*** on any object inside the active staff, the palette associated with the object will open.

8.5.3 Deleting notes and symbols (X)

To delete an object in the active staff,

a. ***Quick-select*** (Ctrl + Click) a note or symbol
b. Press the "**X**" key and click on the note or symbol to be deleted.

To delete one or more object using the Select tool,

a. Press the **Select** tool icon in the toolbar.
b. Click on an object or drag a region to select one or more objects.
c. Hit the **Delete** key to delete object(s).

8.5.4 Select tool ("O")

Use the **Select** tool to highlight one or more objects for single or mass editing functions such as delete, split voices, flip stem directions, join notes of different voices to a vertical event, and copy/paste. The "**O**" key activates this tool. Its button is found in the SmartScore toolbar.

TIP: Use the **Select tool** + **Delete** key to remove any object other than lyrics and barlines. It is especially useful for removing a large number of spurious or unwanted text or multiple objects that do not delete easily with the "**X**" key.

To delete one or more objects including notes, rests and symbols,

a. Push the Select tool icon in the toolbar ("**O key**) and click on an object or drag to select multiple objects to delete.

b. Hit the **Delete** key.

Occasionally, you might find an area full of incorrectly recognized ties and/or slurs or hairpins. Use this tool to "mass-delete" these objects.

To delete an entire system,

a. With the Properties tool active, right click anywhere in a system.

b. In the Systems option window, select **System > Remove**.

8.5.5 Using the Select Tool (O) to edit selected objects

A group of selected notes on the same staff can be transformed into one beamed group if they are flagged or they can be pitch-shifted at once.

To convert a sequence of flagged notes into one beamed group,

a. Use the Select tool (**O**) to select a group of adjacent flagged notes to be beamed together.

b. Hit the "**B**" key to form the flagged notes into a beamed group.

To move a selected group of notes upwards or downwards in pitch,

a. Use the Select tool (**O**) to select an entire region for cleanup. **Edit > Select All** (**Ctrl + A**) will select everything on the current page.

b. Hit the "**G**" key. Only articulations will be deleted. All other notation objects remain unaffected.

8.5.6 Dots (D)

Hit the "**D**" key. This toggles between **Insert** a dot and **Delete** a dot modes. Notice how the cursor alternates between a solid insert dot and grayed-out delete dot.

Any note or rest may be selected with dots of prolongation assigned to it. Select a note or rest from the appropriate palette, then click on the single or double-dot button inside the palette. In **Insert** mode, the new note/rest will have a dot.

8.5.7 Ties (V)

Hit the "**V**" key. This toggles you between the solid **Insert** tie and grayed-out **Delete** tie modes. To tie two contiguous notes of the same pitch, click on the first note. The "**V**" tie tool will also insert multiple ties from one chord cluster to the next as long as note pitches match.

NOTE: To over-ride default arc direction, insert ties with a right-click **(option** + **click** for *Mac*). Inserted ties will have reversed arc directions.

To insert only one tie at a time, select the **single tie** button from the "Notes" palette.

8.5.8 Beam direction (A)

With any single flagged note chosen, hit the "**A**" key. This toggles between Left beam, Middle beam and Right beam directions.

8.5.9 Stem direction (S)

The "**S**" key changes the default note stem direction. When inserting a note, toggling the "**S**" key reverses the stem direction of an inserted note.

Default stem direction of an inserted note is determined by its vertical position on the staff. Stem direction of inserted notes automatically changes when the cursor crosses the middle line of any staff.

To place a note with a stem in the opposite direction of the cursor,

- Hit the "**S**" key to flip the stem on the cursor. Or right-click while inserting a note *(***option + click** *for Mac)*.

To change the stem direction of an existing note,

- In Insert mode, right-click on any given notehead *(***option + click** *for Mac)*. The stem direction of the note will become flipped.

NOTE: In general, Voice #1 should have *stems up* and Voice #2 should have *stems down*.

To change the stem direction of several notes at once,

a. Hit the "**O**" key to activate the Select tool.
b. Click and drag a box around any series of notes.
c. Press the "**S**" key to reverse the stem direction of the highlighted notes.

8.6 Navigator

8.6.1 Open (Ctrl+O / (Cmnd+M *Mac*)

Push to open any SmartScore-compatible file. Select SmartScore (ENF), Image (TIFF, BMP, PCX), or MIDI file from "Files of Type" pull-down menu. Same as **File > Open**.

8.6.2 Scan

Push to initiate scanning. Same as **File > Scan Music > Acquire**.

8.6.3 Recognition

Push to initiate recognition on any pre-scanned image. Same as **File > Recognize.**

8.6.4 Unify Score ("U")

Unify updates key and time signatures as well as clef signs throughout the score based on choices made in the dialog window.

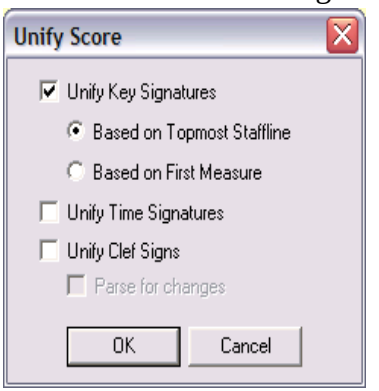


FIGURE 8 - 18: Unify Key, Time and Clefs

TIP: Check part linking before applying Unify (Optimized scores)

If your ENF score contains collapsing and expanding systems, it is recommended to perform Part Linking before Unifying. Unifying signatures and clefs will maintain part linkages as set in Logical Part Linking. Refer to “Re-linking parts” on page 78 for more details.

8.6.5 Unify Key Signatures

- Based on topmost staffline. (Default)

All key signatures for every part are updated based on signatures found in the first staffline of each system. Any change-of-key signs found in the topmost staffline will update subsequent stafflines within each system. Use when systems have the same key signature in each part.

- Based on 1st system.

All key signatures in every system are updated based on signatures found in the first system on the first page. Any subsequent changes in key signatures will be removed. Use to unify scores that have transposed instruments with a fixed number of parts per system.

NOTE: Manually edit key signatures when scores contain:
a) Transposed instruments AND change-of-key signatures
b) Transposed instruments AND have optimized systems.

8.6.5a Unify Time Signatures

All time signatures are updated based on signatures found in the first system on the first page. Change-of-time signatures are removed in any subsequent systems. Use when no change-of-time signatures occur.

8.6.5b Unify Clefs

All clef signs are updated based on clefs found in the first measure of the each system. Any change-of-clef found inside systems are removed. Use if many false change-of-clefs were recognized or if very few change-of-clef signs are found in the original.

8.6.6 Parse every measure (Default)

Clefs are updated on a line-by-line basis. Change-of-clefs encountered updates each staffline until another change-of-clef is encountered. Use when many change of clefs are written into the original score.

8.6.7 Setup

Opens Page Setup environment for page printing alignment & margins. For more details on Page Setup, see page 163, "Document Page Setup".

8.6.8 Print Preview

Use to check for proper page layouts. Also seen in Page Setup view.

8.6.9 Score

Push to create ENF score from scratch. Choose ENF score template from “System Type in Score” pull-down menu. Same as **File > New > New ENF**. See “Creating a New ENF Score from Scratch” on page 97 for details.

8.6.10 Record

Push **Record** button to initiate MIDI Recording. All open ENF documents are closed when MIDI recording is launched. A MIDI Piano Roll view opens with Track 1 staged for MIDI recording through an external MIDI device. Identical to **Real-time > Record** in **MIDI View**.

8.6.11 Karaoke View

Push to enter Karaoke playback environment.

8.6.12 MIDI View (Ctrl + I / Cmnd + I *for Mac*)

Push **MIDI** button to view score in MIDI environment. Use also to change from one MIDI view to another; e.g. to change from Overview to Piano Roll view. Choose Overview or Piano Roll or Event List for a selected Part. Same as **View > New MIDI View**. ENF view remains open until or unless recording is initiated. To revert back to ENF view, close the open MIDI view.

8.6.13 Tiling

Viewing several displays of your score can be extremely useful. It is possible to view several MIDI and ENF views simultaneously.

- Push **Tile** button to display all open TIF/ENF views along with any open ***MIDI Overview***, ***Piano Roll*** or ***Event List*** views. This is identical to selecting the **Window > Tile** menu.

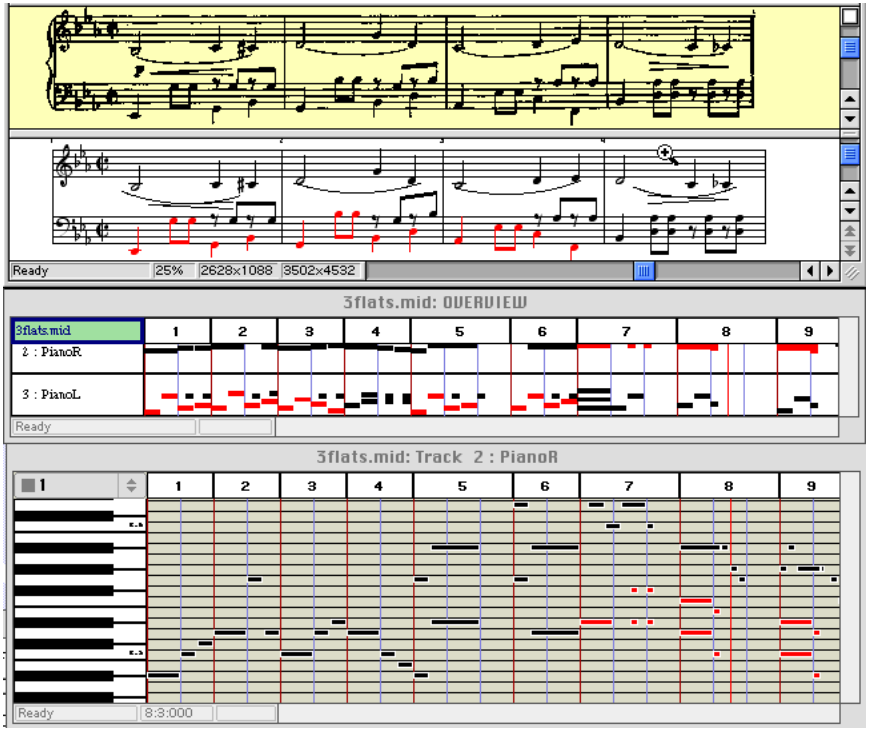


FIGURE 8 - 19: Tiled view (typical)

8.7 Score Reformatting

SmartScore allows for flexible reformatting of the finished ENF score. Changes to both horizontal and vertical formats can be easily made. For detailed information, turn to Section 7.2, "Reformatting scores in ENF view" on page 117.

8.7.1 Auto-Beaming

With **Auto-Beam** selected, beamed notes will automatically form into common groups based on the active time signature and standard notation beaming rules. **Auto-Beam** defaults to “off” after recognition.

To automatically insert and edit beams into preformed groups.

- Push **Auto-Beam** button in the Toolbar
- Select a note value from the Notes palette.
- With any beam tool selected, clicking from left-to-right, will create beamed groups into pre-determined sets.

8.7.2 Auto-Spacing

With the **Auto-Space** button selected, notes and rests will insert proportional to their relative value within a measure. After recognition, **Auto-Space** defaults to "off."

8.8 Transposition

SmartScore offers several types of transposition options depending on your needs. You can transpose by **key**, the most common type of transposition. Transposing by **clef** is useful for transforming one instrument to another written in another clef sign. You can also choose to transpose by altering note pitches only, either considering the active key signature or by ignoring the active key signature. Using the **Limit** option, you can choose a specified range, part or voice to transpose.

To Transpose your entire ENF document to a new key,

a. Position your cursor inside the first staffline of the score. Press **Ctrl + T / Cmnd** + **T** for *Mac* or select the **Transpose** button in the SmartScore Toolbar or select **Transpose** from the **Edit** menu. The window in Transposition always displays the key signature or clef sign of the *active staff*. This is your source key.

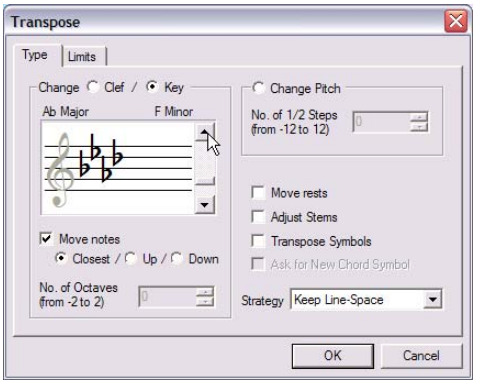


FIGURE 8 - 20: Transposition window

b. Select a new target key or target clef for the score by selecting either the **Key** or **Clef** tab. Scroll up or down to select a target key signature or target clef.

c. **Closest** allows SmartScore to automatically choose up or down based on the least number of intervals. To choose the direction manually, select either **Up** or **Down.**

NOTE: It is recommended that you fully edit your score before transposing. If your score contains incorrect change-of-key signatures and/or guitar fret and chord symbols, it may be hard to Undo properly. Also, the scanned score won't transpose and visual checking of pitches will be difficult after transposition.

8.8.1 Transposition Strategy

You can choose two "strategies" for transposing your scores: ***Link Accidentals to Key*** and ***Keep Line-space***.

- **Link Accidentals to Key**

This choice will consider the target key signature during transposition. If the target key belongs to the opposite class than that of the source key (e.g. transposing from a key with sharps to a target key with flats), then accidentals may be swapped to their harmonic equivalents.

- **Keep Line-Space**

This choice will retain exact relationships between intervals after transposition is completed. Accidentals will generally remain fixed. No attempt will be made to swap harmonic equivalents of accidentals. For example, c and d# may transpose up to c# and d double-#.

- **Transpose Symbols**

To transpose guitar fret and chord symbols to match the new target key, check this box. This selection will also move articulations, such as slurs, up or down along with notes and rests. If necessary, guitar fret and chord symbols may move up to avoid collisions with upwardly-transposed notes.

- **Ask For New Chord Symbol**

This option allows you to accept or change each transposed guitar fret and chord symbol during transposition. Use this option when you know you won't accept default fretboard patterns or when you know you will need to add new fret and chord symbols to the library.

- **Adjust Stems**

Stem directions will be maintained unless this box is checked. It is important to remember, however, that adjusting the direction of stems may create voicing problems. Automatic voiceline recognition relies heavily on stem directions. Flipping stems as they cross the mid-staff point can create unexpected results. Best Bet: Adjust Stems = **Off.** Use Undo (**Ctrl + Z / Cmnd** + **Z** for *Mac*) if necessary.

- **Move Notes**

Uncheck this box to leave the notes in their original positions. This will transpose only key signatures, leaving notes unchanged... good for mental games, but not much more.

- **Change Pitch**

This transposes notes without changing the key signature. Select the number of half-steps to move selected notes (harmonic pitch shift). Pitches are moved by a uniform interval while considering the key signature. Change Pitch can be used in conjunction with Limits tab.

TIP: To shift the pitch of a small range of notes, it is easier to use the **Select** tool (**O**). Hold the **Shift** key down, drag the selected notes up or down.

8.8.2 Limit Transposition

You may limit transposition to a part or voice or to a selected range within the ENF score.

To limit transposition by part, voice or range,

a. Click on the **Limit** tab at the top of the Transposition window.

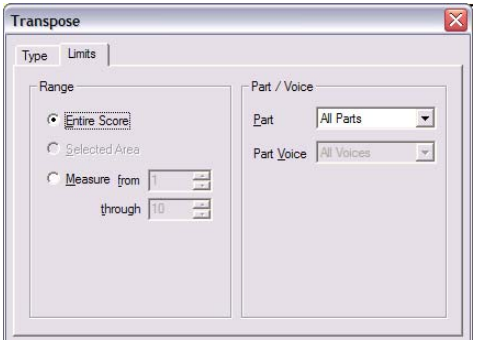


FIGURE 8 - 21: Limit Transposition

b. Choose **All Parts**, or select individual parts by name to transpose. If you select a single part, you may also limit the scope of transposition to a single voiceline. In the **Part Voice** box, select the voice to transpose.

c. To limit transposition by range, choose **Selected Area** (range must already be highlighted by the Select tool) or by **Measure** number.

d. Click **OK** to transpose with selected limits applied.

8.9 Working with Contrapuntal Voices

Each staff line has the potential of containing up to four contrapuntal voices. Contrapuntal voices are “measure-based”. This means that notes and rests are organized into “threads” (voicelines). See “Voices and Playback” on page 67 for more about how voices affect playback.

To view contrapuntal voices as separate colors,

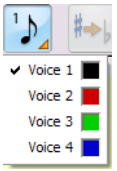
- Push the **Voice Visibility** button in the SmartScore toolbar.

8.9.1 Voice color

Contrapuntal voices display as one of four possible colors (Voice 1= black, Voice 2 = red, Voice 3 = green and Voice 4 = blue). Normally, you will see black (Voice 1) and red (Voice 2).

8.9.2 Overriding voice color assignments

Voice color/number assignments can be changed manually.



To override default voice color of a note or rest (change voice number),

a. Select desired voice number (and color) from **Voice Tool** combo button in the SmartScore Toolbar.

b. Locate the note or rest for which you want to change voice color.

c. Click on a note or rest to change it to the selected color and voice.

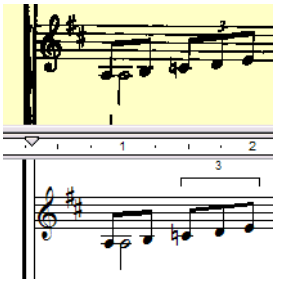
Voice color is automatically determined based on several factors (number of voices, stem direction, number of beats, vertical alignment, etc.) You can override voice colors manually. Changing voice color may change voice colors of other notes in a given measure.

NOTE: Do not override voice colors until a measure is entirely edited. Unusual color combinations usually correct themselves automatically after a measure is corrected.

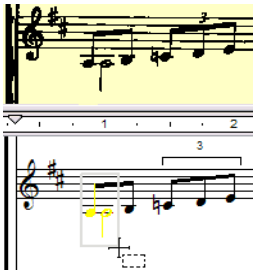
To vertically align offset voices,

a. Use the Select tool ("**O**") to highlight offset notes and/or rests.

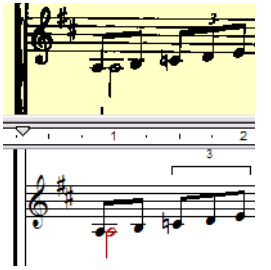
b. Press the "**Y**" key to group the selected, offset notes into a single vertical event. Selected voices will move slightly.



Offset voices not "glued" following Recognition



Using **Select** tool to highlight offset voices



"Y" key "glues" offset voices to a single event.

FIGURE 4 - 22: Correcting offset voices not "glued" after recognition.

Similarly, if you see notes bunched together each displaying different colors (usually black and red and sometimes green), but which actually belong to only one voice, they are probably "glued" to the same vertical event. Joined notes can be "unglued" as follows:

To "Unglue" offset notes not intended to play simultaneously,

a. With the Select tool ("**O**" key), carefully select the incorrectly glued notes (NOTE: they will each have different colors). Be sure to select only the notes which are incorrectly joined.

b. Hit the "**Y**" key. Joined notes will separate and change color.

8.9.3 Checking vertical alignment of voices

Measures with notes and rests that are incorrectly aligned will become highlighted reddish ("error"). In addition, all notes and rests that are glued will move together when dragged left or right in **Nudge mode**.

- Hold the ***Shift*** button. Click and drag note control point to verify.

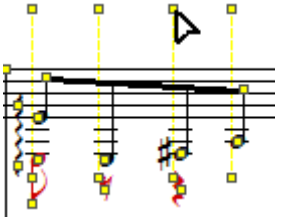


FIGURE 4 - 23: Using Nudge mode (**SHIFT**) to check vertical alignments

8.9.4 Swap position of note heads (Select + "L")

Occasionally, you will want to swap the horizontal positions of a pair of joined offset notes. This can easily be done by selecting a vertically aligned pair with the Select Tool ("O") and hitting the "L" key. The relative positions of these joined notes will be swapped without altering voice color or playback..

Note heads before swap

Note heads after swap

FIGURE 8 - 24: Note head swapping

8.9.5 Cross-staff voicing

Occasionally, notes of one voice may "visit" an adjacent staff. Technically, visiting notes belong to their "home" staff, but they obtain their ***pitch*** information from the visiting staff line.

