

# 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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# Table of Contents

---

## Chapter 1

### Introduction to SmartScore - - - - - 1

What SmartScore does...	- - - - -	1
So, what do you want to do?	- - - - -	2
What's new with Version 3.0?	- - - - -	3
What Edition does what.	- - - - -	4
Parts and Voices in SmartScore	- - - - -	5
What to do when this manual does not help	- - - - -	6

## Chapter 2

### Installation and Quick Tour - - - - - 9

Installation	- - - - -	9
Recognition of Scanned Music	- - - - -	9
System Report	- - - - -	10
ENF Editing	- - - - -	11
Playback	- - - - -	14
Changing Instrument sounds	- - - - -	17
Working with the System Manager	- - - - -	18
Changing Parts and MIDI instruments	- - - - -	19
Manipulating a Multiple-voice Score	- - - - -	20
Extracting Parts and Voices	- - - - -	21
Editing Lyrics and Text	- - - - -	21
Editing three or more voices	- - - - -	22
Open MIDI View	- - - - -	23
Viewing all open windows using Tile	- - - - -	23

## Chapter 3

### Scanning and Recognition - - - - - 25

Scanning Music	- - - - -	25
Scanning in Windows®:	- - - - -	25
Using the SmartScore Scanning Interface	- - - - -	26
Automatic image-enhancement functions	- - - - -	27

---

---

## Table of Contents

---

Scanner settings	- - - - -	29
Choosing an alternative scanning interface	- - - - -	30
Working with HP Scanners in Windows	- - - - -	31
Scanning for Macintosh®	- - - - -	32
Scanner drivers for Mac	- - - - -	32
Selecting a scanner	- - - - -	33
Selecting the SmartScore Scanning Interface	- - - - -	33
Choosing Your Scanner's Interface: Automatic	- - - - -	34
Scanner settings	- - - - -	35
Choosing Your Scanner's Interface: Manual	- - - - -	36
Recognition Sequence	- - - - -	37
Recognition Options	- - - - -	38
Post-Recognition	- - - - -	41
Scanning Outside of SmartScore	- - - - -	42
Selecting Pre-scanned Files for Processing	- - - - -	43
Scanning Part Scores (Score-Parts)	- - - - -	45
Recognition Accuracy	- - - - -	46
Troubleshooting Scanning and Recognition	- - - - -	48
Image Editor	- - - - -	50

## Chapter 4

### ENF Playback

---

ENF Playback	- - - - -	57
--------------	-----------	----

Getting Started	- - - - -	57
Error Check	- - - - -	61
Playback Console	- - - - -	61
Working with Voices	- - - - -	62
Altering Playback	- - - - -	67
Repeats and Endings	- - - - -	72
Instrument Templates	- - - - -	73
Add drum tracks	- - - - -	74
Karaoke View	- - - - -	74

## Chapter 5

### Editing Notes and Rests

---

Editing Notes and Rests	- - - - -	77
-------------------------	-----------	----

Navigating Inside an ENF Document	- - - - -	77
Preliminary Cleanup	- - - - -	78
ENF Editing Modes	- - - - -	79
General Note Editing	- - - - -	80

---

## Table of Contents

---

Undo	80
Tool Palettes (F2-F9 keys)	81
Grace Notes	81
Select tool (“O” key)	81
Voice color	82
Error Check	83
Pitch shift	83
Editing beamed notes	84
Stem direction	85
Dots of Prolongation	85
Tuplets and Slurs (Legatos)	85
Ties	86
Barlines	87
Edit Shapes	87
Key and Clef Transposition	87
Creating a New ENF Score from Scratch	88
Saving and Exporting an ENF File	90
Saving ENF files as MIDI or other file types	91

## Chapter 6

### Editing Text and Symbols **93**

Text	93
Lyrics	94
Text and Lyrics: Changing Styles and Entering	96
Edit Shapes	97
Guitar Frets and Chord Symbols	99
Creating and changing chord symbols in the GCL	101
Bracketing	103

## Chapter 7

### Working with Drums **107**

Percussion clef (Clefs Palette)	107
Automatic Drum Patterns	108
Virtual Drum Kit	111

<b>Chapter 8</b>	<b>115</b>
<b>Changing Score Structure</b>	
Controlling Structure from the System Manager	115
Page Setup	120
Re-link Parts	121
Merging Systems	121
Re-linking optimized systems	122
Score Structure	124
Structure and hierarchy	124
Creating a Conductor's Score from Part Scores	124
Joining open ENF files	125
Creating Part Scores from Ensemble Scores	126
Controlling Voices within Score Structure	127
<b>Chapter 9</b>	
<b>Detailed ENF Editing</b>	<b>129</b>
More ENF navigating	129
Quick Keys	132
QuickSelect (Ctrl + Click)	132
Insert and Change Modes (C)	132
Delete by Group / Delete Any (X)	133
Select Tool (O)	133
Using the Select tool for quick deletions	133
Using the Select Tool (O) to edit selected objects	134
Dots (D)	134
Ties (V)	135
Beam direction (A)	135
Flags and beams (F)	135
Stem direction (S)	135
Accidentals	136
Rests (R)	137
Barlines (I)	137
Dynamics (P, < and >)	137
Tuplets (T)	137
Unify Signatures/Clefs (U)	137
Note values (Number Pad)	137

---

## Table of Contents

---

Navigator	- - - - -	138
Transposition	- - - - -	139
System Manager	- - - - -	143
Instrument Templates	- - - - -	147
Working with Voices and Colors	- - - - -	149
Playback Console	- - - - -	154
Hidden Symbols	- - - - -	155
Dynamics, Articulations and Tempo Markings	- - - - -	156
Properties Tool	- - - - -	162
Repeats and Multiple Endings	- - - - -	165
Unify Key, Time and Clefs (U)	- - - - -	168
MIDI to ENF	- - - - -	170
Troubleshooting ENF Problems	- - - - -	172

## Chapter 10

### MIDI Editing and Sequencing - - - - - 177

ENF Notation and MIDI Editor Relationship	- - - - -	177
Opening, Changing and Closing Multiple MIDI Views	- - - - -	179
Track Overview	- - - - -	180
Playback	- - - - -	182
Spacebar	- - - - -	182
Mini-Console	- - - - -	182
MIDI Devices	- - - - -	183
Playback Range	- - - - -	184
Piano Roll	- - - - -	184
Velocity and Tempo Graphical Controllers	- - - - -	185
Switching between tracks	- - - - -	186
Shuttle Tool	- - - - -	186
Inserting program changes (Assign MIDI instrument)	- - - - -	186
MIDI Instrument settings	- - - - -	187
MIDI event selection	- - - - -	189
Changing MIDI event characteristics	- - - - -	190
Note Event window	- - - - -	191
Cut/Copy and Paste	- - - - -	192
Measure Settings	- - - - -	193
Setting Repeats and Multiple Endings	- - - - -	195
Segnos	- - - - -	195

---

---

**Table of Contents**

---

Event List	197
Changing parameters of selected notes	198
Inserting note events	198
Editing Key, Time and Tempo	199
Inserting Non-Note Events	199
Playback Console	200
Display Controls	201
MIDI Recording	202
Step Time Recording	206
Virtual Drum Kit	207
Playback Considerations after MIDI Editing	208
MIDI to ENF	208
Saving MIDI Files	208
<b>Chapter 11</b>	
<b>Reference</b>	<b>211</b>
Properties Tool	211
Tool Palettes	211
ENF FILE Menu	218
ENF EDIT Menu	223
ENF VIEW Menu	229
ENF OPTIONS Menu	234
ENF PLAYBACK Menu	237
ENF Help Menu	238
MIDI FILE Menu	239
MIDI EDIT Menu	240
MIDI VIEW Menu	241
MIDI OPTIONS Menu	242
OMS (Mac Classic Only)	243
MIDI REALTIME Menu	244
MIDI WINDOW Menu	245
Image File Menu Items	245
Image EDIT Menu	246
Image VIEW Menu	248
Image REALTIME Menu	249
<b>Glossary</b>	<b>251</b>
Score Formats	251

---

---

## Table of Contents

---

Score Components	- - - - -	252
Other Notational Terms	- - - - -	254
MIDI Terms	- - - - -	255
SmartScore Terms	- - - - -	259
<b>Index</b>	- - - - -	<b>258</b>

---

---

**Table of Contents**

---

What SmartScore does...	1
So, what do you want to do?	2
What's new with Version 3.0?	3
What Edition does what.	4
Parts and Voices in SmartScore	5
What to do when this manual does not help	6

## 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 Writer**.

### 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. Fine object repositioning in **Edit Shapes** refines the look of your score giving you a professional finish. 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 / Export to MIDI / Export to Finale® / Export to Sibelius® / Export to PDF / Export to NIFF / Record to CD*

## 1.3 What's new with Version 3.0?

### 1.3.1 Even greater recognition accuracy and realism

State-of-the-art recognition methods make SmartScore the most accurate music-reading software ever. This means you will spend less time “cleaning up” recognized files. Version 3.0 has greatly improved notation, text and lyric recognition. Guitar fretboard and chord symbols, triplets (both noted and implied), arpeggios, glissandos, accents, multiple endings, tempo, pedal and bowing markings are now recognized.

### 1.3.2 New tools to enhance your experience

Improved editing functions include smarter beaming including grouping of selected notes into beams and cross-measure beaming. Apply changes to articulation and dynamic markings individually or globally. The Guitar Chord Library now contains more than 500 chords. A new *Karaoke View* lets you sing along with “bouncing ball” and moving lyrics. Immediately add drum tracks based on various styles.

### 1.3.3 Enhanced ENF-to-MIDI relationship

Unlike most MIDI sequencing programs which support only one MIDI channel per part (Type 1 format), SmartScore supports multiple MIDI channels within each MIDI track. This is because SmartScore can differentiate more than one voice within a part. When **Option > Color = Voice**, contrapuntal voices become assigned to individual MIDI channels. In practice, this level of detail creates a world of possibilities for extracting voices or for creating different voice textures during playback.

### 1.3.4 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**

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

### 1.3.5 Parts and Voices in SmartScore

A careful analysis of the structure of music notation reveals that there are two fundamental elements on which all other musical components are built: Voices and Parts. The following table describes their interrelationships in the context of printed music notation. See the Glossary on page 251 for more detailed descriptions of these terms.

**Table 2: How parts and voices are handled in SmartScore**

Element	Contained Inside:	Visible Components:	MIDI Representation
<b>Part</b>	Systems	Staves	Track
<b>Voice</b>	Staves	Notes / Rests	Channel

SmartScore is based on these relationships. The ability to track these basic components throughout a score, the ability to apply different characteristics to them, to control their visibility and spacing on the page, etc. gives SmartScore its unique flexibility. The usefulness of these relationships becomes most apparent in the System Manager, where instrumental characteristics are assigned.

## 1.4 How to use this manual

An excellent way to start using SmartScore is to turn to the **Quick Tour** on page 9. 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 more detailed editing and to operate in a pure MIDI environment.

This manual is fully indexed and cross-referenced. The easiest and quickest method of obtaining information on any topic is to look it up in the Index on page 258 then turn to listed page(s). Detailed descriptions of SmartScore menu items can be found in Reference chapter on page 211.

### 1.4.1 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 Full Edition**

No restrictions.



- **Songbook Edition (Not found in MIDI, Piano or Guitar Editions)**



Identical to SmartScore Full Edition but limited to processing music with no more than 3 staves per system.



- **Piano Edition (Not found in MIDI or Guitar Editions)**

Limited to processing music with no more than 2 staves per system. No text or lyric recognition or editing. No guitar or chord symbols. No MIDI recording or editing.



- **Guitar Edition (Not found in MIDI or Piano Editions)**

Limited to processing music with no more than 1 staffline per system. No text or lyric recognition or editing. No MIDI recording or editing.



- **MIDI Edition (Not found in Piano or Guitar Editions)**

Limited to processing music with no more than 4 staves per system. No text or lyric recognition or editing. No guitar or chord symbols. Limited score editing.

## 1.5 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. We recommend attaching any scanned

images you are having trouble with along with a brief description of the problems you are facing. Technical Support E-mail address is: [tech@musitek.com](mailto:tech@musitek.com)

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 you are running under.
- Model of Scanner you are using
- The type of music you are scanning (orchestral, hand-written, etc.).
- Your e-mail address.

Installation	9
Recognition of Scanned Music	9
System Report	10
ENF Editing	11
Playback	14
Changing Instrument sounds	17
Working with the System Manager	18
Changing Parts and MIDI instruments	19
Manipulating a Multiple-voice Score	20
Extracting Parts and Voices	21
Editing Lyrics and Text	21
Editing three or more voices	22
Open MIDI View	23
Viewing all open windows using Tile	23

## 2.1 Installation

With the packaged CD, you will be able to install SmartScore an unlimited number of times onto your computer. Application files should not be copied to other computers. SmartScore will operate only when installed correctly. Both the Internet and CD installers are copy-protected as a precaution against software piracy. Internet installers can be installed up to 5 times (using ID and Password) before it becomes necessary to call Customer Service to obtain a new download ID.

- a. Insert the SmartScore CD into your computer's CD drive.
- b. (*Windows*) Push **Start > Run** and Browse to find your CD drive under "Look In". Double-click SS3INSTALL.EXE.
- c. (*Macintosh*) Double-click SmartScore CD icon on your desktop. Double-click SS3INSTALL.
- d. Follow all installation steps including entering Serial Number, Customer ID and registering your copy of the product.

## 2.2 Recognition of Scanned Music



SmartScore includes several pre-scanned TIFF files. Launch SmartScore by double-clicking its icon. We will start the tutorial with the sample pre-scanned file, FANDANGO.

- a. Find the Navigator toolbar and push the **Recognition** button.



FIGURE 2 - 1: Navigator toolbar

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

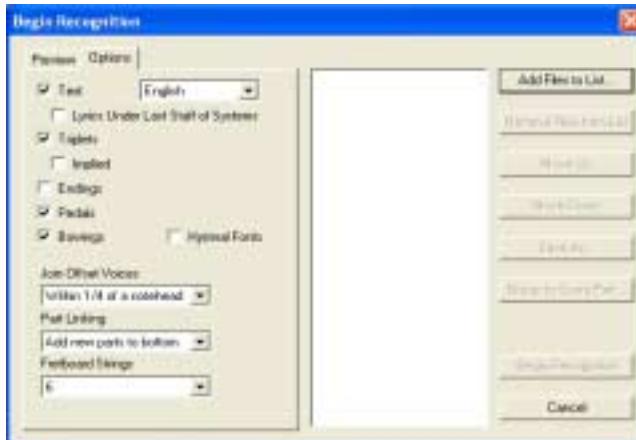


FIGURE 2 - 2: Begin Recognition window



- Press **Add Files to List**. In the **Open** dialog box, double-click on the sample file, FANDANGO.TIF, inside the SmartScore folder.
- This will return you to the **Begin Recognition** window. Turn off *Triplets*, *Endings* and *Text Recognition*. Press **Begin Recognition**. SmartScore will begin to recognize the sample file. When Recognition is complete, the name FANDANGO will appear in the **Save As** filename window with SmartScore's own filetype listed as ENF (Extended Notation Format). The ENF extension will automatically be added to all filenames after recognition. Click on **Save**.

### 2.2.1 System Report

This window will indicate to you how many systems were recognized as well as the number of parts found in the largest and smallest systems. See “Post-Recognition” on page 41 for more details. Press **OK** after studying the report.

### 2.2.2 Unify Key and Time

The Unify function unifies all key and time signatures based on choices listed in the dialog box. See See “Unify Key, Time and Clefs (U)” on page 168 for more details.

- Hit **OK**.

## 2.3 Editing an ENF File

### 2.3.1 Macintosh / Windows shortcut conventions

Most SmartScore keyboard shortcuts are identical on both Windows and Mac machines. These include “**Ctrl + Click**” or “**Ctrl + key + Click**”. Occasionally, however, an entirely different command is required, specifically the familiar Windows *Right Mouse Click*. Since most Macs do not have a right mouse button, the Windows right-click function is performed on the Mac version of SmartScore with “**Option + Click**”

### 2.3.2 ENF Editing

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 - 3: 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.



- To see all staff lines in black, go to the **View** menu and un-check **“Show Active Staff”**. Editing is done a staff-to-staff basis. If you are unsure to which staff a note belongs, turn this back on. To quickly check for errors, select Error Check (**Ctrl + “E”**).

### 2.3.3 Editing Fandango

*To insert the missing grace note in the first measure,*

- a. Move your cursor to the “Notes” tool palette on the left of your screen. Select a 16th note (The number “5” key on your computer keyboard will do the same). Hit the “C” key and toggle to **Insert** mode (displaying only a note). In both **Insert** and **Change** modes, your cursor becomes the selected object.
- b. Press the “A” key to change the beam direction until it points towards the right. In the “Notes” palette, click on the “Grace note” button. Move your cursor into Measure 1 and position the notehead of the grace note on *D*. Press the “S” key to flip its stem direction. 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. See “Insert and Change Modes (C)” on page 132.

NOTE: Grace notes can play back either on the beat (acciaccatura) or before the beat. To change, go to **Playback > Sound Grace Notes**.



**TIP:** The “F1” key will reset all windows and palettes to their default positions. This is especially useful when windows, palettes and tool bars become too scattered or too numerous.

*To insert the missing **dynamic** markings,*

- a. Move your cursor over any tool palette on the left side of your screen and **right-click (Win) / Ctrl + click (Mac)**. This allows you to select any available SmartScore tool palette. Choose the “Dynamics” Palette (**F8**).

- b. Select *Mezzo forte (mf)* in the “Dynamics” palette. Click in Measure 15 to insert the new dynamic marking.
- c. Select *Piano (f)* to activate *Piano* mark. Insert mark in Measure 14.
- d. Hit the “X” key and click on the false “P” in Measure 17 to delete it. Toggle the “C” key to return to **Insert** mode.
- e. Select *Piano (p)* in the “Dynamics” palette to activate *Piano* mark. Click to insert the mark in Measure 17.

 NOTE: To Undo any editing action, select the Undo button in the toolbar (**Ctrl + Z (Win) / Cmnd + Z (Mac)**).

*To insert missing barlines,*

- a. Hit the “I” key. The cursor will become a barline.
- b. Click to insert barlines in the correct spots of Measures 10 & 17.

*Using the **Quick-select** tool to change note values,*

- a. In Measure 3, the beamed triplet was recognized with 16th notes. Hold down the **Control** button of your keyboard and click the first 16th note of the eighth-note triplet in Measure 2. Notice how the cursor changes to an “eighth note-start beam”. This action is what we call *Quick-Select (Ctrl + Click)*. Hit the “C” key to toggle to the **Change** mode (with white arrow) and click on the first note in Measure 3 to correct.
- b. **Ctrl + Click** again on the middle note of the triplet in Measure 2, hit the “C” key and click the middle note of the triplet in Measure 3 to change its value. Repeat with the last note of each triplet.

*To edit chord clusters,*

 A note is missing from the chord in the treble clef of Measure 9.

- a. Press the “Z” key to activate the Cluster Tool. The Cluster Tool is used to build chords or remove single noteheads from a chord.
- b. To insert the new note, click where the *D* belongs below the *F*.

 NOTE: To delete one notehead from any chord, first hit “Z” (the cluster tool), then “X” (the delete mode). Clicking on any

notehead will remove it without deleting the entire note cluster.

#### *Select tool (Copy and Paste / Quick Delete)*



- c. Hit the “**O**” key to activate the Select tool. Drag to highlight the beamed grace notes you entered in Measure 1 earlier. When only the two notes are highlighted, hold down **Ctrl + C** to copy (**Edit > Copy** is the same).
- d. Now, hold down **Ctrl + V** (**Edit > Paste**). Position the mouse pointer to left of the first note in Measure 23 and click to insert the copied grace notes. Holding the Shift button down, move the first grace note from D to E.
- e. *Quick-Select (Ctrl + Click)* the flagged eighth note from the last note in Measure 22. Push the *Grace Note* button in the “Notes” palette and click to insert the grace note in Measure 24.
- f. Go to Measure 23, *Quick-Select* the sharp to the left of the C# notehead and then click on the grace note in Measure 24 in insert.

#### **2.3.4 Playback**

Just hit the *spacebar* to playback this fine little piece by Antonio Soler. SmartScore has scrolling playback, so you will be able to see which notes are sounding while the file plays. The TIFF window closes during play.

The Spacebar acts as a Playback / Pause toggle control. You can also control ENF playback with the floating **Mini Console**. Transport controls are colored and there is a handy tempo controller that smoothly speeds up or slows down playback the further the slider is moved away from the center. Letting go returns the “spring-loaded” slider back to the center and the default tempo resumes.



“Spring-loaded” tempo controller

FIGURE 2 - 4: Mini Console

We will now process a second sample of music and see how SmartScore helps you edit parts, assign instrument sounds and isolate a part. Most scores have parts joined together into “systems”. Each horizontal staff of each system represents a “visible” part or active instrument.

### 2.3.5 Editing Gluck



- a. Push the **Recog** button in the Navigator. If you have any open documents, you will be asked to save them. In the **Begin Recognition** window press **Add Files to List**. In the **Open** window, double-click GLUCK.TIF inside the SmartScore folder.
- b. In the **Begin Recognition** window, click to remove the check mark next to “Text” checkbox Since there are no lyrics or text to recognize.
- c. Press **Begin Recognition** button to start the recognition process. **Save** the recognized ENF file when prompted.
- d. To listen to GLUCK.ENF just press the *spacebar*.

*To shift note pitches,*

- In the flute part of Measure 3, an eighth note of a beamed group needs to be a pitch higher. While holding the **SHIFT** button down, drag the notehead of the first beamed note up from A to B.

*To quickly delete objects,*



- Activate the Select tool (“**O**” key). Click and drag to highlight both the slur and the tie above the staffline in Measure 10. Hit the **Delete** key to remove them.

*To quickly insert ties, dots and accidentals and articulations,*

- a. **Ctrl + click** on the dotted half note in the previous measure to *Quick-select* it. Move the mouse pointer to the beginning of Measure 10 and click to insert the dotted half note.

NOTE: The “**S**” key will allow you to toggle the stem direction of any selected note.

- b. Hit the “**V**” to activate ties. Click on the dotted half notes in Measure 9 and again in Measure 10 to insert each tie.

NOTE: Right-click while inserting a tie (*Mac: Ctrl + click*) will reverse the default orientation of its arc.

- c. There is a spurious dot in the eighth note beam sequence inside Measure 10. To delete the dot, toggle the “D” key until the cursor appears as a greyed-out dot and arrow. Click on the notehead with the dot to remove.
- d. In Measure 18, *Quick-select (Ctrl + click)* the natural sign in the right hand piano part. Move your cursor up to the flute part and click on the half-note B to insert the natural.
- e. **Right-click (Win) / Ctrl + click (Mac)** on any open tool palette. Click on *Articulations* and select *Trill (“tr”)*. Click on the quarter note at the end of Measure 19 to insert the trill.

### *Using the Properties Tools and Selecting Playback Range*



- a. Select the **Properties Tool** button from the SmartScore toolbar. Click onto the trill you just inserted. A properties window will open that allows you to change playback properties of the trill. Move the “*Permutations*” slider to 8 and select “*Fixed Number of Durations*”.

NOTE: The **Properties Tool** works for most articulation, dynamic and tempo markings. See “Properties Tool” on page 162 for more information on how to edit these object’s properties.

- b. Go to **Playback** menu and select **Select Play Range**. Change the beginning measure to 19. Select **OK**. In the Mini-console, press the **Rewind** button then **Play** to hear the changes you just made.

### *Visualizing contrapuntal voices*

Voice color mode 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.



- a. In the SmartScore Toolbar, push the “Voice Visibility” button.
- b. Notice in each staff how notes and rests appear as either black or red. This represents the two voices in each staff line.
- c. To see how multiple voice colors are represented in MIDI, reopen the **Playback Console (Ctrl + 9 / Cmnd + 9)**.

Notice that Track 2 (PianoR in System Manager) has two voices: Black = Voice 1 / Red = Voice 2.



FIGURE 2 - 5: Playback Console with Options> Color Mode > Voice selected

### 2.3.6 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*. By default, the solo part was automatically assigned the *Flute* patch. Let's say you want to hear the solo part as a clarinet sound instead.

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



FIGURE 2 - 6: Changing instruments in Playback Console

- In Track 1, click on *Flute* in the Instrument column and scroll up 2 instruments and select *Clarinet*. Push the spacebar or **Play** button to hear the solo part played as clarinet. Move volume slider left or right to increase or decrease volume on one or more parts. Reset Track 1 to *Flute* or some other instrument. **Close** Playback Console.

## 2.4 Working with the System Manager



The **System Manager** is a very powerful editing tool. It controls part and voice visibility, part name and template assignment, staff and system spacing as well as instrument assignments at the voice level within a part. Here, we will isolate the solo part and copy it to a new document.

### 2.4.1 Extracting a part in System Manager

**NOTE:** Normally all parts, represented by staff lines, play simultaneously. SmartScore considers each staff of a system as a “Part” and also as a MIDI track. A given part may or may not be visible in every system. These irregular or expanding & collapsing systems are sometimes referred to as “optimized” systems. See “Part visibility” on page 145 and “Re-link Parts” on page 121 for more details on controlling visibility and linking of parts.

- Hit **(Ctrl + M / Cmnd + M)** or select **System Manager** from **Edit** menu.



FIGURE 2 - 7: 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.

#### 2.4.2 Changing Parts and MIDI instruments in System Manager

We will now use 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, hit **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 MIDI sounds are obtained from **Instrument Templates**.

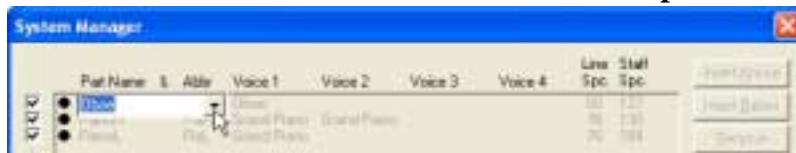


FIGURE 2 - 8: Changing MIDI instruments by selecting new Part Name

- 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.

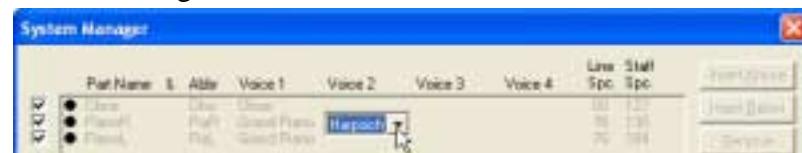


FIGURE 2 - 9: Changing MIDI instrument of a voice in System Manager

- 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**).

## 2.5 Manipulating a Multiple-voice Score

Many scores are written with multiple voices within a staff line. Solo piano, guitar and choral music typically include at least a few measures that include different voices moving independently. What we refer to as “Voiceline Threading” allows you to track and manipulate contrapuntal (polyphonic) voices easily. SmartScore treats voices as fundamental entities, not simply as notes with stems pointed in different directions.



The sample file, CHORALE, is a famous Lutheran chorale. It has four voices: *Soprano*, *Alto*, *Tenor* and *Bass* written in two staff lines (SA/TB).

- a. Push the **Recog** button on the Navigator.
- b. Press the **Add Files to List** button in the **Begin Recognition** window. Select CHORALE.TIF from the SmartScore folder in the **Open** window and then press **Open**. In Options area, leave *Triplets*, *Endings* and *Text Recognition* unchecked.
- c. Press the **Begin Recognition** button. Once Recognition is complete, save the new ENF file, CHORALE.ENF.

In the upper staff, the *Soprano* voice is in black and the *Alto* voice is in red. Because it is the first voice in the lower staff, the *Tenor* line is displayed in black and the *Bass* line is displayed in red. SmartScore allows up to 4 voices per staff: black (V1), red (V2), green (V3) and blue (V4).

- d. While holding down the **Ctrl** button, hit the “9” key. This opens the Playback Console.
- e. Change MIDI Instrument assignments for **PianoR** (Voice 1) to *Choir Ahs* and **PianoR** (Voice 2) to *Voice Oohs*.
- f. Push the **Play** button to hear. Press **Close** to close the console.

### 2.5.1 Extracting Parts using Score Structure

- From the **Edit** menu, choose **Score Structure**.
- Check the **Show Voices** box to view voices.
- Click to highlight the box titled “*PianoL*” and push the **Remove** button.

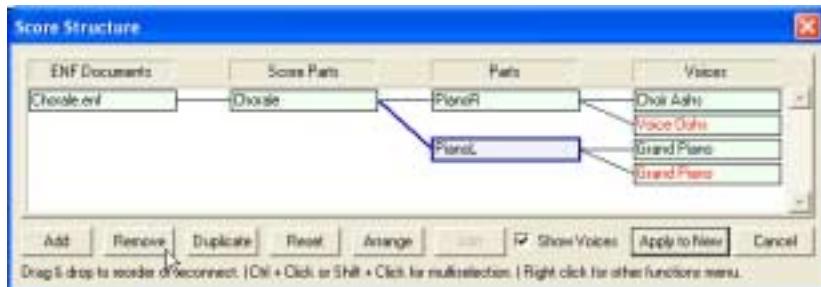


FIGURE 2 - 10: Eliminating a part in Score Structure

- Now push the **Apply to New** button. This creates a new ENF document containing only the soprano and alto voices. The original file will remain unchanged.
- Press the spacebar to hear only the women’s voices. Now, we will extract the alto voice and hear it by itself.

### 2.5.2 Extracting Voices in System Manager

- 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.
- Uncheck the box under **Voice 1** to make the soprano part invisible. In the **Apply** region below, check the **Visibility** box since the only change we are making in the System Manager is to visibility.
- Press **Apply to New** to create a new ENF document containing only the alto voiceline.
- Press the spacebar to hear just the alto line.



### 2.6 Editing Lyrics and Text

- Select **Recognition**.

- b. Press the **Add Files to List** button in the **Begin Recognition** window. Select SONGBOOK.TIF and press **Open**. In the *Options* area, check the box to the left of *Text Recognition*. Change **Language** to *English*.
- c. Press the **Begin Recognition** button. Once Recognition is complete, save the ENF file, SONGBOOK.ENF.
- d. The lyrics in the first system appear too close to the arcing slur in the right hand piano part.
- e. With Shift button down, click and drag the first set of lyrics up.
- f.  Press the **L** (Lyric) button in the *Text and Controllers* toolbar. With the lyric cursor activated, click on half note in the top staff line. The cursor will insert at the beginning of the lyric block associated with that note.
- g. Using the arrow keys, move the cursor down to the next lyric line and then right to the end of the lyric block. Hit “?” to insert it.
- h. Repeat in Measure 8 by clicking on the topmost dotted half note.

## 2.7 Editing Solo Guitar Music / MIDI View

### 2.7.1 Editing three or more voices

Solo classical guitar and solo violin scores are unique in the world of published music. Usually more than two voicelines are present; each voiceline represented by notes with opposite stem directions. In classical guitar notation, different voices represent the four plucking fingers of the right hand and in solo violin music, notes with stems in opposite directions represent the four strings of the instrument. A closely-spaced cluster of three or four disconnected notes, stems pointing in either direction with their noteheads slightly offset represents a “chord”. Such interesting formulations pose real challenges to intelligent music-scanning software...

- a. Push the **Recognition** button in the Navigator. In the **Begin Recognition** window, push **Add Files to List** and select GUITAR.TIF from the SmartScore folder and press **Open** (or double-click the filename). Press **Begin Recognition**.

- b. Push spacebar to **Play**. Notice as the music plays, notes have three colors, including green. The green notes represent the third or tertiary voice. Hit spacebar again to **Stop**.
- c. With the Select Tool (“O” key), click on the text “MY” in Measure 5 to highlight. Hit “Delete” to remove it.
- d. Open the **Playback Console (Ctrl + 9 / Cmnd + 9)**. Click into Instrument selection for Track 1 / Voice 2. Change *Nylon String Guitar* to *Tango Accordion*. Push the spacebar and listen to how contrapuntal voices become more distinct when they are assigned to different instrument sounds.

### 2.7.2 Open MIDI View



MIDI

- 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. Push **MIDI** button in the Navigator again. This time the option of opening *Piano Roll* appears. Push **OK**. The score is now displayed in a “piano roll” configuration where note lengths appear as long bars. Notice that contrapuntal voices maintain their color.