To create cross-staff voicing,

- Make sure the note to be moved across staff lines has its stem in the correct orientation (**Select** + "**S**" to change stem direction). Hold the **Shift** key down and **drag** the notehead to the desired pitch of an adjacent staff. If cross-staff notes belong to a beamed group and the beam does not interfere with the movement of the notehead, simply hold the **Shift** button down and drag the notehead into the adjacent staff to its desired pitch.

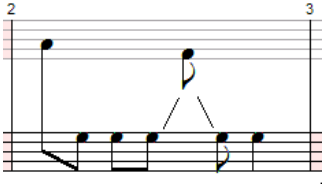


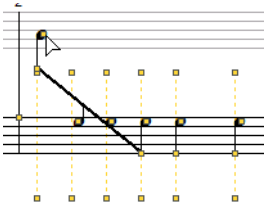
FIGURE 8 - 25: Cross-staff voicing

- Notes positioned in a "visiting" staff still belong to the "home" staff. To edit or move a note positioned in an adjacent "visiting" staff, press the Caps Lock key while the "home" staff is active. Press Caps Lock again to unlock the active home staff.

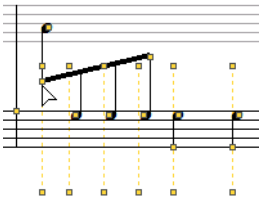
NOTE: Cross-staff indicator lines can be either solid or dotted. These attributes can be changed in **Edit > Program Preferences > Systems > Cross-staff voicing line style**.

To control cross-staff beams (beam collisions and flipped stems)

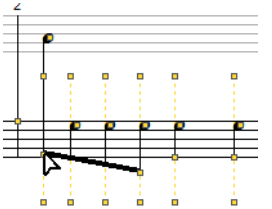
- If a beam collides with note stems or appears at odd angles after moving notes, hold **Shift** down (Nudge) then click & drag the control point on either beam end. Drag beam end until it is properly positioned. Stems of notes alternate as the beam angle is changed.



Beam colliding with note stems.



Drag beam control point to alter stem orientation



Drag beam control point to change beam angle

FIGURE 8 - 26: Controlling cross-staff beams

8.9.6 Cross-measure beaming

To create a cross-measure beam,

a. Insert a flagged note on either side of a barline.

b. Use the **Select tool** to highlight both notes and hit the "**B**" key.

8.9.7 Overlapping or offset noteheads

Two notes in different voices can share the same pitch at the same time. You can choose whether note heads of different voices should overlap one another or become horizontally offset.

To allow offset note heads,

- Check off "***Overlap Notes***" in **Edit > Document Preferences > Score Symbols > Overlap mode.** Playback will not be affected whether note heads are offset or overlap.

8.10 System Manager

Use the System Manager to assign or change instrumental parts, change part names and extract parts and voices by controlling visibility. The System Manager displays information about what is found in the active system (the highlighted system). Changes made can be applied to the current system, current plus subsequent systems, to the entire score or limited to the current Score-Part.

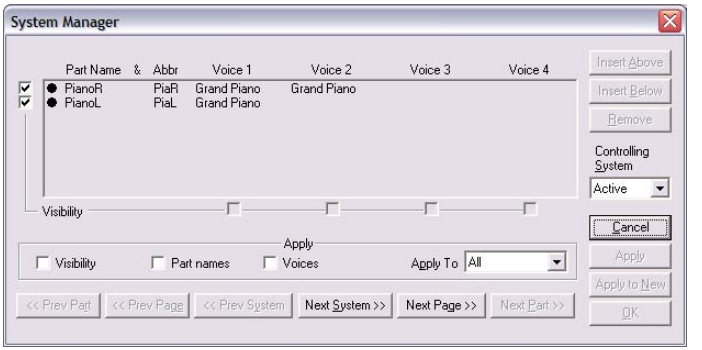


FIGURE 8 - 27: System Manager

To open the System Manager,

a. Position the cursor over a given system in the ENF view.

b. Press (**Ctrl+M / Cmnd+M**) or select **Edit > System Manager** from menu. All parameters of the *active system* will be displayed including part name, visibility and assigned MIDI instruments.

Parts of the system run vertically along the far left column. Checkmarks identify whether parts are “visible” in the active system. Voices run horizontally with checkmarks below which identify the status of their visibility.

8.10.1 Part Names

When a **Part Name** is selected in the System Manager, playback parameters are inherited from **Instrument Templates**, including pitch shifting of transposed instrument. See “Instrument Templates” on page 160 for additional information.

To select a Part Name,

a. Click into a desired instrument name in the **Part Name** column. Select one of preset instruments Notice that MIDI instruments for each voice become updated.

b. If you wish to add a new part name with a unique MIDI instrument assignment, select “**Add New Part**” from the top of the pull-down list. This will open Instrument Templates and allow you to create a new template, name it and assign any MIDI instrument and alter transposition pitch shifting.

8.10.2 Assigning MIDI Instruments to Voices

Voices inherit MIDI instrument assignments from Instrument Templates initially. You can change MIDI instrument assignment for voices (in Voice mode) or parts (Part mode) in the System Manager or Playback Console.

TIP: Assigning each voice a different MIDI instrument adds richer sound texture and helps in hearing “inner voicings” of the music. Highly recommended for classes in composition.

NOTE: Playback Console and System Manager are linked. Changes made to MIDI instruments in one environment will update the other. MIDI instrument assignments in Instrument Tem-

plates are not changed automatically. They can only be changed manually.

To change MIDI instruments for voices in System Manager,

- In System Manager, click on any voice of any part and select a new MIDI instrument in the pull-down menu.

8.10.3 Extracting Parts

Visibility checkboxes along the far left side of the **System Manager** are used to extract parts. Parts can be extracted to new files without altering the original document. Checkmarks identify which parts are assigned (visible) in the active system. Individual parts and/or voices can also be "removed" from a score by selective use of Visibility.

To extract a part from the score,

a. Check ***Visibility*** boxes next to the parts you want to extract. Unchecked parts will be made invisible, but data will be retained.

b. Check ***Visibility*** in the **Apply** field and choose a scope from the "Apply To" pull-down menu. See "Applying changes to the score" on page 159 for details on "Apply To" options.

c. Push **Apply** to remove all unchecked parts from the current (open) document.

d. More commonly used is to select **Apply to New**. This will extract all checked parts to a new ENF document while keeping the original document unchanged. Both documents will display.

8.10.4 Extracting Voices

To extract a voice from the score,

a. Highlight a visible part by clicking on the dot next to *Part Name*.

b. Check or uncheck the ***Visibility*** box below the desired voice number depending on which voice(s) you want to extract.

c. Select ***Visibility*** in the **Apply** field and choose a scope from the **Apply To** pull-down menu.

d. **Apply** alters the current document. **Apply to New** will creates a new ENF document.

TIP: Part and voice extraction/removal can also be controlled in an entirely different way by using the **Score Structure** feature. See “Score Structure” on page 120 for more details on how to isolate, recombine and/or remove parts and voices from a score.

8.10.5 Super System

Sometimes in symphonic music, the total number of instruments exceed even the largest system in the score. For example, a system of 20 parts containing the second string part may be followed by a system of 20 parts where the second string part is replaced by a violin solo line. This would make a total 21 instrumental parts. Since SmartScore only knows the total number of parts found in the largest system (in this case 20), another instrumental part needs to be added so parts can be correctly linked and playback will sound properly.

The “official” list of all existing parts in an ENF score is stored in a special area called the ***Super System*** and is found in **System Manager.** Once the total number instrumental parts are established in the Super System, any part of any system can be reassigned to its appropriate instrument using the ***Re-link*** tool (see Section 4.15 on page 78).

While it’s possible to add a new part to the Super System with the ***Add Staff Above/Below*** option found in the **System Options** tool (see Section 8.4.7 on page 140), real control is found in the Super System itself.

To add a new part to the score,

e. Open **System Manager** with **Ctrl** + **M** (File > System Manager).

f. In the **Controlling System** pull-down menu, choose **Super**.

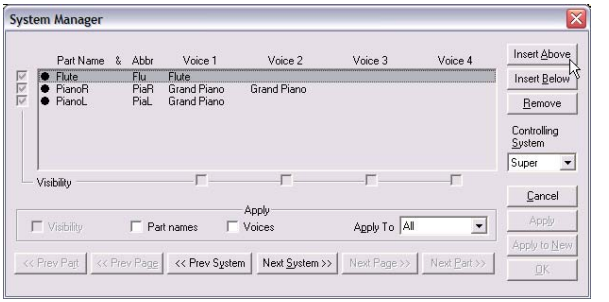


FIGURE 8 - 28: Creating a new part using Super System in System Manager

g. Highlight where you wish to add a part above or below to by clicking on the black dot to the left of the existing part. **Apply to: All** should be selected to apply change globally to all systems.

h. Choose **Insert Above** or **Insert Below**. Then press **Apply**.

i. Switch **Controlling System** back to **Active**. Notice the newly added part is added, but is not checked for visibility. Added parts become visible in ENF only after **Visibility** is **applied**. See See “Part Visibility” on page 160 for details.

To re-link optimized parts for proper playback,

- To reassociate parts of a system, use Re-link (Ctrl + L). Don’t use Visibility to relink. See “Re-linking parts” on page 78 for details.

To remove a part from a score (not recommended for part extraction).

a. Click the dot corresponding to the part you wish to remove.

b. Select a correct scope to **Apply to:** and push **Remove**.

8.10.6 Applying changes to the score

Changes you make to System Manager will apply to the area of interest you select in the “**Apply To”** pull-down menu:

- **All**

Applies the change to all systems of the score. Used when you want a change to be globally applied.

- **System**

Applies only to the currently active system.

- **System+**

Applies to the currently active system and all subsequent systems.

- **Score/Part**

Applies to the Score or Score-Part.

- **Super System** (Do not use except in extraordinary cases)

Changes will be applied only to the Super System..

- **OK**

Applies changes to the current ENF document.

- **Apply**

Applies changes and allows further editing in System Manager.

- **Apply to New**

Creates and opens a new ENF document with changes applied to it. This action does not affect the original document which remains open behind the newly-created ENF document (Minimize window of top-most document to view other open ENF files.)

TIP: **Apply to New** is useful when you want to extract parts or voices to a new ENF document without affecting the original.

8.10.7 Part Visibility

Do not use Visibility to try and relink parts. Use the ***Relink*** tool. see "Re-linking parts", Section 4.15, on page 78. After re-linking, any “false parts” (due to possible errors in system recognition) can be removed in the Super System. See See “Super System” on page 158 for details.

To make added parts visible in one or more systems,

a. To make an added part visible, make sure **Controlling System** is **Active**. Insert **Visibility** check mark next to Part Name and in the *Apply* region below the parts matrix.

b. When the **Apply To** option = ***All***, the part will be visible in all systems. When ***System*** is selected, part is visible only in active system. Visibility in subsequent systems = ***System*** **+**. Push **OK**.

8.11 Instrument Templates

Characteristics of parts are inherited from Instrument Templates including name, abbreviation, MIDI instrument, playback pitch transposition.

To change or add a new instrument template,

a. Hit (**Ctrl+F**/**Cmnd**+**F**) or **Edit > Instrument Templates**.

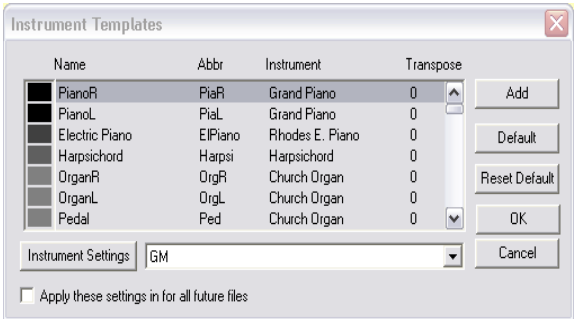


FIGURE 8 - 29: Instrument Templates

b. Click in the **Name** field of any template and type to change the given name of an instrument.

c. To change an abbreviation, click then type inside the **Abbr** field.

d. Click and select a different MIDI instrument from the **Instrument** list to change default MIDI instrument assignment.

e. **Transpose** displays the default playback transposition for selected instruments. The MIDI representation *will* reflect the transposed shift in pitch.

f. Various sets of MIDI instruments can be selected in **Instrument Settings** pull-down menu. Instrument sets acquire their names by clicking on the **Instrument Settings** button and selecting a set.

g. To save settings for future ENF files, check "**Save for Future**".

8.11.1 Transposed Instruments

Because ensemble instruments have such wide pitch ranges, it is necessary for transcribers to notate certain instruments in key signatures that are remote from others in the ensemble. Players of transposed instruments "read" and "transpose" naturally without worrying that the part they are reading is actually out of tune! In order for an ENF score with transposed instruments to play back correctly, transposition of playback by specified amounts must be set. This is accomplished for preset instruments in the **Instrument Templates** but it is also possible to compensate for transposed instruments in the **Playback Console**.

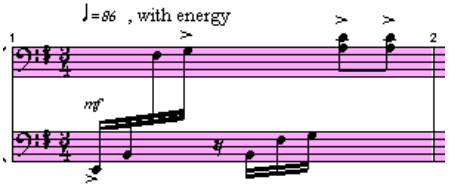
8.12 Hidden Symbols

Hidden symbols displays every possible object in the ENF display. Certain markings such as the ***range*** of a **8va, 8vb, ritard**, **accelerando** or **descelerando** are only visible when Hidden Symbols is active. You may want certain notation objects to be applied to playback, but at the same time, you may not want these symbols to be visible. For example, you may need to insert rests to “fill out” a given voiceline in a measure, but you do not want these “placeholder” rests to be printed.

To insert a hidden notation object,

- Push the **Hide/Show Symbol** button in the Text and Controllers toolbar. Insert any notation object normally. Symbols entered in Hidden Symbols will appear as a lighter color than when entered normally.

In the following example, the measure in question has only 1 beat written into the upper part and 2 beats written in the lower part. Inserting 2 hidden rests in the upper and one hidden rest in the lower corrects error.



Recognized measure
(w/ cross-staff voice)

Corrected measure
(w/ rests placed in Hidden mode)

To view ranges of dynamics and tempos,

a. Push the Hide/Show Symbol button. Dynamics or tempos which were applied to a range of notes will appear as follows:

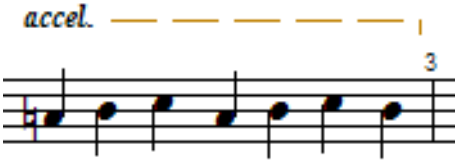
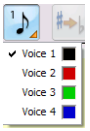


FIGURE 8 - 30: Hidden range of an accelerando

Push again to exit Hidden Symbols mode. “Hidden” symbols do not appear in normal mode and will not print.

8.12.1 Overriding voice color assignments in Hidden Symbols



You may find that it is necessary to change the assigned voice color (and number) of a hidden symbol after it is entered. If so, simply use the Voice Color tool found in the SmartScore toolbar. This is done exactly as in normal ENF editing mode. Notes and rests with changed voice assignments will remain invisible after you exit Hidden Symbols.

To override voice numbers in Hidden Symbols,

a. Select a voice color and number from the Voice Color tool.

b. Click on any note or rest to change its voice number and color.

NOTE: In Hidden Symbols mode, voice colors display differently than in normal edit mode:
Voice #1 = Grey, Voice #2 = Purple, Voice #3 = Yellow, Voice #4 = Aqua

To change the default color of Hidden Symbols,

a. Select **Edit > Program Preferences > Color >Hidden Symbols.**

b. Choose a new color and push **OK**.

8.13 Document Page Setup

Your finished score will probably be printed so you'll want to control how it will look beforehand.

To select or modify a document layout scheme while previewing pages,

- Push **Page Setup** button in the **Navigator** (**Edit > Page Setup**)

If your score was created out of recognition, the ***Document Layout*** pull-down menu will show "From Recognition". Each page frame represents the exact area cropped when each page was scanned. Choose **Center on Page** or one of several preset layouts as described below.

8.13.1 Page Centering

a. Make sure your **Page Type** is correctly set to your paper size.

b. In **Document Layout** pull down menu, select ***Center on Page***.

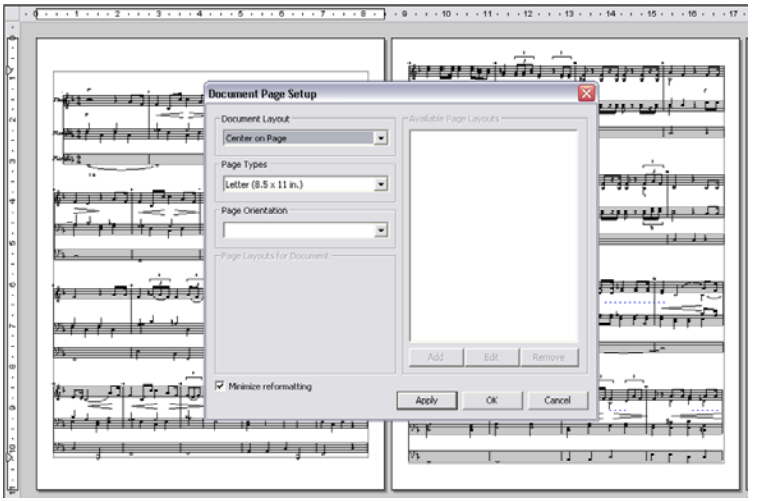


FIGURE 5 - 31: Document Page Setup (Center on Page)

c. Push **Apply**. Score pages in the background update with changes.

d. Each page can be fine-tuned by dragging either of the frame tabs in the left margin up or down. Use the bottom scroller to view and reposition each page up or down if necessary. Once you are satisfied with the layout of your document, push **OK**.

8.13.2 Selecting and creating custom document layouts

Custom document layouts (other than **Center to Page**) will change page margins and alter system widths to accommodate the page size and positioning you select. Since system reformatting is probable, you may see systems move from page to page. We recommend that you correct (edit) the full score first while the scan view is synchronized. See “Split-screen and Scan View reference views” on page 125 for details.

*To select an alternative document format, select the document layout you want from the **Page Layout** pull-down menu as described below:*

NOTE: The following are default settings. Defaults may be changed. See “To modify default margins or to create a new document layout:” on page 166.

- ***Page Layout*: Loose Leaf**
  Single-sided pages with music centered in the middle of the page

  Page Alignment: Centered
  Page Margins: 1/2 inch Top, Bottom, Left, Right

- ***Page Layout*: Loose Leaf with Header Page**
  Single-sided, centered pages with first page having a 2" header:

  Front Page: Centered
  Page Alignment: Centered
  Page Margins: 3 inches Top (1st page). 1/2 inch Top, Bottom, Left, Right (remaining pages).

- ***Page Layout*: Facing**
  Left / Right pages with increased inside margins for binding

  Left Page: Left
  Right Page: Right
  Page Margins: 1/2 inch Top, Bottom, Left, Right

- ***Page Layout*: Facing with Header Page**
  Left / Right pages with first page having a 2" header

  Front Page: Left
  Left Page: Left
  Right Page: Right
  Page Margins: 3 inches Top (1st page). 1/2 inch Top, Bottom, Left, Right (remaining pages).

To modify default margins or to create a new document layout:

a. Click to highlight the page layout you want to change in the ***Available Layout*** list to the right of the **Page Setup** window and push the ***Edit*** button.

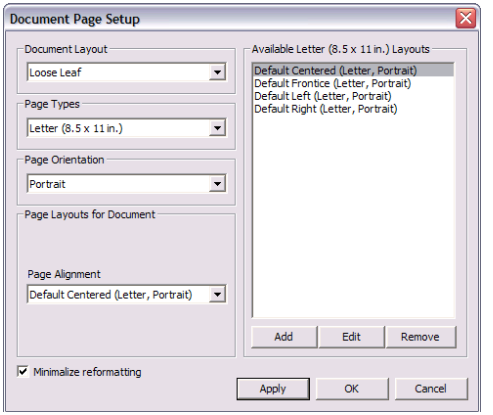


FIGURE 5 - 32: Document Layout Defaults

b. Reset the numerical scrollers on Left, Right, Top and Bottom or simply click and drag the margin guides inside the preview window. You may also change page orientation and page type from the pull-down menus on the right. Push **OK** to reset the layout.

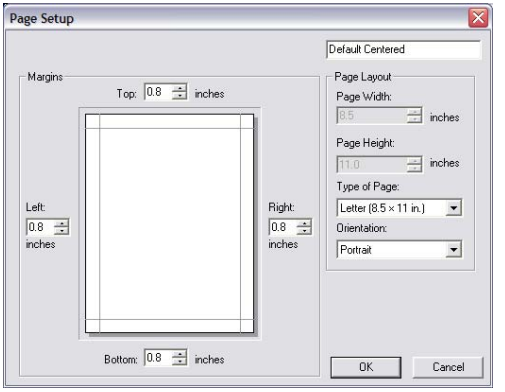


FIGURE 5 - 33: Default Page Margin Control

To change page layout of single pages, parts or entire scores,

a. Select File > Page Setup.

b. To set page size to correspond to a particular page format, choose the desired format from the “Type of Page” pull-down menu.

c. Click and drag with your mouse or use the numeric scrollers to change existing margins as required.

d. To reorient page, select **Landscape** or **Portrait** in “Orientation”.

e. To change the indent of the first system on the first page, select 0”, 1”, 2” or 3” from the **First System Indent** pull-down menu.

f. In the Scope pull-down menu, select the range of pages you wish to apply the change to:
The entire **Score**, **Score-Part** or only to the current **Page**.

g. Push **OK** to apply the changes.

NOTE: In the English version, ***Page Type*** size is “Letter”. In European versions, “A4” is the default page type. The default for Page Type can be reset in **Edit > Program Preferences**.

8.13.3 Default Page Size and Type

In the English version, the default page size and type is *Letter / Portrait*. In European versions, *A4 / Portrait* is the default page type. The default for Page Type can be reset in **Edit > Program Preferences**.

To permanently change your default Page Type and size,

a. Go to Edit > Program Preferences > ***Page Type***

b. Select “Letter”, “Legal” or “A4” for your default page type / size.

8.13.4 Default Document Layouts

8.14 MIDI to ENF

SmartScore accepts any Standard MIDI file and converts it to an ENF file. Since printing is disabled, SmartScore MIDI Edition does not include MIDI to ENF.

To create an ENF document from a MIDI file,

a. Select **File > Open** and change the filetype pull-down menu from **SmartScore Files** to **MIDI Files**. All MIDI files in the given directory will appear in the selection window. Double-click on a selected MIDI file to open.

b. The Playback Console window will appear with a MIDI Overview representation in the background. To hear the file playback, push the **Play** button in the console.

c. To convert the MIDI file into SmartScore notation, push the **Close** button in the Playback Console. Closing the console will begin the conversion process.

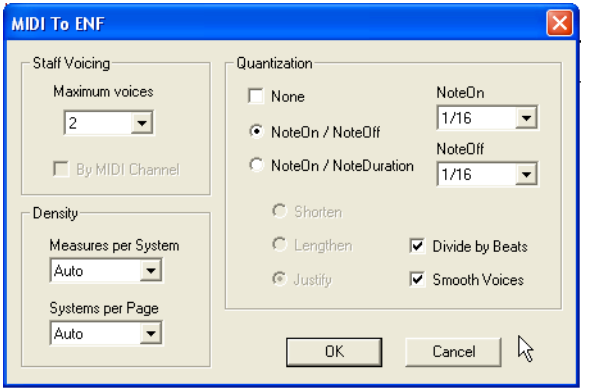


FIGURE 8 - 34: MIDI to ENF window

Staff Voicing

Choose the number of contrapuntal voices you wish to see in the converted ENF file.

NOTE: It is unusual to have more than 2 voices in most music.

Density

- **Measures per System** determines the number of evenly spaced measures per system. Automatic is recommended.
- **Systems per Page** determines the number of evenly spaced systems per page. Automatic is recommended.

Quantization

SmartScore can quantize the MIDI file that will be converted. Each note event will “snap to” the nearest beat boundary eliminating fluctuations in the timing of a MIDI performance.

MIDI files created with “free tempo” (rubato) will probably have many irregular note divisions and odd-looking timing as SmartScore attempts to “compartmentalize” notes “off-the-beat”.

- Check **None** to prevent the application of quantization.
- Use **Note On/ Note Off** to determine the smallest rhythmic values used to when spelling note start times (**Note On**) and end times (**Note Off**) in the ENF document.
- Use **Note On/ Note Duration** to determine the smallest rhythmic values used to when spelling note start times (**Note On**) and the minimum length of each note (**Note Duration**) in the ENF document.
    - **Shorten** each note to the last **Note Duration** value.
    - **Lengthen** each note to the next **Note Duration** value
    - **Justify** each note to the nearest **Note Duration** value.

If the resulting ENF file has many stand-alone flagged notes, try reducing the Quantization value (e.g. to 1/8th notes).

- **Divide By Beats:** When ON, resulting ENF file will interpret measure lengths by number of beats and insert change-of-time signatures if beats of each measure do not correspond to the default time signature. Turn OFF to lock default time signature.
- **Smooth Voices:** When ON, contrapuntal voices will be interpreted as continuous lines whenever practical. When OFF, contrapuntal voice will be interpreted loosely.

8.15 Troubleshooting ENF Problems

Table 3: Troubleshooting ENF Problems

Problem	Probable Cause	Fix
Notes and symbols appear as large letters.	Font association lost.	Reinstall Chopin10 font. Font is located in the SmartScore directory.
Measures outlined in a red color.	Incorrect rhythm in one or more voices.	Edit voicelines to agree with time signature.
Pickup or closeout measure highlights red & doesn't play smoothly.	Voiceline durations do not agree with the current time signature	With Properties tool selected, click on barline that begins the measure. Select "**As written**".

Table 3: Troubleshooting ENF Problems

Problem	Probable Cause	Fix
Only one system highlights black at a time.	View active staffline is ON (default selection).	Check off **View Active Staffline** in View menu.
Measure remains highlighted but measure plays back smoothly.	Secondary voice may be truncated (not fully completed in the measure).	This is a common convention in music notation. May be left as is.
Can't delete an object when "X" key is pushed.	Actual object must be selected first.	"Ctrl + click" the object before deleting. Or, simply use the **Select** tool ("O" key) & drag around an object then hit **Delete**.
New note is inserted when trying to change an existing note.	Existing note was not highlighted yellow when clicked.	***Yellow***-highlighted notes will be changed to new value. ***Blue*** inserts new note at same time slice.
Measures unexpectedly roll from one system to another.	Barlines at the end or beginning of measures may have been deleted.	Restore the number of measures per system by clicking of Staff Properties with Properties tool.
Systems unexpectedly roll from one page to another.	Line, staff or system spacing may have been changed.	Readjust spacing tabs in left margin until systems are restored to page.
Staffline missing from system	Staffline cut off or during scanning or was not localized during Recognition.	Restore missing staff. See "Adding a staff when missed by recognition" on page 81
Wrong part suddenly plays.	Expanding / collapsing score; Part / instrument linking lost.	Reassign parts in system. See "Re-linking parts" on page 78
Display shows notes as brightly colored or with green vertical lines or with a solid orange horizontal line along the staff line.	ENF display is in Hidden Objects, Tempo or Velocity controller mode.	Exit Hidden mode. See

Quick Keys Map (Windows)

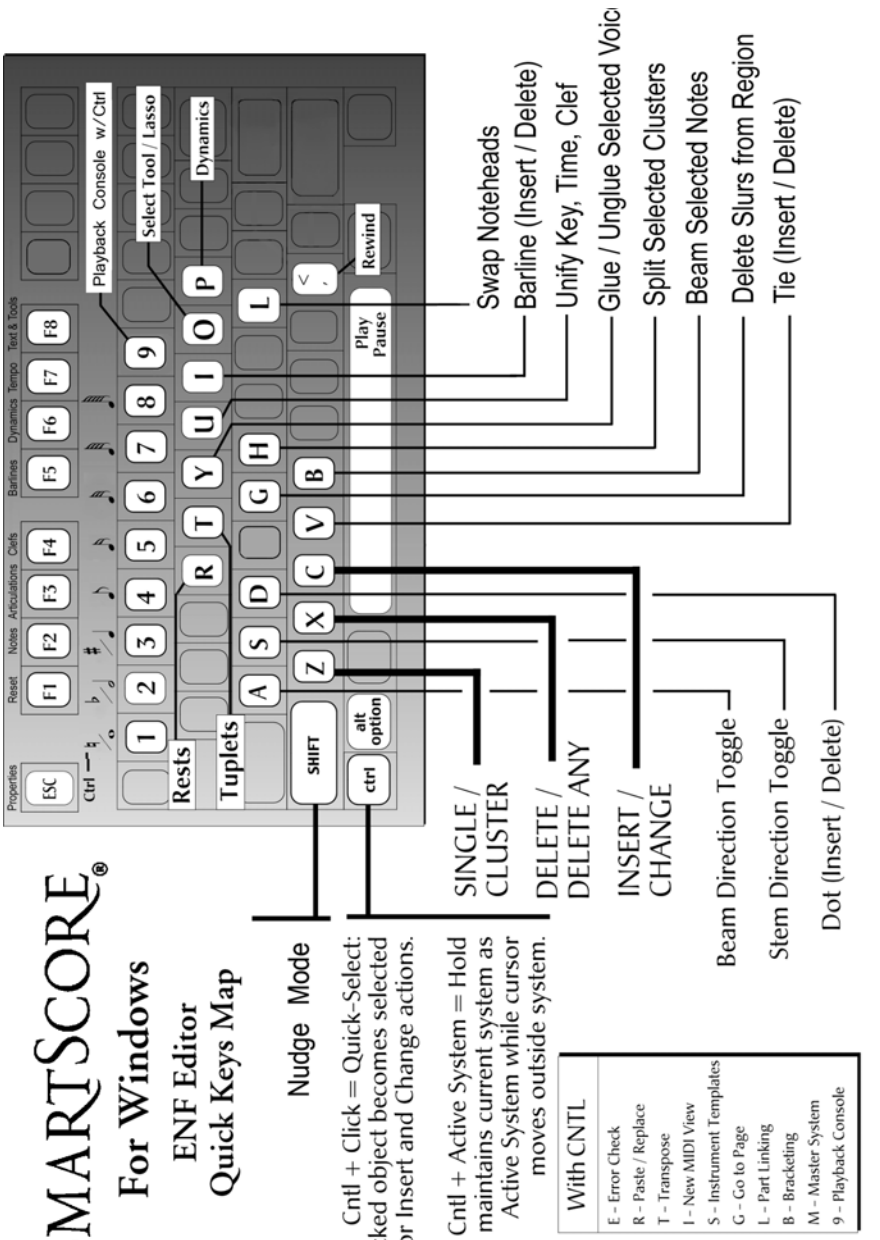


FIGURE 8 - 35: Quick Keys Map (Windows)

MIDI Editing and Sequencing

Chapter 9 MIDI Editing and Sequencing

Underlying MIDI data of an ENF score can be viewed and manipulated in one of three MIDI views: Overview, Piano Roll and Event List.

9.1 MIDI Views

9.1.1 Selecting MIDI views

To open MIDI environment from ENF and select a MIDI view,

a. Press the **MIDI** button in the Navigator or choose **View > New MIDI View** (**Ctrl +I / Cmnd+I** (Mac)).

The New MIDI View Window will open.

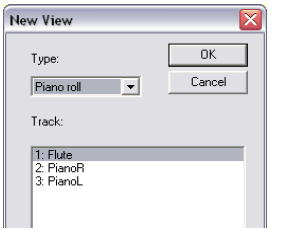


FIGURE 8 - 1: New MIDI View

b. In the **Type** window, select the type of MIDI view desired, **Overview**, **Piano Roll** or **Event List**).

- **Overview**

This view displays all MIDI tracks (parts) found in the open Score-Part.

- **Piano Roll**

This view displays all MIDI note events found in the selected track.

- **Event List**

This view lists all MIDI events and every detail associated with them.

The above MIDI view buttons are accessible from the MIDI toolbar.

9.1.2 MIDI Toolbar

The MIDI toolbar (**View > Toolbars > MIDI Toolbar**) includes buttons for opening **Overview**, **Piano Roll**, **Event List** views. Also visible are the Shuttle, Record, Record to New Track and Virtual Drum tools.

FIGURE 9 - 2: MIDI Toolbar

9.1.3 Closing MIDI Views

Each MIDI view (**Overview, Piano Roll and Event List**) has its own "close" icon in the upper left-hand corner of the window. Click to close an active MIDI view window. Or select **File > Close**. Closing the last MIDI view will return display to its associated ENF view.

9.2 Track Overview

Overview provides a "bird's eye view" of all existing MIDI tracks. Some editing functions are limited

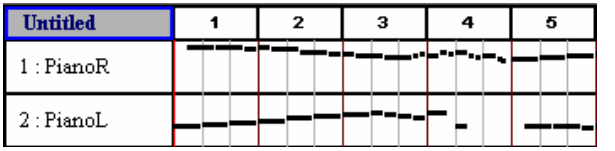


FIGURE 9 - 3: Track Overview window

9.2.1 Selecting tracks and MIDI events

Right-clicking (**option + click** *Mac*) into a track's Name field in Overview will display the track properties. Double-clicking into a track's Name field will open its Piano Roll view..

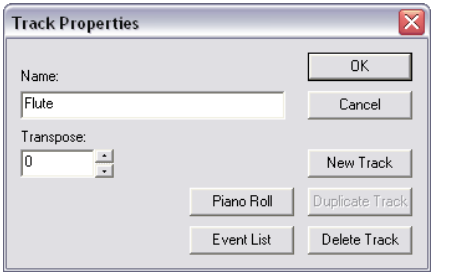


FIGURE 9 - 4: MIDI Track Properties

The Track Properties window allows for editing of the Track Name and its Transposition. It is also used to create new MIDI tracks. Push Piano Roll or Event List buttons to view selected track in one of these views.

NOTE: The Transpose selection window will actually move all the note events of the selected track by half steps.

- New Track will create an empty new track.
- Selecting Duplicate Track will create an exact copy of the active track and insert it at the bottom of the track listing.
- Delete Track will erase the highlighted MIDI track completely.

9.3 Playback

9.3.1 Spacebar

- Press the spacebar to Play. Press again to Pause. Press again to resume Play. Press the comma key (“,”) to Rewind to the start.

9.3.2 Mini-Console

The Mini-Console is a dockable (tear-off) toolbar that plays, records, rewinds and stops playback.

No MIDI Recording

FIGURE 9 - 5: Mini-Console Transport

The “spring-loaded” tempo slider will increase or decrease tempo speed depending on the distance it is pulled from the center. Releasing the mouse will return playback tempo to the default speed.

- *Play* button initiates/resumes playback of the active MIDI file. Once playback has begun, the Play button becomes Pause. Use this button to retain MIDI data after returning to ENF display.

- *Stop* button stops playback/recording of the MIDI. Play/Record is re-initialized at 0 (rewinds to the beginning).

- *Rewind* button resets playback to the beginning of the range.

- The *Record* button will be active only when a MIDI Out deveice is selected. Pushing the Record button will create a new MIDI track and will launch a new recording session. When Record is lit, press *Play* button to begin recording a new MIDI performance to a new track. When recording to a new MIDI track, existing MIDI data, instruments, channels and transpositions of the original ENF or imported MIDI file will be maintained.

NOTE: All playback functions are also available in the **Realtime** menu (in MIDI**)** or **Playback** menu (in ENF).

TIP: To select an entire track for cutting and pasting, go to Overview and click (**option + click** for *Mac*) in the track's Name field.

9.3.3 MIDI Devices

To set the MIDI input and output devices,

a. Select **MIDI Devices** from the **Options** menu. The MIDI Devices window will open.

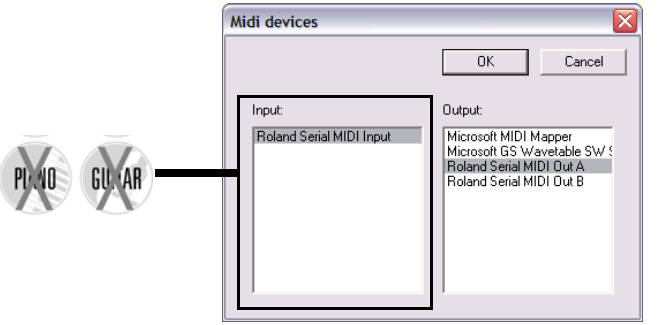


FIGURE 9 - 6: Options > MIDI Devices

b. Click on the **MIDI Input** device / interface you will use for recording new MIDI data.

c. Click on the **MIDI Output** device you wish to use for MIDI playback. The MIDI device window will display all installed MIDI device drivers. MIDI Mapper is the default in Windows and is most commonly used for sound cards although a specific soundcard driver may be selected from the Output list.

d. Press **OK** to set the selected MIDI devices as the current SmartScore MIDI sources. The selected device then moves to the top of the list.

NOTE: If the desired device is not listed in the MIDI Devices window make sure the device driver has been properly installed. Check any software that was installed with your MIDI device and/or download MIDI driver from manufacturer's website. When installing a new MIDI driver, reboot to initialize the new driver.

9.3.4 Playback Range

To specify part of the score for playback,

a. Select **Set Play Range** from the **Realtime** menu.

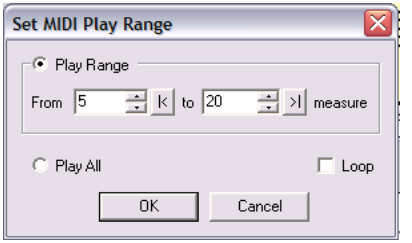


FIGURE 9 - 7: Set MIDI Play Range

b. Set the first measure and last measure of the **Play Range.**

c. Mark **Play All** to play the entire score.

d. Check **Loop** to continually repeat the assigned playback range.

9.4 Piano Roll

In the familiar MIDI piano roll view, it is possible to alter MIDI note events and fine tune other playback parameters. MIDI events are only editable when "***Show Actual Playback***" option in the **View** menu is checked off. When "***Show Actual Playback***" is checked, articulations (trills, tremelos, etc.) display but cannot be edited since articulations are controlled by **Properties**. The Piano Roll view is track-based.

9.4.1 Selecting MIDI tracks

- To move from track to track, click the Track Paging buttons located in the Main Toolbar.

To select and display a track in Piano Roll view:

a. Select the MIDI button in the Navigator. In the New MIDI View window, select a track or Part Name. Pushing OK will open the selected track in piano roll format.

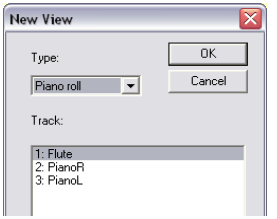


FIGURE 9 - 8: Overview - Selecting a track

b. Select the MIDI track you wish to display and press OK.

c. Select the magnifying glass from the Main Toolbar. Right click to zoom in and left click out (**option + click** for *Mac*) of the Piano Roll view. Click to zoom in. Right-clickto zoom out.

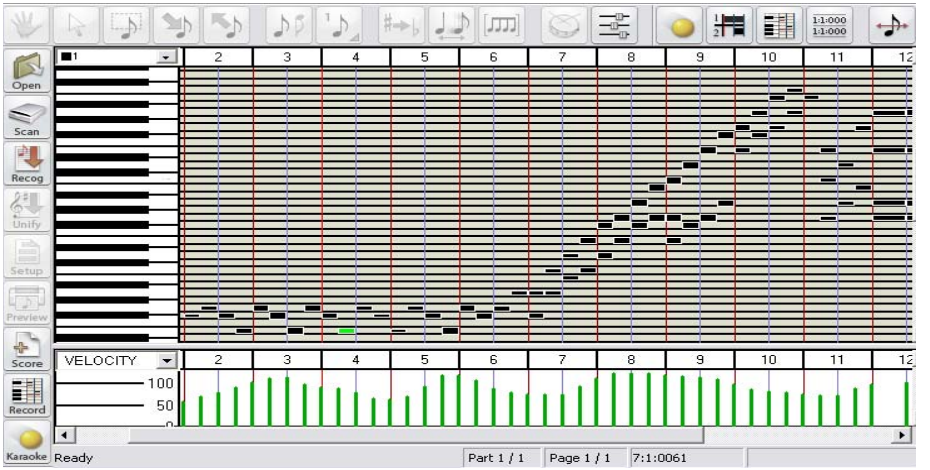


FIGURE 9 - 9: MIDI Piano Roll View

d. Another method of zooming in or out is to drag measure markers horizontally. Dragging to the right zooms in and dragging to the left zooms in.