### 2.7.3 Viewing all open windows using Tile



Tile

- a. Click on the “*Tile Windows*” button in the Main Toolbar to view all windows that are open in SmartScore.
- b. Using your mouse, click and drag on the margins of each window to resize them as you wish.
- c. Clicking into any window activates it. You may zoom, edit and scroll as you would if it were the only open window.



**TIP:** Viewing both the ENF and MIDI windows simultaneously allows you to visualize both sides of the SmartScore equation: The graphical environment and the time-based environment. 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.

Scanning Music	- - - - -	25
Scanning in Windows®:	- - - - -	25
Using the SmartScore Scanning Interface	- - - - -	26
Automatic image-enhancement functions	- - - - -	27
Scanner settings	- - - - -	29
Choosing an alternative scanning interface	- - - - -	30
Working with HP Scanners in Windows	- - - - -	31
Scanning for Macintosh®	- - - - -	32
Scanner drivers for Mac	- - - - -	32
Selecting a scanner	- - - - -	33
Selecting the SmartScore Scanning Interface	- - - - -	33
Choosing Your Scanner's Interface: Automatic	- - - - -	34
Scanner settings	- - - - -	35
Choosing Your Scanner's Interface: Manual	- - - - -	36
Recognition Sequence	- - - - -	37
Recognition Options	- - - - -	38
Post-Recognition	- - - - -	41
Scanning Outside of SmartScore	- - - - -	42
Selecting Pre-scanned Files for Processing	- - - - -	43
Scanning Part Scores (Score-Parts)	- - - - -	45
Recognition Accuracy	- - - - -	46
Troubleshooting Scanning and Recognition	- - - - -	48
Image Editor	- - - - -	50

### 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 drivers and/or Mac plug-ins are normally included in the software packaged with most scanners. It may be necessary for some users to perform “Custom > Install TWAIN” from the CD which was included with your scanner, depending on the manufacturer.

**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.

**Mac Only: Skip the next section. Turn to  
“Scanning for Macintosh®” on page 32.**

### 3.2 Scanning in Windows®:

- 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.

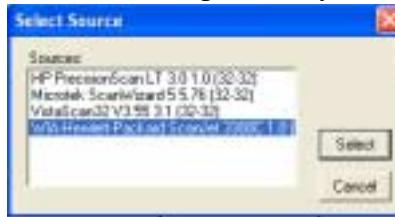


FIGURE 3 - 1: File > Scan Music > Select Scanner

**NOTE:** (**Win XP®** and **NT®** only): Select “WIA xxxx xxxx” if available. Do not select “PrecisionScan”®, etc. when WIA driver is available. For **Win 98®** or **2000®**, see “HP” on page 31.

If you do not see anything listed in the **Select Scanner** window, your drivers are probably not installed. Install or replace TWAIN driver from scanner CD or from the “Download Drivers” area of scanner manufacturer’s website. If the scanner still does not operate properly, go to “Choosing an alternative scanning interface” on page 30.

- c. Push the **Scan** button in the Navigator or in the Main Toolbar.



FIGURE 3 - 2: Scan Button

### 3.2.1 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.

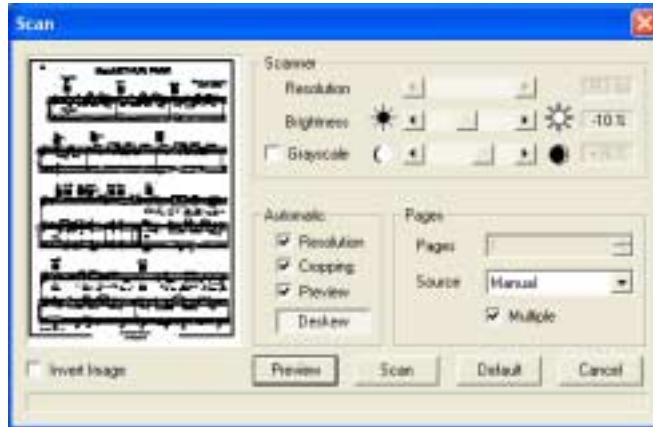


FIGURE 3 - 3: SmartScore scanning interface

**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.

- d. To resize the bounding box, click and drag any of the 4 sides so there is at least 1/4" of white space between the bounding box and the music which you are scanning.
- e. To scan more than one page, make sure **Multiple** is checked.
- f. Push the **Scan** button to create a final high-resolution scan of first page. You will be prompted to scan additional pages. 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.

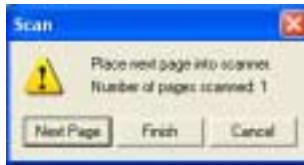


FIGURE 3 - 4: Scan Next Page / Finish window

NOTE: Before selecting **Next Page** place the next page into the scanner and wait until the scanner bar resets. If you push too soon, you may get an error message that "Scanner cannot be found." or "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 (Win / Mac)" on page 37 to complete scanning and to begin the recognition process.

### 3.2.2 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 feature whenever possible.

- **Auto Cropping**

The cropping rectangle defines the final image area. You may change its size by dragging any edge with your mouse. The cropping rectangle should not intersect or interfere with any part of the music. There is no need to extend the length of the rectangle beyond your area of interest. SmartScore will automatically center each page of music to the selected default page size. 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.

- **Override Grey**

SmartScore's scanning interface uses standard TWAIN commands to control scanner settings such as resolution and color selection. Some scanners use "image intelligence" that automatically select scanner settings. Many of these scanners "think" printed music is a photograph and create a *grey* image which is then "dithered" to black and white. If recognition fails or results are extremely poor, zoom If the image appears as small speckles (salt-and-pepper) rather than solid black, then the image has been dithered. In this case, re-scan with the **Override Grey** option checked in the SmartScore interface.



FIGURE 3 - 5: Image dithered by scanner “intelligence”

NOTE: If still you fail to get a workable image using SmartScore’s scanning interface, turn to “Choosing an alternative scanning interface” on page 30.

### 3.2.3 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 and determine the following:

- If objects lack detail, rescan with increased resolution.
- If objects such as note stems and staff lines are broken or lack thickness, rescan with 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 450 dpi. For miniature scores, try 500 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.

### 3.2.4 Choosing an alternative scanning interface

If your scanner does not respond to the **Scan** command in the SmartScore interface or your scanned image is unacceptable (partially scanned, grey, color, etc.)...

- 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 TWAIN driver is probably incompatible with SmartScore's own 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 your scanner's interface.

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

- Place music in the scanner as squarely as possible.
- Scan in Black & White (*Line Art, 1 bit or OCR*). Do not scan in color or in greyscale. “Black & White Document” may be grey.
- Crop in the music to be scanned by dragging mouse in preview.
- Scan between 300-400 dpi (average printed music).

### 3.3 Working with HP® scanners in Windows

#### 3.3.1 Choose Interface > SmartScore's (with HP scanners)

- **For Win XP and Win NT**

Go to **File > Scan Music > Select Scanner**, choose “**WIA xxxx xxxx**”. Do not select “**PrecisionScan**”. Push **Scan** button or **File > Scan Music > Acquire**. If problems occur using SmartScore scanning interface, see Section • below.

- **For Win 98, Win 2000**

- a. Push **Scan** button or **File > Scan Music > Acquire**.
- b. Check the **Override Grey** button in the SmartScore interface.

NOTE: Adjust the midpoint where light grey pixels go to white and dark grey pixels go to black by using the **Threshold** slider.

#### 3.3.2 Choose Interface > Your Scanner's (with HP scanners)

- **Working with HP PrecisionScan®**

- a. Go to **File > Scan Music > Choose Interface** and select **Your Scanner's**. Push the **Scan** button in the Navigator bar.
- b. Select “**Black and White Document or Text**” in PrecisionScan.
- c. Push the “**Adjust Quality**” link and change Resolution to 300, 350 or 400 as required.
- d. Push “**Scan**”. Image will be transferred to SmartScore for saving and recognition. If a warning that resolution is 7 dpi appears, reset resolution.

NOTE: If problems still occur, scan outside of SmartScore. See below. Refer to basic settings “**Scanning Outside of SmartScore**” on page 42.

#### 3.3.3 Scanning Outside of SmartScore (with HP scanners)

- **HP PrecisionScan scanning interfaces (Win Only)**

*For HP scanner models 5100, 5200, and 5300 (PrecisionScan):*

- a. Choose **Settings > Preferences** from the main program window.

- b. Click the tab labeled “Auto Detect”.
- c. Remove the check mark for “Detect regions on the page”.
- d. Set Resolution to 300 to 400 dpi.

*For HP scanner models 5370, 6200, 6300, and 7400 (PrecisionScan Pro):*

- a. Choose “Output Type” from the menu bar.
- b. Select “Black and White”.
- c. Set Resolution to 300 to 400 dpi.

*For HP scanner models 3200, 3300, 4100, and 4200 (PrecisionScan LT) and for HP scanner models 2100, 2200, 3400, and 4300 (PrecisionScan LTX):*

- a. Choose Settings > Output Type menu option.
- b. Select “Black and White”.
- c. Set Resolution to 300 to 400 dpi.

## 3.4 Scanning for Macintosh®

**NOTE: Mac Scanning Notification:** Many Mac scanners are not fully TWAIN-compatible. In order for SmartScore to control a scanning device, it must be TWAIN-compatible. This is true for both Mac OS 8/9 and OS X®. As of this publication, only a handful of OS X scanners have successfully implemented TWAIN. Tests performed at Musitek on many “Mac OS X” scanners indicate that currently, only the newer lines of HP® and Epson® OS X scanners are fully TWAIN-compatible. See “Selecting a scanner” below and “Selecting the SmartScore Scanning Interface” on page 33 for details.

### 3.4.1 Scanner drivers for Mac

Make sure you have installed the scanner drivers that came with your scanner. Often it is necessary to select “Custom Installation” and then choose “TWAIN” and/or “Plug-ins” to install these specialized drivers.

### 3.4.2 Selecting a scanner

- a. Go to **File > Scan Music > Select Scanner**. If your scanner's icon is visible, click it.

NOTE: If you have installed all available scanner driver software and you still do not see a scanner driver listed, it will be necessary to scan outside of SmartScore. In that case, turn to “Scanning Outside of SmartScore” on page 42. If your scanner works, disregard the **Plug-ins** option below.

- b. Test scanner by pushing the **Scan** button in the Navigator or by choosing **File > Scan Music > Acquire**.

- **Plug-ins**

If your scanner does not include a TWAIN driver or if it does not respond properly, try operating your scanner with a Plug-in instead:

- a. To quickly test your scanner, go to **File > Scan Music** and select a plug-in for your scanner if it is visible. Then push the **Scan** button in the Navigator or select **File > Scan Music > Acquire**.
- b. If you do not see your plug-in listed in **File > Scan Music > Select Scanner**, go to your scanner's installed directory (folder), look for a “Plug-in” file with an “Escher” icon and make a copy of it (**Cmnd + D**). Drag the copied plug-in to the **Plug-Ins** folder inside the **SmartScore** folder. (To search for plug-ins, click on the desktop, select **File > Find** and search for “plug-in”).

NOTE: If you own Adobe® Photoshop®, your scanner plug-in will be found inside **Photoshop > Plug-ins** folder.

NOTE: Older plug-ins and drivers may not work with SmartScore. If so, try downloading the most current TWAIN driver or plug-in from your scanner manufacturer's web site.

### 3.4.3 Selecting the SmartScore Scanning Interface

Default scanning control is set to SmartScore's interface (**File > Scan Music > Choose Interface > SmartScore's**).

- a. Push the **Scan** in the Navigator or select **File > Scan Music > Acquire**. The SmartScore scanning interface should open. Functions available within this interface are described in “Using the SmartScore Scanning Interface” on page 26.

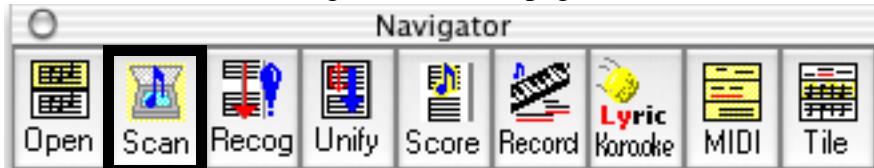


FIGURE 3 - 6: Scan Button (Macintosh)

- b. After you have scanned in one page, you will be given several options. Turn to “Recognition Sequence (Win / Mac)” on page 37 to continue.

If your scanner does not respond properly, choose **File > Scan Music > Choose Interface > Your Scanner’s > Automatic**.

#### 3.4.4 Choosing Your Scanner’s Interface: Automatic

Try this selection first if your scanner does not respond to SmartScore’s scanning interface. Both this option and the alternative (**Manual**) option use your scanner’s interface to acquire multiple pages of music. Each scanned page is analyzed for optimum resolution. If the resolution is out of range, you will be prompted with a recommended resolution. You can choose to retry scanning again or to ignore and continue. Both options will save multiple scanned pages in a single, highly compressed image file format (TIFF CCITT Group IV).

**NOTE:** Once you make a successful scan, it will not be necessary to reselect either your scanner or interface. They are stored.

- a. Place the first page of your score face down into your scanner.
- b. If your scanning software has a **Preview** button, push it.

Notice the scanning **region** defined in your scanner’s preview window. The scan region is bounded by flashing dots, marching ants or by some other obvious delineator and can be resized. This **bounding box** identifies the boundaries of the area to be scanned.

- c. With your mouse, click and drag the edges of the bounding box so the **entire** area of the music is encompassed. Do not cut off any margins as they determine score structure. Try to leave about 1/4" to 1/2" of white space on all sides of the music. Press down hard on the spine if you are using a book.
- d. Find the controls for **Resolution (dpi)** and **Darkness / Brightness** in your scanner's interface. It may take some poking around.

### 3.4.5 Scanner settings

- **Resolution**

Select a resolution of 300-350 dpi for most music. If the original music is printed in smaller type, increase resolution to 400-500 dpi. For miniature scores, try 600 dpi, but don't expect miracles if the music has extremely small print. It is not recommended you scan music below 250 dpi or higher than 600 dpi. If the resolution you selected is too high or too low, you will receive a message at the beginning of the recognition sequence recommending another resolution. You will have to choice to "**Continue**" or "**Rescan**".

- **Darkness / Brightness**

For typical printed music, scan slightly darker than "0" setting (e.g. -10). This tends to "fatten up" objects. 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 (e.g. -10% or -15%). If beams smear together and whole and half notes appear closed or "blobbed", then brighten the scan (e.g. +15%). SmartScore wants to see solid, well-defined lines that are neither razor-thin nor smeared together.

- a. Once set, press the **Scan** or **Final Scan** button in the scanning window. If you selected a resolution outside of the optimum range, you will be prompted for the best possible resolution in dpi. Push **Retry** and reset the recommended resolution. **Ignore** sends you to the "**Scan Next Page / Begin Recognition**" dialog (See "**Recognition Sequence (Win / Mac)**" on page 37).

If your scanner does not respond properly, choose **File > Scan Music > Choose Interface > Your Scanner's > Manual**.

### 3.4.6 Choosing Your Scanner's Interface: Manual

#### For Mac "Classic" Users Only:

Choose **Interface > Your Scanner's > Manual** option is the third and final Macintosh option for scanning within SmartScore itself. Using the **Manual** option is similar to using **Automatic** option, except for final previewing, cropping, de-skewing and paging which is controlled by a special "Image Processing" window. If your scanner still does not respond properly in this mode, it will be necessary to scan outside of SmartScore. See "Scanning Outside of SmartScore" on page 42 for those details.

- a. Push the **Scan** button or **File > Scan Music > Acquire**. Your scanner's interface should appear on-screen.
- b. With your mouse, click and drag the edges of the scan region to create **maximum** sized image. It is very important to acquire a full-sized image in the preview window of your scanner's interface. Subsequent scans may cut off regions of the music if you are scanning several pages.
- c. Preset scanner as described in "Scanner settings" on page 29. Push **Scan** or **Final Scan** in your scanner's interface.

In this mode, you will preview only the first page in your scanner's interface. All subsequent pages are previewed in the Image Processing window.

- d. After a page is scanned , the *Image Processing* window will open...

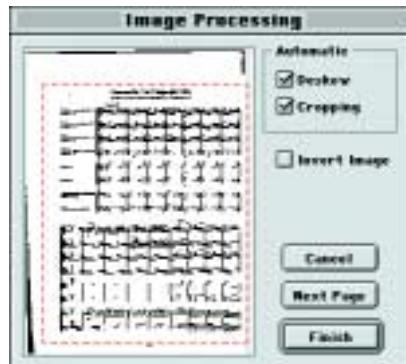


FIGURE 3 - 7: Macintosh Image Processing window

Refer to the following descriptions of the controls available in the **Image Processing** window:

- **Auto Deskew**

Once 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, reposition your music in the scanner and preview again.

NOTE: If the preview image appears mostly black, this means your scanner is reversing image polarity. In this case, you will want to check the box, **Invert Image**, next to the Preview window.

- **Auto Cropping**

The cropping rectangle defines the image area. You may resize by dragging any side with your mouse. The cropping rectangle should not intersect or interfere with any part of the music. There is no need to extend the rectangle beyond your area of interest. SmartScore will automatically center each page of music to the selected default page size. Check that the preview image is straight and properly cropped for each page previewed.

### 3.5 Recognition Sequence (Win / Mac)

Choose **Scan Next Page** or **Save As and Begin Recognition** to initiate the recognition process. Choose **Open Pages in Image Editor** to view scanned pages and to make alterations such as cropping, deskew, line drawing, cutting and pasting, etc. Choose **Cancel** to stop.



FIGURE 3 - 8: Scan Next Page / Finish window

NOTE: If you select **Open Pages in Image Editor**, turn to “Image Editor” on page 50 to learn about editing scanned images.

*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.



### 3.5.1 Recognition Options

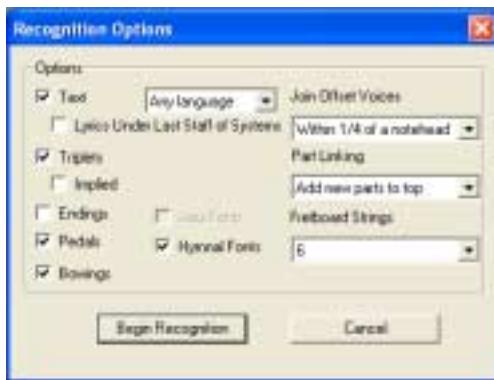


FIGURE 3 - 9: Recognition - Options

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 48.

- **Language**

SmartScore OCR interprets unique characters belonging to individual languages. To exclude the possibility of recognizing characters that do not belong to the language of a piece, choose its appropriate language.

- **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.

- **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 repeated groups of three beamed notes (except for scores with “tripled time” signatures: x/3, x/6, etc.). The first grouping is usually indicated with a triplet marking. For the sake of convenience implied triplets are not repeated again.

- **Endings**

If the music has more than one ending indicated, check this box.

- **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.

- **Hymnal Fonts**

If you are scanning in music from a hymnal (with stubby flags and short stems), check this box.

- **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 “Vertical Alignment and offset voices” on page 64). 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 do not appear until actually played. Optimized scores have irregular numbers of parts (and staves) in systems. As new parts are introduced, they are normally added to the top, e.g. a vocal line appears on top after a piano introduction. However, sometimes 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**”. However, this is rather rare.

- **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.

### 3.5.2 Post-Recognition



FIGURE 3 - 10: Post-recognition System Report

Following recognition, a System Report will be displayed indicating the number of systems found and on how many pages. Most importantly, it will inform you of the largest and smallest systems including the number of parts found in each. If any of these structures do not coincide with the original music, you will want to investigate the cause before spending a lot of time editing the score... it may be difficult or even impossible 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). The ***Save As > Image*** window has a field to type in a name for the image file.
- 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 143 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 50 for more details.

The last window to open is to **Unify** key and time signatures. Selecting **Yes** will unify all key and time signatures based on what was recognized in the topmost part of the first system. The default is **No**. Select “**No**” if the piece is an orchestral score with transposed instruments. See “**Unify Key, Time and Clefs (U)**” on page 168 for details.

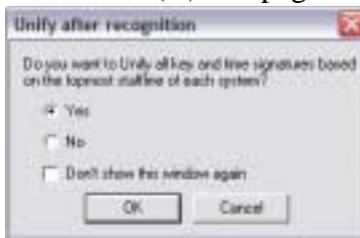


FIGURE 3 - 11: Unify Key and Time After Recognition

**NOTE:** Both **System Report** and **Unify Key and Time** can be permanently disabled by selecting “***Don't show this window again.***”

- e. Refer to page 57 for information on ENF playback, or to page 80 for information on editing of the ENF file.

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 Zoom Window Viewing**” on page 129

### **3.6 Scanning Outside of SmartScore**

An alternative to operating your scanner from inside SmartScore using TWAIN or a Mac plug-in 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 **Recognize** the saved images in SmartScore. This is the least desirable choice. You will get more reliable results if you scan from within SmartScore.

If you are going to scan outside of SmartScore, use the following guidelines for successful music scanning:

- Place music in the scanner as straight as possible.
- Set Output or Purpose to **Black & White** (Line Art, 1 bit or OCR) not color or gray. Do not select “Color” or “Photo”.
- Set **Resolution** to 300-400 dpi for average printed music.
- Set **Darkness** to -10 or -15% for average printed music.
- Save as TIFF file. *Uncompressed* will be about 1 MB per page. *Compressed* files are smaller. BMP will work too. 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).



### 3.7 Selecting Pre-scanned Files for Processing

**NOTE:** For detailed information on proper scanning procedures, see “Scanner settings” on page 35.

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

- a. Push the **Recognition** button on the Navigator or select **Recognize** under the **File** menu.



FIGURE 3 - 12: Recognition Button

A file-selection window ***Begin Recognition*** will open. Here you will list your prescanned files for recognition by selecting them, rearranging them, removing or adding them.

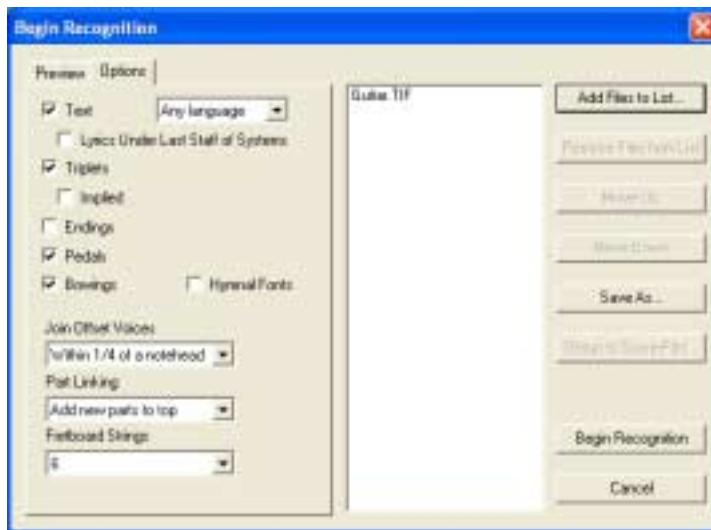


FIGURE 3 - 13: Recognition - Selected Files / Options / Preview

- b. In the ***Begin Recognition*** window, push **Add Files to List**.
- c. Browse to where you stored your scans. 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: 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.

- d. You might want to preview pages prior to recognition to check that pages were scanned completely, that black areas do not obscure part of the music 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.
- e. 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”.
- f. Refer to “Recognition Options” on page 38 for details on how recognition options function.

### 3.7.1 Rearranging 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.

### 3.7.2 Recombining multiple image files (Creating new Page Groups for Recognition) and re-saving a multiple-page image file

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.

## 3.8 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.

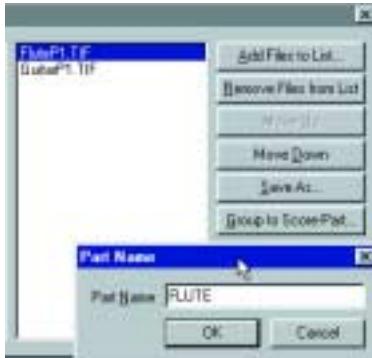


FIGURE 3 - 14: Grouping pages to Score-Parts

- 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 "Creating a Conductor's Score from Part Scores" on page 124.

### 3.9 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 open file in the Image Editor (**File > Open > Files of Type = Image**).

Determine the following by zooming close up:

- If close-up examination reveals the image to be speckled (salt-and-pepper), your scanner may have created a dithered image.

(See page 28). To override automatic dithering, check the “Override Grey” box in the SmartScore interface. Normal thresholding level is +38. Decreasing will darken the image.

- If objects lack detail, rescan with Auto-Resolution = On or increase scanning resolution manually. Optimum distance between horizontal stafflines is 20 pixels. Use your mouse pointer and pixel coordinate readout in the Status Bar to measure.
- If objects such as note stems and staff lines are broken or lack thickness, rescan 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.

### 3.9.1 Troubleshooting Scanning and Recognition

**Table 3: 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 ( <b>File &gt; Scan Music</b> )
	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 with <b>Resolution</b> off. Re-scan in <b>your scanner's software</b> . <b>Select Black &amp; White / 350 dpi / TIFF</b> .
	Scanner model used does not support variable DPI (1 pixel increments)	Re-scan with <b>Resolution</b> off. Manually set to value acceptable to scanner (300 to 600 dpi).
“1-bit image only” or “Cannot process grey images.”	Scanner was set or forced by scanner software to scan in Grey, Color or Photo.	Re-scan in <b>SmartScore interface</b> with “ <b>Override Grey</b> ” = <b>ON</b> (Win).
“Recognition failed for this page.”	Scanner set to screen resolution of 50-100 dpi.	Scan again accepting <b>Auto-resolution</b> settings for best results.
		Manually set resolution to 350 dpi and scan again.
	Scanner was set or forced by scanner software to scan in Grey or Color.	Re-scan in <b>SmartScore interface</b> with “ <b>Override Grey</b> ” = <b>ON</b> (Win)

Table 3: Troubleshooting Guide

Problem	Probable Cause	Fix
“Recognition failed for this page.” (cont’d)	Scanner was set or forced by scanner software to scan in Grey or Color.	Rescan in <b>Your Scanner’s interface:</b> 350 dpi / Black & White (Text / Line Art).
	Music not fully scanned or is severely skewed.	Rescan making sure all the music is selected. Scan music straight or use “ <b>Deskew</b> ” function.
	Image too large for selected resolution.	Re-scan ensuring “Auto Resolution” is ON.
Scanner hangs or crashes.	Driver conflict.	Ensure latest scanner drivers are installed.
		Scan outside of SmartScore using scanners software.
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 right-hand barlines.
	Image too small for selected resolution.	Scan again accepting <b>Auto-resolution</b> settings for best results.
	Handwritten or non-standard notation. Poor print.	Scan well-printed, standard-sized sheet music.
	Poorly printed music.	Increase <b>Darkness</b> level. Find better original.
	Image not straight (skewed).	Open file in Image Editor ( <b>File &gt; Open &gt; Image</b> ). Use <b>Deskew</b> tool to straighten each page.

**Table 3: Troubleshooting Guide**

Problem	Probable Cause	Fix
Poor recognition results. (cont'd)	Image was dithered by scanner software.	See "Dithered Images" on page 28 for information.

### 3.10 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 (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**

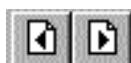
Select **View > Image Information** to display characteristics about the current scanned image including resolution, file type and page size.

- **Zoom**



To Zoom in and out click the Zoom Tool in the Main toolbar (**Ctrl + Q / Cmnd + Q** for Mac). Click inside the image 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).

- **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**

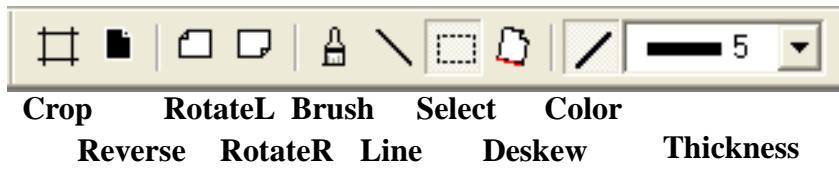


FIGURE 3 - 15: Image Toolbar

### 3.10.1 Page Tools

- **Crop**



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

- Go to the **Edit** menu and choose the **Selection** option OR press the **Select tool** button in the Image Toolbar.



FIGURE 3 - 16: Selecting Region for Cropping



- 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.
- To adjust the marked bounded area, move your mouse pointer over a boundary line, click and drag the boundary to a new position.
- 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 will rotate 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.

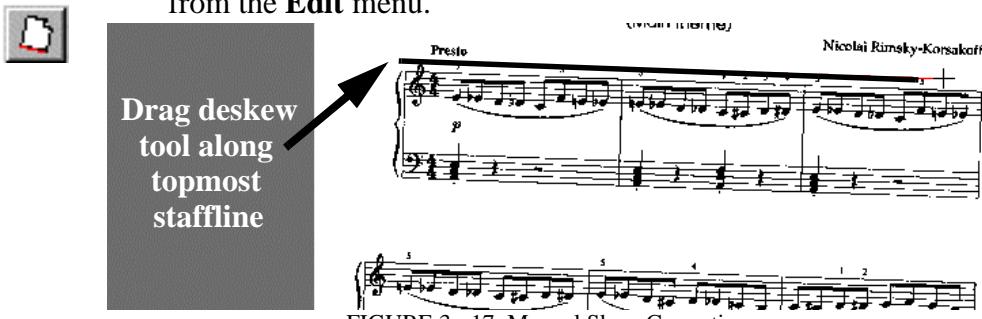


FIGURE 3 - 17: Manual Skew Correction

- 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**).

- **Rotate**



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.

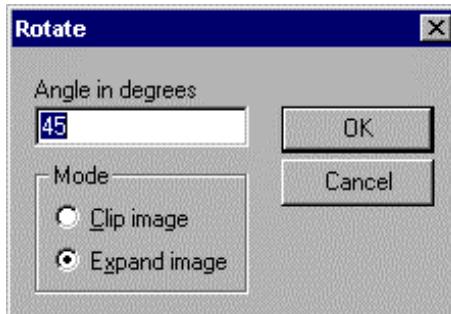


FIGURE 3 - 18: Image Rotation

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

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

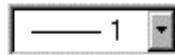
- Choose **Expand Image** mode to increase the page size, if necessary, to include the entire image.
- Remember to Save when done.
- **Invert**

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**.

### 3.10.2 Drawing Tools

- **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.

- **Pen Color**



Toggle the Pen Color push button to choose the color used when drawing. Color changes from White to Black as you toggle the button. Or choose **Pen Color** from the **Edit** menu and choose Black or White.

- **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 draw in missing stafflines and 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.

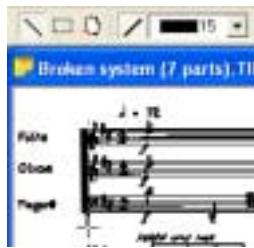


FIGURE 3 - 19: Using Line Draw tool to recreate missing bracket

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

- **Paint Brush**

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.

### 3.10.3 Cut / Copy and Paste

- **Cut**

To Cut an area from the scanned image, use the Select tool and drag a box with the mouse. Select **Edit > Cut (Ctrl + X (Win) / Cmnd + X (Mac))**. Cut region will be stored in the clipboard's memory.

- **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))**. Copied area will be stored in the clipboard.

- **Paste**

To Paste the contents of the clipboard 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.

- **Transparent Background**

To Cut or Copy the marked off area of an image file with a transparent background, highlight **Selection Mode** from the **Edit** menu and select **Transparent**.

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

Getting Started	57
Error Check	61
Playback Console	61
Working with Voices	62
Altering Playback	67
Repeats and Endings	72
Instrument Templates	73
Add drum tracks	74
Karaoke View	74

## 4.1 Getting Started

### 4.1.1 Quick Play

*To play back an open ENF file using 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.

NOTE: Spacebar always refreshes playback according to the current ENF display. If you wish to keep changes made in MIDI view, use **PLAY** button in **Mini-Console** or **Playback Console (Ctrl + 9)**. See Section 4.5.12 on page 72 and Section 10.1.1 on page 177 for more details on Refresh MIDI.

### 4.1.2 Mini-Console

The Mini-Console is free-floating if you grab and move it from its docking position next to Text and Controllers toolbar. It plays, rewinds and stops playback.