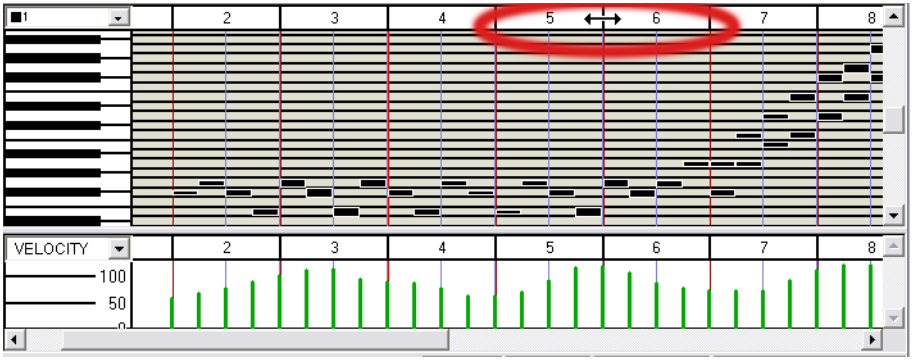


FIGURE 9 - 10: Horizontal zoom by dragging measure markers

9.4.2 Tiling ENF and MIDI views

Using the Tile Windows feature, you can view both ENF and MIDI windows simultaneously. This is useful if timing problems are encountered while editing ENF notation. By switching to MIDI Piano Roll view and pushing the Tile Windows button, it is possible to examine underlying MIDI events while referring to the same region as notation in the associated ENF window.

To tile all open document windows,

- Push the Tile Windows button located both in the Main Toolbar and in the Navigator palette.

Tile Windows Menu Button

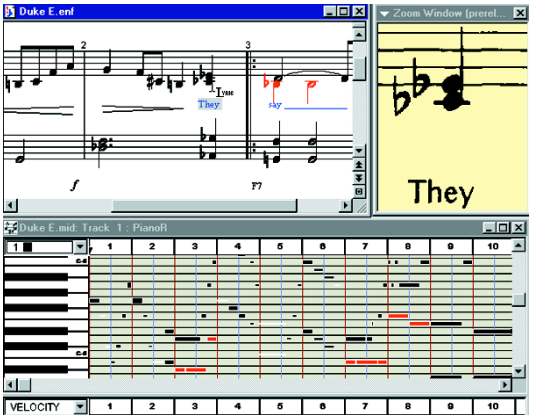


FIGURE 9 - 11: ENF / MIDI Tile View (with floating Zoom window)

9.4.3 Velocity and Tempo Graphical Controllers

In Piano Roll view, the bottom pane of the window displays a graphical, continuous-change MIDI controller. Click into Controller Selector pull-down menu and select a new MIDI controller you wish to view.

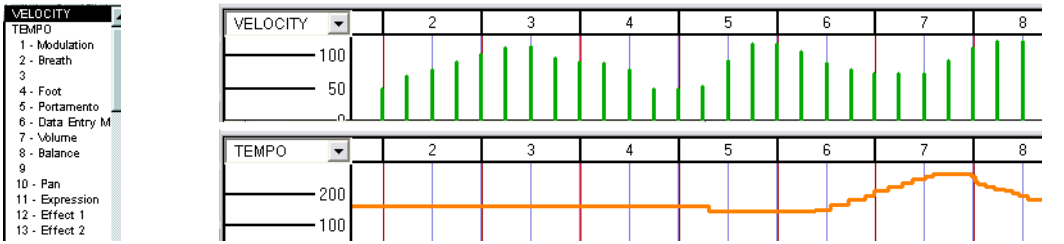


FIGURE 9 - 12: Velocity and Tempo controllers in Piano Roll view

- With the pencil mouse pointer, click and drag a curve over the range you wish to apply the effect.

9.4.4 Shuttle Tool

The Shuttle Tool allows you to sound MIDI events forward or backward by dragging the mouse over a range of events.

To operate the Shuttle Tool,

In Piano Roll view, the "**S**" key toggles the Shuttle Tool off and on. To manually select, press the **Toggle Shuttle** button in the MIDI Toolbar or go to the **Options** menu and select **Shuttle On**. Click and hold anywhere in an Overview or Piano Roll and drag the Shuttle Tool to the right to play the MIDI file at your own tempo. Drag the Shuttle Tool to the left to rewind and hear the MIDI file simultaneously.

To insert or change the voice assignment of selected note event(s):

a. Use the Voice Selection pull-down menu located above the piano keyboard to select a voice number.

b. Right-click and drag to create a note event.

9.4.5 Inserting program changes (Assign MIDI instrument)

To insert a Program Change (MIDI patch change) for any given voice:

a. In an active track, position cursor and click wherever you wish to make an instrument change. Select **Edit > Program Change.**

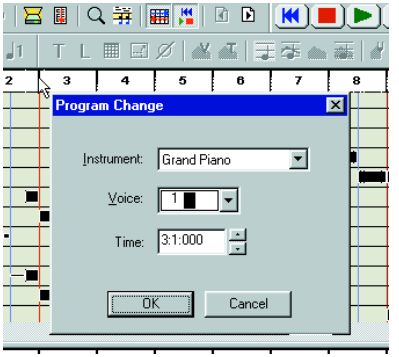


FIGURE 9 - 13: MIDI Program Change (Piano Roll)

b. Select a new **Instrument** from the pull-down menu. In Voice Color mode, select a voice number from the **Voice** pull-down menu. This will apply the new instrument sound to the selected *voice* (voices will automatically be assigned different MIDI channels). For more about Voice Color Mode, turn to “Working with Contrapuntal Voices” on page 151.

c. Press **OK**.

NOTE: List of instruments is determined by the selected **Instrument** set selected in **Options > Instrument Settings**. Instrument set is also able to be selected in the Playback Console (see page 53).

d. An inverted red triangle will indicate the point where the program change was inserted. Clicking on any Program Change triangle will open the **Program Change** window for additional changes.

NOTE: SmartScore supports multiple MIDI channels within each MIDI track. This allows for contrapuntal voices within ENF stafflines to be assigned to different instruments *within each MIDI track*. In other words, multiple voices in ENF are equivalent to multiple channels within a MIDI track. This is a sort of hybrid MIDI type (MIDI Type 1/Type 0 hybrid).

9.4.6 MIDI Instrument settings

To change MIDI instrument parameters,

a. Select **Instrument Settings** under the **Options** menu. In Playback Console, push the **Set Instrument** button. This will open the Instrument Settings window.

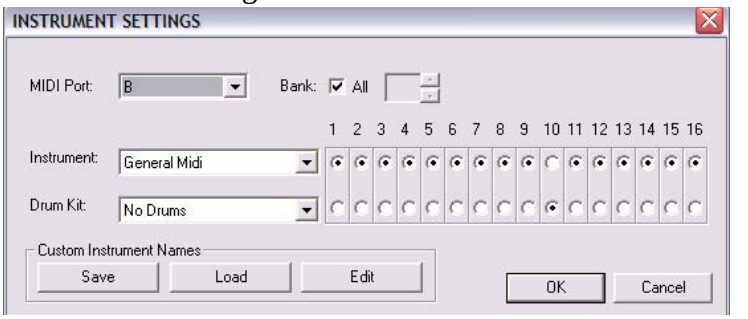


FIGURE 9 - 14: Instrument Settings

b. Select the **MIDI Port** of the MIDI instrument you will be adjusting with the MIDI Port pull-down menu.

c. Choose a specific Instrument Bank or all Banks from the selected MIDI Port if numerical banks are supported by your MIDI device.

d. Select the type of MIDI Instrument (GM, MT32, GS, Yamaha XG, Numeric or Custom) from the **Instrument** pull-down menu.

e. Use the radio buttons to activate or deactivate specific MIDI channels for selected **Instrument** set and **Drum** set. The default MIDI channel for drums is 10.

f. Use the **Drum** pull-down menu to select the type of MIDI Drum set your device supports (GM, No Drums, Roland GS Drums, Yamaha XG Drums, Numeric or Custom).

g. Push **Custom** to create a formatted text document for displaying custom instrument names for your MIDI device. **Edit** to change.

h. **Save** will save **Custom** patch names as a formatted text document (.TXT). Save this file then open it in a word processing application and enter your patch names. Then save as a text document.

i. **Load** will allow you to load the **Custom** text file. Your custom patch names will display throughout SmartScore's MIDI patch selection windows (Instrument Templates and Playback Console).

9.4.7 MIDI event selection

Under the **Edit** menu choosing **Select** opens the Select Window.

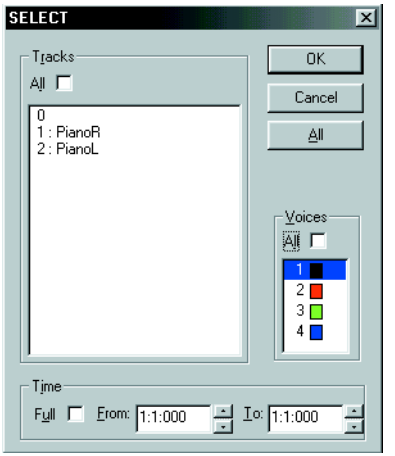


FIGURE 9 - 15: Select Event window

Select **All** tracks or an individual track or voice to highlight for cut, paste, pitch shifting or assigning parameters. Choose **Full** time to display the full length of the MIDI file or designate a portion of the file to display by entering the measure, beat, and tick into the From and To fields.

NOTE: **Edit > Select All** is only available from a Piano Roll or Event List view.

Selecting MIDI events using mouse click-and-drag can be done from any view. Mouse functions work the same in all views.

To select a note or group of notes:

- Click on the individual note or click and drag to Group Select many notes.

To add note(s) to the Group:

- Hold down the Control key and click on the unselected note(s).

To select note events within a given time frame:

a. Click in Piano Roll to mark the beginning of the time frame.

b. Hold down the Shift key and click again to set the end of the time frame. The selected range will highlight in grey.

9.4.8 Changing MIDI event characteristics

To change the start time of selected note event(s):

- Click and drag the left edge of the note(s) to the position you want.

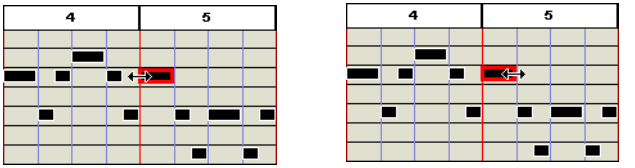


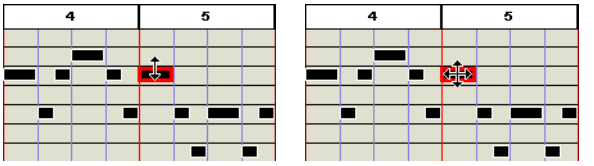
FIGURE 9 - 16: Editing MIDI note on/off events

To change the duration of selected note event(s):

- Click and drag the right edge of a note to change a note's duration.

To change the velocity (loudness/note attack) of selected note event(s):

- Drag the top and bottom edges of a note adjust the note's velocity.



Changing note velocity **Changing note pitch**

FIGURE 9 - 17: Editing MIDI note velocities and pitches

To change the pitch or position of selected note event(s):

- Click and drag the center of the note to change pitch (vertical drag) or note placement (horizontal drag).

NOTE: The arrow keys on your computer keyboard can also be used to adjust the pitch and start time of the selected note.

NOTE: To realign MIDI events to the nearest starting point (quantization), go to **Options > Snap to** and select the base rhythmic value.

To delete selected note event(s):

- Hit the **Delete** key to remove any highlighted notes.

To change the velocity and/or the duration of selected note(s):

a. Select the Velocity/Duration option from the Edit menu. The Velocity and Duration window will open.

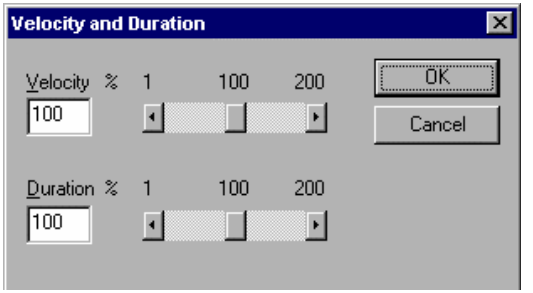


FIGURE 9 - 18: Velocity and Duration window

b. Use the sliders or type in numbers to increase or decrease the velocity or duration of the selected note(s) by a percentage. Example: You wish to double the duration of a group of selected notes. In the Velocity/Duration window move the Duration slider to 200%.

c. Press **OK**.

9.4.9 Note Event window

Double-clicking on any note event will open the Note Event window.

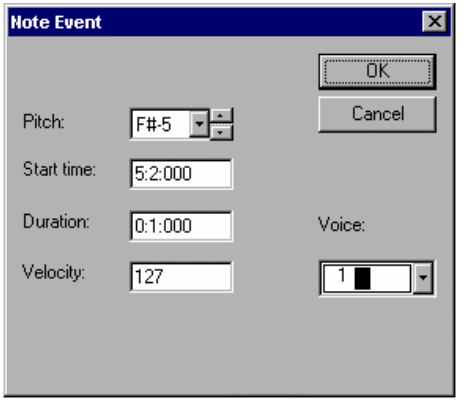


FIGURE 9 - 19: Note Event window

The Note Event window allows access to and adjustment of an individual note's parameters.

- Raise or lower the **Pitch** of the Note Event
- **Start Time** changes when the Note Event begins
- The **Duration** of the Note Event can be shortened or lengthened
- Increase or decrease the **Velocity** of the Note Event
- Select a different **Voice** for the Note Event

9.4.10 Cut/Copy and Paste

Click and drag the mouse or use **Edit > Select** to select a region that you would like to cut, copy or paste.

- **Cut** removes the highlighted notes from the score and places them in the clipboard.
- **Copy** stores the selected notes to the clipboard without removing them from the score.
- **Paste** will insert the contents of the clipboard back into the score without deleting the existing notes. Click where you want to insert the music into the score.

- **Paste Special** will open the Paste Special window.

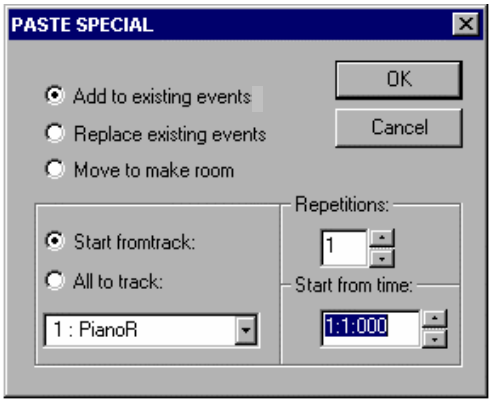


FIGURE 9 - 20: Paste Special

The Paste Special window offers several options for pasting the contents of the clipboard back into the music.

- **Add to existing events** will add the contents of the clipboard to the selected area without erasing the existing notes.
- **Replace existing events** will replace the existing music with the contents of the clipboard.
- **Move to make room** will push the existing music backward and then insert the contents of the clipboard.
- Use **Repetitions** to determine the number of times the contents of the clipboard will be inserted.
- **Start from time** designates where the inserted music will begin by choosing the measure, beat, and tick.
- Select **Start from track** to paste to a selected track number.
- **All to track** will insert the contents of the clipboard, no matter how many tracks were originally selected, into one track.

9.4.11 Measure Settings

The Measure Settings window allows for inserting changes of tempo, time signature and key signature at the start of any given measure.

To open the Measure Settings window in Overview or Piano Roll view:

- Double-click on the measure number where you wish to insert a change in key, time, or tempo.

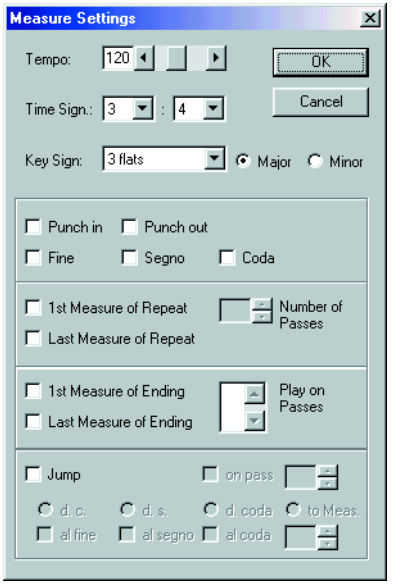


FIGURE 9 - 21: Measure Settings

To insert a change of Tempo:

- Adjust tempo with the **Tempo** slider.

To insert a change of Time Signature:

- Use the **Time Sign** pull-down menus to select the number of beats per measure and the base measure unit (2=Half note, 4=Quarter note, 8=Eighth note, etc.)

To insert a change of Key Signature:

- Select the number of accidentals in the new **Key Signature** with the pull-down menu. Mark the key as major or minor with the radio buttons next to the pull-down menu.

Press **OK** to make the changes current through the end of the active MIDI file.

9.4.12 Setting Repeats and Multiple Endings

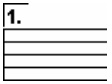
While you are more likely to insert repeats and multiple endings in ENF view, they can also be edited in the **Measure Settings** window in Overview or Piano Roll view. Double click any measure number to open the **Measure Settings** window of that measure.

- **Simple Repeats**

Check the **1st Measure of Repeat** box to select a measure as the beginning of the repeated section.

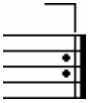
Use the **# of Passes** scroller to determine the total number of times this section will be played. For example: If you want the section to play through and repeat one time, set the **# of Passes** to 2 (the default).

Check the **Last Measure of Repeat** box to set a measure as the final measure of the repeated section. During playback, once the preset number of passes has been met, playback of the remainder of the score will continue after this measure has finished.



The **1st Measure of Ending** box designates a measure as the beginning of an ending.

The **Number of Passes** scroller is used to number this ending, i.e, 1 = 1st Ending, 2 = 2nd Ending. Hold down the Ctrl key to select a number to designate the number multiple passes this ending should have.



Use the **Last Measure of Ending** check box to define the total length of the ending. After this measure is played, MIDI playback will jump to the 1st Measure of Repeat and continue on with the next pass.

NOTE: This measure is also the Last Measure of Repeat. Check the Last Measure of Repeat box to continue playback with the 1st Measure of Repeat.

9.4.13 Segnos

A Segno is a musical notation symbol used to denote the beginning or the end of a repeated section.

- **Starting from a Segno**

Checking the **Segno** box will place a Segno in a measure.

Activate the **Jump** check box and select **d.s.** or Dal Segno (from Segno). After this measure is played, MIDI playback will jump to the Segno measure and continue playback.

- **Ending at a Segno**

Check the **Jump** box and select **d.c**. or Da Capo (from the beginning) and **al segno** (to the Segno).

Checking the **Segno** box will place a Segno in a measure. Playback will stop with this measure.

- **Fine**

Fine means final or end. It denotes the last measure of a score when repeats are used.

- **d.c. al fine**

Check the **Jump to** box and select **d.c.** or Da Capo (from the beginning) and **al fine** (to the end). After this measure is played, MIDI playback will jump to the beginning of the score and continue playback to the end.

Use the **Fine** check box to insert a fine into a measure. MIDI playback will stop at the end of this measure.

- **d.s. al fine**

A Fine can be inserted after a Segno when the Segno is used to mark the beginning of the repeated section.

Checking the **Segno** box will place a Segno in a measure.

Activate the **Jump** check box and select **d.s**. or Dal Segno (from Segno) and **al fine** (to the end). After this measure is played, MIDI playback will jump to the Segno measure.

Check the **Fine** box to insert a fine in a measure. MIDI playback will play through the score, return to the Segno measure, and stop after the Fine measure is played.

- **Jump**

Jump can be used to “send” MIDI playback to a certain measure.

Select **to Measure** in order to jump to a chosen measure during playback.

On Pass will send MIDI playback to the selected measure on the designated pass only.

NOTE: Check **On Pass** if the **d.s., d.c,** or the **Jump** measure falls within a repeated section and define on which pass playback will jump.

9.5 Event List

To view and edit detailed MIDI events, meta events, note events, controllers, program changes, key and time signatures, etc. in a selected track,

a. Press the **MIDI** button of the Navigator or in the menu, select **View > New MIDI View** or **Window > Event List**.

b. Choose Event List from the Type pull-down menu

c. Select a track to view and press **OK**.

The Event List displays every MIDI event of the selected track:

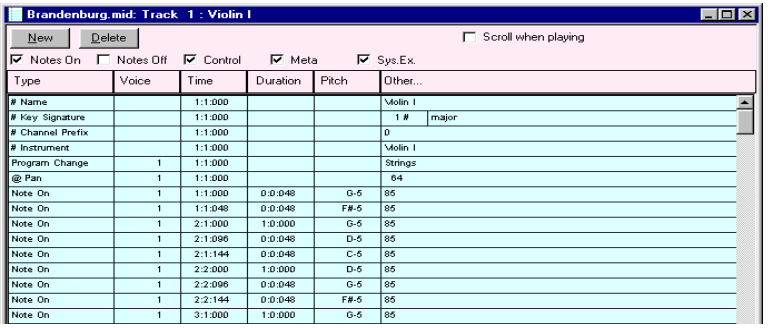


FIGURE 9 - 22: Event List

- Select what event types are displayed in the Event List by checking or un-checking the Event Type boxes along the top of the Event List.
- To scroll the Event List display during playback, check the "*Scroll when playing*" box in the Event List window.
- To page from track to track, click on Track Paging buttons in the Main Toolbar.

9.5.1 Changing parameters of selected notes

To change parameters of a group of selected notes:

- Click in any of the columns to change the parameters of an existing MIDI event or double click in the Type column of a Note Event to open the Note On window.

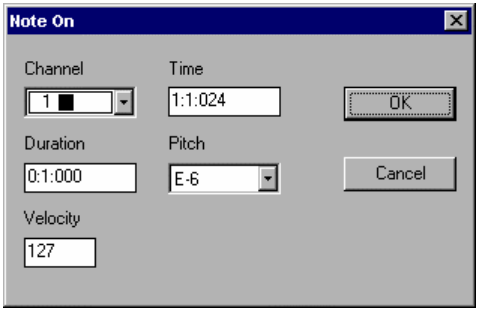


FIGURE 9 - 23: Note On window

The Note On window, like the Note Event window, allows for adjustment of an individual note's parameters: Channel, Time, Duration, Pitch, and Velocity.

9.5.2 Inserting note events

To insert new events in the Event List view,

a. Click the Event you want the Note to follow. Select **New** from the upper left-hand corner of the Event List. The **Create New Event** window will open.

b. Scroll to **Note On** in the Event Type menu.

c. Press **OK.**

d. A Note On event will be inserted into the Event List.

e. Enter the Voice, Time, Duration, and Pitch of the new event by clicking in the corresponding columns or double-click in the **Type** column to open the Note On window.

9.5.3 Editing Key, Time and Tempo

Click in any column to make changes to any existing MIDI events. To insert a new tempo, key, or time signature click the event you want the new event to follow. Press the New button. The Create New Event window will open.

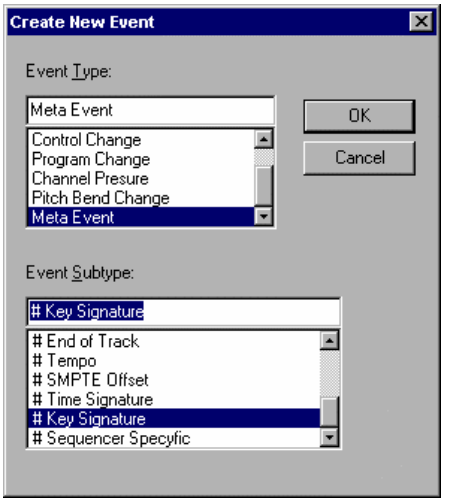


FIGURE 9 - 24: Create New Event window

Use the scroll bar to select Meta Event. A Meta Event is a MIDI file instruction. Scroll through the Event Subtype window to choose Tempo, Time Signature, or Key Signature. Press **OK**. Use the Other column to select the new tempo, time signature, or key signature OR double-click in the Type column to open an event-specific window. You may type in a new value.

9.5.4 Inserting Non-Note Events

Any MIDI event that is not a *note-on* or *note-off* event is a *non-note* event. This includes MIDI Control Changes, Program Changes, Channel Pressure, Pitch Bend information, and Meta Events.

To insert a non-note event in the Event List view:

a. Select the event you want the *non-note* event to follow.

b. Press the **New** button.

The **New Event** window will open.

c. Use the Event Type menu to select the event to be added.

NOTE: Some events, such as Control Change and Meta Event, have Subtype event listings. Choose one if applicable.

d. Press **OK.**

- **Program Changes**

Program Change inserts a MIDI event that changes the instrument playback for a given channel / voice.

To insert a Program Change of the voice/channel in Create New Event:

a. Program Change is the default New Event, so simply press **OK**.

The selected Program Change will be inserted into the Event List.

b. Use the **Voice** pull-down menu to designate the voice to which the Program Change applies.

c. Use the **Other** pull-down menu to select a new instrument.

- **Control Changes**

Control Changes send adjustable parameters to your selected MIDI device i.e., vibrato, hold, volume, pan, effects, etc. You can add specific changes to these controls from within SmartScore's Event List. To find out more about what each control change will do, refer to the user's manual of your MIDI device.

- **Meta Events**

Meta Events are MIDI file instructions written to the MIDI file. They provide information such as file and track headers, SMPTE code, tempo, key and time signatures, etc. and can be added to any MIDI file using SmartScore's Event List

9.6 Playback Console

The Playback Console is available in Overview and Piano Roll views and allows for detailed viewing and control of playback and provides real-time editing of the active MIDI file. Push MIDI in the Navigator and select Piano Roll or Overview.

Push the ***Playback Console*** button in the SmartScore Toolbar or choose **Real-time > Playback Console** (**Ctrl +9** Win **/ Cmnd+9** *Mac*) to open the Playback Console.

NOTE: The console can act as a "window shade". To shrink vertically, drag the bottom edge of the console up or down.

9.6.1 Adjusting Playback Console Settings

General;

- Adjust global playback volume using the **General Volume** slider.
- Adjust channel volumes using individual **Volume** sliders.
- Use **Pan** to adjust stereo balance for each channel.
- **Default** resets all MIDI tracks to their original settings.
- The **Close** button will close the Playback Console.
- **Mute** any voice while all others continue to play or **Solo** a single voice for playback.
- Change the MIDI **Instrument** or **Channel** of any voice.

To play back at a given point in the file;

- Use the **Measure / Beat** slider and scroll to the desired measure and beat in the score.

To select the MIDI output device;

- Use the **Port** pull-down selector.

To transpose playback globally;

- Use the **General Transposition** pull-down selector.

To transpose an individual track / voice;

- Use the **Transposition** pull-down selector in any track / voice.

9.7 Display Controls

9.7.1 Time

To choose whether the timing of MIDI note events is displayed by Measure: Beat: Tick or by Tick Number;

- Go to the **Options** menu and select **Time Format**.
- Choose by *Measure: Beat: Tick* or by Tick Number.

9.7.2 Velocity

To choose whether the velocity of MIDI note events is displayed with absolute numbers (0-127) or as percentages;

- Go to **Velocity Format** under the **Options** menu.
- Choose by Value (0-127) or Percent.

9.8 MIDI Recording

No MIDI Recording

9.8.1 Recording Options

To activate the Record mode and adjust the recording options choose Record from the Realtime menu.

- **Synchro Start**

Recording is synchronized to start with the first MIDI note played. To "unsynchronize" the start of recording with the first played MIDI event uncheck **Synchro Start** from the **Realtime** menu OR choose the **Metronome Settings** listed under the **Options** menu and uncheck **Synchro On**.

- **Thru**

Sends new MIDI events to the selected MIDI output device. The active Piano Roll determines the parameters of the MIDI Thru sound. If no Piano Roll is open, MIDI Channel 1 is used.

9.8.2 Metronome

The Metronome is on by default. The metronome is useful in keeping time while recording and as a "count-in" tool to mark the beginning of the recording session.

Sometimes, you may want to record "freely"... that is, you simply want to capture a performance in MIDI without worrying about timing or about trying to convert the performance into notation. For this purpose, you will want to turn the metronome off. To make the metronome inac-

tive during recording, uncheck **Metronome** from the **Realtime** menu OR choose the **Metronome Settings** listed under the **Options** menu and uncheck **Metronome On**.

To make changes to SmartScore's metronome;

- Choose **Metronome Settings** from the **Options** menu. The Metronome Settings window will open.

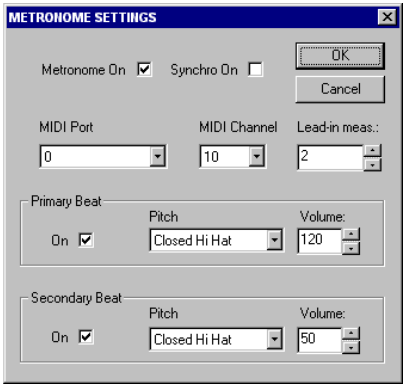


FIGURE 9 - 25: Metronome Settings

NOTE: The **Metronome On** check box must be selected for the metronome to sound during recording. To record without a metronome uncheck the Metronome On box.

With **Synchro On**, SmartScore will synchronize the start of recording with the first played MIDI event.

Select which **MIDI Port** the metronome will play through.

Choose the metronome's **MIDI Channel**.

NOTE: The de facto drum channel, MIDI Channel 10, is the default channel. But you can change it if you wish.

Determine the number of **Lead-in Measures** that will play prior to the start of recording. The metronome will click at each baseline beat (derived from the time signature) for as many measures as you choose.

The **Primary Beat** (down beat) will sound when its **On** check box is selected. The **Pitch** pull-down menu displays all General MIDI drum sounds. Use the **Volume** scroll box to increase or decrease the volume of the Primary Beat. The default accents the Primary Beat.

The **Secondary Beat** will sound when it **On** check box is selected. The **Pitch** pull-down menu displays all General MIDI drum sounds. Use the **Volume** scroll box to increase or decrease the volume of the Secondary Beat.

9.8.3 Snap to

MIDI recording is very strict. Any fluctuation in timing or speed may result in strange or even useless notation. To prevent this, you can apply quantization to your performance. Select **Snap to** from the **Options** menu prior to recording. Choose the smallest rhythmic value that you think you can accurately play while recording. The resulting MIDI events will be justified, each event beginning at the nearest selected rhythmic timing mark.

You can reset start times of selected events to the nearest value set in **Options > Snap to** will also reset start times of all selected MIDI events and will fix the increment at which selected MIDI events can be moved, when using the mouse or arrow keys to move events horizontally.

9.8.4 Recording New Tracks / Voices

To Record a new track to a MIDI file,

a. Select **Record** from the **Realtime** menu OR press the Record button in the Playback Console. The New View window will open if any MIDI data already exists in an active file.

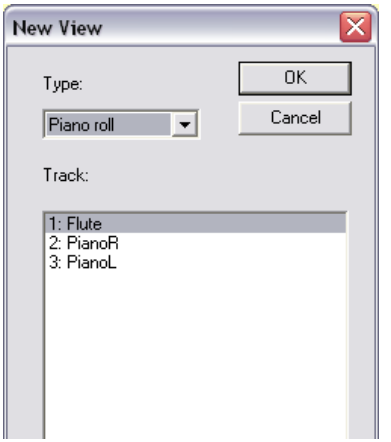


FIGURE 9 - 26: Selecting Track to Record

b. Select an existing track to record a new voice within the same track.

NOTE: The new MIDI data will be added to the existing track without overwriting any material.

c. Select **New Track** to record a brand new MIDI track.

NOTE: A Piano Roll will open for the selected track. A Piano Roll must be open to record in SmartScore. A new voice and MIDI channel will automatically be created when recording into any track.

d. Use the Playback Console to assign the MIDI parameters for the new track / voice.

e. Press the spacebar or select **Play** from the **Realtime** menu, or press the Play button in the Playback Console to start recording at measure 1, unless a Punch In point has been set (see below).

While recording:

- **Pause** (spacebar) will temporarily halt recording.
- **Play** button (spacebar) will resume recording the same track / voice
- **Stop** will end the current recording session. SmartScore will return to the standard MIDI editing environment.

9.8.5 External Timer

- To run SmartScore's MIDI recording from an external timer, select **External Timer** from the **Realtime** menu.

9.8.6 Setting Punch In and Punch Out points

To set Punch In and Punch Out points for recording, double click any measure number in an Overview or Piano Roll. The Measure Settings window will open.

- Check **Punch In** to start recording at the beginning of this measure.
- Check **Punch Out** to set this measure as the last measure for recording.

The Punch In and Out points are marked with red triangles in the Overview and Piano Roll displays.

9.9 Step Time Recording

Recording a “live” MIDI performance to a metronome may be very useful to an accomplished keyboardist, but many of us do not have the timing skills required to record a performance meaningful enough for conversion to notation. Even if using “Snap to” quantization will result in note positions that are offset with a mix of strange note values and, usually, many rests. A logical alternative to live recording is ***Step Time Recording***. Using this method, you will be able to quickly select exact note durations as well as “skips” (rests) from the number pad of your computer keyboard. With your other hand, enter notes and chords from your MIDI keyboard or MIDI instrument.

To activate Step Time Recording,

a. Make sure your MIDI keyboard or MIDI instrument is properly connected to your computer and that it or its interface is selected under **Input** in the **MIDI Devices** window (See “MIDI Devices” on page 176 for more.)

b. From the **Realtime** menu, select **Step Time Record**.

c. Select a track. The default is set to “**New Track**”. If you wish to record onto an existing MIDI track, select that track in the **New View** window.

d. Press **OK**.

e. A floating window representing the computer keyboard number pad and associated note durations appears. **Record** is now staged.

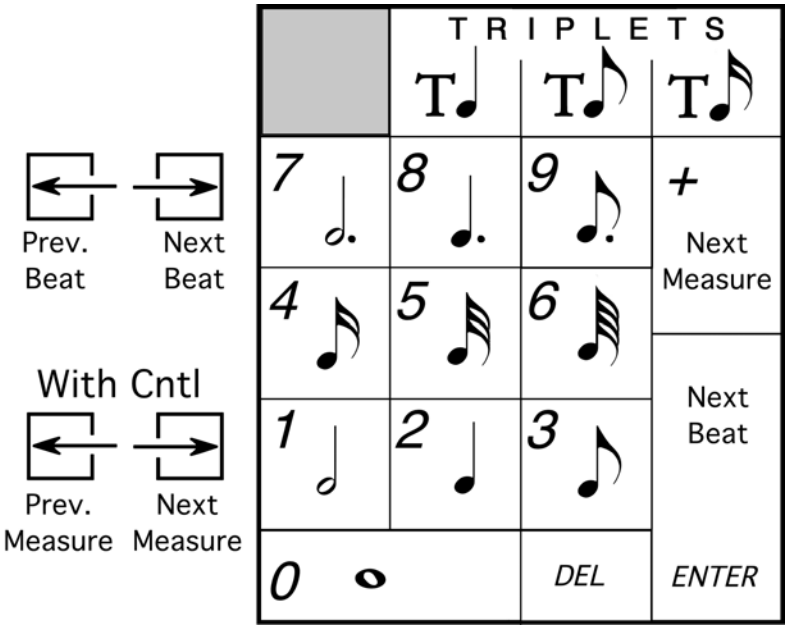


FIGURE 9 - 27: Step Time recording (Number Keypad)

f. Click on a note value or control button in the floating key pad window. Or, you may select the corresponding value / control function using the numerical keypad on your computer keyboard.

g. Press the **Play** button of the Mini Console. Recording will begin at Measure 1.

h. Press a note or chord on your MIDI instrument. Notes of the selected value will insert. The next note you enter will begin at the same point the last note ended. e.g. In 4/4 time with quarter note selected, hitting a note four times will fill up one measure.

i. To insert a rest, choose a note value and hit Enter or right arrow.

9.10 Virtual Drum Kit

In any MIDI view, you can record your own drum tracks onto existing tracks using nothing more than your computer keyboard. To activate Virtual Drums, go to the **Realtime** menu and select **Virtual Drum Kit**. See for more information.

9.11 Playback Considerations after MIDI Editing

If you return to the ENF view after editing in the MIDI environment, playback will retain changes made in MIDI views until the ENF display is updated with “MIDI Refresh”. If notation is subsequently edited in ENF or if MIDI Refresh is selected, you will be given a choice of A) Keeping current MIDI playback B) Refreshing ENF and clearing previous changes made in MIDI or C) Saving the current playback as a MIDI file.

9.12 MIDI to ENF

SmartScore accepts any Standard MIDI file and converts it to an ENF file.Turn to “MIDI to ENF” on page 167 for details.

9.13 Saving MIDI Files

When saving a MIDI file, remember that you are not saving a music notation file. The more “humanized” the MIDI file sounds, the less likely it will appear correctly when imported into a music notation application, such as SmartScore. Saving SmartScore files derived from scanning will normally give reasonably good results because the music is already “quantized” into discreet start and stop times.

To save a SmartScore MIDI file,

a. Select **FILE > Save As**, click the “**Save as Type**” pull down menu and select either ***MIDI Type 0*** (Single Track/Multiple Channels) or ***MIDI Type 1*** (Multiple Tracks / Multiple Channels).

b. Push the Save button. A window appears saying the following:

Articulations such as slurs, staccatos and legatos will result in a MIDI file that will not import properly into a notation program. Choose whether you want your MIDI file for importing into a notation program or for playback only.

c. Choose **Remove** or **Keep Articulations** according to your need.

Working with Drums

Chapter 10 Working with Drums

SmartScore has some really nice drum features including MIDI support for the percussion clef, automatic drum patterns and a “drum kit” which records a drum track by tapping keys on your computer keyboard.

10.1 Percussion clef (Clefs Palette)

When the Percussion Clef is entered on a staffline, the MIDI channel assignment for that staff and part switches to 10; the default drum channel. Notes can be entered, deleted and pitch-shifted normally, and will playback as MIDI drums. The percussion clef works in den tic ally as all other clefs, including Unify Clefs (See 8.6.4 on page 144).

10.1.1 Playback > Drumset

Drum instruments are linked with staff lines and spaces when the drum clef is active. An editable drum-to-pitch map is accessed by selecting **Playback > Drum Set.**

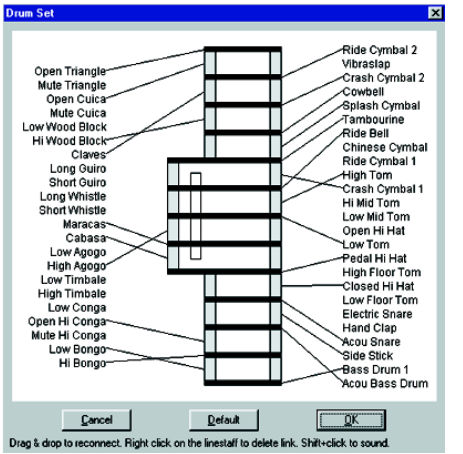


FIGURE 10 - 1: Drum-to-pitch links (Drum Set)

To change the pitch assignment of a drum instrument,

a. Click on a drum instrument name and drag to a new line or space. If another instrument is linked to the line or space, it will unlink.

b. Clicking and dragging a line or space to an instrument name will also create a new link and delete any existing link.

c. Press **OK** to finalize changes. Press **Cancel** to undo changes.

NOTE: Accidentals are ignored regardless of the key of the score.

10.1.2 Creating a drum pattern in ENF

a. From the **Navigator** palette, select "**Score**". In the ***System Type in Score*** pull-down menu, select ***Solo/Part***. Click **OK**.

b. **Right-click** (**Ctrl + click** *for Mac*) on any open palette and select ***Clefs***. Click on the rectangular "percussion clef".

c. Position your cursor over treble clef of the first system until it highlights yellow. Click to change the clef. All clefs of that part in subsequent systems will update to drum clef.

d. Select ***eighth note*** from "Notes" palette and using *beam direction tools*, create the following pattern. Hit **Spacebar** to play back.