The *Record* button will launch a new MIDI recording session to record additional tracks (see “MIDI Recording” on page 202). The “spring-loaded” slider will speed up or slow down playback at variable speeds and then snap back to the default tempo when let go.

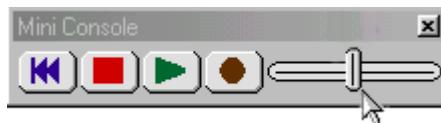


FIGURE 4 - 1: Mini-Console

#### 4.1.3 Lock to Time Signature

Playback of the ENF file can be controlled in one of two ways: “Lock to Time Signature” or “play whatever is there”. Selecting **Lock to Time Signature** will force playback to progress with exactly the same number of beats / measure as indicated by active Time Signature. This is the default. For pickup measures, turn **Lock to Time Signatures** off.

*To play back each measure exactly as written in the ENF display,*

Uncheck **Playback > Lock to Time Signature**. Playback will then sound every measure exactly as notated. If ENF is unedited, you will probably hear mistakes played back as longer measures or interrupted passages.

#### 4.1.4 MIDI Devices

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®. One nice advantage of the Mac® Operating System 8.0 and better is that it includes QuickTime™ Musical Instruments *soft synthesizer*. This allows you to select and play General MIDI (GM) sounds without attaching an external synthesizer or internal soundcard to your computer.

*To set the MIDI input and output devices,*

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

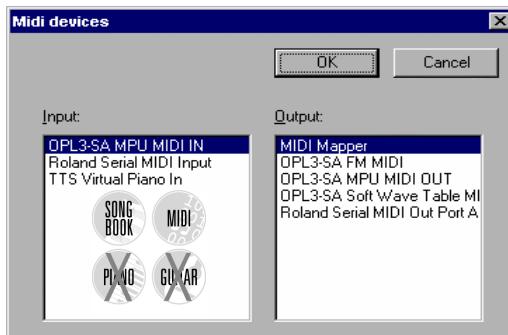


FIGURE 4 - 2: Playback > MIDI Devices

- 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: Some MIDI programs may prevent playback if opened before SmartScore. By closing the first MIDI program, the output port will be released.

#### 4.1.5 Audio MIDI Setup (Mac OS X Only)

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



FIGURE 4 - 3: Applications > Utilities > Audio MIDI Setup (OS X)

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

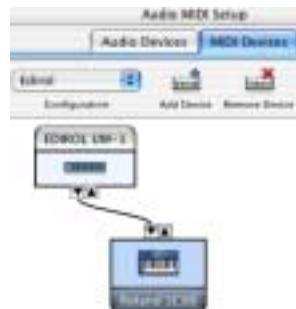


FIGURE 4 - 4: Connecting MIDI Devices in Audio MIDI Setup

With SmartScore ENF file open, 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.



FIGURE 4 - 5: Selecting external MIDI devices in SmartScore

To activate built-in *soft*-synthesizer (Macintosh QuickTime Musical Instruments), choose **QT Internal Playback**.

#### 4.1.6 OMS Setup (Mac Classic Only)

NOTE: To work properly, OMS requires AppleTalk to be turned OFF.

If you intend to record MIDI to your Mac or if you use an external MIDI device/interface, make sure you have installed OMS from the SmartScore installer. Choose **OMS > OMS Setup** to run the setup routine. Choose **Easy OMS Setup** to begin. Leave “**Run MIDI in Background**” unchecked. If you have an external MIDI device attached to either your printer or modem parallel port, select the right port in the first window. Following MIDI Setup, you should see all available MIDI devices in the display screen. These same devices will appear in the **MIDI Device** window in SmartScore and in **OMS Studio Setup** when selected.

NOTE: For USB connections, select both **Printer** and **Modem** options.

Select **Playback > QT Internal Playback** if you want to play back through *QuickTime Musical Instruments* (QuickTime 3.0 or better only).

NOTE: If no sound is heard after pressing the space bar, select “Refresh MIDI” from the **Playback** menu then reselect **QT Internal Playback** from the **Playback** menu. Check speaker volume.

## 4.2 Error Check

It's a good idea to select **Edit > Error Check** (**Ctrl + E** for Win / **Cmnd + E** for Mac) to quickly identify problem measures before moving on to more editing activities. See “Error Check” on page 83 for details on this option.

## 4.3 Playback Console

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

*To open the Playback Console,*



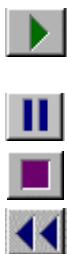
- Press the speaker button in the SmartScore Toolbar. Or hold down **Ctrl + 9** (Win) / **Cmnd + 9** (Mac) or select **Playback > Console**.



FIGURE 4 - 6: Playback Console

The first column, **Track**, lists the MIDI track assigned. The second column, **Ch/V** lists the MIDI channel number within a colored box representing one of 4 possible voices (black, red, green and blue).

The Playback Console will display just tracks (parts in black only) when **Options > Color Mode = Part**. If **Options > Color Mode = Voice** is selected, all voices (in colored boxes) will be displayed. Refer to “Working with Voices and Colors” on page 149 for more information on controlling voices.



- **Play** button plays the current ENF file. Once playback has begun, the **Play** button changes to **Pause**.
- **Pause** suspends playback. **Play** resumes where pause was selected.
- **Stop** button stops playback of the ENF file.
- **Rewind** button resets playback to the start of the playback range.

#### 4.3.1 Adjustable Playback Console settings

- Scroll to any beat in the score using the Measure / Beat slider.
- Adjust the overall or individual volumes of playback with the **Volume** sliders.
- Use the **Port** pull-down menus to select new MIDI output device.
- Adjust tempo with the **Tempo** slider.
- Change **MIDI Instrument** or **Channel (Chan)** of any voice / part.
- **Transpose** the file globally or by individual voices / parts.

NOTE: **Transposition** in the Playback Console is for playback only.  
To transpose notation, see “Transposition” on page 139.

- **Mute** a voice while all others continue to play or **Solo** a single voice.
- Use **Pan** to create a stereo image.

### 4.4 Working with Voices

SmartScore treats contrapuntal voices (multiple voicelines in a single staff) as a fundamental musical component. In a score’s hierarchy, voices are treated as the “primary building block”. You can visualize your music’s hierarchy by going to **Score Structure** in the **Edit** menu. (See “Score Structure” on page 124 for more details.)

All scores contain one or more voices in any given measure; occasionally three or four. The ENF editor provides extremely useful voice-based functions including the ability to extract voices to new documents, to split two-note chords into separate voices and to control individual voice playback such as assigning unique MIDI instruments, muting and soloing each voiceline.

#### 4.4.1 Color Mode > Voice



To view contrapuntal voices as separate colors in an ENF file, push the **Voice Color** button in the SmartScore toolbar or go to the **Options** menu and select **Color Mode > Voice**. Each ENF Part (each staffline of the score) can contain a maximum of 4 voices (represented by 4 colors). We recommend that you normally view your ENF files with voice color on. An alternative note-coloring method, useful in orchestral scores, is to view each Part (each staffline) with a unique color. For more about coloring parts and voices, see “Working with Voices and Colors” on page 149.



**TIP:** When **Color Mode = Voice**, the number of MIDI channels will be increased to equal the total number of voices in the score. When **Color Mode = Part**, the number of channels equals number of parts; far less than if **Color Mode = Voice**. Open Playback Console (**Ctrl + 9 / Cmnd + 9**) in either mode to view the difference.

#### 4.4.2 Assigning instruments to voices

Assigning a unique MIDI instrument to each voiceline adds richness and tonal variety while allowing the listener to distinguish one contrapuntal voice from all others 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,*

- Set **Options > Color Mode** to **Voice**. Open the Playback Console (**Ctrl + 9 / Cmnd + 9**) or select **Playback > Console**.



FIGURE 4 - 7: Changing MIDI instrument of a voice in Playback Console

The **Track** column displays each ENF Part as a MIDI track number. To the right, the **Ch/V** column displays the voice number of the part/track inside a colored box corresponding to the color for that voice.

- b. In the **Instrument** 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 within the part you want to change. Click the pull down menu in MIDI instrument assigned to that part and voice. Select an alternative instrument from the pull-down menu for that voice. You will hear each voice stand out from other voices within the same part/staffline when played back; provided you chose instruments with enough difference in their respective timbres.

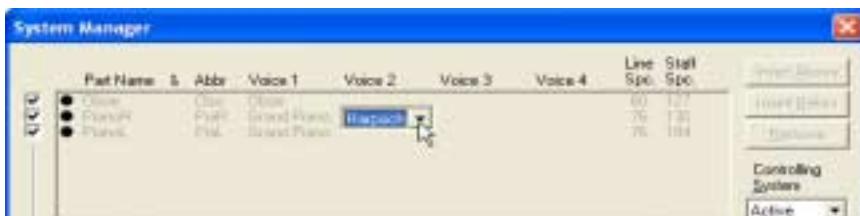


FIGURE 4 - 8: Changing MIDI instrument of a voice in System Manager

#### 4.4.3 Vertical Alignment and offset voices

In printed music, it is common for notes belonging to different voices to appear horizontally offset from one another. Such offset notes are clearly meant to sound simultaneously even if they are not aligned vertically. Such notes belong to different voices, may have opposite stem directions and will appear horizontally offset. See FIGURE 4 - 9: on page 65. Prior to recognition, you will have the option of varying the distance that SmartScore uses to determine whether to join these offset notes to one vertical event or not. See “Join Offset Voices” on page 40. for more details.

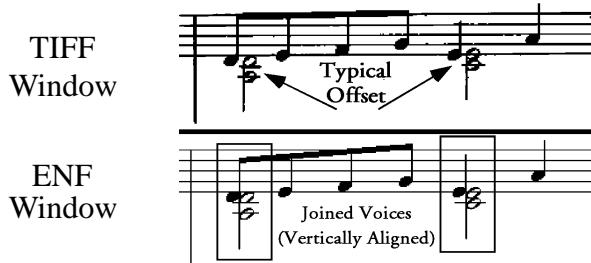


FIGURE 4 - 9: Vertical Alignment



**TIP:** In **Edit Shapes** environment, vertically joined events are “glued” and will move together when nudged. To verify whether or not offset voices are actually joined to the same vertical event, press the **Edit Shapes** button in the Main Toolbar and nudge one of the notes horizontally. For more info, see “Edit Shapes” on page 87.

#### 4.4.4 Correcting Vertical Alignment

The best way to test if offset voices are not vertically aligned is to listen to the playback (uncheck Lock to Time Signature first). If you find offset notes that should, but don’t play together, you can join offset voices manually or they can be joined with a global “Join Voices” command.

*To vertically align offset voices (manual method),*



- Use the Select tool (“O” key) and highlight a group of horizontally offset notes or rests (See FIGURE 4 - 9:)
- Press the “Y” key to group the selected, offset notes into a single vertical event. Selected voices may move or jump slightly closer.

*To globally join offset voices (automatic method),*

**NOTE:** The following procedure is “global” and may result in joining voices which do not belong to the same vertical event. Use caution when employing this procedure. Less is better.

- a. Press the “J” key or select **Join Voices** from the **Edit** menu.

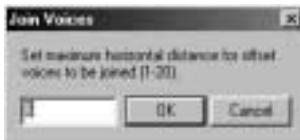


FIGURE 4 - 10: Join Voices

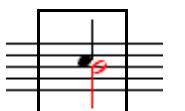
- b. Notes and rests belonging to different voices will be joined to the same vertical event based on the distance selected (1 through 20). These units are arbitrary. The default is 6. It is recommended not to change distance more than 2 or 3 units at a time.

**NOTE:** Be careful not to overdo it. You may inadvertently join voices that ought to be syncopated. Always playback and listen after joining voices. If you wind up with sewing machine or worse, you can always UNDO (**Ctrl + Z Win / Cmd + Z Mac**).

- c. Press **OK** and hit the spacebar to audition.

#### **4.4.5 Swapping offset voices (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.



Highlight with Select Tool



Positions swap with “L” key

FIGURE 4 - 11: Swapping horizontal positions of offset notes

#### **4.4.6 Options > Align Joined Voices**

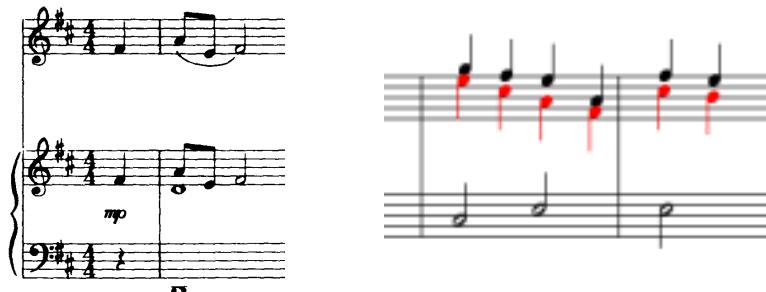
Offset voices that are joined will have simultaneous “start” times for playback. By default, joined notes and rests become vertically aligned. Sometimes, especially in cases where notes are particularly dense, you may not want horizontal movement. To keep joined notes and rests offset, go to **Options > Align Joined Voices** and remove the check mark.

## 4.5 Altering Playback

### 4.5.1 Lock to Time Signature

SmartScore allows for two kinds of playback: “*Play what’s there*” or **Lock to Time Signature**. With **Playback > Lock to Time Signature** check marked, every measure plays back with the exact number of beats indicated in the default time signature. If the ENF file contains editing errors, this may result in dropped notes during playback or in the case of pickup measures and “split” measures, it will cause a pause to be heard. With Lock to Time Signature turned off, whatever is written in each measure will be played back regardless of the current time signature. If the ENF file contains errors, this option may result in irregular meter, lengthened or shortened measures. Either option is useful under certain circumstances.

- For smoothest playback effects, leave **Lock to Time Signature** on.
- For “aural editing” to uncover editing errors, turn **Lock to Time Signature** off.
- For pickup measures or measures split between lines, turn **Lock to Time Signature** off. Playback will ignore current time signature. Make sure rhythm values are consistent in all parts.



Pickup Measure (typical)      “Split” Measure (typical)

FIGURE 4 - 12: Pickup and split measures

NOTE: **Lock to Time Signature (on or off)** will reflect its actual representation in MIDI. When an unedited ENF file is saved to MIDI with **Lock to Time Signature** unchecked, the resulting MIDI file may produce measures with various meters. When checked, all measures will have constant meters.

### 4.5.2 Tempo

Default tempo for all time signatures is 120 beats per minute (120 bpm) except for music which is either in “cut-time” or in 2/4 time (60 beats per minute).

**NOTE:** To change default tempo in the ENF view, always establish a “base” or default tempo first. This is done by selecting **Tempo** under the **Edit** menu. The metronome tool (in the “Tempo” palette) is used to update default tempo.

- **Default tempo**

To set or to alter default playback tempo in ENF, open **Edit > Tempo** and set a new default speed. This can also be done in the **Playback Console**.

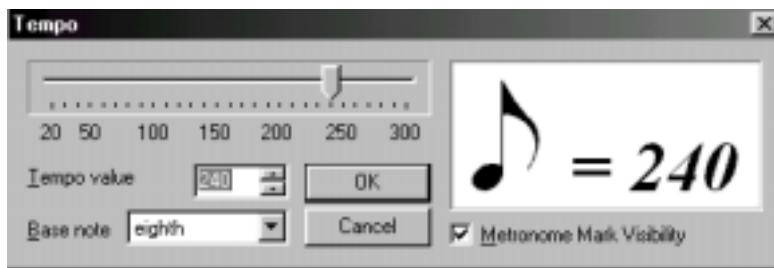


FIGURE 4 - 13: Setting Default Tempo

- **Change of tempo**

Creating a change-of-tempo is accomplished by inserting tempo marking or a metronome mark from the “Tempo” palette anywhere you wish the tempo to change. See “Tempo Markings (Metronome Mark)” on page 156. You may also alter playback tempo continuously with the use of the ENF Tempo graphical controller. See “ENF Tempo Controller” on page 69.

### 4.5.3 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 - 14: ENF Text and Controllers Toolbar

### 4.5.4 ENF Velocity Controller

 In ENF score view, push the “V” button to activate Velocity controller. Click and drag your mouse up or down along the vertical bars which represent each note’s velocity. The higher the bar, the more the velocity.



FIGURE 4 - 15: ENF Velocity Controller

### 4.5.5 ENF Tempo Controller

 Push the “T” button to active tempo controller. 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 - 16: ENF Tempo Controller

### 4.5.6 Normalize controllers

Playback may result in greater-than-desired changes after altering either tempo or velocity controllers. If so, you may globally reduce the effects of either controller by applying *normalizing*.

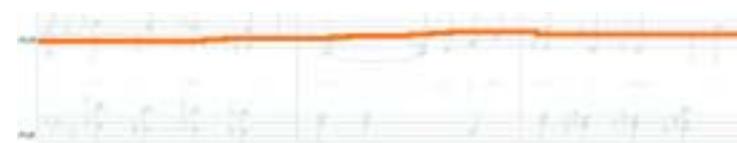
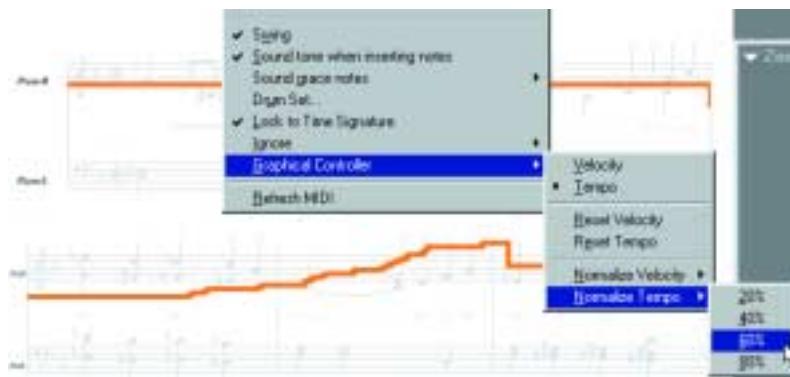


FIGURE 4 - 17: Normalizing Tempo

*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.

NOTE: Additional Tempo markings inserted into ENF will still take affect. The end result is an averaging of tempo values.

#### **4.5.7 Controller background views**

- Invisible

Graphical controllers are not visible in this view. It is the default view.

- Line

In Line view, controller is displayed in the foreground with notation displayed in grey in the background.



- Filled

In Filled view, notation is obscured entirely with controller in foreground.



- Background

In Background view, notation is displayed in the foreground and the graphical controller appears in grey in the background.

#### 4.5.8 Set Play Range

You can have playback begin on any measure in the ENF file or you can specify a range of measures for playback.

*To set a playback start point or to select a range for playback,*

- a. Select **Playback > Set Play Range** and click the **Play Range** radio button.
- b. In the **From** field, choose a starting measure. To establish a range for playback, select an end point in the **To** pull-down box.



FIGURE 4 - 18: Set Playback Range

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

#### 4.5.9 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 157 for details on inserting dynamics.

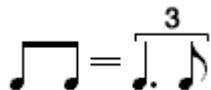
To apply dynamics and/or dynamic markings to more than one staff, enter the dynamic in each active staff that you wish to apply the effect. If you do not wish to have so many dynamics visible in every staffline, you may enter symbols in the **Hidden Symbols** mode. For more details, see “Hidden Symbols” on page 155.

#### **4.5.10 Articulations**

Numerous note articulations including slurs, trills, turns, mordents, staccatos, tenutos, accents, arpeggios, glissandos and tremolos can be applied from the “Articulations” palette. For more information, see “Articulations and Trills” on page 159.

#### **4.5.11 Swing**

This very *cool* feature applies standard swing rhythm to straight 8th and 16th notes notated in beamed groups. If the header in the original music says “swing” or gives a similar marking, SmartScore will modify playback and the underlying MIDI representation as follows:



#### **4.5.12 Refresh MIDI**

ENF and MIDI Views are tightly integrated. Occasionally, data in one view may conflict with data in another resulting in playback that is not anticipated. If this happens, select **MIDI Refresh** from the **Playback** menu. **MIDI Refresh** will update playback based only on the ENF View. Any changes made in MDI view including tracks added during MIDI recording (Step Time or Real Time) will be lost. You will be given a chance to save the “pre-refresh” playback as a MIDI file before updating based on ENF display. For more information about MIDI Refresh, refer to “Updating and refreshing playback and display” on page 177.

### **4.6 Repeats and Endings**

Repeat signs (including *Repeat Last Measure*) and ending markings (including *Codas* and *Segnos*) from the “Barlines and Repeats” palette will alter playback accordingly. Using the “*n*” *repeat barline* will allow

you to set beginning and ending measures of a multiple ending. For more details on repeats, multiple endings and *Codas* and *Segnos*, see “Repeats and Multiple Endings” on page 165.

## 4.7 Instrument Templates

Instrument Templates 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.

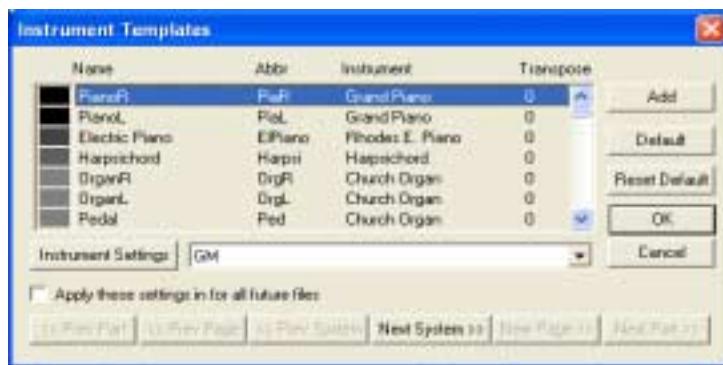


FIGURE 4 - 19: Instrument Templates

**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.

### 4.7.1 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.

## 4.7.2 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 147. For more information on the System Manager, turn to “System Manager” on page 143.

## 4.8 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”, Section 7.2, on page 108.



## 4.9 Karaoke View

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

*To view moving lyrics with familiar bouncing ball,*



- a. Press the Karaoke View button in the floating **Navigator** palette.
- b. Use the floating mini-console transport buttons to control playback.
- c. Open the **Playback Console (Ctrl + 9 / Cmnd + 9 for Mac)** to adjust tempo and change instrument assignments for parts and voices.



Navigating Inside an ENF Document	77
Preliminary Cleanup	78
ENF Editing Modes	79
General Note Editing	80
Undo	80
Tool Palettes (F2-F9 keys)	81
Grace Notes	81
Select tool (“O” key)	81
Voice color	82
Error Check	83
Pitch shift	83
Editing beamed notes	84
Stem direction	85
Dots of Prolongation	85
Tuplets and Slurs (Legatos)	85
Ties	86
Barlines	87
Edit Shapes	87
Key and Clef Transposition	87
Creating a New ENF Score from Scratch	88
Saving and Exporting an ENF File	90
Saving ENF files as MIDI or other file types	91

This section is intended to give you a brief overview of ENF editor functions. Turn to Section Chapter 9, "Detailed ENF Editing" on page 129 for more.

## 5.1 Navigating Inside an ENF Document



### 5.1.1 Zoom

*To Zoom in and out,*

- Click the Zoom Tool in the Main Toolbar. **Ctrl + Q** (**Cmnd + Q** for *Mac*) will toggle between In and Out.
- 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).

**NOTE:** An alternative to the “split screen” view is the “Zoom Window” view. See “Split-screen and Zoom Window Viewing” on page 129 for more details.

### 5.1.2 Paging



**TIP:** It is possible to view several pages at once with either **File > Print Preview** or the **View > True Scrolling** function. See page 231, "View > True Scrolling".



*To page forward or backward in an ENF document,*



- Use the paging buttons located in the Main Toolbar or push the “Next page” / “Previous page” arrows at the lower right-hand corner of the SmartScore window.

### 5.1.3 Status Bar

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).

### 5.1.4 Active staffline

In SmartScore, only one staff is capable of being edited at a time. A staff becomes activated when the mouse pointer crosses into it. If **Show Active Staff** is checked, all other staves display as greyed out (inactive).

You may display the active staff highlighted or show all staves in black.

*To allow every staff to display in color or in black,*

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

For additional information on navigating inside an ENF document, go to “More ENF navigating” on page 129.

## 5.2 Preliminary Cleanup

Many new symbols are recognized in SmartScore 3. In order to limit “false positives”, we’ve added options that selectively narrow the set of objects to be recognized. (See “Recognition Options” on page 38.). It may be necessary to remove incorrectly recognized objects in any case. We recommend this simple “sweep” method following recognition.

- a. Hit the “**O**” key to activate the Select tool.
- b. Click and drag the Select Tool to highlight a group of “false positives” that may be found between staff lines.
- c. Pay attention to any false tempo and dynamic markings (e.g. *f, ff*, etc.) but at the same time, be sure not to select valid markings, notes, chord symbols or other objects you don’t wish to remove.
- d. Hit the “Delete” key to remove highlighted objects.
- e. Repeat between subsequent staff lines and on remaining pages.

f. See “Inserting or Deleting Multiple Articulations” on page 161.

## 5.3 ENF Editing Modes

### 5.3.1 Insert and Change modes

NOTE: It is highly recommended that you become familiar with SmartScore’s hand position for editing. You will find editing fast and easy once you begin working with this two-handed method:



FIGURE 5 - 1: Left and Right Hand Positions for Editing

Press the “C” key of your computer keyboard to toggle between the **Insert** and **Change** modes. Notice how this changes the appearance of the cursor. In the **Insert** mode, the cursor becomes the chosen object. In the **Change** mode, the cursor becomes an arrow with the chosen object next to it. The Change and Insert buttons in the toolbar alternate as well.



- **Insert** mode allows you to insert objects when clicking anywhere in the active staffline.
- **Change** mode allows you to change existing objects to the selected notation object.

You can select any editing mode from the SmartScore Toolbar.



FIGURE 5 - 2: SmartScore Toolbar with *Insert mode* selected



**TIP:** In areas that are particularly crowded with objects, nudge notes horizontally in **Edit Shapes** to make room. See 5.5 on page 87.

### 5.3.2 Delete by Group / Delete Any

Press the “X” key of your computer keyboard to toggle between the **Delete by Group** and **Delete Any** modes.

In the **Delete by Group** mode, the cursor becomes an arrow with the selected object type in grey. In the **Delete Any** mode the cursor becomes an arrow with an “X” next to it.



- **Delete by Group** mode deletes any object that is listed in the active Tool Palette group. Objects from other groups will not be deleted.
- **Delete Any** mode removes any notation object that is clicked with the mouse. NOTE: This action will remove an entire chord. To remove a single note from a chord, hit the “X” then “Z” key.



### 5.3.3 Chords (Cluster Tool)



*To attach note to existing note stem (Chord-building) Tool,*

- a. Press the Cluster Tool button (“Z” key) in the “Notes” palette.
- b. While in the **Insert** mode, click above or below an existing note to **Insert** a new note along the stem. The new note inherits the same duration of the original note.



*To Delete a single note from a chord cluster,*

- Press the “X” key with the Cluster Tool active and click on any note to remove it from the chord. **Delete Any** will erase the entire chord.

## 5.4 General Note Editing



**TIP:** The “F1” key will reset all windows and palettes to their default “startup” positions. Use when things get messy.

### 5.4.1 Undo

To undo any edit action, hold the **Ctrl** and “Z” keys down (**Cmnd + Z** for Mac). Repeat again to undo a previous action.



#### 5.4.2 Tool Palettes (F2-F9 keys)

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 11.2, on page 211.

To quickly select any alternative Tool Palette, **right-click** (**Ctrl + click for Mac**) on any open Tool Palette. All possible Tool Palettes become available for selection. Notice that the “active” palette is replaced by the newly-selected palette when *Recycle* is the palette mode.



**TIP:** *Quick-Select* (**Ctrl + Click**) is probably the quickest way to select an object to **Insert** or **Change**. Hold down the **Ctrl** button and click on any object in the active staff line. The cursor will become that object and also inherit its attributes.



**TIP:** Notes can be selected from number keys. Use **SHIFT** for rests and **Ctrl + 2** and **3** for accidentals.

#### 5.4.3 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 and are written to the resulting MIDI file, go to Playback > Sound Grace Notes,*



- On the Beat (Acciaccatura) - Plays on the beat and shortens the duration of the following note.
- Before the Beat - Plays before the beat and shortens the duration of the preceding note.

#### 5.4.4 Select tool (“O” key)



Use the Select tool to highlight one or more objects for selected editing functions such as delete, vertically align multi-voice notes, split voices, flip stem directions 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 spurious or unwanted text or multiple objects that do not delete easily with the “**X**” key.

#### 5.4.5 Voice color

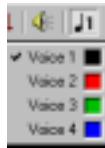


Contrapuntal voices can be viewed in color as well as in black. To view contrapuntal voices as separate colors in an ENF file, push the **Voice Visibility** button in the SmartScore toolbar or go to the **Options** menu and select **Color Mode > Voice**. The initial default is **Options > Color Mode > Part > Black**. Voice color can be turned off or on anytime by clicking the **Voice Visibility** button.

Voice color is automatically determined based on several factors (number of voices, stem direction, vertical alignment, etc.) You can override voice colors manually. Changing voice color also changes its voice assignment and, possibly, changes voice assignments 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.

*To override automatic voice color assignment (and change voice number),*



- a. Select desired voice number (and color) from **Voice Color** combo button in the SmartScore Toolbar.
- b. Locate the note or rest in a voice you wish to change and click on it.
- c. Color and voice assignment will update as will any other voices within the same measure, e.g. other notes in the same vertical event.

For more about part and voice colors, see “Working with Voices and Colors” on page 149. See also “Vertical Alignment and offset voices” on page 64.

#### 5.4.6 Error Check

Error Check will search each measure looking for voicelines that are either incomplete or have total durations in excess of the default time signature.



FIGURE 5 - 3: Error Check window

*To check for errors based on total voice durations,*

- a. Press **Ctrl +E** Win / **Cmnd + E** Mac. Or select **Edit > Error Check**. The first measure found with a discrepancy will highlight in grey. The Error Check window will suggest whether there are too many or too few note values in a particular voice in a given measure.
- b. Click into the ENF page and correct the indicated voiceline.

NOTE: It may be necessary to click twice in the ENF display to change “cursor focus” from the Error Check window to ENF display.

- c. Select **Resume** to continue. Click back into ENF to regain “focus”.

NOTE: Very often publishers will leave one voiceline incomplete when there are two or more voices within a measure (to avoid cluttering a measure with rests). SmartScore may successfully cope with such a situation *provided* voices are vertically aligned.

- d. Choose **Ignore** to skip the indicated voiceline discrepancy or **Quit**.

#### 5.4.7 Pitch shift

*To change the pitch of any note,*



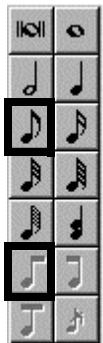
- Hold down the “Shift” key, click and drag a notehead up or down.



NOTE: To move objects horizontally, activate Edit Shapes from the Text and Controllers Toolbar. See “Edit Shapes” on page 87.

### 5.4.8 Editing beamed notes

- **Inserting and deleting beamed notes**



To create beam groups, first select a flagged note value and the “right beam” option from the “Notes” palette. Toggle the “C” key to enter **Insert** mode. Multiple clicks inside a staff will form beamed groups of two notes. Deleting an end beam note will cause adjacent beamed groups to connect. To join multiple 2-beam groups into larger groups, use the Select tool (“O” key) and then hit the “B” key. All selected beam groups will reform.

- **Inserting an “inside” beamed note**

To insert an inside beamed note, be sure you are in the **Insert** mode. Select the proper note value from the “Notes” palette and then push the “Middle Beam” button. Position the cursor inside a beam and click.

- **Forming flagged notes into beamed notes**

To transform a group of flagged notes into a beamed group, use the Select tool (“O” key) to highlight any group of flagged notes adjacent to each other. Hit the “B” key to join the notes into a beamed group.

- **Forming a beamed group from mixed flagged and beamed notes**

Any number of flagged or beamed notes may be reformed into a new multiple group by first selecting a group of adjacent flagged or beamed notes using the Select tool. Then hitting the “B” key.

- **Quick-beam**

Using any “Beam” tool, you can quickly insert and edit a series of beamed groups.

- With any beam tool selected, clicking from left-to-right, will create 2-note beamed sets.
- With “middle” or “right beam” selected, clicking to the left of an existing beamed group will insert a note to the beginning of that group.

### 5.4.9 Stem direction

The default stem direction of an inserted note is determined by its vertical position on the staff. When your cursor crosses the middle staffline, the direction of the stem automatically switches. Default stem directions: Up above the middle staff line; Down below the middle staff line.

*To reverse the default stem direction while inserting a note,*

- With a stemmed note selected, toggle the “S” key to change its default stem direction. Another method is to insert the note with a right-click (**option + click for Mac**). This will reverse the default stem direction of the note as it is displayed by the cursor.

*To change the stem direction of an existing note,*

- Toggle the “C” key to activate the **Change** mode.
- Right-click (**option + click for Mac**) on any given notehead. The stem direction will change.

### 5.4.10 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.

### 5.4.11 Tuples and Slurs (Legatos)

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

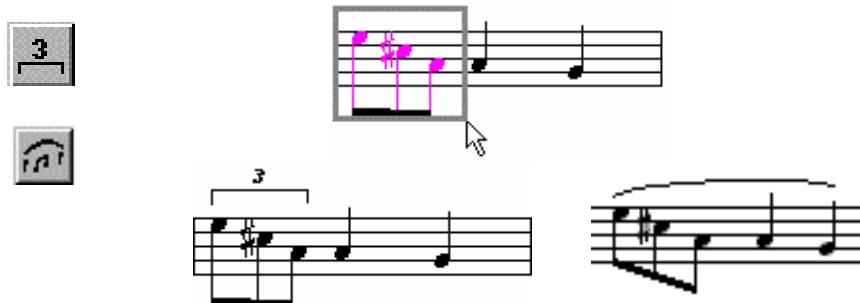


FIGURE 5 - 4: Creating a Tuplet or Slur

- 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. Press the “X” key and click on the tuplet or legato to delete it.

NOTE: To move a tuplet bracket up or down, use **Edit Shapes** mode.

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

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

- **User-defined Tuplet**



Other than the common triplet, quintuplet, etc. it may be necessary to create a unique rhythmic group. Divisions = the number of equally divided notes. Value = total duration equal to one undivided note times the number selected. E.g. a quarter-note triplet defaults as follows: Divisions = 3 / Value = 2. (Total duration of 2 quarter notes divided equally into three.)

#### 5.4.12 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 and click the first note of the pair to delete. You can also use the **Select tool** and **Delete** key to delete ties.

NOTE: A tie across a system (tie at end of line) automatically creates a “linked tie” marking at the end of the source system as well as to its partner at beginning of the next system.

### 5.4.13 Barlines



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 a barline,*

- Select a barline from the “Barlines” palette.
- In Change mode, click on a barline to change to selected barline.
- Press the “**X**” key and click on the barline to delete it.

## 5.5 Edit Shapes



Detailed features of certain objects can be changed in the “Edit Shapes” mode. Beam angles, lengths and curves of slurs and ties, even horizontal and vertical “nudging” of notes and rests are all controlled by dragging control points or the objects themselves. To open “Edit Shapes” mode, press the “Edit Shapes” button in the “Text and Controllers” toolbar. To return to normal edit mode, press the “Edit Shapes” button again. For more information, turn to “Edit Shapes”, Section 6.4, on page 97.

## 5.6 Key and Clef Transposition

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 (either harmonically or enharmonically) are all possible. For information on these additional transposition methods turn to “Transposition”, Section 9.5, on page 139.

*To transpose the key of an entire score,*

- Choose **Transpose** from the **Edit** menu (**Ctrl +T Win / Cmnd+T Mac**).

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



FIGURE 5 - 5: 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**.

## 5.7 Creating a New ENF Score from Scratch

### 5.7.1 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)).
- 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 “File > Page Setup” on page 220 for details.

NOTE: **Tempo** will set the metronome for display in ENF and for playback.

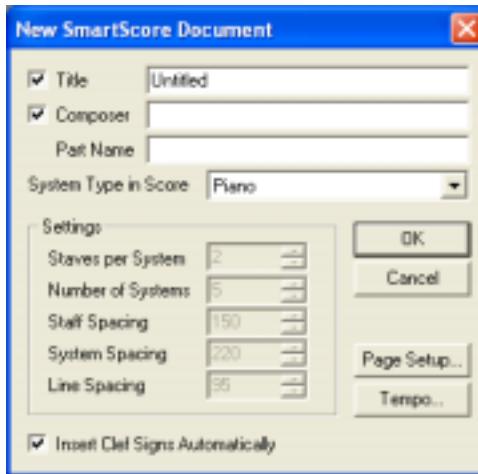


FIGURE 5 - 6: New score window

NOTE: To create an ENF document without clefs, uncheck **Insert Clef Signs Automatically**.

### 5.7.2 Using Built-in Templates

SmartScore has 15 preset templates including solo instrument, piano, SA / TB score, duet and custom.

- a. Select a desired template from **System Type in Score** window.
- b. Once the score is open, use palettes to select objects and place them in the score in **Insert** mode.
- c. Remember to select **File > Save As** in order to save the new ENF file with a name you give to it.

**TIP:** To create a new page once you have reached the bottom of an ENF page, place your cursor in the last system and hold down the CTRL button (this “holds” the active system). Select **Edit > System > Insert Below**. A new page will be created and the new system will be added to it. Repeat as necessary to create as many new systems and pages as you require.





### 5.7.3 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", Section 10.9, on page 202.



### 5.7.4 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", Section 10.10, on page 206.

### 5.7.5 Select Area (create bitmap for pasting)

*To Copy an area of an ENF file for pasting into another application (e.g Microsoft™ Word®, Adobe™ Photoshop®, etc.),*

- a. Press the "O" key to activate the Select tool.
- b. Right-click (**option + click for Mac**) and drag to select desired region in the ENF pane.
- c. Hit (**Ctrl +C / Cmnd+C**) or **Edit > Copy** to copy selected region to the clipboard as a *bitmap image*.

**NOTE:** Before copying to clipboard, uncheck **View > Show Active Staff**, otherwise, you may not capture the entire view.



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

## 5.8 Saving and Exporting an ENF File

You can save the current ENF file at any time by hitting the **Save** button in the Main toolbar, by hitting **Ctrl + S (Cmnd + S for Mac)** or by selecting **File > Save**. If **Options > Auto-Save** is on, incremental saving becomes automatic. For more on Auto-Save, turn to "Options > Auto Save" on page 236. A rule of thumb for all files, especially big ones, is "Be safe. Save often."

### 5.8.1 Saving ENF files as MIDI or other file types



You can save SmartScore files in several different file formats such as MIDI, Finale®, NIFF for Sibelius®, or standard NIFF files.

- .MID files 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.
- .FIN files will import SmartScore pages into Finale 2000c or better with graphical information and page layout intact. Use the **File > Import** selection in Finale to open a SmartScore .FIN file.
- SmartScore saves several flavors of .NIF files: **NIFF for Lime**, **NIFF for Sibelius** and raw NIFF files; one conforming to the NIFF (Notation Interchange File Format) Specification 6a as published by the NIFF steering committee in 1998 and one to the 6b update. NIFF files contain both graphical and playback information and can be used as a means of exchanging music notation and MIDI data between software programs that support the format.
  - a. Select **File > Save As**.
  - b. In the Filetype/Format window, choose a format to save the active SmartScore file: **MIDI Type 1** (Multiple Track / Multiple Channel), **MIDI Type 0** (Single Track / Multiple Channel), **FINALE** or **NIFF for Lime**, **NIFF for Sibelius**, **NIFF 6a or 6b**.
  - c. Browse to another directory and change the name if desired.
  - d. Press **OK**. The file will be saved in the last directory used with the “Save As” command. The extension is automatically added.

**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 it is recommended that articulations be removed if MIDI files are to be imported into other notation-based programs.

Text	93
Lyrics	94
Text and Lyrics: Changing Styles and Entering	96
Edit Shapes	97
Guitar Frets and Chord Symbols	99
Creating and changing chord symbols in the GCL	101
Bracketing	103

During recognition of music, text characters found between stafflines are assumed to be lyrics. Characters found outside stafflines are treated as standard text fields. There are certain exceptions. For example, the recognizer attempts to identify italicized *f* and *p* marks (dynamic markings). If so, these characters are classified as dynamics and their values are applied to MIDI playback. See “Dynamics” on page 71 for information about dynamics.

Push the “T” or “L” button to enter and exit Text or Lyric modes. While in either mode, it is not possible to do other sorts of edits.



FIGURE 6 - 1: Text and Lyric icons

## 6.1 Text



Characters outside of stafflines are treated as “dumb” text blocks. They are differentiated from lyrics by color. Text is black. Lyrics are blue.

NOTE: Score headers are not considered “text”. See “Edit > Score Header” on page 227 for creating and editing the header line.

*To edit a text field,*

- a. Push the “T” button in the Text and Controllers toolbar. Toggle the “C” and select **Edit** mode (vertical cursor). Click anywhere inside an existing ENF text block to edit text.
- b. The cursor will flash within the highlighted field. Use the Left Arrow or Right Arrow buttons on your keyboard to navigate within a text field.
- c. Drag to highlight one or more characters within the field to replace with newly-typed characters or to delete (**Delete** key). Highlighted characters can also be cut, copied or pasted elsewhere using standard **Ctrl + “X”**, **“C”** and **“V”** shortcuts (**Cmnd + “X”**, **“C”** and **“V”** for Mac).

*To move a text field vertically,*

- a. Hold the Shift button down while clicking and dragging a text field up or down.

*To move a text field in any direction,*

- a. Push the **Edit Shapes** button in the Text and Controllers toolbar.
- b. Position your mouse in the staff associated with the text field.

NOTE: You may want View > Show Active Staff checked to verify. Remember to hold the **Ctrl** button down to keep a particular staff line active while moving you cursor around the page.

- c. Click and drag any text field to move. Use the Select tool to select and move multiple text fields around while in **Edit Shapes**.

*To create a new text field,*

- a. Push the “T” button and toggle “C” to enter **Insert** mode (white arrow). Click anywhere in an ENF page outside a staff and begin typing.

*To delete text fields,*

- a. To delete one or more text fields use the Select tool (“O” key) to highlight fields by clicking or dragging. Hit the Delete (Del) key.

NOTE: Click outside any text field to reset cursor (Insert / Change).

## 6.2 Lyrics



Lyrics hold special meaning in SmartScore. 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: 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 39.



**TIP:** Nudge notes in **Edit Shapes** to verify lyric-to-note associations.

To edit existing 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. Use the *left arrow* or *right arrow* buttons on your keyboard to navigate within a lyric block. Once positioned, type normally. Click and drag on one or more characters within the block to replace with new characters or to delete one or more characters in a lyric block. 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).
- d. 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 lyric block in line immediately below. Hit **Return** to start a new lyric line (and new lyric block) beginning at the first note of system.
- e. Use **Backspace** key to delete characters within a lyric block.
- f. Lyrics can be moved up or down while holding the **Shift** button down and then clicking and dragging any lyric block.
- g. Push “L” again (Text and Controllers toolbar) to exit Lyric Edit.

### 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 - 2: 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.

## 6.3 Text and Lyrics: Changing Styles and Entering

### 6.3.1 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. 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. The **Select tool** will highlight more than one text field and changes will apply to all. 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.

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

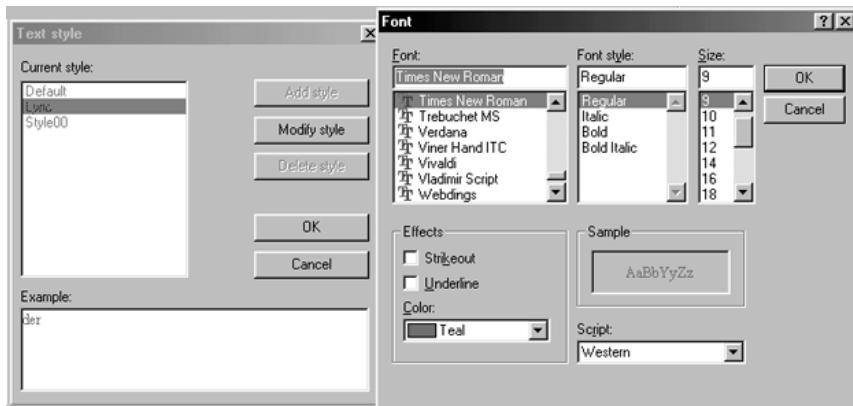


FIGURE 6 - 3: Changing Text and Lyric styles

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.

## 6.4 Edit Shapes

Edit Shapes is an extremely useful tool that allows you to make a number of graphical (non-musical) changes to the ENF view. Modify beam angles, change the shape of slurs, tuplets and ties, move one or more objects horizontally as well as verify joining of vertically-aligned voices and note-to-lyric links.

*To alter the shape of arcs and beams,*

a. Push the Edit Shapes button in the Text and Controllers toolbar.



FIGURE 6 - 4: Edit Shapes

- b. Position the cursor over one of the black-outlined squares, hold down and drag. These “handles” alter the height and/or angle of an associated beam. They also alter the endpoint of slurs... particularly handy in a tight area where beams and slurs may intersect other objects.
- c. Position the cursor over one of the brown-outlined squares. Moving these “control points” alters the angle of half of a slur or tie, making the arc lessor or greater. The “balance” of an arc depends on the relative length and angle of each control “arm” attached to either endpoint.

#### 6.4.1 Nudging notes and rests in Edit Shapes

*To nudge text, note and rest objects horizontally in Edit Shapes,*

- a. Place your cursor over any notehead, rest or text field.
- b. Click and drag until the object is positioned where you want it. Notice that text fields can move in any direction.

NOTE: Horizontal reformatting of an entire score is not currently possible. Objects fixed inside a staff must remain in that staff.

*To move groups of objects horizontally,*

- a. Push the **Edit Shapes** button in the Text and Controllers toolbar to exit Edit Shapes mode. Use the Select Tool to highlight a range of objects including notes, rests, guitar fret and chord symbols.
- b. Push **Edit Shapes** button again and using your mouse, drag highlighted objects left or right.

NOTE: Beam angles and stem length may become “normalized” (return to default angle and length) when selected and moved.

NOTE: Objects are constrained to the measure in which they reside.

#### 6.4.2 Repositioning lyrics in Edit Shapes

Occasionally, lyrics are jammed together either because the default font is too large or the original music was not well-punctuated.

- a. In Edit Shapes, click and drag on the notehead associated with the lyric block that is in a crowded area. Move the note left or right to reposition. Notice that the lyric block will move with the note when moved horizontally.



FIGURE 6 - 5: Edit Shapes - repositioning Lyrics



**TIP:** Rather than repositioning a lot of lyrics, try reducing lyric font size. See “Changing styles of Text and Lyrics” on page 96.

#### 6.4.3 Using Edit Shapes to verify associations

Nudging note heads horizontally is a great way to verify that a particular lyric block is indeed associated with a note stem. Besides verifying notes with lyric blocks, Edit Shapes is extremely useful in verifying that vertical events are properly aligned. Refer to “Vertical Alignment and offset voices” on page 64 for more information.

*To verify vertical alignment of two or more voices,*

- a. Open Edit Shapes. 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.
- b. To exit Edit Shapes mode, push the Edit Shapes button again.

### 6.5 Guitar Frets and Chord Symbols



Guitar fret diagrams are recognized automatically. Frets and their associated chord symbols also update with key transposition. You can choose to display either the chord symbol or the fret diagram, or both. It is important to understand that each corresponding chord symbol is automatically tied to the fret diagram. For a chord symbol to have “intelligence” by itself, that is, for it to change with key transposition, its associated fret diagram must be recognized or inserted first. Alpha/numeric chord symbols may be recognized, but only as dumb text.

You can easily change mis-recognized fret diagrams in the ENF editor.

*To change an existing guitar fret / chord symbol,*

- a. **Ctrl + click** on any existing fret symbol (or select the fret symbol from the Text and Controllers Toolbar). Your cursor should change to a “fretboard”.
- b. Toggle the “C” key to Change mode (fretboard with arrow).
- c. Click on any existing fretboard symbol. The **Guitar Chord** library will open with the selected symbol displayed. If the selected fret is not found in the Guitar Chord Library, a C major chord will be displayed.

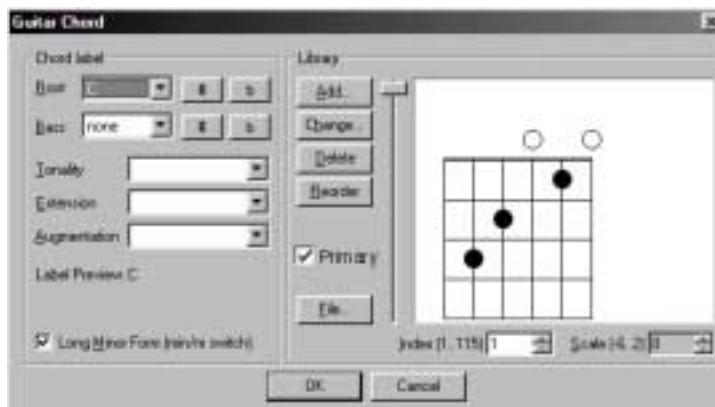


FIGURE 6 - 6: Guitar frets and chord symbols library

- d. Select the desired chord from **Root** pull-down menu.
- e. Select **sharp, flat, Tonality, Extension and Augmentation**.

NOTE: More than one chord can apply to the same parameters. When **Primary** is checked, that chord pattern will be selected before other chords having duplicate parameters.

- f. Click **OK**. The fret diagram and chord symbol will update.

*To insert a fret / chord symbol from the Guitar Chord library,*

- a. Push the fretboard symbol in the Text and Controllers toolbar.



FIGURE 6 - 7: Guitar Fret Symbol

b. Click above the staff line where you wish to insert the symbol.

### 6.5.1 Creating and changing chord symbols in the GCL

*To create a new guitar fret / chord symbol,*

- a. Select **Guitar Chord Library** from the **Edit** menu.
- b. Push the **Add** button in the **Library** section of the chord window.
- c. Choose a root with sharp or flat, bass tone (with sharp or flat) and descriptive modifier (tonality, extension and augmentation).
- d. Press the **Frets** tab in the upper part of the window.

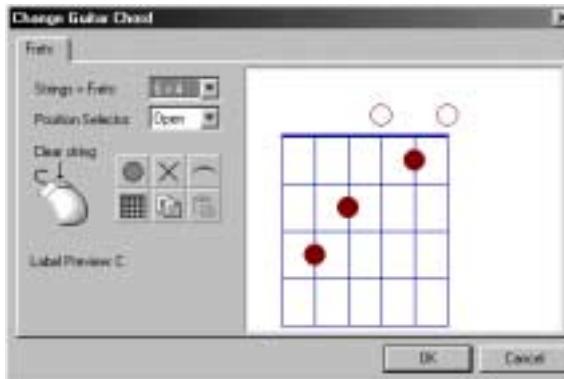


FIGURE 6 - 8: Frets tab window of Guitar Chord library

- **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 Marker (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.

Press **Add**. The newly created chord and symbol will be written to the library. You will be warned if a symbol with the exact chord label already exists. If so, push **Done**, rename the chord and **Add** again.

*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 delete existing chord symbol(s),*

- In **Delete** mode (“X” key), click on any symbol to delete it. To delete several fret symbols, use the Select tool, highlight as many frets on one line that you wish and hit the **Delete** key.

*To move a chord symbol vertically*

Hold the **Shift** button and click and drag a chord symbol up or down.

*To move one or more chord symbols,*

- a. Use the Select tool (“O” key) and highlight more than one guitar fretboard / chord symbol above a staff line.
- b. Push the **Edit Shapes** button in the Text and Controllers toolbar.
- c. Use your mouse to click and drag fretboard/chord symbols.

*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.



## 6.6 Bracketing

Use **Bracketing** to assign braces, grand staff brackets and to join selected parts into barline groups in an ENF document.

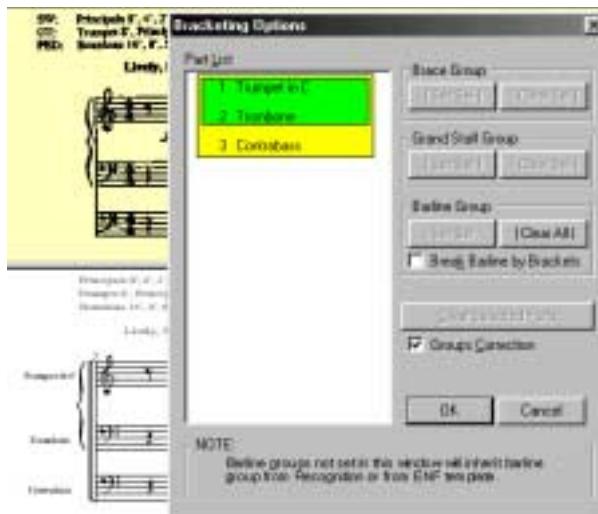


FIGURE 6 - 9: Bracketing window

*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 staves.
- f. Choose **Clear Sel** or **Clear Selected Parts** in selected group or **Clear All** to remove groupings.



Percussion clef (Clefs Palette) - - - - -	107
Automatic Drum Patterns - - - - -	108
Virtual Drum Kit - - - - -	111



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.



## 7.1 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 tandem with all other clefs, including Unify Clefs (See Section 9.14.3 on page 169).

### 7.1.1 Playback > Drumset

Drum sounds are associated with every line and space of the drum clef staff. Accidentals are ignored regardless of the key of the score,

*To change default pitch-to-MIDI drum mapping*

- Select Playback > Drum Set.

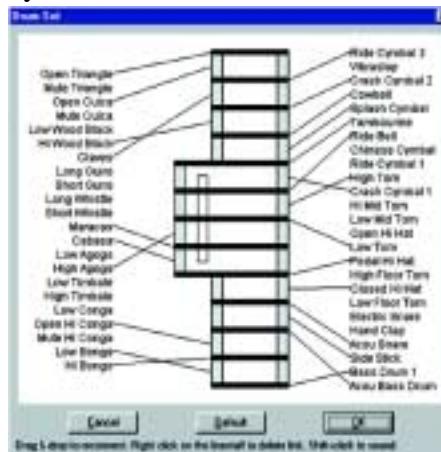


FIGURE 7 - 1: Linking stafflines to MIDI drums in Drumset map

- Using the mouse, drag links from staff and ledger lines and spaces in the window and reconnect to list of General MIDI

drums on left-hand and right-hand sides of window. Press **OK** to finalize changes.

### 7.1.2 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. Toggle the “C” key to get to the **Change** mode and click on the treble clef in the first staff line. All clefs should then update.
- d. Select **eighth note** from “Notes” palette and using *beam direction tools*, create the following pattern. Hit **Spacebar** to play back.

$\text{♩} = 120$



FIGURE 7 - 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.

## 7.2 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.

### 7.2.1 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.



Drum pattern	Style	Beats	Measure
Chunka	Rhythm & Blues	4	4
Dotted Ride	Rhythm & Blues	4	1
Mo Town	Rhythm & Blues	4	1
Mo' Town Yo' Town	Rhythm & Blues	4	8
Straight Shuffle	Rhythm & Blues	4	2
Ballad 1	Rock	4	4
Blues 1	Rock	4	1
Blues Thump	Rock	4	4
HiHat Chunk	Rock	4	4
Offbeat Cymbal	Rock	4	4
Quarter Cows	Rock	4	2
Rock Cows	Rock	4	1

FIGURE 7 - 3: Automatic Drum Pattern Library

c. Click on a pattern that matches the time signature and style of your ENF file. Press **OK** to accept the selection.

d. 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.

### 7.2.2 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 108 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 10.2 on page 179 for more about MIDI views.



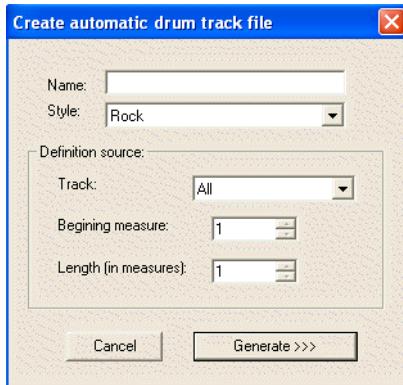
d. Select **Edit > Create Automatic Drum Pattern**.

FIGURE 7 - 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 (**Ctrl + 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. Its 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



- 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.
- Push the **Play** button to hear the MIDI file play back. Push **Close**.
- The imported MIDI file will appear in the MIDI Overview window.
- Repeat the process from Step d) above.

## 7.3 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 204.

### 7.3.1 Recording a virtual drum track

*To create a virtual MIDI drum track in ENF,*

- Select **Options > Virtual Drum Kit**.
- In the **New MIDI View** window, *New Track* is selected. Press **OK**.
- A MIDI Record view will open. Test drum sounds by hitting the center keys on the two front rows of your computer keyboard.
- When ready, hit the **Record** button. You will hear a metronome sound for one measure. Playback and drum recording begins.
- Hit **Stop** when finished. Close the MIDI window to return to ENF.

### 7.3.2 Defining Virtual Drum Kit

*To change a MIDI drum and link to your computer keyboard,*

- a. Select **Options > Virtual Drum Kit Definition**

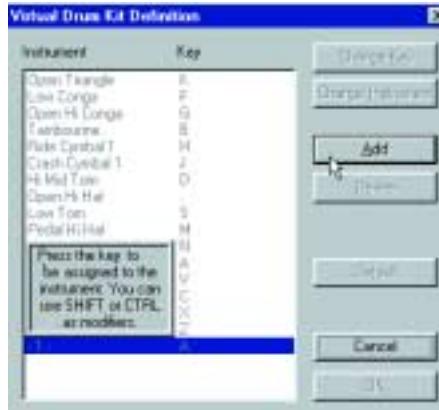


FIGURE 7 - 5: Virtual Drum Kit Definition

- 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**.



Controlling Structure from the System Manager	115
Page Setup	120
Re-link Parts	121
Merging Systems	121
Re-linking optimized systems	122
Score Structure	124
Structure and hierarchy	124
Creating a Conductor's Score from Part Scores	124
Joining open ENF files	125
Creating Part Scores from Ensemble Scores	126
Controlling Voices within Score Structure	127



**FOR PRO and SONGBOOK EDITIONS ONLY:** Once you have recognized and edited your music, you now have the ability to reconfigure the score. In this chapter we will look at how to change the structure of your music by extracting and recombining parts, score-parts and voices or creating a conductor's score from separate parts.

## 8.1 Controlling Structure from the System Manager

### 8.1.1 Extracting parts using Visibility

In this example, we have recognized a vocal / piano arrangement:



FIGURE 8 - 1: Three-part score (ENF View)

*To extract a selected Part from within the System Manager,*

- Position your cursor over an ENF system that contains the part you wish to extract. Hit **Ctrl+M** (**Cmnd+M** for Mac). System Manager opens.
- Select an instrument template for the parts in Part Name column.

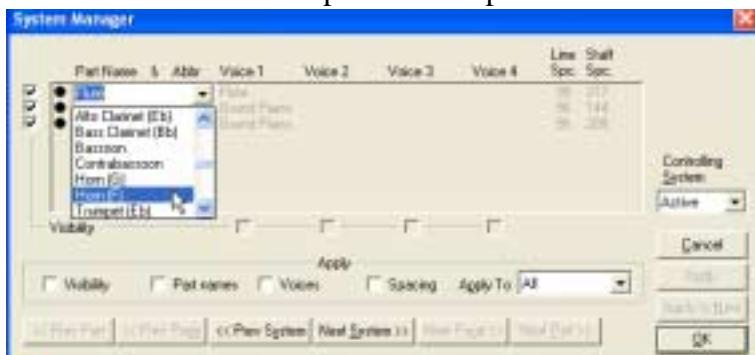


FIGURE 8 - 2: System Manager (displaying active system)

- c. 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.
- d. 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.
- e. Press **Apply to New** to create a new score, leaving the current file unaffected. Or press **OK** to remove parts from the open document.

FIGURE 8 - 3: is the result of the System Manager settings made in FIGURE 8 - 2:



FIGURE 8 - 3: Extracted vocal Part

### 8.1.2 Extracting voices using Visibility

Let’s go back to the original ENF document in FIGURE 8 - 1: 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. Click the dot next to the **Part Name** to highlight the target part. Remove checkmarks of all parts and voices except for the part and voice you wish to target.

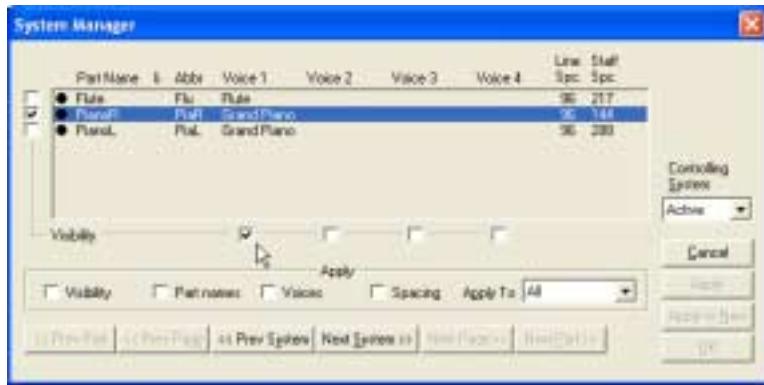


FIGURE 8 - 4: Selecting Voices to be extracted

- Make sure “**Visibility**” in lower left-hand corner is checked.
- 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 8 - 5: Extracted Voice

### 8.1.3 Active System vs. Super System

When you position your cursor over a given system and open the System Manager, what you see displayed is a representation of the *active* or highlighted system. Some parts may have their visibility checked on and some may not depending on whether or not a particular part appears in the active system. When the System Manager is opened, the default “controlling system” is always the **active system**.

During Recognition, the system containing the greatest number of staves will register that total number in a special *controlling system* within the System Manager. This register is called the Super System and it represents the *true number* of parts in the score. Normally, the

Super System and the largest System Manager will have the same number of parts. Occasionally, however, total actual instrumental parts may exceed the number of staves per system in the largest system of the score (as represented in the list of Part Names inside the System Manager). For example, the largest system may *not* contain an instrumental part that appears elsewhere. See “Re-link Parts” on page 121 for more information about re-linking parts and dealing with scores having collapsed or expanded systems.

### 8.1.4 Super System

The Super System always represents the total number of *potential* instruments. Adding or removing parts is normally done from the Super System and not from active system displayed in the System Manager.

*To add a new part to the score (System Manager > Super System),*

- Select **Edit > System Manager (Ctrl + M (Cmnd+M Mac))**.
- Choose **Super** from the **Controlling System** pull-down menu.

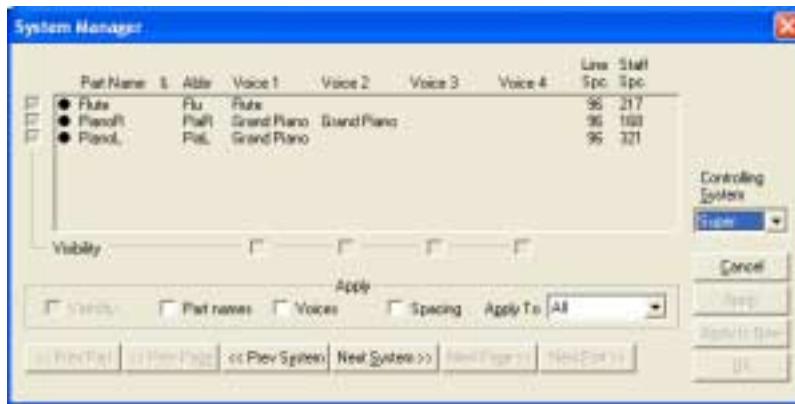


FIGURE 8 - 6: Inserting a new part using Super System in System Manager

- Select the part you wish to add a part next to by clicking on the black dot to the left of the part. **Apply to: All** should be selected.
- Choose **Insert Above** or **Insert Below**. Then press **Apply**.
- Switch **Controlling System** back to **Active**. Notice the newly added part is added, but is NOT checked for visibility.

**NOTE:** Parts are not visible in ENF until **Visibility** is **applied** to one or more systems. See “Controlling Part Visibility and Part Linking” on page 147 for details on making part visible.