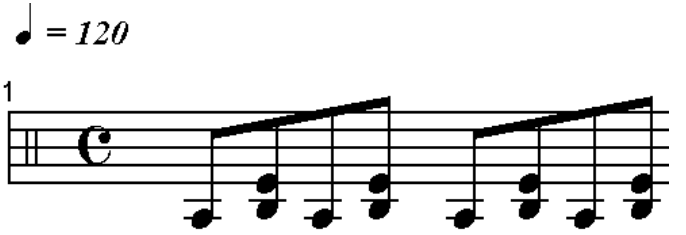


FIGURE 10 - 2: Creating a drum pattern

NOTE: Simultaneous drum sounds must be contained in the same voice. Therefore, you will need to use the **Cluster** tool to add additional drum "note heads" to an existing note stem. Holding down **Shift** and dragging a notehead up or down will allow you to hear each drum sound associated with each space and line.

10.2 Automatic Drum Patterns

It's more fun if it's got a beat! Simply select a drum accompaniment or you can add customized patterns to the drum library yourself.

10.2.1 Play back with automatic drum pattern

To select an instant drum pattern for ENF playback,

a. With any ENF file open, click on the **Drum Pattern** button in the SmartScore toolbar.

b. Sort each column by clicking on its name in the column header.

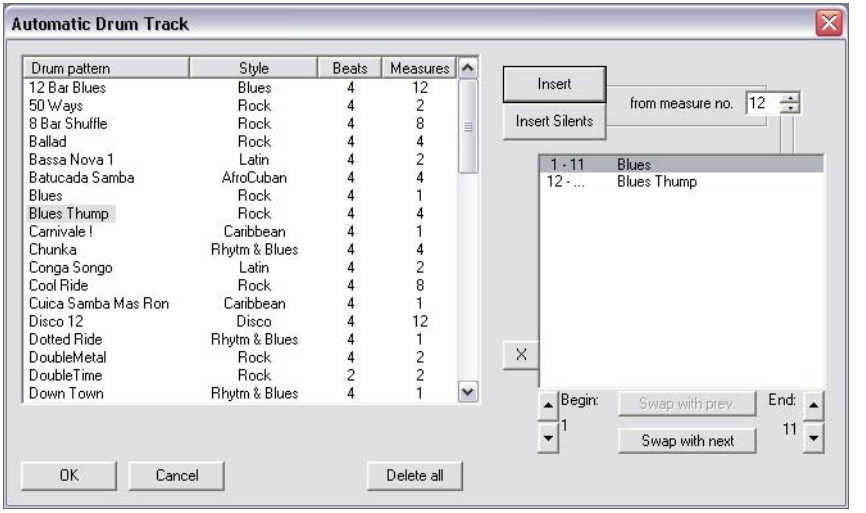


FIGURE 10 - 3: Automatic Drum Track Window

c. Click on a pattern that matches the time signature and style of your ENF file.

d. Choose a starting measure in the "***from measure no.***" field and push the ***Insert*** button.

e. To enter another drum groove at another location, repeat steps c. and d. above.

f. If you wish to mute drum playback for one or more measures, select the starting measure and push the "***Insert Silents***" button.

NOTE: Insert Silents are automatically inserted if the ***Begin*** and ***End*** points of 2 or more patterns are not sequential.

g. Press **OK** to accept the selection.

h. Press the **spacebar** to hear your file playback with drum accompaniment.

To Remove a drum pattern from the library,

- Locate the ***Styles*** folder inside the SmartScore application folder and delete the ***.ssd*** file you wish to remove.

10.2.2 Adding custom drum patterns from ENF

The drum pattern library is expandable. You can add new patterns that you have either created yourself or imported from a MIDI file which contains a drum track on MIDI Channel 10.

To add an ENF drum pattern to the automatic drum pattern library,

a. Open an ENF file which contains a percussion part (written with a percussion clef) or,

b. Open an ENF file in which you have created your own drum pattern. Refer to “Creating a drum pattern in ENF” on page 206 for more information on how to create drum patterns.

c. Click the **MIDI** button in the **Navigator** to open the MIDI Overview.

NOTE: See Section 9.1.1 on page 173 for more about MIDI views.

d. Select **Edit > Create Automatic Drum Pattern**.

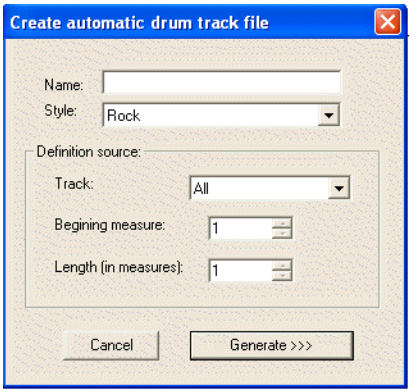


FIGURE 10 - 4: Creating a drum pattern from a MIDI file

e. Locate the track in which the drum is played and select it in the ***Track*** field. Note that MIDI drums will sound only if they are assigned to MIDI Channel 10.

NOTE: To check the channel number of a track, right-click (**alt + click** *for Mac*) next to the track number in MIDI Overview then select ***Piano Roll***. The channel number (and its color) will appear in the upper left corner of the Piano Roll View. Close the Piano Roll window to return to Overview window. Another option is to simply open the Playback Console (**Ctrl + 9**). Next to each track number listing is a colored box containing the MIDI channel number assigned.

f. Enter the name you wish to give the pattern in the ***Name*** field.

g. Select a musical style to classify the new pattern and enter it in the ***Style*** pull-down menu.

h. Locate the first measure where you wish the pattern to begin and enter it into the ***Beginning Measure*** field.

i. Decide how many measures you wish the pattern to contain and enter it in the ***Length (in Measures)*** field. This is a very important decision if you want to have proper-sounding patterns.

j. Click **Generate** to add the pattern to the library. It's name will then appear in the **Automatic Drum Pattern** window.

TIP: Add "fills" to longer patterns (8 or 12 measures). Repeated fills in patterns having 1 or 2 measures usually sound dumb.

- **Importing MIDI drum patterns**

a. Push the **Open** button in the Navigator (**File > Open**) and click to select *MIDI* from the "***Files of Type***" pull-down menu. Browse to a MIDI file containing a drum track and double-click.

b. Push the ***Play*** button to hear the MIDI file play back. Push ***Close***.

c. The imported MIDI file will appear in the MIDI Overview window.

d. Repeat the process from Step d) above.

10.3 Virtual Drum Kit

This option allows you to create a drum track to accompany any ENF playback without requiring a drum machine or any other external MIDI device. It maps selected MIDI drum sounds to the keys of your computer keyboard. MIDI quantization to sixteenth notes is applied by default. For more information about quantization, see “Snap to” on page 198.

10.3.1 Recording a virtual drum track

To create a virtual MIDI drum track in ENF,

a. Select **Options > Virtual Drum Kit.**

b. In the **New MIDI View** window, *New Track* is selected. Press **OK**.

c. A MIDI Record view will open. Test drum sounds by hitting the center keys on the two front rows of your computer keyboard.

d. When ready, hit the **Record** button. You will hear a metronome sound for one measure. Playback and drum recording begins.

e. Hit Stop when finished. Close the MIDI window to return to ENF.

10.3.2 Defining Virtual Drum Kit

To change a MIDI drum and link to your computer keyboard,

a. Select **Options > Virtual Drum Kit Definition**

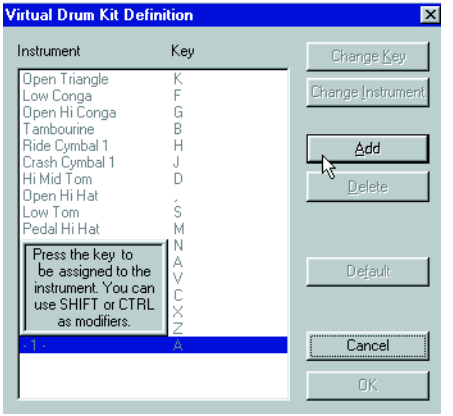


FIGURE 10 - 5: Virtual Drum Kit Definition

b. Click on an instrument / key in *Instrument* list.

c. To reassign a MIDI drum instrument, push **Change Instrument** and make another MIDI drum selection in the pull-down menu.

d. To reassign a keyboard key for that instrument, push **Change Key** and press any keyboard key to be linked to that instrument.

e. When finished, press **OK**.

To add a MIDI drum and link it to your computer keyboard,

a. Push **Add**.

b. Press a key to become associated with the sound.

c. Select a new drum sound from the pull-down menu.

d. When finished, press **OK**.

Reference

Chapter 11 Reference

11.1 Preferences

Default ENF display characteristics can be changed. Select **Edit > Document Preferences** or **Edit > Program Preferences** depending on whether the characteristic is document or program-dependant.

11.1.1 Document Preferences

- **Text symbols**

Reset default font size and type for text symbols such as triplets, dynamics and expression marks. For text and lyric defaults including part names, push the “Text Styles” button. Push **Apply** to change. See “To modify font styles of text fields or lyric blocks,” on page 105.

- **Systems**

Reset display characteristics for systems including part names, measure numbers, lyric display and printing, cross-staff pointer lines and constraining system scrolling when the score is reformatted.

- **Score symbols**

Change display options for

  - Triplet bracketing (square, arc, none)
  - Note overlap control (overlap voices or offset noteheads)
  - Rehearsal symbol display (numbers or letters).

- **Chord symbols**

Change display options for chord symbols and fretboard font type, size and color, fretboard size scaling and how chord symbols will be displayed:

  - Show both chord name and guitar fretboard symbols.
  - Show only guitar fretboards.
  - Show only chord names.

- Show neither chord nor fretboard symbols.
- ***Long Minor*** will display “min” instead of “m” for the word “minor”.

- **Page number**

Change display options for page number display and page position.

- **Playback**

Change default playback characteristics for grace notes:

- Before the beat
- After the beat (accaciatura)

11.1.2 Program Preferences

- **User Interface**

Turn tool palette recycling off and on, turn display of active staff and margins off and on and show Task Window at startup. Reset disabled windows including post-recognition pop-up notifications.

- **Page type**

Reset default page size and orientation.

- **Units and Zoom**

Reset default ruler display units and reset zoom - screen size ratios.

- **Color settings**

Reset color properties of notes and other symbols.

- **MIDI channel color**

Reset the colors displayed for MIDI channels 1-16

- **Karaoke settings**

Control appearance during playback including scroll and ball behavior as well as background and lyric colors. These options are also available in Karaoke mode under the **Options** menu.

- **Autosave**

Reset default Autosave rules.

- Every *n* minutes - even if no editing takes place.
- Every *n* actions - based on number of editing actions, e.g. Inserting, Changing, Deleting, etc.
- What is first - based on which is first; the number of minutes selected or the number of actions performed.
- Never - deactivates Auto Save of the ENF file.

- **Notifications**

Control whether or not to display certain warning and caution notices.

- **Music XML**

Change default options for saving ENF to Music XML files.

11.2 Properties Tool

Playback properties of many markings, including dynamics and articulations, may be adjusted singly or globally by clicking with this tool.which is located in the SmartScore toolbar. See Section 4.6, "Playback Properties" on page 59 and for more details.

11.3 Tool Palettes

11.3.1 Notes and Rests palette

- **Notes** (See Section 5.2.2 on page 86)
- **Cluster tool** (See Section 5.2.12 on page 90)
- **Rests** (See Section 5.2.2 on page 86)
- **Tuplets** (See Section 4.5.5 on page 58)
- **Beam** (See Section 5.2.13 on page 91)
- **Grace notes** (See Section 8.3.3 on page 130)
- **Dots** (See Section 5.2.10 on page 90)
- **Ties** (See Section 5.2.11 on page 90)
- **Accidentals** (See Section 5.2.8 on page 88)
- **Courtesy accidental tool** (See page 89)

11.3.2 Articulations palette

Turn to “Articulations and Trills” on page 134 for editing details.

- **Slur (Legato)**

Note durations associated with slurs are increased about 10% giving an overlapping or “connected” effect when played back.

- **Expressions** (See page 134)
- **Turn**

Click on note head or note stem apply a turn. Turns play as follows:

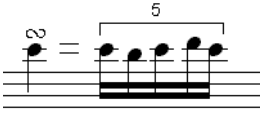


FIGURE 11 - 1: Turn

- **Fermata (bird’s eye)**

Click on note head or note stem to apply a fermata. Tempo is slowed by 50% for the duration of the note to which the fermata is attached.

- **Staccato**

Click on note head to apply a staccato. Duration of the associated note is shortened by 25%.

- **Tenuto**

Click on note head to apply a tenuto. Duration of the associated note is extended by 125%.

- **Accent**

Click on note head to apply an accent. Accent increases the velocity of its associated note by 150%.

- **Soft Accent**

Click on note head to apply a soft accent. Soft accent increases the velocity of its associated note by 125%.

- **Trill**

With ***tr*** **(**trill) selected, click on a note to insert a single trill marking. To create an “extended” trill, hold the **Shift** button down (**Nudge** mode) and drag the yellow control handle on the trill marking to the right. See also “Articulations and Trills” on page 134.

FIGURE 11 - 2: Trill and Extended Trill

- **Sharp, Flat and Natural**

With one of these modifiers selected, clicking on a trill marking will insert the accidental above the trill and cause playback of the trill to “flatten”, “sharpen” or “neutralize” target pitches while considering the active key signature.

- **Mordent**

Click on notehead to apply a mordent. Mordents play back as follows:

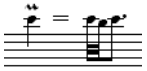


FIGURE 11 - 3: Mordent

- **Inverted Mordent**

Inverted mordent play back as follows:

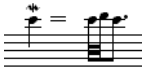


FIGURE 11 - 4: Inverted Mordent

- **Tremolo (single, double, triple, quadruple)**

Tremolos repeat the note affected by dividing the associated note by four times the selected tremolo value. See also, “To change existing half notes to beamed tremelos,” on page 136.

FIGURE 11 - 5: Tremolo (Double)

- **Arpeggio**

Arpeggiated chords will offset the start time of all members of a cluster and will keep them sustained throughout the duration of the chord.

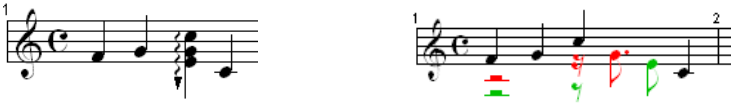


FIGURE 11 - 6: Arpeggio

- **Glissando**

Glissandos divide connecting notes into equal notes of 1/4 base value.

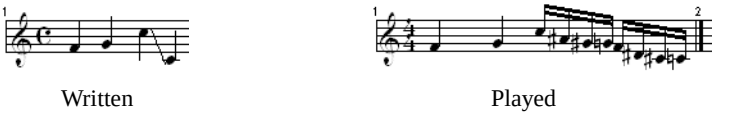
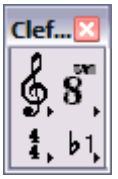


FIGURE 11 - 7: Glissando)

11.3.3 Clefs and Signatures palette



In **Insert** mode, ***Quick-select*** (Ctrl+click) the any nearby clef of the desired type. Or select any clef from the “Clefs” palette.

- Click anywhere in the active staff to insert the selected clef.

Click on any existing clef (yellow highlighted) to change it to the selected clef. Notes will not reposition themselves when a clef is changed either by a change-of-clef sign or by Unifying Clefs.

To delete a clef,

- ***Quick-select*** (Ctrl+click) any clef, press the “**X**” key and click on a clef to remove it.

NOTE: Note positions do not move when a clef sign is changed. To change a clef while keeping original note pitches of a part or selected region, note positions must be shifted. Refer “Transposition by Key and Clef” on page 95.

- **Alto / Tenor / Mezzo-soprano (“C”) clefs**

The midpoint of the “C” clef indicates where C *below middle C* (MIDI *C3*) is to be located.

- **Treble Octava / Bass Octava clefs**

Playback in these clefs will be an octave higher than with a standard clef.

- **Treble Octavo / Bass Octavo clefs**

Playback in these clefs will be an octave lower than with a standard clef.

- **Percussion clef**

When the Percussion clef is inserted into a staffline, MIDI channel assignment of the staff switches to 10; the default drum channel. Notes are entered normally, but playback as MIDI drums. Note pitch-to-MIDI drum assignments are mapped in **Drumset** option under the **Playback** menu. Refer to “Playback > Drum Set” on page 235 to assign drums.

- **Octava / Octavo tools**

These are not clefs *per se*. Rather than insert with a mouse click, they are applied to selected notes by dragging to select the notes to be modified. Playback of selected notes will be an octave higher when selecting with ***Octava*** tool and an octave lower when selecting with ***Octavo*** tool.

To assign Octava or Octavo to a range of selected notes

a. Select either ***Octava*** or ***Octavo*** tool.

b. Drag the cursor to select notes in the active staff.

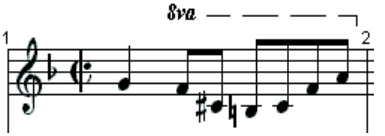


FIGURE 11 - 8: Octava

Notice that the *Octava or Octavo* mark will appear at the beginning of the range of selected notes an the applied range will be indicated by a dashed line above the selected notes.

- **Signatures (Key and Time)**

See “Signatures (Key and Time)” on page 137

11.3.4 Barlines and Repeats palette

See “Barlines palette (I)” on page 92.

Also see “Jumps, Repeats and repeat symbols” on page 71.

11.3.5 Dynamics palette

See “To insert a crescendo or decrescendo,” on page 133

11.3.6 Tempo palette

See “Tempo Markings” on page 57

11.3.7 Tools palette

- **Text**

Selecting the Text button sets the cursor to the Text Edit mode. See "Text mode", Section 6.1, on page 101.

- **Lyrics**

Selecting the Lyric button sets the cursor to the Lyric Edit mode. See "Lyrics", Section 6.2, on page 103.

- **Guitar Fretboard**

Selecting the Guitar chord fretboard button resets the cursor to “Insert Guitar Chord” mode. See "Guitar Fret and Chord Symbols", Section 6.4, on page 107.

- **Rehearsal**

Ten Rehearsal Markings can be placed anywhere in the ENF view.

- **Pedals**

Four Pedal Markings can be placed anywhere in the ENF view.

- **Bowings**

Two Bowing Markings can be placed anywhere in the ENF view.

- **Breaths**

A Breath Marking can be placed anywhere in the ENF view.

11.4 ENF FILE Menu

11.4.1 File > New ENF / New MID

Select between a new ENF or a new MIDI. Choosing New ENF will open the New SmartScore Document window. Select a Template or use Custom to create a unique score. Choosing New MIDI will open a blank MIDI Overview and Piano Roll for MIDI input.

11.4.2 File > Open (Ctrl +O Win / Cmnd+O)

Opens File Selection dialog box and lists saved files. A selected file will be loaded into memory and will display on the screen.

11.4.3 File > Close (Cmnd+W)

Closes active ENF document. If changes have been made, a Save As dialog box will open.

11.4.4 File > Save (Ctrl +S / Cmnd+S for *Mac*)

This will save an open SmartScore document to the same drive the file was opened from. The original name remains unchanged. If ENF and Image are displayed, only the ENF file is saved.

11.4.5 File > Save As

You can save files in several file formats other than SmartScore's native ENF format. These include MIDI (**.MID**), NIFF (**.NIF for Lime** and **.NIF for Sibelius**) and (**.FIN**) file. Saving in the .FIN format will create a file that can be opened in Finale 2000c or greater with page layout and formatting intact. To save open ENF document into one of these formats or to save open file with a new name,

a. Go to **File > Save As.**

b. In the Filetype/Format window, choose a format to save the file.

c. Browse to another directory and change the name if necessary.

d. Press **OK**. The file will be saved in the last directory used to "save".

NOTE: Use **File > Save** (**Ctrl +S** /**Cmnd+S**) to update the current ENF file.

NOTE: When saving ENF to MIDI files, a dialog box will open to explain that articulations such as slurs, staccatos and tenutos will create MIDI events that are not quantized. You will be given a choice to save the MIDI files with articulations removed or kept. For the purpose of playback only, it is recommended that articulations be kept. If t is recommended that articulations be removed if MIDI files are to be imported into other notation-based programs.

11.4.6 File > Save as PDF

This opens file browser and saves current active ENF file as an Adobe® Acrobat® PDF format file. (Windows requires PDF 995 from installer)

11.4.7 File > Scan Music

- **Acquire:** Initiates scanning. Same as Scan in Navigator.
- **Select Scanner:** Opens list of available TWAIN drivers to select.
- **Choose Interface:**
  > SmartScore's = selects the SmartScore scanning interface. Refer to "Selecting your scanner and interface in SmartScore" on page 27 for details.
  > Your Scanner's = selects scanning software from your scanner.

11.4.8 File > Recognize

This initiates the recognition sequence for recognition of pre-scanned images. See "Recognition Sequence" on page 32 for details.

11.4.9 File > Page Setup

This opens the document layout control panel. See "Document Page Setup" on page 163 for details.

11.4.10 File > Print (Ctrl+P / Cmnd+P)

11.4.11 File > Print Preview

Use to check for proper page layouts. Also seen in Page Setup view.

11.4.12 File > CD Writer

Using the CD Writer feature, you will be able to record one or more ENF (MIDI playback) performances as a audio CD playable in your car, home stereo, etc. It will be necessary to have a CD-R (CD Writable) device installed and connected to your system. CD Writer will also record and burn MIDI files.

To record ENF or MIDI files and burn them to audio CD,

a. Push the CD Writer icon at the bottom of the Navigator.

b. Push “Add Files” and select one or more ENF or MIDI files to be recorded to CD.

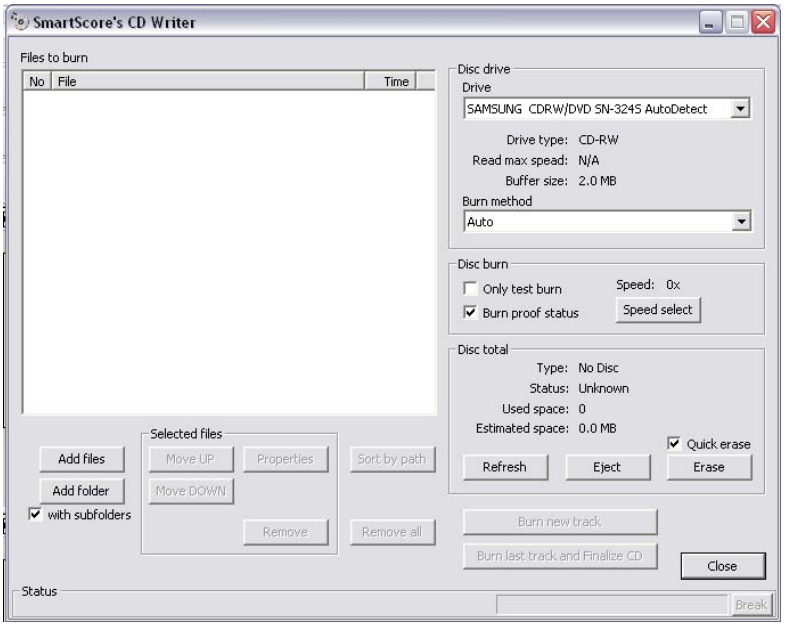


FIGURE 11 - 9: CD Writer window

c. Each selected file must undergo a conversion to an audio format. (.WAV is the default). After converting, the selected file(s) will appear in the “**Files to Burn**” list as an audio.

Files may be reordered using the "**Move Up**" or "**Move Down**" buttons. They may be removed from the list separately or all together with "**Remove**" or "**Remove All**" buttons.

d. Insert an unused writable CD (CD-R) into your CD tray. **Burn Method** = ***Auto***. Change to another method if you have trouble.

e. Push "**Burn Last Track and Finalize CD**" to record and finalize your ENF files to CD. All selected files will record on a single CD track. To record individual tracks, use "**Burn New Track**" as described below.

NOTE: "Finalizing" a CD is necessary before a can be played back. Once Finalize is applied, you will not be able to record anything more to the CD.

f. If you wish to continue burning new selections without finalizing the CD, push "**Burn new track**". Each set of converted files in the "**Files to Burn**" list will record to one track. Select "**Burn Last Track and Finalize CD**" to record last track and finalize the CD.

11.4.13 Most recently opened ENF files

The last four ENF files are listed and may be opened by clicking their names.

11.4.14 Exit

Saves and closes all open ENF files and closes SmartScore.

11.5 ENF EDIT Menu

11.5.1 Undo (Ctrl +Z / Cmnd+Z)

Reverses the last action you performed. SmartScore has ninety-nine layers of Undo.

11.5.2 Redo (Ctrl +Y / Cmnd+Y)

Reapplies the last action that has most recently been Undone.

11.5.3 Edit > Cut (Ctrl+X / Cmnd+X)

To Cut selected objects from the score and place them on the clipboard,

a. Hit "**O"** key or choose the **Select** tool from the Toolbar.

b. Click and drag a box with the cursor until objects you wish to cut (and store to the clipboard) are highlighted orange.

c. Press the **Cut** button in the Main toolbar, hit **Ctrl + X / Cmnd + X** or select **Edit** > **Cut** from the menu.

11.5.4 Edit > Copy

To Copy selected objects for pasting elsewhere in the score,

a. Activate the **Select** tool then click and drag a box to select a region of interest.

b. Press **Ctrl +C** / **Cmnd+C** or go to **Edit > Copy**.

NOTE: To copy selected region of the page to the clipboard for pasting as a bitmap image into another program, activate the **Select** tool and drag a region with the right mouse button (**Alt** + click for *Mac*).

11.5.5 Edit > Paste (Ctrl +V / Cmnd+V)

To Paste the contents of the clipboard into an ENF file,

- Select Paste (**Ctrl +V / Cmnd+V**) from the Edit menu and click anywhere in the score. The contents of the clipboard will be added to the score without replacing the existing notes.

11.5.6 Edit > Paste Replace (Ctrl+R or Cmnd+R)

To Paste the copied material into an ENF file and replace existing notation,

- Select **Paste Replace** from the **Edit** menu (**Ctrl+R** or **Cmnd+R**) and click anywhere in the score.

TIP: Use **Paste Replace** to quickly replace a complex passage that was poorly recognized with an identical passage that is correct.

11.5.7 Edit > Delete

In this mode, clicking on objects that are moused over (and highlight yellow) are deleted.

11.5.8 Edit > Select All (Ctrl+A or Cmnd+A)

To select all objects on the current page for cut, copy or paste / replace action,

Choose **Select All** from the **Edit** menu (**Ctrl+A** or **Cmnd+A**).

11.5.9 Edit > Bracketing (Ctrl+B or Cmnd+B)

Refer to “Bracketing” on page 112.

11.5.10 Edit > System Manager (Ctrl+M or Cmnd+M)

Refer to “System Manager” on page 155.

11.5.11 Edit > Staff Spacing

Refer to Section 7.2.2, "Globally applying line, staff and system spacing" on page 119 for details.

11.5.12 Edit > Text Styles

Refer to “To modify font styles of text fields or lyric blocks,” on page 105 for more details.

11.5.13 Edit > Part Linking (Ctrl+L or Cmnd+L) (Collapsing and expanding systems)

Many printed scores “collapse” or “optimize” systems to show only actively playing parts. Similarly, instruments that appear in one part may split into two or more parts anywhere in the score causing systems to “expand” in size. SmartScore automatically senses expanding systems when, for example, a piano solo introduction precedes a vocal/piano arrangement. Expanding and collapsing parts are easily linked or re-linked in a simple-to-use environment called Part Linking. Part Linking is also used when merging staves with brackets that were cut off. Turn to “Re-linking parts” on page 78 for details on this feature.

11.5.14 Edit > Score Structure

This special environment is used to perform useful functions such as creating a conductor’s score from different parts and for isolating or joining parts and voices. For detailed discussion on using this powerful feature, turn to “Score Structure” on page 120.

11.5.15 Edit > System > Insert Above/Insert Below/Remove

Use this feature to insert an entire empty system above or below the currently active system. Use to delete a system, if you need to.

a. Position the cursor over the current system to make it *active*.

b. To remove a system from a score, position the cursor over the system you wish to delete and select **Edit > System > Remove.**

NOTE: When an ENF score structure is changed by adding or deleting staves and/or systems from the **Edit** menu, synchronization with the scanned images will be lost. We recommend that you complete all needed edits/corrections or save a copy of the ENF file before using the **Edit** menu to change structure of your scanned music. See “View >Associate Image Files” on page 232 for more about keeping synchronization.

11.5.16 Edit > Staff > Insert Above/Insert Below/Remove

Use this feature to expand or collapse a system.

TIP: Keep in mind that when you add a part to a system, you are also adding a new part to the score. When adding a part to a system, the new part will not be visible in any system except the active system. For details, see “Part Visibility” on page 160.

11.5.17 Edit > Score-Part

Use this feature to append a new Score-Part to the ENF document. When a new Score-Part is added, it will begin playback at measure #1 along with all other Score-Parts that have been created. For definition of Score-Part, see **Score-Part** on page 249.

11.5.18 Edit > Add Empty Pages

Use to add new pages. Also found in Status Bar (lower right corner).

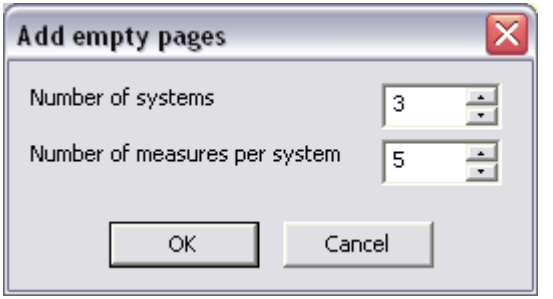


FIGURE 11 - 10: Add Empty Page window

11.5.19 Edit > Unify Signatures (U)

Refer to “Unify Score (“U”)” on page 144.

11.5.20 Format Score

This tool is used to entirely reformat the ENF score.

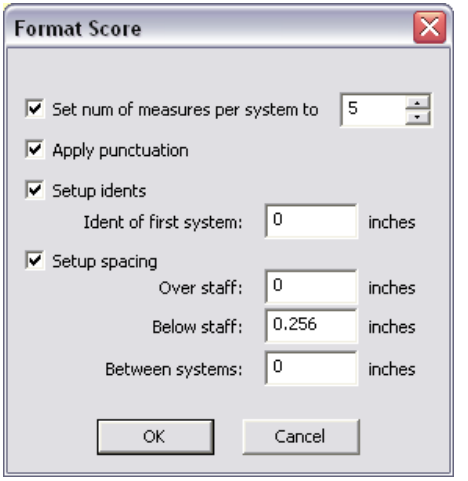


FIGURE 11 - 11: Format Score window

- **Measures per system**
  Select a fixed number of measures for every system in the score.
- **Apply punctuation**
  Apply auto-spacing to reformatted measures.

- **Setup indents**
  Set indent for 1st system.
- **Setup spacing.**
  Set staff and system spacing.

11.5.21 Default Voices (Ctrl + U)

Use this feature to revert a selected set of notes within a measure to their default voice / color assignment. Useful if voice / color assignments become confused after repeated over-riding of voices.

11.5.22 Edit > Instrument Templates (Ctrl+S or Cmnd+S)

Refer to “Instrument Templates” on page 160.

11.5.23 Edit >Score Header

Refer to “Score Header” on page 102.

11.5.24 Edit >Default Tempo

To set the default tempo,

a. Select desired *Beats per Minute* from the horizontal slider.
b. Choose a base note **Tempo Value** (4/4 default = quarter note).
c. Check the **Metronome Mark Visibility** box to display the Metronome Mark in the ENF document in the first measure.

Refer to “Tempo Markings” on page 57 for entering change-of-tempo (metronome) markings.

11.5.25 Automatic Drum Track

Opens the “assign drum pattern” window. See “Add drum tracks” on page 67 for details on creating automatic drum tracks.

11.5.26 Edit > Guitar Chord Library

The Guitar Chord library contains preset guitar chords and associated chord symbols. Add, change, delete and store any custom chords. Guitar frets and chord symbols automatically transpose with key transposition. Refer to “Guitar Fret and Chord Symbols” on page 107 for details.

11.5.27 Edit >Transpose (Ctrl +T / Cmnd+T)

Transpose your score by key or by clef. Limit to a part, a voice or select a range. Refer to “Transposition” on page 148 for details.

11.5.28 Edit > Edit Mode

- **Zoom**
- **Select tool (Ctrl+O / Cmnd+O)**
- **Insert** / **Change** - See “Insert/Change mode” on page 87.
- **Delete** - See “Deleting notes and symbols (X)” on page 141.
- **Vertical Alignment (Y)** - See “Working with Contrapuntal Voices” on page 151.
- **Beam Notes (B)** - See “To convert a sequence of flagged notes into one beamed group,” on page 142.
- **Split Voices (H)** - See “Voice Splitting (Select + “H”)” on page 67.
- **Flip Stems (S)** - See “Stem direction (S)” on page 143.
- **Delete Selected Ties/ Articulations (G)** - See “Select tool (“O”)” on page 141**.**

11.6 ENF VIEW Menu

11.6.1 View > Toolbars

- **Navigator**

Opens and closes the SmartScore Navigator.

- **Main**

Opens and closes Main Toolbar

- **SmartScore**

Opens and closes SmartScore Toolbar

- **Image**

Opens and closes Image Editing Toolbar

- **Text and Controllers**

Opens and closes the toolbar containing control buttons for text and graphical controllers.

- **Mini Console**

Opens and closes the Mini playback console in ENF view.

- **MIDI Toolbar**

Opens the MIDI toolbar in the active ENF view.

- **Print Preview Toolbar**

Open and closes the Print Preview toolbar when Print Preview is active.

- **Status Bar**

Opens and closes Status Bar at the bottom of display. Displays current page, cursor position, image size, zoom, page view type and add page.

11.6.2 View > Palettes

Refer to page 129, "Tool Palettes (F2-F8 keys)" for details.

11.6.3 View > Show Active Staff

This selection will cause the ENF display to highlight the active staff in black while other staves become grey. The active staffline is the staff that the cursor was last positioned over.

TIP: Show Active Staff is useful when notation objects do not respond to editing actions. Using this view option might reveal that they actually belong to an adjacent staffline.

TIP: If an object does not delete even if it shows itself to be in an active staff, use the Select tool (“**O**” key) to highlight it and then hit **Delete**. All selected objects will be removed with the Delete key, whether they are in the active staff or not.

11.6.4 View > Reset Tools and Palettes (F1)

Resets tool palettes and toolbars to their default (program launch) positions and maximizes the ENF display.

11.6.5 View > Hidden Symbols

Refer to page 162, "Hidden Symbols" for details.

11.6.6 View > Show Part Names

To display the part name or abbreviation on the left staffline margin,

a. Selecting **Show Part Names and Abbreviations** displays Part Names in the first system and the Part Abbreviations in subsequent systems.

b. Select **Show Part Names Only** or **Part Numbers Only** to display just name or number in the 1st system and nothing more.

NOTE: For information on selecting and modifying Part Names, see “Instrument Templates” on page 160.

c. Selecting **Do Not Show** will nor display any Part Names or abbreviations in the ENF display.

11.6.7 View > Lyric Show/Don’t Show

Checking this option off will remove the display and printing of lyrics.

11.6.8 View >Associate Image Files

Synchronization between the ENF and TIFF panes assumes exact ENF correspondence to the original score structure. Synchronization may become lost after systems are inserted, removed or if page margins are changed. Once a system rolls from one page to another, ENF-TIFF synchronization will become lost for all subsequent pages.

TIP: To keep ENF to TIFF panes synchronized for as long as possible, complete all ENF editing before inserting systems (Edit > System > Insert). Synchronization may be regained by resizing top and/or bottom margins in Page Setup after making small changes; e.g. after altering line spacing. Refer to “File > Page Setup” on page 222 for more details on controlling page margins.

To synchronize ENF and TIFF views,

a. Go to **View > Associate Image Files...**

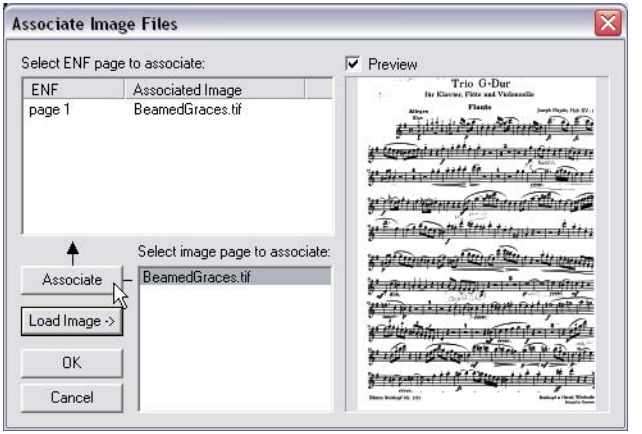


FIGURE 11 - 12: Associate Image File Window

b. Push **Add** to locate the TIF file associated with the open document. Browse your computer to find the image file. If the file contains several pages of images, they will appear as xxxP1, xxxP2, xxxP3, etc.

c. Click to highlight a page in the image-page list. A preview of the page will appear in the view window if *Preview* is checked. Then click on the appropriate ENF page in the list of ENF pages.

d. Push the **Associate** button to associate the image page with the appropriate ENF page. Continue as necessary.

11.6.9 View > Image Information

Provides information on the structure and type of the currently displayed image file.

- **Next Page**

Displays next page of ENF document

- **Previous Page**

Displays previous page of ENF document

- **Go to Page (Ctrl +G / Cmnd+G)**

Presents a dialog box to select a page number to jump to. Refer to “Paging” on page 84 for details.

- **Zoom**

Lists available view percentages. Changing zoom will affect both the image and the ENF file simultaneously. Range is from 8% to 400% view scale.

11.6.10 View > Scan View

Provides options for the floating zoom window including whether to display ENF or TIFF close-ups in the zoom window and selecting additional zoom views. Refer to page 125, "Split-screen and Scan View reference views" for details on the floating zoom window.

11.6.11 New MIDI View (Ctrl +I / Cmnd+I)

Opens New MIDI View dialog box. Select type of MIDI view.

- **Overview -** Displays all staves as MIDI tracks.
- **Piano Roll -** Displays selected stave as MIDI track.
- **Event List -** Displays MIDI events of selected staff line.

11.7 ENF PLAYBACK Menu

11.7.1 Playback > Set Playback Range

Refer to “Playing back a selected section” on page 55.

11.7.2 Playback > Play / Stop / Rewind

Used to control playback functions from menu.

11.7.3 Playback > Thru

Sets MIDI device to play “live” without ***MIDI Record*** on.

11.7.4 Playback > Console

Opens Playback Console **(Ctrl+9 / Cmnd+9**).

11.7.5 Playback > Mini Console

Opens and closes Mini Console toolbar.

11.7.6 Playback > MIDI Devices

Opens MIDI device dialog box. Select MIDI input and output sources. Refer to “MIDI Setup” on page 51 for details.

11.7.7 Playback > Swing

Turns swing playback on or off. Refer to “Swing” on page 67.

11.7.8 Playback > Drum Set

This window allows you to map MIDI Drum instruments to staff lines and spaces when percussion clef is assigned to a staff. For more details, turn to “Percussion clef (Clefs Palette)” on page 205.

11.7.9 Playback > Lock to Time Signature

Refer to “Pickup and split measures” on page 66.

11.7.10 Playback > Graphical Controller

Refer to “ENF Graphical controllers” on page 63.

11.8 ENF WINDOW Menu

11.8.1 Task Window (Ctrl + W)

a. Opens the SmartScore task window:

FIGURE 11 - 13: Task Window

11.8.2 Clone Document

Duplicates and opens currently open ENF file.

11.8.3 Cascade

Display, overlap and offset all open ENF files.

11.8.4 Tile

Display all open windows of all open ENF files with no overlap.

11.8.5 Split

Activates the ENF / Scan view split control tool.

11.8.6 Scan View Window

Removes the split-screen Image pane and activates the floating scan view window. See Section 8.1.1, "Split-screen and Scan View reference views" on page 125 for more details.

11.8.7 Karaoke

Opens the Karaoke view window. See Section 4.8.3, "Karaoke View" on page 66 for more details.

11.8.8 Overview / Piano Roll / Event List

Opens MIDI view window and displays the selected MIDI environment, Overview, Piano Roll or Event List. See Section 9.1, "MIDI Views" on page 173 for more details.