### 8.1.5 Changing line, staff and system spacing

You can change the distances between the lines in a staff as well as distances between staves and systems from inside the System Manager. Changes can be applied to the active system or to all subsequent systems.

- a. Position your cursor over the system which you want to alter.
- b. Select **Ctrl + M (Cmnd + M Mac)** to open the System Manager.
- c. Changing **Line Spacing** increases or decreases the space between lines in staves and resizes noteheads. Changing **Staff Spacing** increases or decreases the distance between staves.

NOTE: Staff Spacing of the last part will determine the space between systems. It is usually about double the other staff spacings.

- d. Check the **Spacing** box in the “Apply” area.
- e. In the “Apply To” pull-down menu, select the active **system**, all subsequent systems (**System+**) or **All**. Press **Apply** then **OK** to close.

### 8.1.6 Adding a staff when missed by recognition

Occasionally, a staff inside a system may not be localized during recognition due to flaws in the image or otherwise. If so, the system in ENF to which it belongs will not display that part. Missing staves can be inserted 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. Hit **OK**.
- c. Open System Manager (**Ctrl + M**). You should see a part with a missing check mark along the left side. This means it is *invisible*.
- d. Check the part, and check the **Visibility** box in the **Apply** section.
- e. Change the **Apply To:** pull down menu from **Score** to **System**. Hit **Apply** to preview or **OK** to apply and close System Manager.
- f. Hit the “U” key and select **Unify Key and Time based on First System**. Hit **OK**. Now you need only fill in the missing notes. Remember to use **Copy** and **Paste** functions whenever possible.

## 8.2 Page Setup

Any or all the actions listed in this chapter will alter the layout of the ENF file. Be mindful that synchronization with the original scanned pages will probably be lost after one or more of these actions are applied. Therefore, it is recommended you thoroughly edit the ENF file using the associated image views before altering score structure. See “View >Associate Image Files” on page 232 for information on reassociating ENF and scanned image views.

Controlling individual page layout can be done in Page Setup.

*To change page layout of single pages, parts or entire scores,*

- Select File > Page Setup.

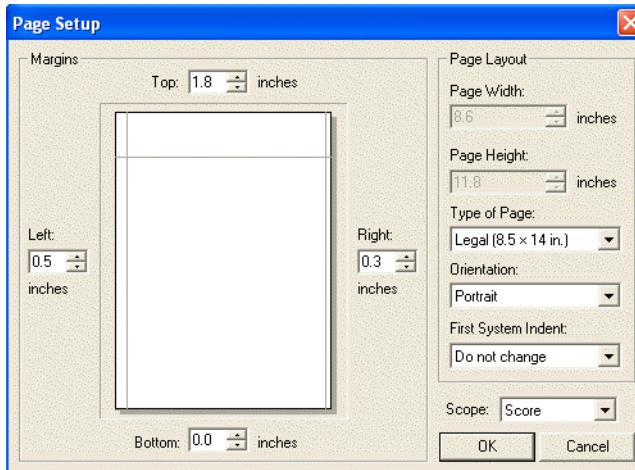


FIGURE 8 - 1: Page Setup

- To set page size to correspond to a particular page format, choose the desired format from the “Type of Page” pull-down menu.
- Click and drag with your mouse or use the numeric scrollers to change existing margins as required.
- To reorient the page, select **Landscape** or **Portrait** in “Orientation”.
- 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.

## 8.3 Re-link Parts

### 8.3.1 Merging Systems

For parts to be joined into a system (and play simultaneously), an adjoining bracket along the left-hand margin must be visible. Usually, brackets are cut off by mistake during scanning. If this occurs and one or more parts become separated (becoming single-line systems themselves), it is possible to rejoin them; forming a new, larger system.

*To merge two systems into one larger system,*

- 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 8 - 2: 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.

### 8.3.2 Re-linking optimized systems

In scores with collapsed or expanded systems (also known as optimized systems), **Re-link Parts** allows you to reassign parts to stafflines of any selected system. Within such scores, parts may disappear, become doubled or reappear in a later system. By re-linking parts of optimized scores, parts will play back correctly as they disappear and reappear throughout the score. In addition to proper playback, the MIDI file created for such files will have tracks and channels properly threaded.

*To re-link parts in a system,*

- Position your cursor over a system to be re-linked. Hit **Ctrl+L** (Win) / **Cmnd+L** (Mac) to open **Re-link Parts** window.



FIGURE 8 - 3: Re-link Parts window

All parts listed in System Manager's *Super System* appear in the main list of the **Re-link Parts** window (see "System Manager" on page 143 for more information). Checked boxes represent which parts were assigned to each staff of the active system.

- 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.
- To view adjacent systems, press *Next* or *Prev System*.
- In the **Apply To** box, press **Apply** to apply to active system. **System+** will apply to the active system plus all subsequent systems.

NOTE: Revise part names in System Manager or Instrument Templates.



Page #1 of Orchestral Score



Page #2 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.

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 7-2 on page 122a.. Notice that the re-linked parts were applied to all subsequent systems (System+) from the topmost active system.

FIGURE 8 - 4: Re-linking an orchestral score

## 8.4 Score Structure

### 8.4.1 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 45 for more info.

### 8.4.2 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,*

- Select **Edit > Score Structure**.

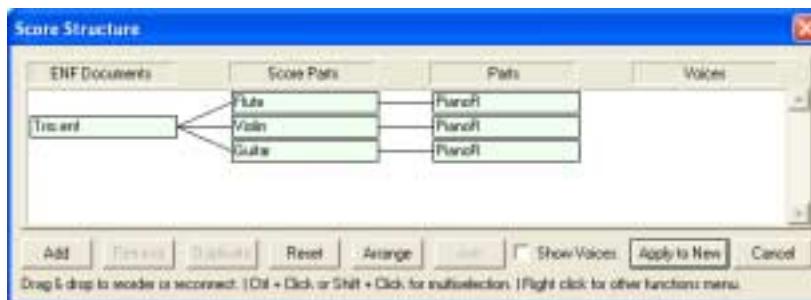


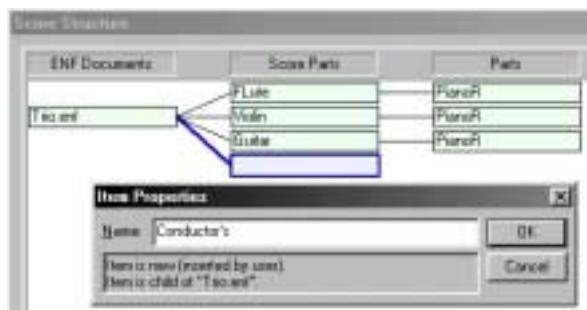
FIGURE 8 - 5: Score Structure (Typical Part Score)

- 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 8 - 6: 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 **Inserted** (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 8 - 7: 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.

#### 8.4.3 Joining open ENF files

You may discover that you have edited two ENF files that really belong together as a single section, movement or song. ENF files can be joined (appended) to a single ENF file.

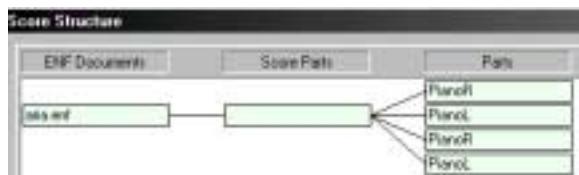
To append two open ENF files into one,

- Click to highlight two open ENF files. Click **Join**. Press **Apply to New**. A new ENF file will be created from both selected files.

#### 8.4.4 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.

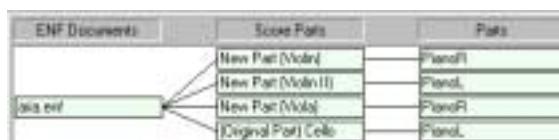
- a. Open an ENF file with 2 or more staves per system.
- b. Select **Edit > Score Structure**.



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 8 - 8: Creating Score Parts from Ensemble scores

The following table describes how various structures appear in ENF and MIDI views. Understand these relationships and you will understand how the logical structures are linked in SmartScore.

**Table 4: Relationship between structures in ENF and MIDI views**

Score (Document)	Score Part	Part	Voice
<b>ENF View</b>			
Defined by Super System within System Manager	Defined by System Manager	Defined by Part Number in System Manager.	Defined by Voice Number in System Manager
<b>Equivalents in MIDI View</b>			
MIDI File	MIDI Track	MIDI Track	MIDI Channel

#### **8.4.5 Controlling Voices within Score Structure**

To view voices in Score Structure, click on “Show Voices” button. If **Color Mode = Voice**, you will notice voice names also show their voice color. Voices have special meaning in SmartScore. They are tightly linked to each other logically and physically (Vertical Event joining for example). Since voices are “locked” to one another in ways that Parts and Score-Parts are not, it is not possible to re-link voices to other Parts or Score-Parts. You can, however, extract voices separately or in select groups from within the System Manager. See "Extracting voices using Visibility", Section 8.1.2, on page 116 for more.

More ENF navigating	129
Quick Keys	132
QuickSelect (Ctrl + Click)	132
Insert and Change Modes (C)	132
Delete by Group / Delete Any (X)	133
Select Tool (O)	133
Using the Select tool for quick deletions	133
Using the Select Tool (O) to edit selected objects	134
Dots (D)	134
Ties (V)	135
Beam direction (A)	135
Flags and beams (F)	135
Stem direction (S)	135
Accidentals	136
Rests (R)	137
Barlines (I)	137
Dynamics (P, < and >)	137
Tuplets (T)	137
Unify Signatures/Clefs (U)	137
Note values (Number Pad)	137
Navigator	138
Transposition	139
System Manager	143
Instrument Templates	147
Working with Voices and Colors	149
Playback Console	154
Hidden Symbols	155
Dynamics, Articulations and Tempo Markings	156
Properties Tool	162
Repeats and Multiple Endings	165
Unify Key, Time and Clefs (U)	168
MIDI to ENF	170
Troubleshooting ENF Problems	172

## 9.1 More ENF navigating

### 9.1.1 Split-screen and Zoom Window Viewing

The default view is the “split screen” view immediately following recognition. An alternative view is the floating “Zoom Window”.



FIGURE 9 - 1: Zoom Window

*To use the “Zoom Window”,*

- Go to **View** menu, select “Zoom Window” and “TIFF” view.

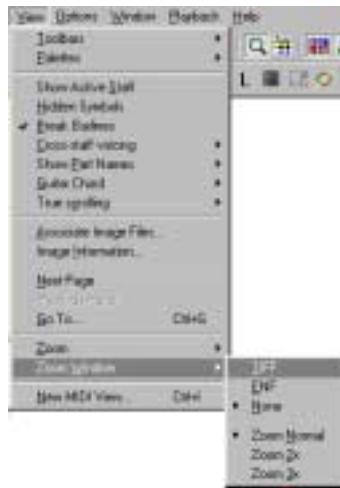


FIGURE 9 - 2: View > Zoom Window

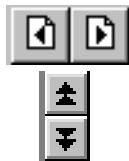
- To increase or decrease zoom view of the window, choose a zoom magnification from **View > Zoom Window** selection. Available zoom levels are Normal (1x), 2x and 3x magnification.

### 9.1.2 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.

### 9.1.3 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.

### 9.1.4 Go To...(Ctrl +G or Cmnd+G for Mac)

While editing, you can quickly 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).

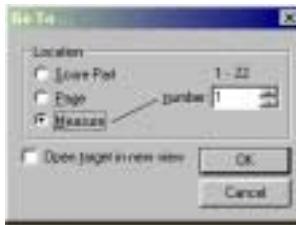


FIGURE 9 - 3: Go To window

- 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.

### 9.1.5 Tool Palettes (F1-F9 keys)

All notation objects 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.



**TIP:** The **F1** key always resets windows and palettes to their default.

**TIP:** To quickly select an alternative Tool Palette, right-click on any open Tool Palette. (Mac: **Ctrl + click**). All Tool Palettes become available to select. Notice the open palette becomes replaced with the selected palette when in the *Recycle* mode.



While selecting an alternative palette, you may choose one of 4 modes.

- **Show All** opens all 9 SmartScore Tool Palettes.
- **Hide All** removes all Tool Palettes from view.
- **Reset (F1)** returns to default display of Notes and Rests palettes.
- **Recycle** (Default) changes the *secondary* open palette when a Quick Key is activated. The *Notes* palette remains open and does not cycle.



FIGURE 9 - 4: Tool Palette Selection

You may also use the function keys along the top of your computer keyboard to choose any of the available Tool Palettes. **F1** will reset the palettes to their default display settings.

**NOTE:** For detailed functions of all tool palettes, turn to "Tool Palettes", Section 11.2, on page 211.

#### 9.1.6 Pitch shift (Shift + drag)

*To change the pitch of any note,*



- Hold down the "Shift" key, click on and drag a note head up or down to shift its vertical position in the staff.



**TIP:** To adjust vertical placement of a rest, hold the **SHIFT** key down, click and drag the rest up or down.

*To change the pitch of several notes at once,*

- a. Press “**O**” key to activate the Select tool (also in SmartScore Toolbar)
- b. Click and drag a box around any series of notes.
- c. Hold down the “**Shift**” key and drag the notes with the mouse.

## 9.2 Quick Keys



**TIP:** Refer to the Quick Keys maps on page 174 for a graphic depiction of all SmartScore keyboard shortcut keys.

### 9.2.1 QuickSelect (Ctrl + Click)

The fastest way to choose any object for inserting and changing is to QuickSelect it. **Ctrl + Click** on any object inside the active staff and the cursor inherits all of that object’s attributes. The mouse pointer becomes any object that is QuickSelected.

### 9.2.2 Insert and Change Modes (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. Toggle the “**C**” key to the **Change** mode.
- b. Select any note value from the “Notes” or “Rests” palette.
- c. Click on any existing note or rest to change to selected value.

**NOTE:** When you *QuickSelect (Ctrl + Click)* on any object inside the active staff, the palette associated with the object will open.

### 9.2.3 Delete by Group / Delete Any (X)

Press the “X” key of your computer keyboard to toggle between the **Delete by Group** and **Delete Any** modes.

In the **Delete by Group** mode, the cursor becomes an arrow with the selected object type in grey. In the **Delete Any** mode the cursor becomes an arrow with an “X” next to it.



- **Delete by Group** mode removes any object clicked on that is found in the active Tool Palette but no other object.



- **Delete Any** mode removes any notation object that is clicked with the mouse.

**NOTE:** This delete will remove an entire chord. To remove a single note from a chord, hit the “X” then “Z” (cluster) key. Click a note.

*To delete any object in the active staff,*

- a. Toggle the “X” key to **Delete Any** mode.
- b. Click on any object.



**TIP:** For the occasional object that does not respond to normal click-to-delete action, use the **Select** tool. Hit the **Delete** key to remove all selected objects.

## 9.3 Select Tool (O)

### 9.3.1 Using the Select tool for quick deletions



Use the Select tool (letter “O” key) to highlight more than one object. Many functions including mass delete, mass pitch shift, vertical alignment, voice splitting, flipping stem directions and copy/paste work with the Select tool. Its button can be found in the SmartScore toolbar.

*To delete a group of objects including notes, rests and symbols,*

- a. Use the Select tool (O) to select only the range of objects to delete. Do not highlight an entire system.
- 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 mass-delete ties and articulations,*

- 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.

*To delete an entire system,*

- a. Use the Select tool (**O**) and highlight an entire system.
- b. Hit the **Delete** key. The system will be deleted. All subsequent systems will scroll upwards replacing the gap.

### **9.3.2 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.

### **9.3.3 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. In **Change** mode, a clicked note/rest will acquire a dot.

### 9.3.4 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.

### 9.3.5 Beam direction (A)

With any single flagged note chosen, hit the “A” key. This toggles between Begin beam, Middle beam and End beam note configurations.

### 9.3.6 Flags and beams (F)

The “F” key toggles between flag and beam note attributes of any clicked note. Flag/beam toggle works in both **Insert** or **Change** modes.

### 9.3.7 Stem direction (S)

The “S” key changes the default note stem direction. In **Insert** mode, toggling the “S” key reverses the default 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 before inserting any given note. Or right-click (Windows) while inserting (**option + click** for *Mac*).



**TIP:** To reverse the stem directions of several notes at one time, press the “O” key, drag to select a group of notes. Then press the “S” key to reverse the stem direction of all selected notes.

*To change the stem direction of an existing note,*

- a. Toggle the “C” key to activate the **Change** mode.

b. Right-click on any given notehead (**option + click** for Mac). The stem direction will change.

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.

In **Change** mode, an existing note stem can be reversed by right-clicking (Windows) on any existing notehead (**Option + click** for Mac).

### 9.3.8 Accidentals

*To insert an accidental,*



- a. Select any accidental from the “Notes” or “Articulations” palette.
- b. Toggle the “C” key to **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,*

- Press the “X” key with any accidental active in cursor 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; normally used when notation becomes dense. MIDI playback ignores these “redundant” accidentals.

*To insert a courtesy accidental,*

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

### 9.3.9 Rests (R)

Press the “R” key to automatically select a quarter rest for editing. “Shift” + “R” will select an eighth rest.

### 9.3.10 Barlines (I)

Hit the “I” key to select a standard barline for editing. The “Barlines and Repeats” palette will open as the secondary palette.

### 9.3.11 Dynamics (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.

### 9.3.12 Tuples (T)

The “T” key opens the tuple (Rhythmic Groups) Palette. Triplet is selected as the default. Drag the mouse to box in the notes/rests to become the selected tuple. Drag downwards to insert the tuple above the selected notes/rests. Drag upwards to insert the tuple below selected notes/rests.

### 9.3.13 Unify Signatures/Clefs (U)

Press the “U” key to automatically open the Unify Score window. Unify the clefs, key and time signatures throughout the entire score. Refer to “Unify Key, Time and Clefs (U)” on page 168 for details on using this tool.

### 9.3.14 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 174 for a graphic of shortcut keys.

## 9.4 Navigator



### 9.4.1 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**.



### 9.4.2 Scan

Push to initiate scanning. Same as **File > Scan Music > Acquire**.



### 9.4.3 Recognition

Push to initiate recognition on any pre-scanned image. Same as **File > Recognize**.



### 9.4.4 Unify (U)

Push to initiate Unify Key, Time and Clefs. Same as **Edit > Unify Signatures**. See “Unify Key, Time and Clefs (U)” on page 168 for details.



### 9.4.5 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 88 for details.



### 9.4.6 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 **Realtime > Record** in **MIDI View**.



### 9.4.7 Karaoke View

Push to enter Karaoke playback environment.

### 9.4.8 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.

#### 9.4.9 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.

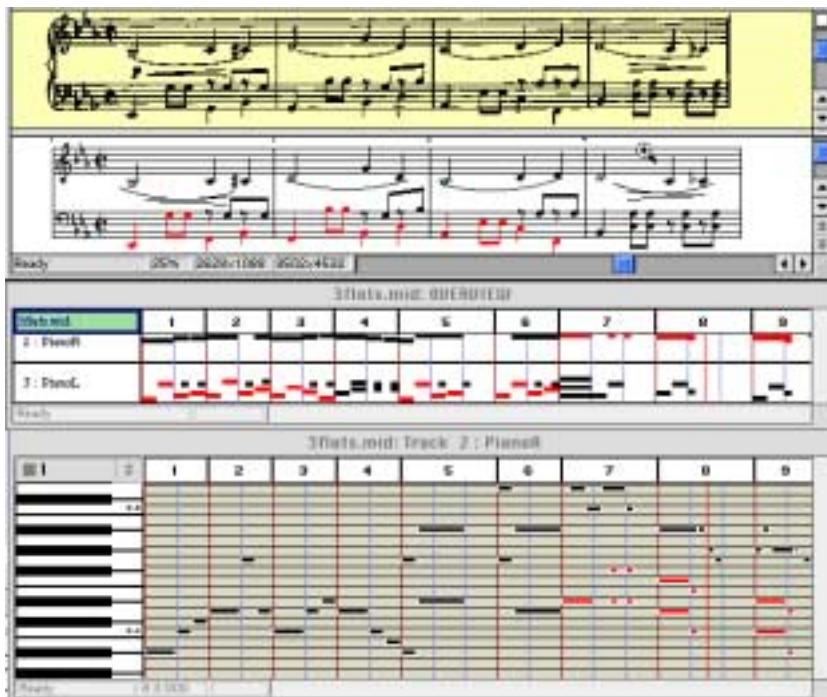


FIGURE 9 - 5: Tiled view (typical)

## 9.5 Transposition

SmartScore offers several types of transposition depending on your needs. You can transpose by **key**, the most common type of transposition. Transposing by **clef** is useful for transforming parts to instruments written in another clef sign. It is also most helpful for rewriting transposed instrument parts for other transposed/non-transposed instruments. 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.

**NOTE:** It is recommended that you carefully edit your score before transposing. If your score contains incorrect change-of-key signatures and/or guitar fret and chord symbols, they will be transposed to “who-knows-where”. Remember too that it may become difficult to refer to the original score for visual editing clues after transposing.

*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.

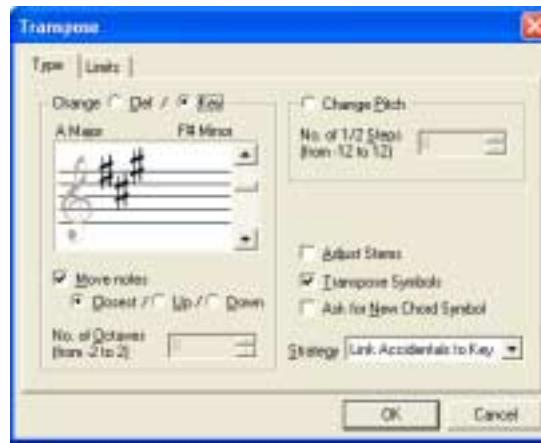


FIGURE 9 - 6: Transposition window

- 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**.

### 9.5.1 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 Transpose Limits.



**TIP:** To shift the pitch of a small range of notes, it is easier to use the **Select** tool (**O**). Click-drag to highlight the range of notes. Then, while holding the **Shift** key down, drag the selected notes up or down.

### 9.5.2 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 9 - 7: 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.



## 9.6 System Manager

Use the System Manager to add or delete parts, change part names, apply visibility to parts and voices, extract parts and voices, assign MIDI instrument sounds to parts and voices and to control staff and system spacing. The System Manager displays information about what is found in the active system (the highlighted system). A special display called the Super System which is a sort of “mother system” is also accessible. (See “Active System vs. Super System” on page 117 for more details). Changes made can be applied to the current system, current and following systems, active Score-Part or to the entire score.



FIGURE 9 - 8: System Manager

*To open the System Manager,*

- a. Position the mouse pointer over a given system in the ENF view.



**TIP:** To verify an *active system*, go to **View > Show Active Staff**.

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, instrument and staffline, staff and system spacing.

Parts run vertically along the left column along with checkmarks that identify whether they “exist” in the active system. Voices run horizontally.

### **9.6.1 Part Names**

**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. See “Instrument Templates” on page 147 for additional information.

*To select a Part Name,*

- a. Highlight a part by clicking on the black dot next to its name. Choose a desired instrument in **Part Name** column. 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 add a new template, name it and assign any MIDI instrument to it.

### **9.6.2 Assigning MIDI Instruments to Voices**

Voces 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.

NOTE: In Playback Console, select a channel (voice color and number) and choose a new MIDI instrument from pull-down menu.

### **9.6.3 Part visibility**

Checkmarks along the far left column identify which parts SmartScore thinks are visible in the active system; they can be turned on or off. Individual parts and/or voices can be isolated or they can be “removed” from a score by selective use of Visibility. Selected parts or removed (un-selected) parts can be extracted to new files without altering the original document.

*To change Part Visibility,*

- a. Check or uncheck the Visibility box next to a Part Name to restore or remove visibility of that Part.
- b. Select Visibility in the **Apply** field and choose a scope from the “Apply To” pull-down menu. See “Applying changes to the score” on page 146 for details on “Apply To” options.
- c. Push **Apply** to apply to the current document or **Apply to New** to extract part(s) to or remove part(s) from a new ENF document.

### **9.6.4 Voice visibility**

*To change Voice Visibility,*

- 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.
- c. Select “Visibility” in the **Apply** field and choose a scope from the “Apply To” pull-down menu.
- d. **Apply** changes the open file. **Apply to New** creates a new ENF file.



**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 124 for more details on how to isolate, recombine and/or remove parts and voices from a score.

### 9.6.5 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 (including Super System). 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, but not the Super System.

- **Super System**

Applies changed values only to the Super System.

*To apply changes,*

- **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.

**Controlling System** will determine whether selected values apply to the active system or to the Super System. Since the active and the Super System may have completely different values, changes you make to the score are controlled by which you controlling system you select.

- **Controlling System = Active** is used for most local and global edits.
- **Controlling System = Super** is used to add or remove parts from the score. See “Active System vs. Super System” on page 117.

### 9.6.6 Controlling Part Visibility and Part Linking

*To make added parts visible in one or more systems,*

- a. See “Super System” on page 118 for adding parts to score.
- b. To make added part visible, change **Controlling System** to **Active**. Insert **Visibility** check mark next to Part Name and in the **Apply** region below the parts matrix.
- c. When the **Apply To** option = **Score**, 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**.

*To re-link optimized parts for proper playback,*

- a. Inserting or removing parts may affect continuity of instrument playback. See “Re-link Parts” on page 121 for more information.

*To remove any part from a score (**System Manager > Super System**),*

- a. Click the dot corresponding to the part you wish to remove.
- b. Make sure **Apply to: All** is selected. Push **Remove**

## 9.7 Instrument Templates

Basic characteristics of all parts (ENF staves) are inherited from Instrument Templates. These include name, abbreviation, MIDI instrument, playback transposition and color (when **Color = Part** mode). When an instrument is selected from the **Part Name** pull-down menu in the **System Manager**, it is directly linked to the same name and its assigned characteristics in Instrument Templates. Any or all of these characteristics can be changed at any time.

To open, modify or add a new instrument template,

- a. Hit **(Ctrl+F/Cmnd+F)** or choose **Edit > Instrument Templates**.

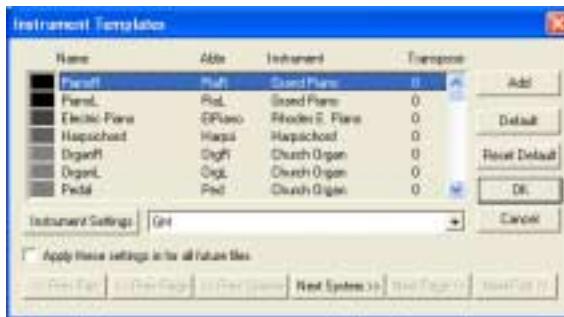


FIGURE 9 - 9: Instrument Template window

- b. Instrument color can be changed by double-clicking in its color field. When **Part = Color** in **Options > Color Mode**, notation for parts associated with this instrument will inherit this color.
- c. Click in the **Name** field of any template and type to change the given name of an instrument.
- d. To change an abbreviation, click then type inside the **Abbr** field.
- e. Click and select a different MIDI instrument from the **Instrument** list to change default MIDI instrument assignment.
- f. **Transpose** displays the default playback transposition for selected instruments. The MIDI representation *will* reflect the transposed shift in pitch.
- g. 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.
- h. To save settings for future ENF files, check “**Save for Future**”.

### 9.7.1 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 play-

back 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**.

## 9.8 Working with Voices and Colors

SmartScore uses 2 main color modes for viewing your music as well as for controlling how MIDI data is handled: **Color by Part** or **Color by Voice**. Each mode will change certain characteristics of how the notation is displayed and how parts and voices are assigned to MIDI channels. Changing the color mode of an open ENF document can be done at any time. Nothing is lost by switching back and forth between color modes.

*To select or change the color mode for an open ENF score,*

- a. Choose **Options > Color Mode > Voice** to color by *voicelines*.
- b. Choose **Options > Color Mode > Part > Color** to color by *part*.
- c. Choose **Options > Color Mode > Part > Black** to color all parts in black.

NOTE: To quickly toggle between viewing voices in different colors or all in black, push the **Voice Color** button in the SmartScore toolbar or select **Options > Define Colors > Voices**.



### 9.8.1 Options > Color Mode > Voice

The following table describes the relationships between color modes and how parts and contrapuntal voices are assigned to MIDI channels.

**Table 5: Parts and Voices and their MIDI equivalents**

<b>Options &gt; Color Mode =</b>	<b>MIDI Tracks</b>	<b>MIDI Channels</b>
<b>Voice</b>	Each Staff = One Track	Each <b>Voice</b> = One Channel 4 Voice-channels per Track
<b>Part &gt; Black</b> <b>Part &gt; Color</b>	Each Staff = One Track	One Voice per Track.



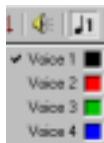
In **Voice** mode, contrapuntal voices display as one of four colors (Voice 1 = black, Voice 2 = red, Voice 3 = green and Voice 4 = blue). Voicelines can then be extracted in either **System Manager** or in **Score Structure**.

In **Voice** mode, each contrapuntal voiceline is assigned a unique MIDI channel. This allows you to control each voice's Volume, Balance and MIDI instrument in the **Playback Console**.

### **9.8.2 Overriding automatic voice colors**

Voice colors are assigned automatically, but can be manually overridden.

*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 the note or rest to change it to the selected color and voice.



**TIP:** When editing a measure containing multiple voices, voice colors may change to green and blue as you insert or delete notes and rests. Ignore these changes until the entire measure is fully edited. Once edited correctly, colors should appear normal; that is, mostly black (Voice 1) and red (Voice 2).

**NOTE:** Ties between notes belonging to different voices will not sustain during playback.

### **9.8.3 Options > Color Mode > Part**

In **Part** mode, all notes within a staffline become assigned to a single MIDI channel; stem directions, vertical events and other characteristics that differentiate contrapuntal voicelines are ignored. In **Color by Part** mode, each staff assumes a unique color as defined in Instrument Templates. This is most useful in orchestral scores that contain one part per staff, allowing for quick visual referencing of each instrument by its color.

To change default staff colors when **Color Mode > Part > Color**,

- a. Select **Options > Define Colors > Part Color**
- b. **Instrument Templates** will open. Double-click the color of a given part and choose a new color you want associated with that part. Push **OK**.

#### 9.8.4 Changing colors of hidden symbols and backgrounds

To change the default background color of the TIFF or ENF window,

- a. Select **Options > Define Colors > Background**
- b. Choose either *Image Pane* or *ENF Pane*.
- c. Click to select a new color and push **OK**.

To change the default color of *Hidden Symbols*,

- a. Select **Options > Define Colors > Hidden Symbols**
- b. Choose a new color and push **OK**.

#### 9.8.5 Voice Splitting (H)

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

- a. Hit the “**O**” key to activate the Select tool.
- b. Drag a box around any number of two-note clusters.
- c. Press the “**H**” key to separate two-note clusters into 2 voices.

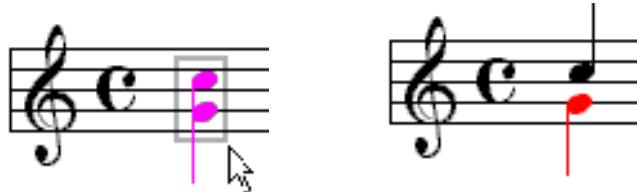


FIGURE 9 - 10: Splitting two-note chords into 2 voices



**TIP:** **Music ministers and choir directors:** Use this handy tool to split two-note clusters into 2 voices (e.g. hymnals). Assign each voice a unique instrument or extract each voice to a separate file.



**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.

### 9.8.6 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. In order to maintain voice continuity, cross-staff (visiting) notes must be handled in a special way.

*To create cross-staff voicing,*

- If the visiting note is part of a beamed group, use the Shift button to click and drag the notehead up (or down) into the adjacent staff. Then drag to the line or space you to position it.

**NOTE:** Notes that “visit” adjacent staves do not display any ledger lines. They inherit their pitch from the space or line of the “visited” staff.

- To create a cross-staff note with a flipped stem, create a two-note beam. Toggle the “C” key to Change mode, then **right-click** (**option + click** for Mac) on the note you wish to flip. Drag the flipped note head into the desired staff and position it to the desired line or space. Once in place, you may insert any additional beamed notes using the **middle-beam** tool in “Notes” palette.
- If the visiting note is stand-alone (not part of a beamed group), choose whether you want the cross-staff indicator lines to be solid or dotted (**View > Cross-staff Voicing > Solid or Dotted**).
- Drag the notehead up (or down) to an adjacent staff and position it over the desired line or space.

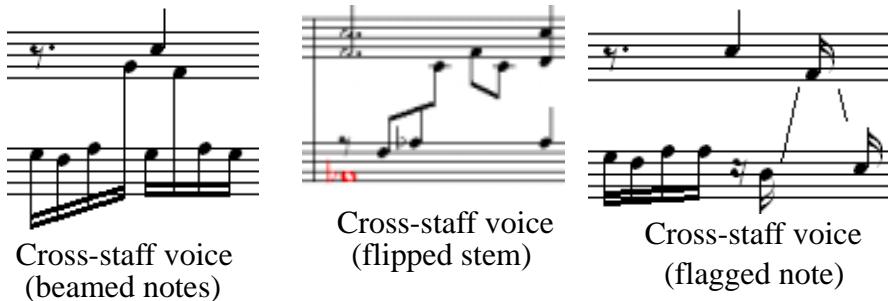


FIGURE 9 - 11: Cross-staff voicing

- e. To edit a cross-staff note, position the mouse pointer over the home staff of the visiting note. Hold the **Ctrl** button down and **Shift + drag** the notehead of the visiting voice to alter its pitch.



**TIP:** Holding the **Ctrl** button down always keeps the active staff and its system selected. This is useful when accessing the **Edit** menu to add / remove staves and systems or to open the System Manager.

### 9.8.7 Cross-measure beaming

*To create a cross-measure beam,*



- a. Insert a right-beam note and a left-beam note on either side of a barline.
- b. Use the **Select tool** to highlight both notes and hit the “**B**” key.

### 9.8.8 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 overlapping note heads, check off “**Overlap Notes**” in the **Options / Overlap** menu. Playback will not be affected whether note heads are offset or overlap.

### 9.8.9 Swapping positions of offset notes

The relative orientation of offset notes can be swapped if necessary.

*To swap the horizontal positioning of offset notes,*

- a. Use the Select tool to highlight two offset notes belonging to different voices in the same vertical event.
- b. Hit the “**L**” key to swap note positions.

## 9.9 Playback Console

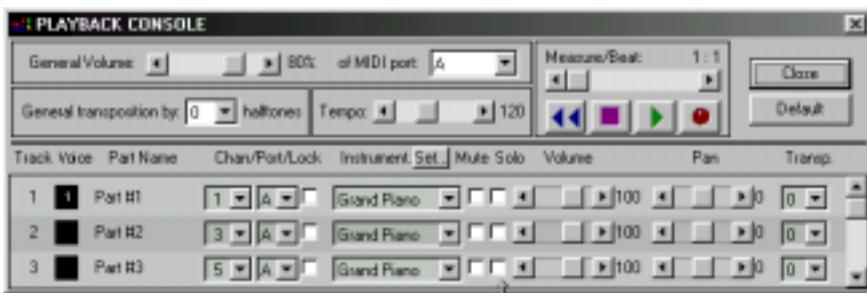


FIGURE 9 - 12: Playback Console

The Playback Console controls tempo, transposition, muting, soloing, volume, panning and MIDI Instrument assignments to parts (when **Options > Color Mode = Part**) or to voices (when **Options > Color Mode = Voice**).

*To open the Playback Console,*



- Select the speaker button from the SmartScore Toolbar. Or hold down **Ctrl+9** (Win) / **Cmnd+9** (Mac) or select **Console** from Playback menu.

*The first column, **Track**, lists the MIDI track assigned. The second column, **Ch/V** lists the MIDI **channel** number within a colored box representing one of 4 possible **voices** (black, red, green and blue). When **Options > Color Mode = Part** only tracks will be displayed. If **Options > Color Mode = Voice** is selected, all tracks and all voices will be displayed.*



**TIP:** When **Color Mode = Voice**, each voiceline becomes assigned to a discrete MIDI channel. That is why you may see many channels within one MIDI track. To reduce the number of channels to equal the number of stafflines found in ENF, change **Options > Color Mode** to **Part**.

- If changes are made to MIDI instrument assignments the System Manager will become updated. Changes to other parameters will be stored as MIDI data for the ENF file.

The default MIDI instrument sets are General MIDI Instruments and General MIDI Drums.

*To reassign MIDI instrument sets,*

- a. Push **Set** button next to Instrument column header.
- b. Choose Instruments or Drums tab and select from preset list.
- c. Push **Custom** to reassign to external names if required.

## 9.10 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 **decelerando** 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,*

- a. 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 brown color.

*To view ranges of dynamics and tempos,*

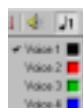
- a. Push the Hide/Show Symbol button. Dynamics or tempos which were applied to a range of notes will appear as follows:



FIGURE 9 - 13: Hidden range of an accelerando

Push again to exit Hidden Symbols mode. “Hidden” symbols do not appear in normal mode and will not print.

### 9.10.1 Changing Voice 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. 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 **Options > Define Colors > Hidden Symbols**
- b. Choose a new color and push **OK**.

## 9.11 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 9.12 on page 162.

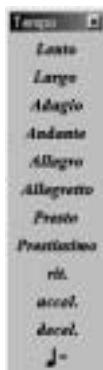
- Dynamic markings affect the volume of a range of notes in the active staff (MIDI track) to which they are entered.
- Articulation markings, such as trills, staccatos, tenutos, arpeggios, glissandos and mordents are note-specific.
- Tempo changes are global and cannot be applied to one staffline.

### 9.11.1 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 68 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*).

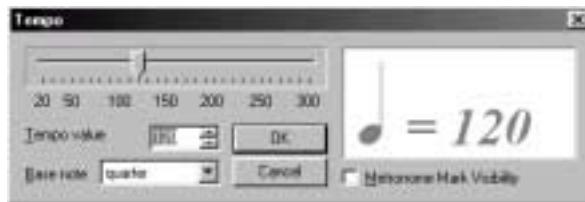


FIGURE 9 - 14: Tempo Change (Metronome Mark) window

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,*



- Select the Properties tool from the SmartScore toolbar.
- Click on a mark in the score to edit its properties.

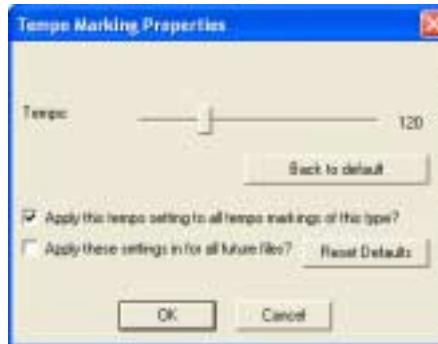
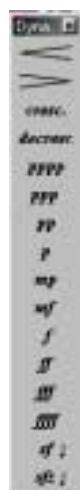


FIGURE 9 - 15: Tempo Marking Properties window

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.

### 9.11.2 Dynamics, Hairpins, Crescendos and Decrescendos

*To Insert a Dynamic marking,*



- 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 155.

*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 9 - 16: 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 9 - 17: 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.

NOTE: Playback properties of articulations and dynamics may be changed using the Properties tool. See “Properties Tool” on page 162.

*To delete a dynamic or tempo marking,*

- Press the “X” key and click on the marking. An alternative to using the X key is to use the Select tool (“O” key), highlight the mark and hit **Delete**.

### 9.11.3 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*”, Section 11.2.2, on page 211.

*To insert a legato (slur),*

- Push the Legato button in the “Articulations” palette.
- 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 turns, fermatas, accents and mordents,*

Turns, fermatas, accents and mordents can be positioned near the top of a note head or near the tip of note stem.

- 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,*

- Select the articulation to delete. 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.

*To insert a trill,*

- With **tr** (trill) selected, click on a notehead to insert a single trill.
- To create an “extended” trill, toggle the “C” key to enter Change mode. Click and drag horizontally to select a region. The length of the extension is determined by how far you drag the mouse.

*To insert an extended trill,*

- a. As described above in *To insert a trill*, insert a trill on the first note of an extended trill sequence.
- b. Hit the “C” key to enter **Change** mode. With the right mouse button down (**alt** key down for *Mac*), right-drag a box extending from the trill along the length you wish extended trills to play.

Trills can play back either up from the source note or downwards from the source note.

*To choose whether a trill plays up or plays down*

- a. Go to **Playback** menu and from the item, **Trills**, select either **Up** or **Down**.

*To insert a tremolo,*

- a. Select one of four tremolo values from the palette; single, double, triple or quadruple.

- b. Click on the head of the note to apply the tremolo value.

*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 with 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,*

- Select the specific articulation to delete from the “Articulations” palette. Press the “X” key, and click on the object itself or 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.

#### **9.11.4 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.



## 9.12 Properties Tool

The “Properties” tool displays and alters playback values of dynamic and articulation markings. Changes can be applied to the marking itself or globally to all similar markings and applied as new defaults.

To activate the Properties window of an object:

- Hit the “Esc” key or select the **Properties** icon from the SmartScore toolbar.
- Click on a listed marking below to open its properties.

### 9.12.1 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.

### 9.12.2 Hairpin, Cresc. and Decresc. Properties



FIGURE 9 - 18: Hairpin Properties

- Velocity sliders: Start value and Ending value.
- Range: 10 to 127 (Note Velocity)

### 9.12.3 Dynamic Marking Properties



FIGURE 9 - 19: 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.

### 9.12.4 Slur (Legato) Properties

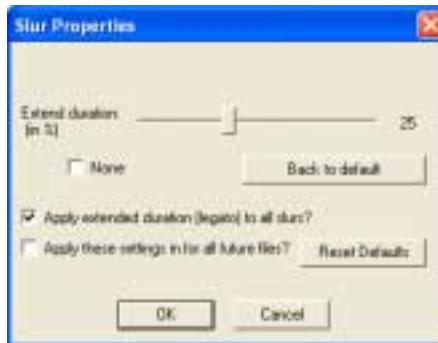


FIGURE 9 - 20: Dynamic Marking Properties

- Increase duration of notes associated with the slur.
- Percentage - 10 to 50% (MIDI Note Duration)
- None = No increase of note duration

### 9.12.5 Tempo Marking Properties

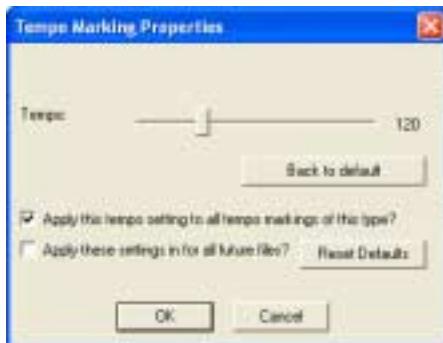


FIGURE 9 - 21: Tempo Marking Properties

- Tempo slider: Resets tempo (Beats per Minute).
- Range: 20 to 400 (Beats per Minute).

### 9.12.6 Trill Properties



FIGURE 9 - 22: Trill. Properties

- **Fixed duration:** Preset permutations based on SmartScore 2.0.
- **Variable duration:** Move the slider to the a number which well represent the fraction of the note value to be trilled (1 to 1/32).
- **Fixed number of divisions:** Move the slider to increase or decrease the number of permutations. The more permutations are generated, the shorter the duration of the trills. (1 to 32 permutations).

## 9.12.7 Tempo (Metronome) and Rhythmic Group Properties

- When either a Tempo or Rhythmic group marking is clicked with the **Properties Tool**, their basic edit windows will open.



## 9.13 Repeats and Multiple Endings

Many of these markings are recognized automatically. All will be interpreted during playback as described below:

### 9.13.1 Repeats and repeat symbols

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

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

*To change any current barline to a repeat barline,*

- Toggle the “C” key to enter **Change** mode. Click on any existing barline to change it to the selected repeat barline.

*To delete a repeat barline,*

- Hit the “X” key and click on the symbol to delete it.

*To insert a “Repeat Previous Measure” mark,*



- Select the **Repeat Previous Measure** mark from palette.
- In **Insert** mode, click into an empty measure.

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

### 9.13.2 Multiple Endings

*To create a multiple ending,*

- Select the **Start Alternate Repetition** button from the “Barlines & Repeats” palette. Toggle the “C” key to enter the **Change** mode.
- Click on the barline that begins the first ending. Select the number of times you want the section to repeat. The barline will

change into a **start-of-ending** bar. The cursor then switches to an **end-of-ending** barline with a *left repeat bar* as default. Click on the barline that terminates the first ending.



FIGURE 9 - 23: Multiple Endings

- c. This “closes out” the first ending and stages the cursor to enter another (second) ending section.

*To create a second or third ending,*

- d. Select the **Start Alternate Ending** button. Select the number of repeats and click the barline of the first measure of the second ending (usually the same repeat barline that ends the first ending).
- e. Click the last barline to close out the second ending.
- f. Repeat above steps as necessary for subsequent endings.

NOTE: If the last barline is not a repeat ending, it can be changed. Choose an appropriate barline from the “Barlines and Repeats” palette and **Change** the barline type.

### 9.13.3 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.

#### 9.13.4 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.

#### 9.13.5 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.

## 9.14 Unify Key, Time and Clefs (U)

*Unify updates key and time signatures as well as clef signs throughout the score based on choices made in the dialog window.*



- Hit the “U” key, press the **Unify** button on the Navigator, or select the **Unify Signatures** button in the SmartScore Toolbar or go to **Edit** menu and select **Unify Signatures**.
- Check the **Insert Empty Rests** box to Insert a whole rest into all empty measures.

NOTE: Changing a clef sign does not reposition notes. Note pitches alone are updated by a change in clef. To alter note position by selecting a different clef, use **Transpose (by Clef)** function. See “Transposition” on page 139 for more details.

### 9.14.1 Part Linking before applying Unify

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-link Parts” on page 121 for more details.

### 9.14.2 Unify Key and Time

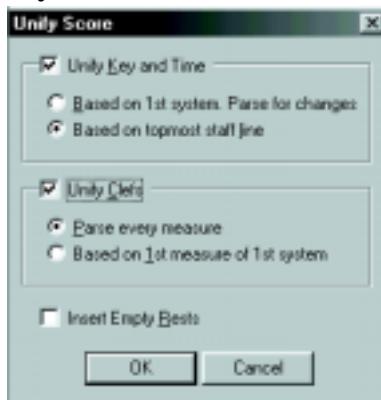


FIGURE 9 - 24: Unify Key, Time and Clefs

- Based on 1st system. Parse for changes

All key and time signatures for every part are updated based on signatures found in the first system on the first page. Any changes in key or time signatures are read in and subsequent systems are updated as they are encountered. Use when systems have a consistent number of parts.

- Based on topmost staffline. (Default)

All key and time signatures for every part are updated based on signatures found in the first staffline of each system. Any change-of-key or time signatures found in the topmost staffline will update subsequent stafflines of each system. Use when systems do not have a consistent number of parts.

### 9.14.3 Unify Clefs

- Parse every measure (Default)

Clefs are updated on a line-by-line basis. Any change of clef encountered in a given staff updates that staffline until another change of clef is encountered. Use when many change of clefs are written into the original score.

- Based on 1st Measure of 1st System

All clef signs are updated based on clefs found in the first measure of the first system. Overwrites any change of clef found. Use if many false change-of-clefs were recognized or if very few change-of-clef signs are found in the original.

## 9.15 MIDI to ENF

SmartScore accepts any Standard MIDI file and converts it to an ENF file.

*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.

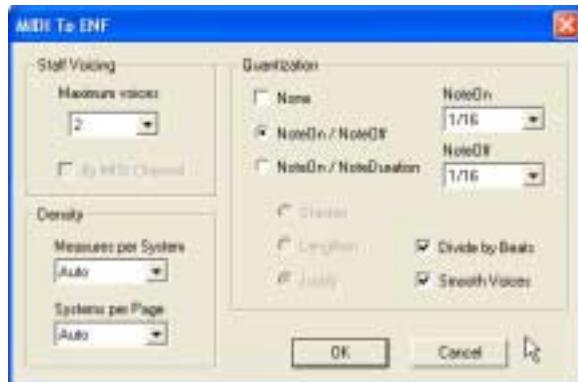


FIGURE 9 - 25: MIDI to ENF window

### *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.

Be forewarned, however, that 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.

## 9.16 Troubleshooting ENF Problems

**Table 6: Troubleshooting ENF Problems**

Problem	Probable Cause	Fix
Notes and symbols appear as large letters.	Font association lost.	Reinstall Chopin04 font. Font is located in the main SmartScore directory.
“MMSYSTEM008 Device is in use.”	MIDI Out port is not available to SmartScore due to another open MIDI application.	Close any other MIDI applications other than SmartScore.
Can't delete an object.	Display pixel trapping may not coincide with tip of cursor.	Use <b>Select</b> tool (“O” key) to click on or drag around an object. Hit <b>Delete</b> .
How do I create a new ENF page.	SmartScore creates new pages by “rolling over” added systems.	Position cursor inside the last system of a page. Go to EDIT > SYSTEMS > ADD BELOW. A new page will be created.
Systems detached. (Staves broken into separate systems without adjoining system bracket).	System bracket cut off during scanning leaving disconnected staves “floating”.	Merge systems. See “Merging Systems” on page 121.
Staffline missing from system	Staffline cut off during scanning.	Restore missing staff. See “Adding a staff when missed by recognition” on page 119

**Table 6: Troubleshooting ENF Problems**

Problem	Probable Cause	Fix
Wrong part suddenly plays.	Expanding / collapsing score; Part / instrument linking lost.	Reassign parts in system. See “Re-link Parts” on page 121
ENF display is brown, orange or green lines appear.	ENF mode is in Edit Shapes, Tempo or Velocity controller mode.	Exit mode.

QuicK Keys Map (Windows)

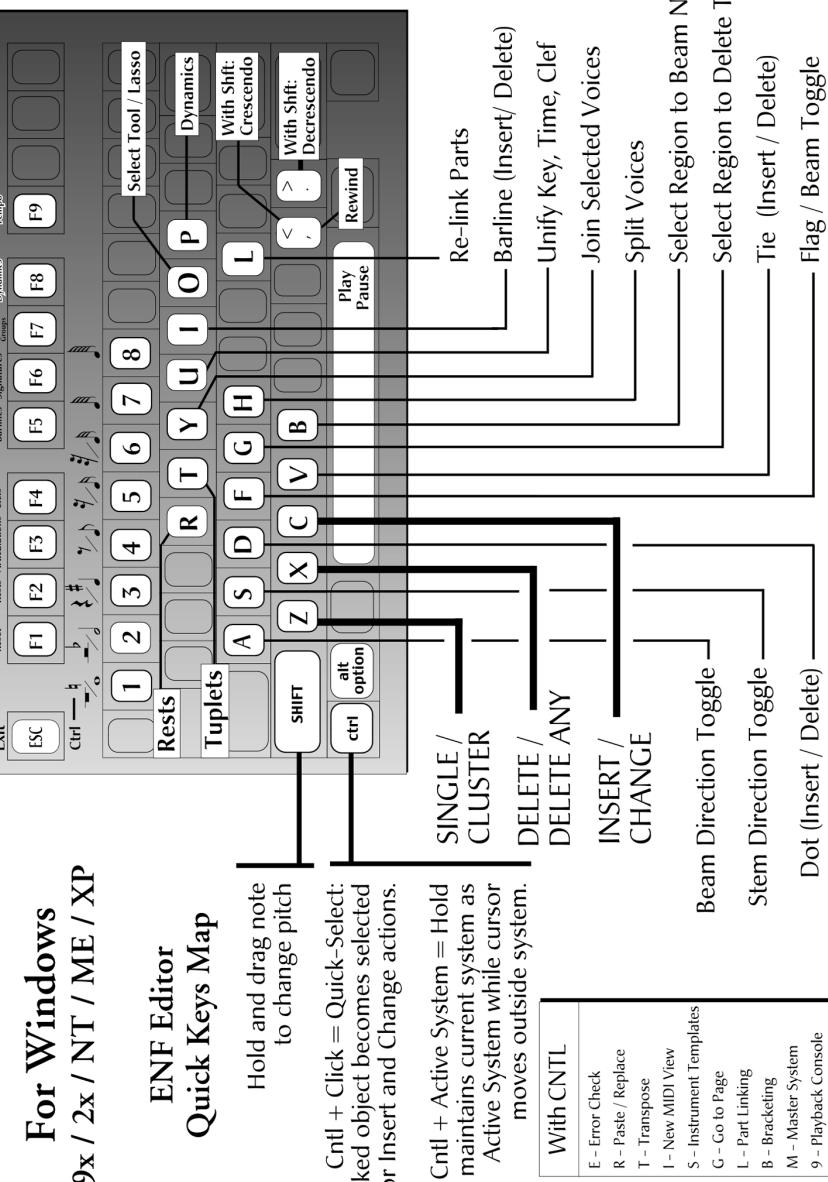


FIGURE 9 - 26: Quick Keys Map (Windows)

## QuicK Keys Map (Mac)

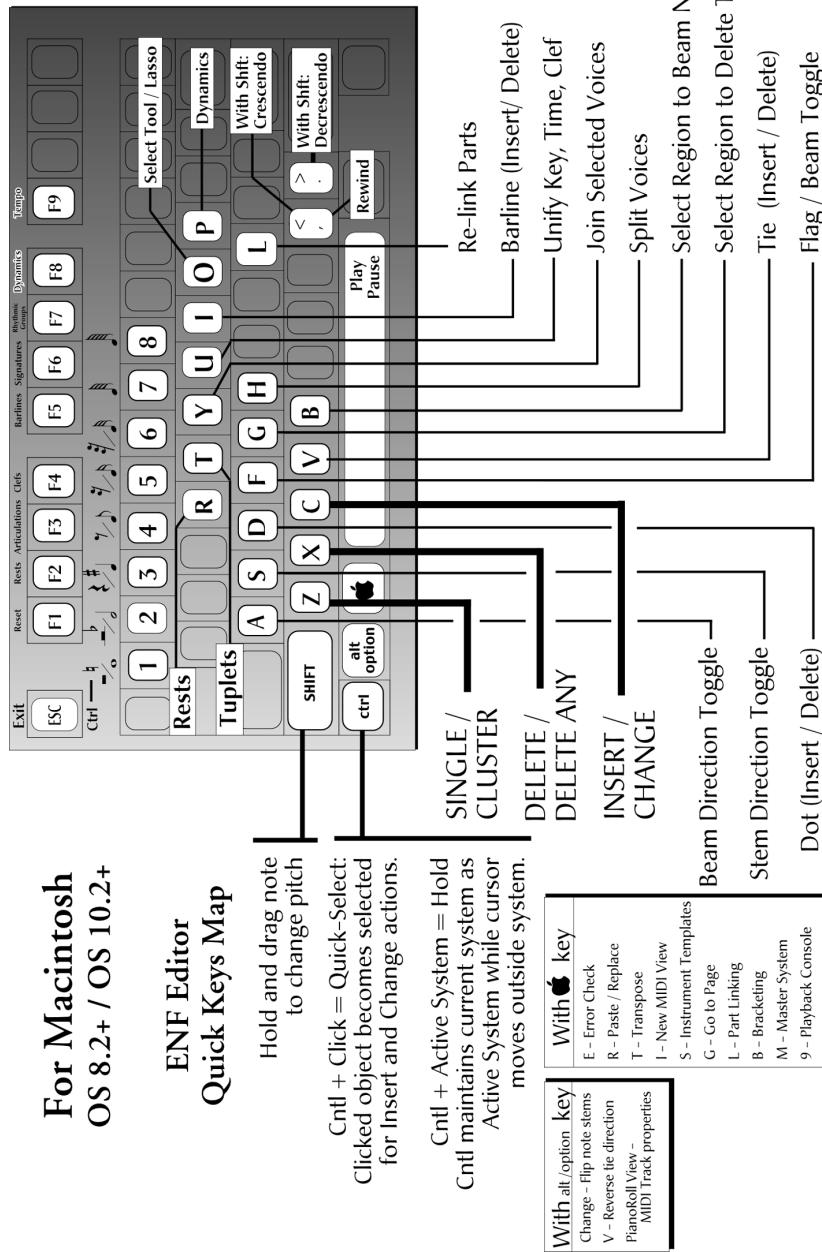


FIGURE 9 - 27: Quick-keys Map (Mac)

ENF Notation and MIDI Editor Relationship	177
Opening, Changing and Closing Multiple MIDI Views	179
Track Overview	180
Playback	182
Spacebar	182
Mini-Console	182
MIDI Devices	183
Playback Range	184
Piano Roll	184
Velocity and Tempo Graphical Controllers	185
Switching between tracks	186
Shuttle Tool	186
Inserting program changes (Assign MIDI instrument)	186
MIDI Instrument settings	187
MIDI event selection	189
Changing MIDI event characteristics	190
Note Event window	191
Cut/Copy and Paste	192
Measure Settings	193
Setting Repeats and Multiple Endings	195
Segnos	195
Event List	197
Changing parameters of selected notes	198
Inserting note events	198
Editing Key, Time and Tempo	199
Inserting Non-Note Events	199
Playback Console	200
Display Controls	201
MIDI Recording	202
Step Time Recording	206
Virtual Drum Kit	207
Playback Considerations after MIDI Editing	208
MIDI to ENF	208
Saving MIDI Files	208



# Chapter 10

# MIDI Editing and Sequencing

## 10.1 ENF Notation and MIDI Editor Relationship

### 10.1.1 Updating and refreshing playback and display

It's important to understand the difference between the ENF and MIDI displays. ENF notation always updates the MIDI display. But the MIDI display does not update ENF notation. Raw MIDI data can only be displayed as ENF notation when it is reintroduced into a new ENF document. This is because MIDI data lacks all information about page layout, stem direction, voices, etc. MIDI data is *time-based* while ENF notation data is *graphical* and contains much more visual information of the music. Changes made in the MIDI environment can be heard during ENF playback but the ENF graphical representation remains unchanged. You can modify data in MIDI view, return to ENF view and still retain changes made in MIDI by using the **PLAY** button in the play console. It is always possible to return to ENF display-only for playback by selecting **Playback > Refresh MIDI** or by using the **Spacebar** to play. The following table attempts to clarify the relationship between ENF and MIDI views.

**Table 7: ENF View and MIDI View Relationships**

ENF to MIDI	MIDI to ENF	ENF View	MIDI View
DISPLAY		PLAYBACK	
MIDI View is automatically updated	ENF View is NOT automatically updated	ENF <> MIDI (Updates Both Ways)	ENF > MIDI (Updates One Way)
TO UPDATE DISPLAY -----		TO UPDATE PLAYBACK	
Select <b>MIDI</b> in the <b>Navigator</b> or <b>View &gt; New MIDI View</b>	Select <b>View &gt; Convert MIDI to ENF</b>	Spacebar = <b>Refresh MIDI</b> . Play button = <b>Refresh MIDI</b> .	Refreshes MIDI: <b>Close</b> MIDI view, return to ENF, push <b>MIDI</b> again.

To sum up,

- Changes in ENF view automatically update MIDI display.
- Changes in MIDI view update ENF playback only, not its display.
- In MIDI view, choosing **View > Convert MIDI to ENF** will create a **new** ENF document based only on MIDI file data.

NOTE: Page formatting will be lost in the new ENF document, but the source ENF document will remain open and unchanged.

- Close MIDI views (icons appear in upper left-hand corner) to return display to ENF notation view. Changes made in MIDI environment will be kept until **Refresh MIDI** is invoked.
- In ENF view, **Playback > Refresh MIDI** updates playback based on the current ENF display only. MIDI Refresh is performed whenever an ENF file is opened or when the spacebar is used for playback after MIDI editing. Select “**Save As MIDI**” to save current playback as a MIDI file. Choose “**Keep MIDI**” to ignore refresh and temporarily retain changes made in MIDI environment. Choose “**Refresh and Continue**” to discard changes made in MIDI and refresh playback based only on ENF display.

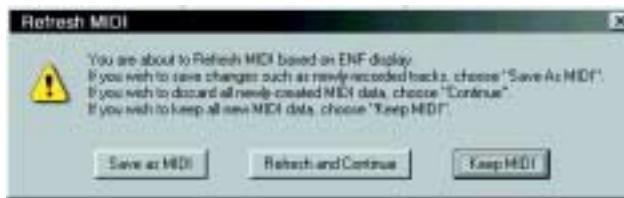


FIGURE 10 - 1: Refresh MIDI based on ENF display

- Changes made in MIDI will be kept in ENF playback until MIDI Refresh is activated either by hitting the spacebar for playback or when closing and reopening the ENF file. The Play button in the Mini Console and Playback Console will NOT activate MIDI Refresh. Remember: Reopening an ENF file refreshes MIDI.

The rule of thumb for saving changed MIDI data is:

**“Perform MIDI Editing Last - Then Save As MIDI”**

### 10.1.2 Parts and Voices to Channels and Tracks

SmartScore is designed to map ENF parts and/or voices to MIDI tracks depending on which Color Mode is selected: Part or Voice. For more about color mode of parts and voices, see “Working with Voices” on page 62.

## 10.2 Opening, Changing and Closing Multiple MIDI Views

There are three ways to display MIDI data in the MIDI Editor: Overview, Piano Roll and Event List.

### 10.2.1 Opening MIDI views

*To enter MIDI environment from ENF and to select or change 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.

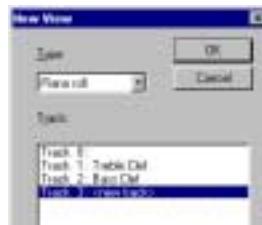


FIGURE 10 - 2: New MIDI View

- b. In the **Type** window, select the type of MIDI view desired, **Overview** (display all tracks), **Piano Roll** (display detail of one track) or **Event List** (display all MIDI events in all tracks).

### 10.2.2 Changing MIDI Views

The MIDI toolbar (View > Toolbars > MIDI Toolbar) includes buttons for opening new **Overview**, **Piano Roll**, **Event List** windows. The Shuttle Tool, Record, Record to New Track and Virtual Drum Kit are also visible.



FIGURE 10 - 3: MIDI Toolbar



You can also change to a new MIDI view by pressing MIDI in the Navigator. Views do not replaced. Each new view overlays all open views.

### 10.2.3 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.

## 10.3 Track Overview

Overview provides a “bird’s eye view” of all existing MIDI tracks. Some editing functions are limited



FIGURE 10 - 4: Track Overview window

### 10.3.1 Selecting tracks and MIDI events

Clicking into a track's Name field in Overview will highlight the entire track for cutting/pasting/shifting. Double-clicking into a track's Name field will open its Piano Roll view. Right-click (**option + click Mac**) in the Name field will open the Track Properties window.

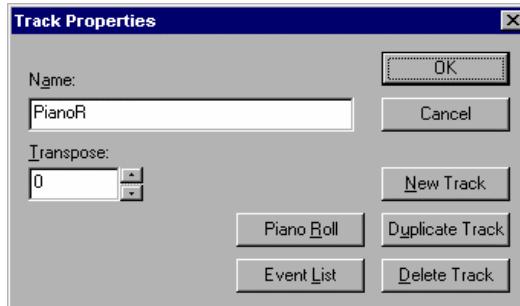


FIGURE 10 - 5: Track Properties

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.

*To zoom in and out in Overview and Piano Roll,*



- Use the magnifying glass in the MIDI toolbar. Click to zoom in. Right-click (**option + click for Mac**) to zoom out.
- Drag zoom will magnify events either horizontally or vertically. To zoom vertically, drag any piano key divider (Piano Roll) or track divider (Overview) upwards or downwards. To magnify events horizontally, drag a measure bar division in the track header left or right.



FIGURE 10 - 6: Drag Zoom in Piano Roll and Overview

## 10.4 Playback

### 10.4.1 Spacebar

- Press the spacebar to Play. Press again to Pause. Press again to resume Play. Press the comma key (“,”) to Rewind to the beginning.

### 10.4.2 Mini-Console



The Mini-Console is a dockable (tear-off) toolbar that plays, records, rewinds and stops playback.



No MIDI Recording

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.



- *Pause* will stop playback without rewinding to the beginning of the score. Hitting Play again will resume playback.



- *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 playback range.



- 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.