11.9 ENF Help Menu

11.9.1 Help > SmartScore Manual (PDF)

In CD versions, this selection will open the file, SSManual.pdf. This file is the full *Using SmartScore 5* manual in Adobe Acrobat format. It is located in the SmartScore directory and is opened by Adobe Acrobat.

In download versions, this selection will attempt to open an Internet connection and begin downloading of the file, SSManual.pdf from the Musitek website. If the file is moved to the SmartScore directory, the local file will open when the Help > SmartScore Manual (PDF) is selection is made again.

11.9.2 Help > Online Help

This selection will attempt to launch your Internet browser and connect to a special interactive help system online at musitek.com. The Online Help system is fully interactive and contains index links, table of contents links and text hyperlinks to related subjects.

11.9.3 Check for Updates

Opens Internet browser and attempts to locate the SmartScore online updates page at: http://www.musitek.com/updates.html

11.9.4 Registration

Opens Internet browser and attempts to locate the Musitek online registration page at: http://www.musitek.com/registration.html

11.9.5 About SmartScore 5

Displays version / update number. Pushing the graphic icon reveals author / programming information.

11.10 MIDI FILE Menu

11.10.1 File > New

Select between a new ENF or a new MIDI. Choosing New ENF will open the New SmartScore Document window. Select a Template or use Custom to create a unique score. Choosing New MIDI will open a blank MIDI Overview and Piano Roll for MIDI input.

11.10.2 File > Open (Ctrl +O / Cmnd+O)

Opens File Selection dialog box and lists saved files. A selected file will be loaded into memory and will display on the screen.

11.10.3 File > Close - (Cmnd+W *Mac*)

Closes all MIDI views. If any changes were made to the MIDI file, option to Save MIDI file. Return to main SmartScore window.

11.10.4 File > Save (Ctrl +S / Cmnd+S)

Writes currently displayed file to the hard disk.

11.10.5 File > Save As

Opens Windows File Selection dialog box

Save processed or modified MIDI files to hard disk following MIDI Recording or Editing procedures.

Use to save selected files to directory other than the working directory

11.10.6 File > Show Task Window (Ctrl + W)

Opens SmartScore Task Window.

11.10.7 File > CD Writer

Opens CD Writer / Burn window. See “File > CD Writer” on page 223.

11.10.8 File > Recent (1,2,3, or 4)

Automatically loads one of the last four files accessed by SmartScore.

11.10.9 File > Exit/ Quit- (Cmnd+Q)

Exit SmartScore. Save current file. Go to Windows main desktop.

11.11 MIDI EDIT Menu

11.11.1 Edit > Undo (Ctrl +Z / Cmnd+Z)

Reverses the last action you performed. SmartScore has ninety-nine layers of Undo.

11.11.2 Edit > Redo (Ctrl +Y / Cmnd+Y)

Reapplies the last action that has been Undone.

11.11.3 Edit > Select

Opens the Select window for defined note selection.

11.11.4 Edit > Select All (Ctrl +A / Cmnd+A)

Selects all MIDI events in every track.

11.11.5 Edit > Cut (Ctrl +X / Cmnd+X)

Removes the highlighted notes from the score and places them in the clipboard.

11.11.6 Edit > Copy (Ctrl +C Win / Cmnd+C *Mac*)

Places selected notes on the clipboard without removing them from the score.

11.11.7 Edit > Paste (Ctrl +V / Cmnd+V)

Insert the contents of the clipboard back into the score without deleting the existing notes.

11.11.8 Edit > Paste Special

Opens the Paste Special window. The Paste Special window offers several options for pasting the contents of the clipboard back into the music.

11.11.9 Edit > Delete (Del)

Deletes the selected section from the MIDI file.

11.11.10 Edit > Delete Track

Deletes the currently displayed MIDI track.

11.11.11 Edit > Program Change (Piano Roll only)

Opens the Change Instrument window. Insert a change to a new MIDI patch.

11.11.12 Edit > Velocity/ Duration

Opens the Velocity and Duration window. Adjust the Velocity and/ or Duration of the selected MIDI events.

11.11.13 Edit > Create Automatic Drum Pattern

If you wish to convert a MIDI drum pattern and add it to the SmartScore drum pattern library, load the MIDI drum pattern file and select this option. For more information, see “Adding custom drum patterns from ENF” on page 208.

11.11.14 Edit > Convert MIDI to ENF

Converts MIDI data in the currently open file to ENF notation.

11.12 MIDI VIEW Menu

11.12.1 View > Navigator

Opens and closes the SmartScore Navigator.

11.12.2 View > Main Toolbar

Opens and closes Main Toolbar.

11.12.3 View > SmartScore Toolbar

Opens and closes SmartScore Toolbar.

11.12.4 View > Image Toolbar

Opens and closes Image Editing Toolbar.

11.12.5 View > Text and Controllers Toolbar

Opens the Text and Controllers toolbar.

11.12.6 View > Mini Console

Opens Mini Console transport control.

11.12.7 View > MIDI Toolbar

Opens the MIDI toolbar.

11.12.8 View > Synchronize

Synchronizes measure sizes in all MIDI views to that of current MIDI view. All horizontal resizing is synchronized between all MIDI views.

11.12.9 View > Show Actual Playback

When selected, all MIDI events (including articulations such as trills and tremelos) are visible in the Piano Roll view. When selected, MIDI events cannot be edited (behavior of articulations is controlled with Properties tool in the ENF view. Turn off to edit MIDI events.

11.13 MIDI OPTIONS Menu

11.13.1 Options > Snap to (Quantization)

Quantities selected MIDI “Note On” events to the nearest “tick” specified. Also determines default quantization value for MIDI recording and for horizontal nudging of selected MIDI events by mouse dragging or by use of the arrow keys. Quantization values range from 32nd triplet to whole note.

11.13.2 Options > File Settings

Opens Sequence Settings window. Shows the MIDI header information including: tempo, time base, time signature, key, and MIDI instrument.

11.13.3 Options > Track (not in Overview)

Opens Track Properties dialog box. Select a different track view, delete, duplicate, rename, or transpose the selected track.

11.13.4 Options > MIDI Devices

Opens MIDI device dialog box. Select MIDI input and output sources.

11.13.5 Options > Instrument Settings

Opens Instrument Settings dialog box. Allows for selection of Port, Bank, and MIDI channel assignment for Instrument and Drum sources.

11.13.6 Options > Metronome Settings

Opens Metronome Settings dialog box. Allows for selection of Port, MIDI Channel, number of lead in measures, MIDI sound and volume for Primary and Secondary beats.

11.13.7 Options > Shuttle On

Activate/ deactivate SmartScore’s shuttle tool.

11.13.8 Options > Virtual Drums Definition

Opens the keyboard map editor for changing computer keyboard key assignments for the Virtual Drum feature. See “Recording a virtual drum track” on page 210 for more details.

11.14 MIDI PLAYBACK Menu

11.14.1 Playback > Set Playback Range

Opens Set MIDI Play Range dialog window.

11.14.2 Playback > Play/ Pause “Spacebar”

Begins/ pauses/ resumes playback of current MIDI file. In Record Mode will start and pause MIDI recording.

11.14.3 Playback > Stop

Stops playback or recording of current MIDI file.

11.14.4 Playback > Rewind “,” (comma)

Rewinds to beginning of Set Playback Range.

11.14.5 Playback > Record

Check to activate MIDI Record mode

11.14.6 Playback > External Timer

Set recording to begin from an external signal.

11.14.7 Playback > Synchro Start

Active only in Record Mode, check to synchronize start of MIDI recording with first note played on MIDI keyboard.

11.14.8 Playback > Thru

Allows MIDI input to sound

11.14.9 Playback > Metronome

Activates/ deactivates Metronome in recording

11.14.10 Playback > Playback Console (Ctrl + 9 / Cmnd+9)

Opens the Playback Console.

11.15 MIDI WINDOW Menu

See "ENF WINDOW Menu", Section 11.8, on page 235.

11.16 IMAGE FILE Menu Items

11.16.1 File > New

Select between a new ENF or a new MIDI. Choosing New ENF will open the New SmartScore Document window. Select a Template or use Custom to create a unique score. Choosing New MIDI will open a blank MIDI Overview and Piano Roll for MIDI input.

11.16.2 File > Open (Ctrl +O / Cmnd+O)

Opens File Selection dialog box and lists saved files. A selected file will be loaded into memory and will display on the screen.

11.16.3 File > Save (Ctrl +S / Cmnd+T)

Writes currently displayed file to the hard disk.

11.16.4 File > Save As

Opens Windows File Selection dialog box

Save processed or modified Image files to hard disk following Scanning and Editing. Use to save selected files to directory other than the working directory.

11.16.5 File > Save As PDF

Saves currently open TIFF image as a PDF file (Windows requires PDF 995 from installer).

11.16.6 File > Scan Music

Selects scanner or initiates scanner to acquire image.

11.16.7 File > Recognition

Initiates Recognition to begin processing saved image file(s).

11.16.8 File > Print (Ctrl +P Win / Cmnd+P *Mac*)

Initiates Windows Print Monitor. Current Image file is output to default printer from selected printer port.

11.16.9 File > CD Writer

Opens CD Writer / Burn window. See “File > CD Writer” on page 223.

11.16.10 File > Recent (1,2,3, or 4)

Automatically loads one of the last four files accessed by SmartScore (Win). Select any recent files by type (Mac)

11.16.11 File > Exit/ Quit (Cmnd+Q *Mac*)

Exit SmartScore. Save current file. Go to Windows main desktop.

11.17 Image EDIT Menu

11.17.1 Edit > Undo (Ctrl +Z / Cmnd+Z)

Reverses the last action you performed. SmartScore has ninety-nine layers of Undo.

11.17.2 Edit > Redo (Ctrl +Y / Cmnd+Y

Reapplies the last action that has been Undone.

11.17.3 Edit > Cut (Ctrl +X / Cmnd+X)

Removes the selected section from the image file and places it on the clipboard

11.17.4 Edit > Copy (Ctrl +C / Cmnd+C)

Places selected section on the clipboard without removing it from the image file.

11.17.5 Edit > Paste (Ctrl +V / Cmnd+V)

Insert the contents of the clipboard back into the image file

11.17.6 Edit > Delete (Del)

Deletes the selected section from the image file.

11.17.7 Select All

Selects the entire image for moving / centering.

11.17.8 Edit > Crop

Trims the image file down to the selected region

11.17.9 Edit > Invert

Switches the colors of the image file.

11.17.10 Edit > Rotate

- Left: Rotates the image file counter-clockwise
- Right: Rotates the image file clockwise
- Any: Opens the Rotate window for rotation by defines degrees.

11.17.11 Edit > Delete Page

Deletes currently displayed page. Does not delete the entire file.

11.17.12 Edit > Selection

Activates the Area Selection tool.

11.17.13 Edit > Line

Activates the Line drawing tool.

11.17.14 Edit > Brush

Activates the Brush tool.

11.17.15 Edit > Deskew

Activates the Deskew tool for straightening “crooked” scans

11.17.16 Edit > Selection Mode

- Opaque

  When a selected area is moved to the clipboard the background will be included

- Transparent

  When a selected area is moved to the clipboard only the black portion of the selected area with be moved.

11.17.17 Edit > Pen Color

Select the color used by the Brush and Line drawing tools.

11.18 Image VIEW Menu

11.18.1 View > Navigator

Opens and closes the SmartScore Navigator.

11.18.2 View > Main Toolbar

Opens and closes Main Toolbar

11.18.3 View > SmartScore Toolbar

Opens and closes SmartScore Toolbar

11.18.4 View > Image Toolbar

Opens and closes Image Editing Toolbar

11.18.5 View > Status Bar

Opens and closes Status Bar at the bottom of main SmartScore Window. Displays current page, cursor position, image size, and zoom percentage.

11.18.6 View > Palettes

Opens and closes tool palettes for ENF document editing.

11.18.7 View > Image Information

Provides information on the structure and type of the currently displayed image file.

11.18.8 View > Next Page

Displays next page of ENF document

11.18.9 View > Previous Page

Displays previous page of ENF document

11.18.10 View > Go to Page (Ctrl +G Win / Cmnd+G *Mac*)

Presents a dialog box to select a page number to jump to. Use scroller to select desired page and click OK.

11.18.11 View > Zoom

Lists available view percentages. Changing zoom will affect both the image and the ENF file simultaneously.

11.18.12 View > Reset Tools and Palettes (F1)

Resets windows, toolbars and palettes to their default position.

11.18.13 View > Reset Warnings

Resets warning messages to their default.

11.19 Image Realtime Menu

11.19.1 Realtime > Thru

Allows MIDI input to sound while recording.

11.19.2 Realtime > MIDI Devices

Opens MIDI Device window.

Glossary

Chapter 12 Glossary

12.1 Score Formats

Score - A musical piece compiled as a document. A score usually contains more than one part with all the parts to be played together. In SmartScore, it is a single computer file; an ENF file. A hand-written score is called a manuscript.

Part - A part is represented by a staff line either alone (solo part) or grouped into a system with other instruments (ensemble part). A part is usually an single instrument, but in the case of two-handed instruments (piano, organ, xylophone, etc.), it may represent one hand's part.

Voice - Derived from choral music but applied to instrumental music as well, *contrapuntal voicing* (sometimes referred to as *polyphonic voicing*) refers to a unique melodic thread distinct from other voices in a measure by its harmonic direction and possibly its timbre. Contrapuntal voices reside in the same measure of the same staff. Voices are often distinguished by stem direction and sometimes by offsetting the horizontal position of notes. For the purposes of SmartScore, a "voice" written in its own staffline is referred to as a "Part".

Score-Part - Scores that are printed in sets for each individual instrument. Players read from their own unique set of pages. For example, a duet for guitar and flute would be printed in two separate sets: one for the flute player and one for the guitar. Staves of part scores flow like a book where each staff line appends to the one above it.

Ensemble - Scores that have multiple staff lines connected by a vertical bar or "bracket" (usually along the left-hand edge of the music). When joined in this way, each staff line represents a different part or instrument. All parts are played "ensemble". Piano music, (with left-hand and right-hand staves) are joined into one system, is regarded as "ensemble". SmartScore assigns each stave to separate MIDI tracks.

Landscape - Some scores are wider than they are high. These "landscape" layouts need to be rotated prior to processing.

Folio - Large sized and conductor scores may need to be scaled down during scanning or reduced on a copy machine before scanning. If the score must be reduced more than 50% in order to fit the imaging area of your scanner, you may consider scanning each full-sized page twice and treat each scan as one “image-page”.

12.2 Score Components

System - A grouping of multiple staves linked together by a solid line or bracket along the left margin is called a “system”. All staves belonging to a system are played simultaneously. In ensemble scores, each system appends to the one before it. A single page of a symphony conductor's score, containing 10 or 20 staff lines per system, may represent only a few seconds of music!

Staff (Stave) - The field on which notes are represented is called a staff. “Staves” is normally used as the plural. At the core of every staff are five horizontal lines. Each successive line and space are equivalent to a full step in note pitch. The higher the note appears on the stave, the higher its pitch. Every staff line anomaly begins with a clef sign and a key signature.

Voiceline - An individual melodic line formed by a voice within one measure. When a staff contains more than one voiceline in any given measure, note stems of each voiceline usually point in the opposite directions. The sum of all note and rest values of each voiceline in any given measure *should be* accounted for, but sometimes are not. Refer to “Working with Contrapuntal Voices” on page 151 for more on dealing with this rule in SmartScore.

Clef - The clef sign at the beginning of each stave identifies which pitch “class” that stave belongs to. The lowest instruments are written in the bass clef, intermediate instruments and voices often use one of three “C” clef classes while higher-pitched instruments, in addition to the right-hand part of a piano score, are scored in the treble clef. The clef sign always appears at the beginning of every staff line and in the first measure if a *change of clef* occurs. Change of clef signs are smaller than normal clefs.

Key Signature - The key signature, along with the clef sign, appears at the beginning of every line; it is also found in the measure where a *change of key* occurs. The key signature defines the "tonal center" of the piece. The number of sharps or flats in the key signature determines the key tone (or tonic).

Time Signature - Time signatures usually appear only once: at the beginning of the stave in the first measure of the piece. They will also appear when a *change of time* signature occurs. Time signatures indicate both the number of beats per measure (numerator) as well as which note value is given the fundamental beat (denominator). The sum of note duration values in a given measure must equal the value of the current time signature.

Note - A note is the fundamental unit of tone. The duration of a note is determined by its note value (normally between 1 and 128 divisions). The note's vertical position on a given staff (with clef) determines its pitch.

Rest - Rests are equivalent to notes insofar as their durations; but represent silence. They act as "place-holders" used to keep the rhythmic structure of the measure intact.

Measure - Staff lines are segmented into equal time divisions called measures. Measures are the building blocks that provide structure for music. The sum of note and rest durations within each measure must equal the value of the current time signature

Barline - Barlines are the vertical lines that define the beginning and ending of measures

Accidental - Note pitches often range outside of the tonal center defined by the key signature. An accidental shifts its associated note up (sharp) or down (flat) by 1/2 step. Accidentals may also be doubled. An accidental remains effective only for the remainder of the measure in which it appears. A natural "cancels" a note's current accidental.

Dot of Prolongation - Notes and rests that are dotted have the value of their duration lengthened by 1/2. For example, a dotted quarter note is equal in duration to three eighth notes. Double-dotted notes increase the note's duration by 3/4 of the original.

Tuplet - Some notes belong to a special readmit class called “tuplets”. These include triplets, quintuplets and sextuplets. A tuplet is a group of notes, usually marked with a bracket, that are subdivided within a single beat, equal in duration to the note’s next higher value. For example, a triplet of three eighth notes is equal in total duration to one quarter note

Ties - A tie links two pairs of notes of the same pitch whose durations are combined so that both notes are played as if one note. Ties are often used to sustain the sound of a note across more than one measure.

NOTE:Ties and slurs (legatos) often look alike, but they are different. Ties connect two notes of the same pitch and combine their durations into one note event and slurs connect two or more notes over a range of pitches forming a *legato* that when performed, creates a slight overlapping of the notes.

Articulations - Performance markings that provide instructions for playback of the marked notes. For example, a staccato, a dot placed above/ below a notehead, means the note should be short, sounding for only a moment.

Dynamics - Dynamic markings are used to denote the general volume and intensity of music. For example, “f” or forte means loud and “p” or piano means soft.

12.3 MIDI Terms

MIDI- Musical Instrument Digital Interface. Originally a hardware device that allowed a computer and a synthesizer to communicate, now a generally accepted term for hardware or software that operate according to General MIDI standards.

Standard MIDI File (SMF) - The file protocol or *format* for music files saved as MIDI (.MID extension). Includes Type 1 (multiple track / multiple channel) and Type 0 (single track / multiple channel) formats.

Sound Device- A MIDI driven tone generator. Sound cards, synthesizers, and MIDI modules all fall under this category.

MIDI Event - Each piece of information contained within a MIDI file is an event. This includes Notes (attack and release), Control Changes, System Exclusive, Meta Events, Program Changes, etc.

Velocity - The speed at which the note was struck, measured with a number from 0-127.

Channel -A MIDI device sends and receives MIDI information along separate and distinct Channels. Each channel contains note and non-note event data. Most MIDI devices can support up to 16 MIDI Channels at one time.

Patch - Every MIDI channel has a MIDI patch assigned to it. A Patch is the instrument sound selected for a particular channel when playing back.

Program Change - Same as a patch. Indicates a change of patch within a given channel or track.

Bank - MIDI devices divide patches into groups of 128. One Bank of patches from a MIDI device can be accessed at a time by a MIDI computer program or another MIDI device.

Port - A computer can run several MIDI devices at a time with the proper hardware. Each device is connected to a unique Port.

12.4 SmartScore Terms

ENF - Extended Notation Format. This is SmartScore's proprietary file format.

Navigator - The floating window containing buttons designed to "navigate" through SmartScore's main features and editing environments.

System Manager - The System Manager is a sort of "virtual system" which allows for manipulating all or specific voices, parts and systems in the score. It contains the parts and voices that make up the active system. The **Super System**, within it, contains ALL possible parts.

Voice Line Threading - SmartScore will differentiate multiple voices within a single staff line by displaying them in different colors (Voice 1-black, Voice 2-red, Voice 3-green, and Voice 4-blue) while, at the same time, creating an independent MIDI channel for each voice. .

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