### 10.4.3 MIDI Devices

*To set the MIDI input and output devices,*

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

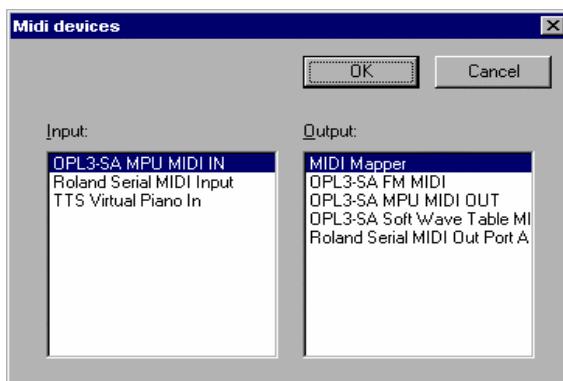


FIGURE 10 - 7: Options > MIDI Devices



- 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.

### Mac Only:

Rerun OMS Setup after installing new MIDI drivers. For more about OMS, turn to “OMS Setup (Mac Classic Only)” on page 60.

#### 10.4.4 Playback Range

*To specify part of the score for playback,*

- a. Select **Set Play Range** from the **Realtime** menu.

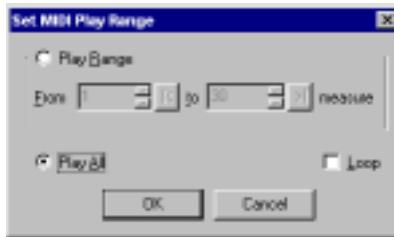


FIGURE 10 - 8: Set MIDI Play Range

- 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.

### 10.5 Piano Roll

*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.

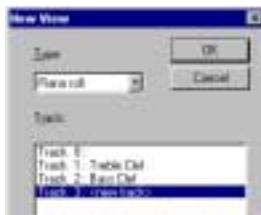


FIGURE 10 - 9: Overview - Selecting a track

- b. Select the MIDI track you wish to display and press OK.



- c. Use the magnifying glass in the Main Toolbar to zoom in or out of the Piano Roll view. Click to zoom in. Right-click (**option + click** for Mac) to zoom out.
- d. Another zoom method is to drag measure dividers horizontally and piano key dividers vertically. See Figure 6 on page 181 for more details on zooming.

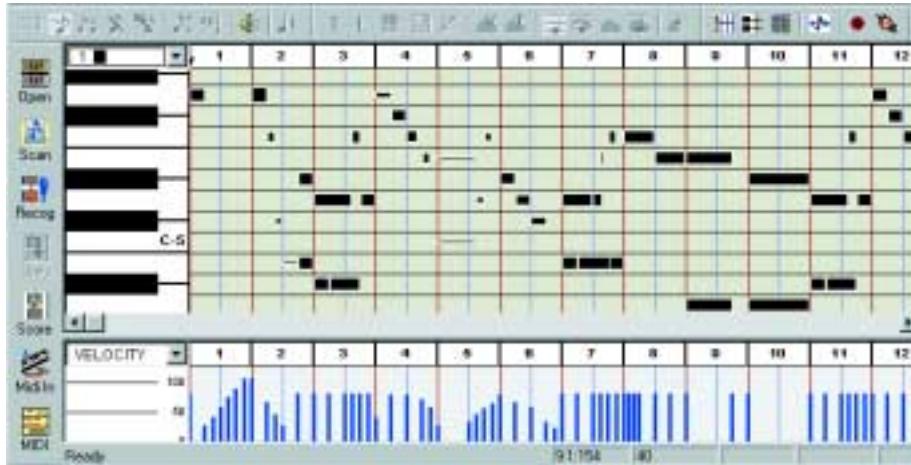


FIGURE 10 - 10: MIDI Piano Roll View



**TIP:** It is often helpful to have several tracks visible at once. Use the Tile button to neatly display several open Piano Roll views.

### 10.5.1 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 pulldown menu to select the MIDI controller you wish to effect a change to.

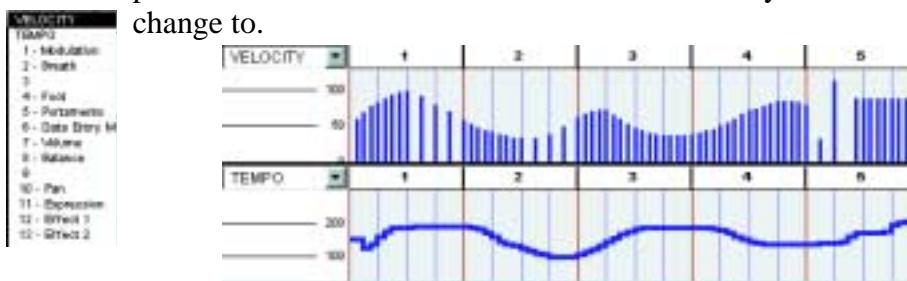


FIGURE 10 - 11: Velocity and Tempo controllers in Piano Roll view

- With the pencil mouse pointer, click and drag a curve over the range you wish to apply the effect.

### 10.5.2 Switching between tracks



### 10.5.3 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):*

- Use the Voice Selection pull-down menu located above the piano keyboard to select a voice number.
- Right-click and drag to create a note event.

### 10.5.4 Inserting program changes (Assign MIDI instrument)

*To insert a Program Change (MIDI patch change) for any given voice:*

- In an active track, position cursor and click wherever you wish to make an instrument change. Select **Edit > Program Change**.



FIGURE 10 - 12: 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 Voices and Colors” on page 149.
- 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 61).

- 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).

#### 10.5.5 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 10 - 13: 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).

### 10.5.6 MIDI event selection

Under the **Edit** menu choosing **Select** opens the Select Window.

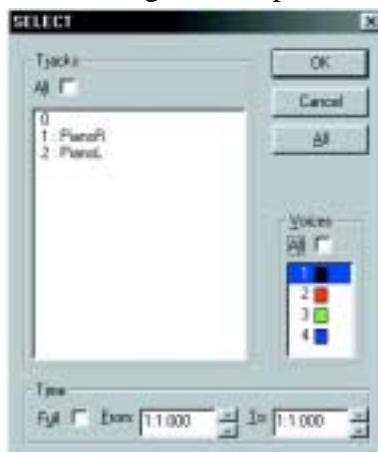


FIGURE 10 - 14: Select Event window

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 timeframe. The selected range will highlight in grey.

### 10.5.7 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.

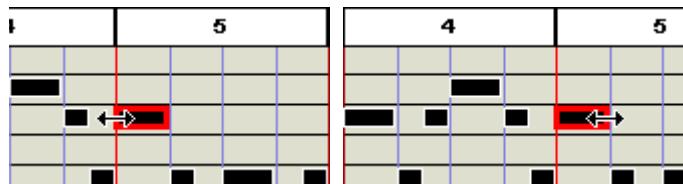


FIGURE 10 - 15: Editing MIDI note on/off events

*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.



FIGURE 10 - 16: 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.

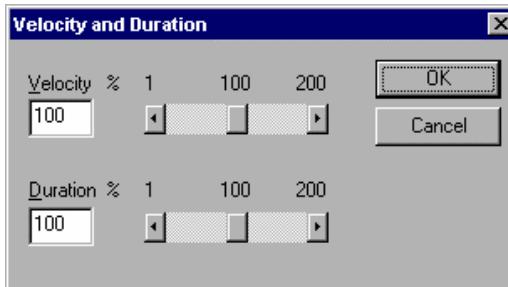


FIGURE 10 - 17: Velocity and Duration window

- 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**.

#### 10.5.8 Note Event window

Double-clicking on any note event will open the Note Event window.

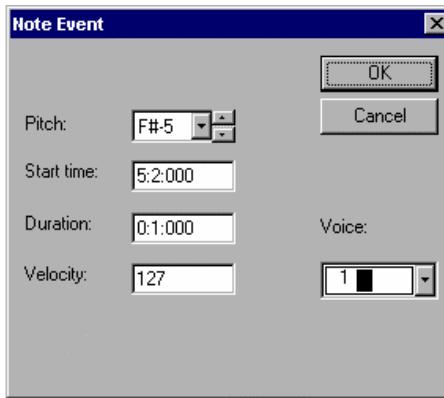


FIGURE 10 - 18: Note Event window

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

### 10.5.9 Cut/Copy and Paste

Click and drag the mouse or use **Edit > Select** to select a region of note events 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.

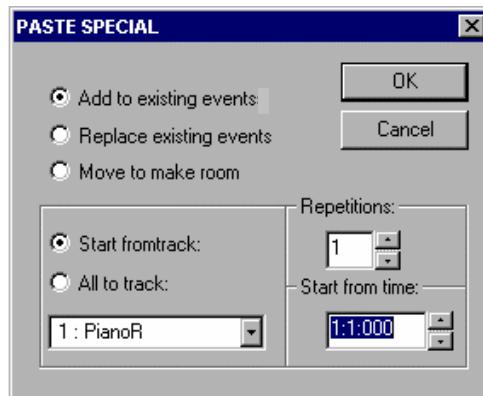


FIGURE 10 - 19: Paste Special

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.



**TIP:** Using Tile, you can view ENF and MIDI View windows simultaneously. Changes made in ENF automatically update the MIDI view. This is useful if timing problems are encountered while editing ENF notation.

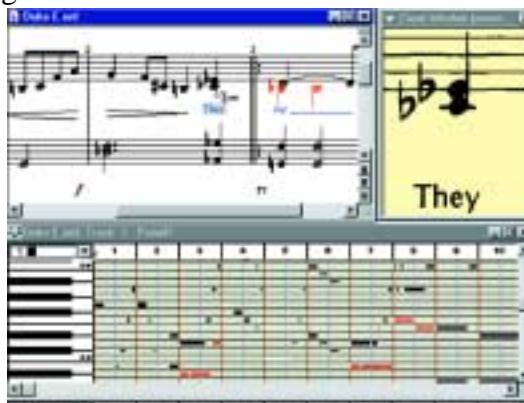


FIGURE 10 - 20: ENF / MIDI Tile View (with floating Zoom window)

### 10.5.10 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 10 - 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.

### 10.5.11 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**

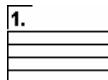


Check the **1<sup>st</sup> Measure of Repeat** box to select a measure as the beginning of the repeated section.

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 **1<sup>st</sup> 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 = 1<sup>st</sup> Ending, 2 = 2<sup>nd</sup> 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 1<sup>st</sup> 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.

### 10.5.12 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.

## 10.6 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:

The screenshot shows a Windows-style window titled "Bachchoralmusik Track 1: Violin". The window has a menu bar with "File" and "Edit". Below the menu is a toolbar with buttons for "MIDI", "Notes List", "Control", "Meta", and "SysEx". A "Type" dropdown menu is open, showing options: "Name", "Note", "Note On", "Note Off", "Control", "Meta", and "SysEx". The main area is a table with columns: "Type", "Voice", "Time", "Duration", "Pitch", and "Other...". The table lists various MIDI events, including note on/off events for notes like A4, B4, C5, etc., and control change events for pitch bend and volume. The "Other..." column shows values like "0.0000", "0.0000", "0.0000", "0.0000", "0.0000", and "0.0000". The "Duration" column shows values like "0.000000", "0.000000", "0.000000", "0.000000", "0.000000", and "0.000000". The "Pitch" column shows values like "69", "69", "69", "69", "69", and "69". The "Time" column shows values like "0.000000", "0.000000", "0.000000", "0.000000", "0.000000", and "0.000000". The "Voice" column shows values like "1", "1", "1", "1", "1", and "1".

Type	Voice	Time	Duration	Pitch	Other...
Name	1	0.000000	0.000000	69	0.0000
Note	1	0.000000	0.000000	69	0.0000
Note On	1	0.000000	0.000000	69	0.0000
Note Off	1	0.000000	0.000000	69	0.0000
Control	1	0.000000	0.000000	69	0.0000
Meta	1	0.000000	0.000000	69	0.0000
SysEx	1	0.000000	0.000000	69	0.0000
Program Change	1	0.000000	0.000000	69	0.0000
Pitch Bend	1	0.000000	0.000000	69	0.0000
Volume	1	0.000000	0.000000	69	0.0000
Note On	1	0.000000	0.000000	69	0.0000
Note Off	1	0.000000	0.000000	69	0.0000
Control	1	0.000000	0.000000	69	0.0000
Meta	1	0.000000	0.000000	69	0.0000
SysEx	1	0.000000	0.000000	69	0.0000
Program Change	1	0.000000	0.000000	69	0.0000
Pitch Bend	1	0.000000	0.000000	69	0.0000
Volume	1	0.000000	0.000000	69	0.0000
Note On	1	0.000000	0.000000	69	0.0000
Note Off	1	0.000000	0.000000	69	0.0000
Control	1	0.000000	0.000000	69	0.0000
Meta	1	0.000000	0.000000	69	0.0000
SysEx	1	0.000000	0.000000	69	0.0000
Program Change	1	0.000000	0.000000	69	0.0000
Pitch Bend	1	0.000000	0.000000	69	0.0000
Volume	1	0.000000	0.000000	69	0.0000
Note On	1	0.000000	0.000000	69	0.0000
Note Off	1	0.000000	0.000000	69	0.0000
Control	1	0.000000	0.000000	69	0.0000
Meta	1	0.000000	0.000000	69	0.0000
SysEx	1	0.000000	0.000000	69	0.0000
Program Change	1	0.000000	0.000000	69	0.0000
Pitch Bend	1	0.000000	0.000000	69	0.0000
Volume	1	0.000000	0.000000	69	0.0000
Note On	1	0.000000	0.000000	69	0.0000
Note Off	1	0.000000	0.000000	69	0.0000
Control	1	0.000000	0.000000	69	0.0000
Meta	1	0.000000	0.000000	69	0.0000
SysEx	1	0.000000	0.000000	69	0.0000
Program Change	1	0.000000	0.000000	69	0.0000
Pitch Bend	1	0.000000	0.000000	69	0.0000
Volume	1	0.000000	0.000000	69	0.0000
Note On	1	0.000000	0.000000	69	0.0000
Note Off	1	0.000000	0.000000	69	0.0000
Control	1	0.000000	0.000000	69	0.0000
Meta	1	0.000000	0.000000	69	0.0000
SysEx	1	0.000000	0.000000	69	0.0000
Program Change	1	0.000000	0.000000	69	0.0000
Pitch Bend	1	0.000000	0.000000	69	0.0000
Volume	1	0.000000	0.000000	69	0.0000
Note On	1	0.000000	0.000000	69	0.0000
Note Off	1	0.000000	0.000000	69	0.0000
Control	1	0.000000	0.000000	69	0.0000
Meta	1	0.000000	0.000000	69	0.0000
SysEx	1	0.000000	0.000000	69	0.0000
Program Change	1	0.000000	0.000000	69	0.0000
Pitch Bend	1	0.000000	0.000000	69	0.0000
Volume	1	0.000000	0.000000	69	0.0000
Note On	1	0.000000	0.000000	69	0.0000
Note Off	1	0.000000	0.000000	69	0.0000
Control	1	0.000000	0.000000	69	0.0000
Meta	1	0.000000	0.000000	69	0.0000
SysEx	1	0.000000	0.000000	69	0.0000
Program Change	1	0.000000	0.000000	69	0.0000
Pitch Bend	1	0.000000	0.000000	69	0.0000
Volume	1	0.000000	0.000000	69	0.0000
Note On	1	0.000000	0.000000	69	0.0000
Note Off	1	0.000000	0.000000	69	0.0000
Control	1	0.000000	0.000000	69	0.0000
Meta	1	0.000000	0.000000	69	0.0000
SysEx	1	0.000000	0.000000	69	0.0000
Program Change	1	0.000000	0.000000	69	0.0000
Pitch Bend	1	0.000000	0.000000	69	0.0000
Volume	1	0.000000	0.000000	69	0.0000
Note On	1	0.000000	0.000000	69	0.0000
Note Off	1	0.000000	0.000000	69	0.0000
Control	1	0.000000	0.000000	69	0.0000
Meta	1	0.000000	0.000000	69	0.0000
SysEx	1	0.000000	0.000000	69	0.0000
Program Change	1	0.000000	0.000000	69	0.0000
Pitch Bend	1	0.000000	0.000000	69	0.0000
Volume	1	0.000000	0.000000	69	0.0000
Note On	1	0.000000	0.000000	69	0.0000
Note Off	1	0.000000	0.000000	69	0.0000
Control	1	0.000000	0.000000	69	0.0000
Meta	1	0.000000	0.000000	69	0.0000
SysEx	1	0.000000	0.000000	69	0.0000
Program Change	1	0.000000	0.000000	69	0.0000
Pitch Bend	1	0.000000	0.000000	69	0.0000
Volume	1	0.000000	0.000000	69	0.0000
Note On	1	0.000000	0.000000	69	0.0000
Note Off	1	0.000000	0.000000	69	0.0000
Control	1	0.000000	0.000000	69	0.0000
Meta	1	0.000000	0.000000	69	0.0000
SysEx	1	0.000000	0.000000	69	0.0000
Program Change	1	0.000000	0.000000	69	0.0000
Pitch Bend	1	0.000000	0.000000	69	0.0000
Volume	1	0.000000	0.000000	69	0.0000
Note On	1	0.000000	0.000000	69	0.0000
Note Off	1	0.000000	0.000000	69	0.0000
Control	1	0.000000	0.000000	69	0.0000
Meta	1	0.000000	0.000000	69	0.0000
SysEx	1	0.000000	0.000000	69	0.0000
Program Change	1	0.000000	0.000000	69	0.0000
Pitch Bend	1	0.000000	0.000000	69	0.0000
Volume	1	0.000000	0.000000	69	0.0000
Note On	1	0.000000	0.000000	69	0.0000
Note Off	1	0.000000	0.000000	69	0.0000
Control	1	0.000000	0.000000	69	0.0000
Meta	1	0.000000	0.000000	69	0.0000
SysEx	1	0.000000	0.000000	69	0.0000
Program Change	1	0.000000	0.000000	69	0.0000
Pitch Bend	1	0.000000	0.000000	69	0.0000
Volume	1	0.000000	0.000000	69	0.0000
Note On	1	0.000000	0.000000	69	0.0000
Note Off	1	0.000000	0.000000	69	0.0000
Control	1	0.000000	0.000000	69	0.0000
Meta	1	0.000000	0.000000	69	0.0000
SysEx	1	0.000000	0.000000	69	0.0000
Program Change	1	0.000000	0.000000	69	0.0000
Pitch Bend	1	0.000000	0.000000	69	0.0000
Volume	1	0.000000	0.000000	69	0.0000
Note On	1	0.000000	0.000000	69	0.0000
Note Off	1	0.000000	0.000000	69	0.0000
Control	1	0.000000	0.000000	69	0.0000
Meta	1	0.000000	0.000000	69	0.0000
SysEx	1	0.000000	0.000000	69	0.0000
Program Change	1	0.000000	0.000000	69	0.0000
Pitch Bend	1	0.000000	0.000000	69	0.0000
Volume	1	0.000000	0.000000	69	0.0000
Note On	1	0.000000	0.000000	69	0.0000
Note Off	1	0.000000	0.000000	69	0.0000
Control	1	0.000000	0.000000	69	0.0000
Meta	1	0.000000	0.000000	69	0.0000
SysEx	1	0.000000	0.000000	69	0.0000
Program Change	1	0.000000	0.000000	69	0.0000
Pitch Bend	1	0.000000	0.000000	69	0.0000
Volume	1	0.000000	0.000000	69	0.0000
Note On	1	0.000000	0.000000	69	0.0000
Note Off	1	0.000000	0.000000	69	0.0000
Control	1	0.000000	0.000000	69	0.0000
Meta	1	0.000000	0.000000	69	0.0000
SysEx	1	0.000000	0.000000	69	0.0000
Program Change	1	0.000000	0.000000	69	0.0000
Pitch Bend	1	0.000000	0.000000	69	0.0000
Volume	1	0.000000	0.000000	69	0.0000
Note On	1	0.000000	0.000000	69	0.0000
Note Off	1	0.000000	0.000000	69	0.0000
Control	1	0.000000	0.000000	69	0.0000
Meta	1	0.000000	0.000000	69	0.0000
SysEx	1	0.000000	0.000000	69	0.0000
Program Change	1	0.000000	0.000000	69	0.0000
Pitch Bend	1	0.000000	0.000000	69	0.0000
Volume	1	0.000000	0.000000	69	0.0000
Note On	1	0.000000	0.000000	69	0.0000
Note Off	1	0.000000	0.000000	69	0.0000
Control	1	0.000000	0.000000	69	0.0000
Meta	1	0.000000	0.000000	69	0.0000
SysEx	1	0.000000	0.000000	69	0.0000
Program Change	1	0.000000	0.000000	69	0.0000
Pitch Bend	1	0.000000	0.000000	69	0.0000
Volume	1	0.000000	0.000000	69	0.0000
Note On	1	0.000000	0.000000	69	0.0000
Note Off	1	0.000000	0.000000	69	0.0000
Control	1	0.000000	0.000000	69	0.0000
Meta	1	0.000000	0.000000	69	0.0000
SysEx	1	0.000000	0.000000	69	0.0000
Program Change	1	0.000000	0.000000	69	0.0000
Pitch Bend	1	0.000000	0.000000	69	0.0000
Volume	1	0.000000	0.000000	69	0.0000
Note On	1	0.000000	0.000000	69	0.0000
Note Off	1	0.000000	0.000000	69	0.0000
Control	1	0.000000	0.000000	69	0.0000
Meta	1	0.000000	0.000000	69	0.0000
SysEx	1	0.000000	0.000000	69	0.0000
Program Change	1	0.000000	0.000000	69	0.0000
Pitch Bend	1	0.000000	0.000000	69	0.0000
Volume	1	0.000000	0.000000	69	0.0000
Note On	1	0.000000	0.000000	69	0.0000
Note Off	1	0.000000	0.000000	69	0.0000
Control	1	0.000000	0.000000	69	0.0000
Meta	1	0.000000	0.000000	69	0.0000
SysEx	1	0.000000	0.000000	69	0.0000
Program Change	1	0.000000	0.000000	69	0.0000
Pitch Bend	1	0.000000	0.000000		



- To page from track to track, click on Track Paging buttons in the Main Toolbar.

### 10.6.1 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.

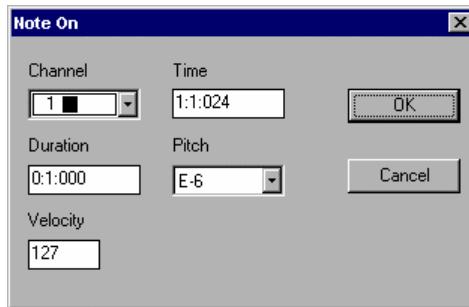


FIGURE 10 - 23: Note On window

The Note On window, like the Note Event window, allows for adjustment of an individual note's parameters: Channel, Time, Duration, Pitch, and Velocity.

### 10.6.2 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.

### 10.6.3 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.

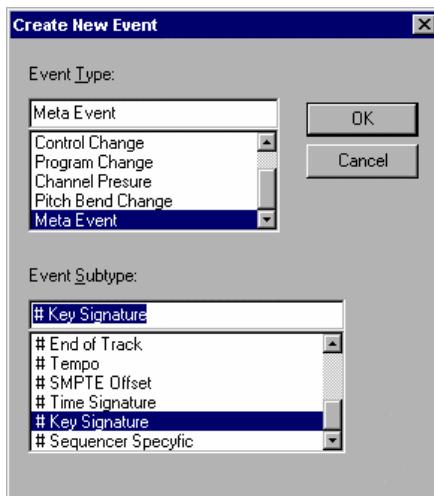


FIGURE 10 - 24: Create New Event window

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.

### 10.6.4 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:*

- Select the event you want the *non-note* event to follow.
- 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

## 10.7 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.

### 10.7.1 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.

## 10.8 Display Controls

### 10.8.1 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.

### 10.8.2 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.



## 10.9 MIDI Recording

### 10.9.1 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.

### 10.9.2 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 10 - 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.

### 10.9.3 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.

### 10.9.4 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.

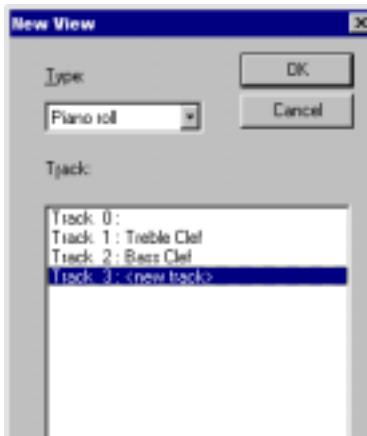


FIGURE 10 - 26: Selecting Track to Record

- 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.

#### 10.9.5 External Timer

- To run SmartScore's MIDI recording from an external timer, select **External Timer** from the **Realtime** menu.

#### 10.9.6 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.

## 10.10 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 183 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.

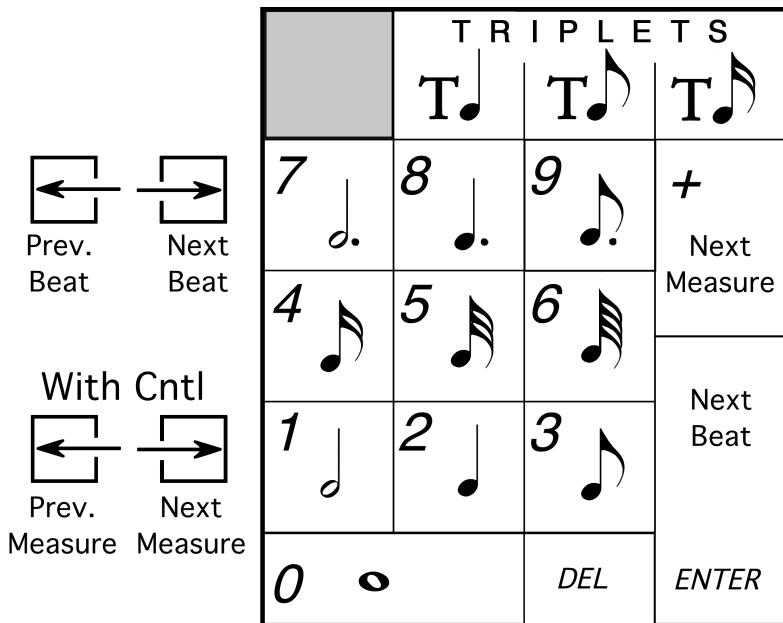


FIGURE 10 - 27: Step Time recording (Number Keypad)

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.

## 10.11 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.

## 10.12 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.

Refer to “Updating and refreshing playback and display” on page 177 for more information on how ENF and MIDI views are inter-related.

## 10.13 MIDI to ENF

SmartScore accepts any Standard MIDI file and converts it to an ENF file. Turn to “MIDI to ENF” on page 170 for details.

## 10.14 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.



Properties Tool	211
Tool Palettes	211
ENF FILE Menu	218
ENF EDIT Menu	223
ENF VIEW Menu	229
ENF OPTIONS Menu	234
ENF PLAYBACK Menu	237
ENF Help Menu	238
MIDI FILE Menu	239
MIDI EDIT Menu	240
MIDI VIEW Menu	241
MIDI OPTIONS Menu	242
OMS (Mac Classic Only)	243
MIDI REALTIME Menu	244
MIDI WINDOW Menu	245
Image File Menu Items	245
Image EDIT Menu	246
Image VIEW Menu	248
Image REALTIME Menu	249



## 11.1 Properties Tool

Playback properties of many markings, including dynamics and articulations, may be adjusted singly or globally with the use of the Properties Tool located in the SmartScore toolbar. See Section 9.12, "Properties Tool" on page 162 for more details.

## 11.2 Tool Palettes

### 11.2.1 Notes and rests

See "General Note Editing" on page 80.



### 11.2.2 Articulations

Turn to "Articulations and Trills" on page 159 for editing details.

- **Slur (Legato)**

Note durations associated with slurs are increased about 10% giving an overlapping or "connected" effect when played back.

- **Turn**

Click on note head or note stem apply a turn. Turns play back 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**

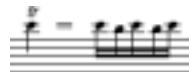
Click on note head to apply an accent. Accent increases the velocity of its associated note by 150%.

- **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 notehead to insert a single trill marking. To create an “extended” trill, toggle the “C” key to enter Change mode. Click and drag horizontally to select a region. The length of the extension is determined by how far you drag the mouse.



Trill (**Insert** mode)



Extended Trill (**Change** mode)

FIGURE 11 - 2: Trill and Extended Trill

- **Sharp, Flat and Natural**

With one of these modifiers selected, clicking on a trill marking will cause playback of the trill to “flatten”, “sharpen” or “neutralize” certain pitches within the context of the active key signature. The modifier also appears above the trill marking when inserted.

- **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:

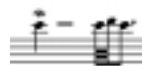


FIGURE 11 - 4: Inverted Mordent

- **Tremolo (single, double, triple, quadruple)**

Tremolos repeat the note affected by dividing the associated note by four times the selected tremolo value.



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.



Written



Played

FIGURE 11 - 6: Arpeggio

- **Glissando**

Glissandos divide connecting notes into equal notes of 1/4 base value.



Written

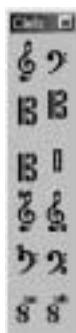


Played

FIGURE 11 - 7: Glissando)

### 11.2.3 Clefs

In **Insert** mode, select any clef from the “Clefs” palette. Click anywhere in the active staff to insert the selected clef.



In **Change** mode, clicking on an existing clef to change to selected clef. Note that playback becomes updated. Notes do not reposition themselves when a clef is changed either by a change-of-clef sign or by Unifying Clefs.

To **Delete** a clef, press the “X” key and click on the clef.

NOTE: See “Unify Signatures/Clefs (U)” on page 137 for more details on how to update clefs throughout all remaining systems.

- **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.

- **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 an **Octavo** tool.

*To assign Octava or Octavo to a range of selected notes*

- a. Select either **Octava** or **Octavo** tool.
- b. With the mouse pointer, drag 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 and the applied range will be indicated by a dashed line above the selected notes.

- **Percussion clef**

When the Percussion clef is entered on a staffline, MIDI channel assignment of the staff switches to 10; the default drum channel. Notes can be entered normally, but will playback only as MIDI drums. Note pitch-to-MIDI drum assignments are mapped in **Drumset** option under the **Playback** menu. Refer to “Playback > Drumset” on page 107 to assign drums.

### 11.2.4 Barlines and Repeats

See “Repeats and Multiple Endings” on page 165.

### 11.2.5 Signatures (Key and Time)

*To change an existing key or time signature to another signature,*

NOTE: It is possible to change one or all key signatures in a system. In **Insert** mode, all staves of the system are updated to the inserted key signature. In **Change** mode, only the staff line where the change is made will be affected. This is particularly useful for transposed instruments.

- a. Select a new signature from the tool palette.
- b. Hit the “C” key to toggle to the **Change** mode.
- c. Click on the signature to be change.

**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 change C major to a new key signature selected from the palette, you must still toggle to **Change** mode and click on or to the right of the clef sign. Simply inserting a new key will not work.

*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.

*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 11 - 9: Time Signature at the end of a system

- Insert a barline about 1/2" to the left of the end of a system. Insert the new time signature anywhere to the right of a barline.
- If a barline “closes” the system, you may click to the right of the last barline to insert a signature. It will appear outside and to the right of the system.
- A final option is to simply insert the change-of-signature at the beginning of a new line.

*To delete a signature*

- With the mouse pointer displaying a key or time signature, hit the “X” key to enter **Delete** mode and click on the signature.

### 11.2.6 Rhythmic Groups

See “Tuplets and Slurs (Legatos)” on page 85.

### 11.2.7 Dynamics

See “To insert a crescendo or decrescendo,” on page 158

### 11.2.8 Tempo

See “Tempo Markings (Metronome Mark)” on page 156

## 11.2.9 Tools



- **Text**

Selecting the Text button sets the mouse pointer to the Text Edit mode. See "Text", Section 6.1, on page 93.

- **Lyrics**

Selecting the Lyric button sets the mouse pointer to the Lyric Edit mode. See "Lyrics", Section 6.2, on page 94.

- **Guitar Fretboard**

Selecting the Guitar chord fretboard button set the mouse pointer to "Insert Guitar Chord" mode. See "Guitar Frets and Chord Symbols", Section 6.5, on page 99.

- **Edit Shapes**

Selecting the Edit Shapes button activates Edit Shapes mode. See "Edit Shapes", Section 6.4, on page 97.

- **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.

## 11.3 ENF FILE Menu

### 11.3.1 File > New ENF (Ctrl +N Win / Cmnd+N)

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.

### 11.3.2 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.

### 11.3.3 File > Close (Cmnd+W)

Closes active ENF document. If changes have been made, a Save As dialog box will open.

### 11.3.4 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.

### 11.3.5 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.

### 11.3.6 File > Scan Music

- **Acquire:** Initiates scanning. Same as Scan in Navigator.
- **Select Scanner:** Opens list of available TWAIN drivers to select.
- **Choose Interface (Windows only):**
  - > **SmartScore's** = selects the SmartScore scanning interface. Refer to “Scanning in Windows®:” on page 25 for details.
  - > **Your Scanner's** = selects the image scanning software included with your scanner.

### 11.3.7 File > Import

SmartScore imports standard NIFF files (Notation Interchange File Format) which conform to the ***NIFF 6b Specification***. NIFF is an open standard for the exchange of music notation files between music notation programs. The NIFF standard supports both graphical and time-based data. Unlike MIDI files, which are only time based, NIFF attempts to logically integrate both page layout and playback information.

### 11.3.8 File > Page Setup

Page Setup allows for several adjustments of how your music will appear on-screen and on the printed page. Since SmartScore is WYSIWYG (What you see is what you get), your pages will print just as they appear on-screen, albeit sharper provided you have a high-resolution printer.

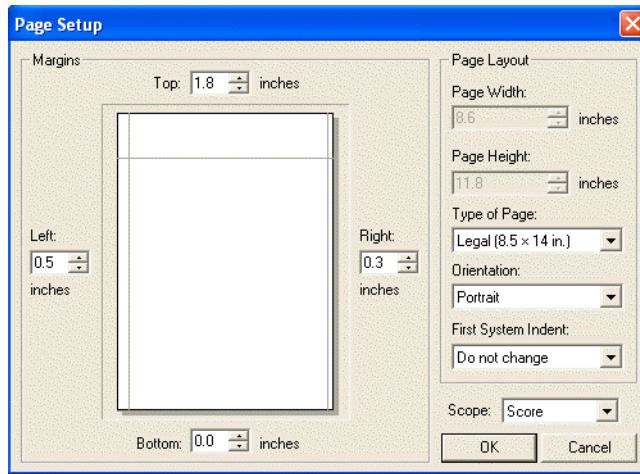


FIGURE 11 - 10: Page Setup

*To open Page Setup, go to **File > Page Setup***

- a. Adjust margins, if necessary, by either dragging margin line in page preview window or by setting amount in top, bottom or side fields.
- b. Apply changes using the **Scope** pull-down menu. Select **Score** to apply changes to the entire ENF file. Choose **Part** to apply changes only to current score-part. Choose **Page** to apply to current page.

### 11.3.9 File > Print Preview

Selecting this option gives you a page views in a horizontal format. See page 231, "View > True Scrolling" for more information about previewing pages in horizontal or vertical format.

### 11.3.10 File > Print (Ctrl+P / Cmnd+P)

*To Print the active ENF document,*

- Only the active (topmost) ENF file will print. To print other open ENF files, select (click on) the desired ENF file first.

### 11.3.11 File > Save As PDF

If you are using Windows or Macintosh OS X®, you can save your SmartScore ENF files as Adobe® Acrobat® PDF files.

#### Windows Only:

PDF995.exe® resides in the SmartScore folder and is installed during normal installation. PDF995 launches automatically when invoked in ENF. The utility appears in your list of printers whenever you invoke **Print** in an other applications.

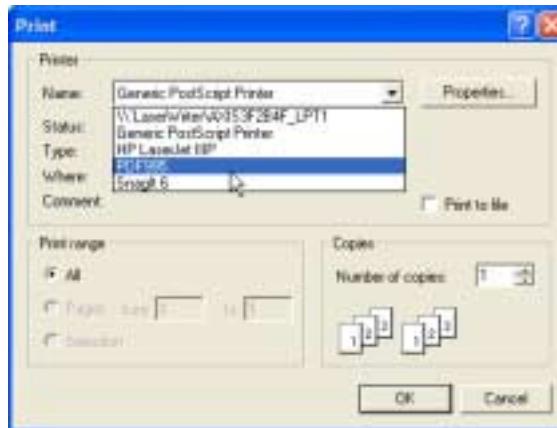


FIGURE 11 - 11: Selecting PDF995 to create a PDF file.

Select **File > Save As PDF**, to generate a PDF file out of your ENF file. Browse to any directory to save the PDF file on your computer.

#### Mac OS X Only:

In the Print window, select **PDF** to generate a PDF file. Browse to save.

### 11.3.12 File > CD Writer

#### Windows Only:

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,*

- Push the CD Writer icon at the bottom of the Navigator.
- Push “Add Files” and select one or more ENF or MIDI files to be recorded to CD.

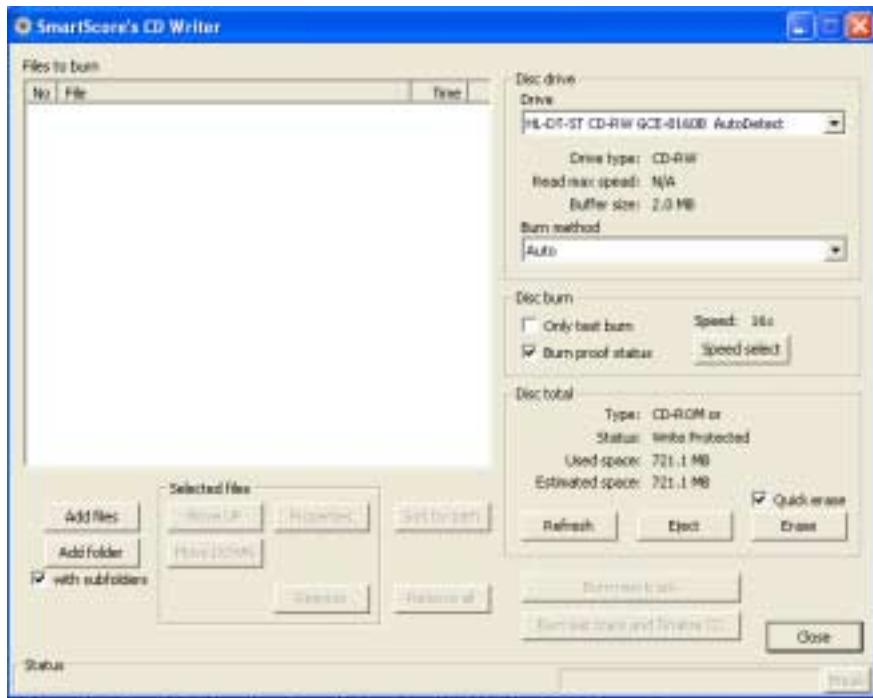


FIGURE 11 - 12:

- 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 ENF EDIT Menu

### 11.4.1 Undo (Ctrl+Z / Cmnd+Z)

Reverses the last action you performed. SmartScore has ninety-nine layers of Undo.

### 11.4.2 Redo (Ctrl+Y / Cmnd+Y)

Reapplies the last action that has most recently been Undone.

### 11.4.3 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.
- c. Press **Ctrl + X** / **Cmnd + X** or select **Edit > Cut** from the menu.

#### 11.4.4 Edit > Copy

*To Copy selected objects to the clipboard without removing them from the score,*

- Click and drag a box with the Select tool. Press **Ctrl +C** / **Cmnd+C** or go to **Edit > Copy**.

*To Copy selected objects to the clipboard without removing them from the score,*

- Click and drag a box with the Select tool. Press **Ctrl +C** / **Cmnd+C** or go to **Edit > Copy**.

#### 11.4.5 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.

#### 11.4.6 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.



#### 11.4.7 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**).

#### 11.4.8 Edit > Bracketing (Ctrl+B or Cmnd+B)

Refer to “Bracketing” on page 103.

#### 11.4.9 Edit > System Manager (Ctrl+M or Cmnd+M)

Refer to “System Manager” on page 143.

### 11.4.10 Edit > Part Linking (Ctrl+L or Cmnd+L) (Collapsing and expanding systems)

A lot of music contains parts that do not play for long periods of time. 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-link Parts” on page 121 for details on this feature.

### 11.4.11 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 124.

### 11.4.12 Edit > Arrange Systems

You may select a fixed distance between systems and you can select a fixed number of systems that will appear on each ENF page. In **Edit > Arrange Systems**, you can select the distance between systems (in pixels) that will be applied to all systems. You can also select a number of systems you wish to appear on all ENF pages.

### 11.4.13 Edit > System > Insert Above/Insert Below/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 information on keeping synchronization.

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 mouse pointer over the current system to make it *active*.
- b. Hold down the “**Ctrl**” button and select the function you want from the **Edit** menu.



**TIP:** Keep the **Control (Ctrl)** key depressed for as long as required to maintain focus on the system or staff you are altering. Whenever you move the mouse pointer out of an active staff or system, another staff or system becomes active.

- c. To remove a system from a score, position the cursor over the system you wish to delete and select **Edit > System > Remove**.

#### 11.4.14 Edit > Staff > Insert Above/Insert Below/Remove

Use this feature to expand or collapse a system. This will add a new part to the system and also add a new part to the Super System. Make sure you hold down the **Ctrl** button before moving the cursor to the **Edit** menu.

**NOTE:** Only the *active* system is affected when inserting or removing a staff. Remaining systems do not change. Change *visibility* in the **System Manager** and apply to *Score/Part* to update all systems.



**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. See “*Super System*” on page 118.

#### 11.4.15 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 251.

#### 11.4.16 Edit > Unify Signatures (U)

Refer to “*Unify Key, Time and Clefs (U)*” on page 168.

#### 11.4.17 Edit > Format Score

This is a kind of “cleanup” tool that attempts to horizontally reposition notes and rests. Does not “roll” objects from one system to another.

#### 11.4.18 Edit > Instrument Templates (Ctrl+S or Cmnd+S)

Refer to “Instrument Templates” on page 147.

#### 11.4.19 Edit > Score Header

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



FIGURE 11 - 13: Score Header

- a. Select **Title** and type in the name of the score.
- b. Select **Composer** and type in the name of the composer.
- c. Type a part name if it is a Score-Part.

*To move a Score Header vertically,*

While holding the **Shift** button, click and drag score header up or down.

#### 11.4.20 Edit >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 (Metronome Mark)” on page 156 for entering change-of-tempo (metronome) markings.

### 11.4.21 Edit > Guitar Chord Library

The Guitar Chord library contains preset guitar chords and associated chord symbols. You may add, change, delete and store any custom chords. Guitar frets and chord symbols automatically transpose with key transposition. Refer to “Guitar Frets and Chord Symbols” on page 99 for details.

### 11.4.22 Edit > Join Voices

Automatically join offset voices to one “vertical event” as described in “To globally join offset voices (automatic method),” on page 65.

### 11.4.23 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 139 for details.

### 11.4.24 Edit > Edit Mode

- **Zoom (Ctrl+Z / Cmnd+Z)**
- **Select tool (Ctrl+O / Cmnd+O)**
- **Insert / Change** - See “Insert and Change modes” on page 79.
- **Delete by Group / Delete Any** - See “Delete by Group / Delete Any (X)” on page 133.
- **Edit Shapes** - See “Voice Splitting (H)” on page 151.

### 11.4.25 Edit > Special

- **Vertical Alignment (Y)** - See “Vertical Alignment” on page 64.
- **Beam Notes (B)** - See “To convert a sequence of flagged notes into one beamed group,” on page 134.
- **Split Voices (H)** - See “Voice Splitting (H)” on page 151.
- **Flip Stems (S)** - See “Stem direction (S)” on page 135.
- **Delete Selected Ties/ Articulations (G)** - See “Occasionally, you might find an area full of incorrectly recognized ties and/or slurs or hairpins. Use this tool to “mass-delete” these objects.” on page 133.

### 11.4.26 Edit > Error Check (Ctrl +E / Cmnd+E)

Automatically check for errors such as missing notes and rests in voice-lines. Refer to “Error Check” on page 83 for more details.

## 11.5 ENF VIEW Menu

### 11.5.1 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.

- **Status Bar**

Opens and closes Status Bar at the bottom of main SmartScore Window. Displays current page, cursor position, image size, and zoom percentage. Clicking inside any of the displays opens a navigation aid or zoom window.

### 11.5.2 View > Palettes

Refer to page 130, "Tool Palettes (F1-F9 keys)" for details.

### 11.5.3 View > Open at Startup

When this option is active, Toolbars and Palettes that are checked will open by default when SmartScore is launched. Use to override default toolbar and palette displays.

### 11.5.4 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 mouse pointer 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.

### 11.5.5 View > Hidden Symbols

Refer to page 155, "Hidden Symbols" for details.

### 11.5.6 View > Break Barline

Choose this option to break barlines by instrument groups. For more details, see page 224, "Edit > Bracketing (Ctrl+B or Cmnd+B)"

### 11.5.7 View > Cross-staff Voicing

Choose **solid** or **dashed** line to indicate when a voice crosses over to an adjacent staff line (“visiting”). Refer to “Cross-staff voicing” on page 152.

### 11.5.8 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 147.

c. Selecting **Do Not Show** will nor display any Part Names or abbreviations in the ENF display.

### 11.5.9 View > Chord Symbols

Select how inserted chord symbols should display...

- **Show Symbols and Frets** displays guitar chord and symbol name.
- **Show Symbol** displays only the symbol name.
- **Show Fretboard** displays only the guitar chord.
- **Long Minor** will display “min” instead of “m” for the word “minor”.



### 11.5.10 View > True Scrolling

It is possible to view several pages at once with Print Preview. Select this option either from the **File** or **View** menus or by pushing the “Print Preview” button in the lower right-hand corner of the ENF display.

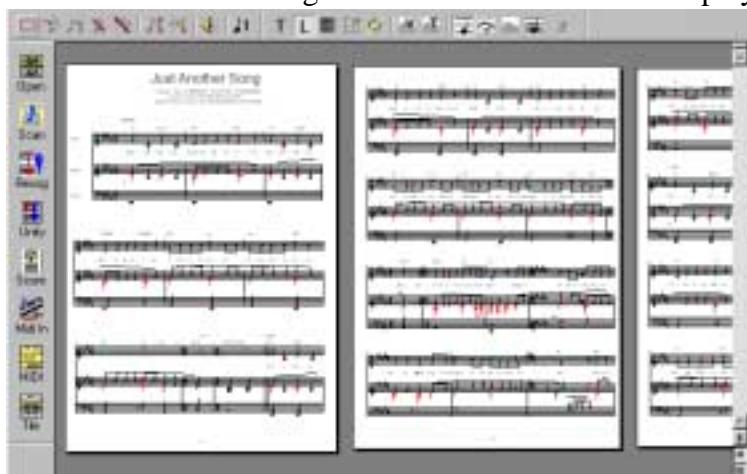


FIGURE 11 - 14: Print Preview- Horizontal Format

- **Horizontal** format



Select from **View** or push this button to view pages in horizontal format.

- **Vertical** format



Select from **View** or push this button to view pages in vertical format.

### 11.5.11 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 220 for more details on controlling page margins.

*To synchronize ENF and TIFF views,*

- Go to **View > Associate Image Files...**



FIGURE 11 - 15: 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.

### 11.5.12 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 77 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.

### 11.5.13 View > Zoom Window

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 129, “Split-screen and Zoom Window Viewing” for details on the floating zoom window.

### 11.5.14 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.

## 11.6 ENF OPTIONS Menu

### 11.6.1 Options >Measure Numbers

There are several options for displaying measure numbers in an ENF file. Under the **Options** menu, highlight Measure Numbers.

- **None** - removes all measure numbers from the ENF file.
- **Every Staff** - displays a measure number for the first measure of each system only.
- **Every Measure** - displays a measure number at each barline.

### 11.6.2 Options > Color Mode

For detailed discussion of color modes, refer to page 149, "Working with Voices and Colors".

- **Voice**

Each voice of a staff line will display in a different color.

- **By Part**

Each staff line will display in a different color or in black.

### 11.6.3 Define Colors

- **Voices**

Define the colors used to identify each of four contrapuntal voices.

- **Part Color**

Define the colors used while Color > By Part is selected.

- **Background**

Define the background color for the ENF pane or **Image** pane.

- **Hidden Symbols**

Define the colors used to display objects while in “Hidden Symbols” mode. Main = Non-note object color / Voices = Colors displayed for each of 4 possible contrapuntal voices while in “Hidden Symbols” mode.

#### 11.6.4 Options > Overlapping notes

Often two notes of different voices share the same pitch at the same time. You can choose whether you want noteheads of different voices to overlap one another or to become offset next to each other. To allow overlapping noteheads, check off “**Overlap Notes**” in the **Options** menu. Playback will not be affected whether note heads are offset or overlap.

#### 11.6.5 Options > Align Lyrics to the Left

Lyric fields are normally center-aligned to their associated note or rest. Choose this option to left-align lyrics. All lyric fields will be affected.

#### 11.6.6 Options > Melisma

Select **Dash** or **Underline** for how you wish lyric melisma lines should be displayed.

#### 11.6.7 Options > Accidental Stacking Rule

You may choose two alternative methods of stacking accidentals:

- **Diagonal**

Applies the rule that adjacent accidentals should be positioned as closely as possible to each other and become diagonally offset.

- **Zig-Zag**

Attempts to arrange accidentals in back-and-forth rows no more than three spaces wide.

#### 11.6.8 Options > Triplet Angle

Select **Flat**, **Beamed**, **Round** or **None** for how you wish triplet brackets are be displayed. With None selected, the division number appears but without any bracket.

### 11.6.9 Options > Virtual Drum Kit

Refer to “Recording a virtual drum track” on page 111.

### 11.6.10 Options > Virtual Drum Kit Definition

Refer to “Defining Virtual Drum Kit” on page 112.

### 11.6.11 Options > Auto Save

Open ENF files are automatically saved as a backup file. Should your computer crash or a session somehow becomes interrupted, you will be prompted that a previous version was detected when you reopen SmartScore. If so, accept the backup and save it.

You may change how frequently you want to Auto Save to backup your current ENF file.

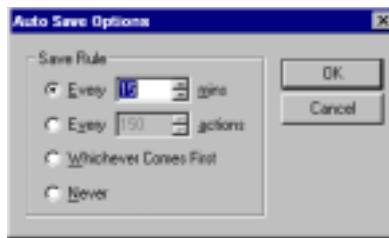


FIGURE 11 - 16: Auto Save

*To change backup intervals for Auto Save,*

- Select **Auto Save** from the **Options** menu.

The active, topmost ENF file will be saved as follows:

- **Every *n* minutes** - even if no editing takes place.
- **Every *n* actions** - based on number of editing actions, e.g. Inserting, Changing, Deleting, etc.
- **Whichever Comes 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.

### 11.6.12 Options > Reset Tools and Palettes

Resets all toolbars and palettes to the default choices set at installation.

### 11.6.13 Options > Reset Tools and Palettes

Reactivates all warning windows that can be “permanently” disabled by user. This applies to warning windows that have a “*Do not show this warning again.*” checkbox option. If selected again, warning windows will not appear again until program is reinstalled or until Rest Warnings is selected again.

## 11.7 ENF PLAYBACK Menu

### 11.7.1 Playback > Set Playback Range

Refer to “Set Play Range” on page 71.

### 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 Devices” on page 58 for details.

### 11.7.7 Playback > Swing

Turns swing playback on or off. Refer to “Swing” on page 72.

### 11.7.8 Playback > Sound tone when entering note

Notes will sound their pitch when entered or when shifted up or down. Check this option off to not sound pitches while editing.

### 11.7.9 Playback > Sound grace notes.

Select whether to play grace notes before the following note (default) or on the beat of the following note. Refer to “Grace Notes” on page 81.

### 11.7.10 Playback > Trills

Trills can be played with diatonic permutations going either up or down from the home tone. Select **Up** for permutations to play upwards or **Down** for them to play downwards.

### 11.7.11 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 107.

### 11.7.12 Playback > Lock to Time Signature

Refer to “Lock to Time Signature” on page 67.

### 11.7.13 Playback > Graphical Controller

Refer to “Graphical controllers” on page 69.

### 11.7.14 Playback > Refresh MIDI

Refresh MIDI resets playback based on the current ENF display. All changes made in MIDI view including newly recorded tracks are lost. For details, see “Updating and refreshing playback and display” on page 177

## 11.8 ENF Help Menu

### 11.8.1 Help > SmartScore Manual (PDF)

In CD versions, this selection will open the file, SSManual.pdf. This file is the full *Using SmartScore Version 2.0* manual in Adobe Acrobat format. It can be 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

file will open when the Help > SmartScore Manual (PDF) selection is made again.

### **11.8.2 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.

### **11.8.3 Help > Helper Files**

This selection will direct your Internet browser and connect to a special online directory that contains various help and install files that may be helpful. For Mac users who downloaded their versions, files include:

**FreeMIDI**

**OMS**

**Acrobat Reader**

## **11.9 MIDI FILE Menu**

### **11.9.1 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.

### **11.9.2 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.

### **11.9.3 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.

### **11.9.4 File > Save (Ctrl +S / Cmnd+S)**

Writes currently displayed file to the hard disk.

### **11.9.5 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

### **11.9.6 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).

### **11.9.7 File > Exit/ Quit- (Cmnd+Q)**

Exit SmartScore. Save current file. Go to Windows main desktop.

## **11.10 MIDI EDIT Menu**

### **11.10.1 Edit > Undo (Ctrl +Z / Cmnd+Z)**

Reverses the last action you performed. SmartScore has ninety-nine layers of Undo.

### **11.10.2 Edit > Redo (Ctrl +Y / Cmnd+Y)**

Reapplies the last action that has been Undone.

### **11.10.3 Edit > Select**

Opens the Select window for defined note selection.

### **11.10.4 Edit > Select All (Ctrl +A / Cmnd+A)**

Selects all MIDI events in every track.

### **11.10.5 Edit > Cut (Ctrl +X / Cmnd+X)**

Removes the highlighted notes from the score and places them in the clipboard.

### **11.10.6 Edit > Copy (Ctrl +C Win / Cmnd+C Mac)**

Places selected notes on the clipboard without removing them from the score.

### **11.10.7 Edit > Paste (Ctrl +V / Cmnd+V)**

Insert the contents of the clipboard back into the score without deleting the existing notes.

### **11.10.8 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.

### **11.10.9 Edit > Delete (Del)**

Deletes the selected section from the MIDI file.

### **11.10.10 Edit > Program Change (Piano Roll only)**

Opens the Change Instrument window. Insert a change to a new MIDI patch.

### **11.10.11 Edit > Velocity/ Duration**

Opens the Velocity and Duration window. Adjust the Velocity and/ or Duration of the selected MIDI events.

### **11.10.12 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 109.

## **11.11 MIDI VIEW Menu**

### **11.11.1 View > Navigator**

Opens and closes the SmartScore Navigator.

### **11.11.2 View > Main Toolbar**

Opens and closes Main Toolbar

### **11.11.3 View > SmartScore Toolbar**

Opens and closes SmartScore Toolbar

#### **11.11.4 View > Image Toolbar**

Opens and closes Image Editing Toolbar

#### **11.11.5 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

#### **11.11.6 View > New MIDI View**

Opens New MIDI View dialog box. Select type of view.

- Overview- Displays all staves as MIDI tracks
- Piano Roll- Displays selected stave as MIDI track
- Event List- Displays MIDI events of selected stave

#### **11.11.7 View > Show Track 0 (only in Overview)**

Displays MIDI channel 0 in MIDI Overview

#### **11.11.8 View > Synchronize**

Synchronizes measure sizes in all MIDI views to that of current MIDI view. Further horizontal resizing synchronized between all MIDI views.

#### **11.11.9 View > New ENF View**

Opens the MIDI-to-ENF window for converting the active MIDI file into and ENF document.

---

### **11.12 MIDI OPTIONS Menu**

#### **11.12.1 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.

### 11.12.2 Options > Time Format

Select whether start time of note events is displayed with Measure: Beat: Tick numbers or solely with Tick numbers.

### 11.12.3 Options > Velocity Format

Select whether Velocity of note events is displayed with absolute numbers or as percentages.

### 11.12.4 Options > File Settings

Opens Sequence Settings window. Shows the MIDI header information including: tempo, time base, time signature, key, and MIDI instrument.

### 11.12.5 Options > Track (not in Overview)

Opens Track Properties dialog box. Select a different track view, delete, duplicate, rename, or transpose the selected track.

### 11.12.6 Options > MIDI Device

Opens MIDI device dialog box. Select MIDI input and output sources.

### 11.12.7 Options > Instrument Settings

Opens Instrument Settings dialog box. Allows for selection of Port, Bank, and MIDI channel assignment for Instrument and Drum sources.

### 11.12.8 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.

### 11.12.9 Options > Shuttle On

Activate/ deactivate SmartScore's shuttle tool.

## 11.13 OMS (Mac Classic Only)

### 11.13.1 OMS MIDI Setup

Displays the current port selection for MIDI Device connection to your computer. A new Setup can be created from here.

### 11.13.2 OMS Studio Setup

Launches OMS for editing of your current OMS studio setup

### 11.13.3 All Notes Off

Shuts off MIDI output.

## 11.14 MIDI REALTIME Menu

### 11.14.1 Realtime > Set Playback Range

Opens Set MIDI Play Range dialog window.

### 11.14.2 Realtime > Play/ Pause “Spacebar”

Begins/ pauses/ resumes playback of current MIDI file. In Record Mode will start and pause MIDI recording.

### 11.14.3 Realtime > Stop

Stops playback or recording of current MIDI file.

### 11.14.4 Realtime > Rewind “,” (comma)

Rewinds to beginning of Set Playback Range.

### 11.14.5 Realtime > Solo (not in Overview)

Solos the active track during playback.

### 11.14.6 Realtime > Record

Check to activate MIDI Record mode

### 11.14.7 Realtime > External Timer

Set recording to begin from an external signal.

### 11.14.8 Realtime > Synchro Start

Active only in Record Mode, check to synchronize start of MIDI recording with first note played on MIDI keyboard.

### 11.14.9 Realtime > Thru

Allows MIDI input to sound

### **11.14.10 Realtime > Metronome**

Activates/ deactivates Metronome in recording

### **11.14.11 Realtime > Playback Console (Ctrl + 9 / Cmnd+9)**

Opens the Playback Console.

## **11.15 MIDI WINDOW Menu**

### **11.15.1 Window > New Window**

Opens a second copy of the current MIDI view.

### **11.15.2 Window > Cascade**

Layers all open windows within main SmartScore window. Active window is stacked on top.

### **11.15.3 Window > Tile**

Arranges all open windows to fit within main SmartScore window. Windows are arranged from left to right, top to bottom starting with the active window.

## **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 > Scan Music**

Selects scanner or initiates scanner to acquire image.

#### **11.16.6 File > Recognition**

Initiates Recognition to begin processing saved image file(s).

#### **11.16.7 File > Print (Ctrl +P Win / Cmnd+P Mac)**

Initiates Windows Print Monitor. Current Image file is output to default printer from selected printer port.

#### **11.16.8 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)

#### **11.16.9 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 Edit > Crop**

Trims the image file down to the selected region

#### **11.17.8 Edit > Invert**

Switches the colors of the image file.

#### **11.17.9 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.

#### **11.17.10 Edit > Selection**

Activates the Area Selection tool.

#### **11.17.11 Edit > Line**

Activates the Line drawing tool.

#### **11.17.12 Edit > Brush**

Activates the Brush tool.

#### **11.17.13 Edit > Deskew**

Activates the Deskeew tool for straightening “crooked” scans

#### **11.17.14 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 will be moved.

### **11.17.15 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 > Window**

Opens a second copy of the current ENF document.

### **11.18.13 View > Cascade**

Layers all open windows within main SmartScore window. Active window is stacked on top.

### **11.18.14 View > Tile**

Arranges all open windows to fit within main SmartScore window. Windows are arranged from left to right, top to bottom starting with the active window.

## **11.19 Image REALTIME Menu**

### **11.19.1 Realtime > Thru**

Allows MIDI input to sound while recording.

Score Formats	251
Score Components	252
Other Notational Terms	254
MIDI Terms	255
SmartScore Terms	256

## 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 Voices and Colors” on page 149 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 as different as lightning and a lightning bug. 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. The arc of a slur can vary from flat to angular. The arc of a tie is always flat.

**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 Other Notational Terms

**Polyphony** - The dynamic harmony which evolves as voicelines move horizontally against one another in time. Polyphony evolved from the simpler *homophony* of middle ages where vocal harmony was more chordal, vertical and static. Polyphony usually refers to the harmonic relationships between voices but also applies to instruments and parts. For the purposes of this manual, we use the adjective “contrapuntal” rather than “polyphonic”. Contrapuntal voices are fundamental to SmartScore’s design. Refer to “Working with Voices” on page 62 for more details.

**Counterpoint** - Similar to polyphony but more formalized by the theoretical, rule-based conventions of music composition. Counterpoint usually refers to the melodic *and* rhythmic relationship between parts or voices.

## 12.4 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.

**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.

## 12.5 SmartScore Terms

**ENF** - Extended Notation Format. This is SmartScore's proprietary file format. It is created after scanning, when creating a new score or when converting an imported MIDI file into ENF (MIDI-to-ENF).

**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. Generally, it is a list of all the parts and voices that make up the LARGEST system in the score. The System Manager is the basis of many editing features including; Visibility, Voices, Spacing, and Part Names.

**Voice Line Threading** - SmartScore will differentiate multiple voices within a single staff line by displaying them with 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. The individual voice lines will "threaded" from the TIFF file, through Recognition, to the ENF file, from the ENF file to the MIDI file, and from the MIDI file back to the ENF file.

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## Glossary

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**Index**

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**A**

Acciaccatura 81  
accent  
    editing 159, 160  
    playback 212  
Accidental 253  
accidentals, editing 136, 235  
accuracy, recognition 46, 52  
active staffline 11, 78, 230  
active system 117, 122  
Apply To  
    System Manager 146  
Apply-New 146  
arpeggio 161  
Articulations 254  
articulations 156  
    deleting 161  
    editing 159  
    multiple  
        inserting or deleting 161  
palette button 211  
Associate Image Files 232  
Audio MIDI Setup 59  
Auto Save 236

**B**

Bank, MIDI 255  
Barline 253  
barlines  
    bracketing 104  
    breaking 230  
    editing 87  
    repeat 165  
beaming flagged notes 134

**beams**

    changing angles and height 87, 97  
    cross-measure 153  
    cross-staff voicing 152  
    Quick-beaming 84  
Begin Recognition Window 10  
bowings 40  
bracketing 103

**C**

CD Writer 222  
Change mode 13  
Channel 255  
chord  
    deleting single note from 133  
    splitting into voices 151  
chord cluster tool 80  
chord symbols 99, 231  
    editing and adding 101  
    recognition of 99  
classical guitar notation 22  
Clef 252  
clefs  
    editing 213  
    transposition 139  
    unifying 169  
Coda 166  
collapsed systems 122  
Color Mode  
    overriding automatic color 150  
    parts and voices 63, 149, 150  
Colors, defining 234  
conductor score from parts 39, 45, 124  
contrapuntal voices 3, 16  
Controlling System 117  
Copy 224

ENF region to clipboard 90  
copy and paste 14  
Counterpoint 255  
courtesy accidentals 136  
crescendos and decrescendos  
    hiding 155  
    inserting 158  
    properties 162  
Crop 51  
cross-measure beaming 153  
cross-staff voicing 152

**D**

da Capo 167  
dal Segno 167  
Darkness, scanning 29, 35  
Delete  
    quick 14  
delete 82  
    a note from chord 13, 80  
    entire system 134  
    selected group of objects 133  
    selected ties & articulations 133  
    when all else fails (Tip) 82, 230  
Delete / Delete Any toggle 80, 133  
dithered images 28  
dot  
    delete 16  
Dot of Prolongation 85, 253  
drag zoom, MIDI 181  
drums  
    automatic drum patterns 108  
    virtual 111  
    working with 107  
Dynamics 254  
dynamics 137, 156  
    inserting 157

properties 163, 164

**E**

EDIT menu 223  
Edit Shapes 87, 97  
    moving fret and chord symbols 102  
endings 39  
endings, multiple  
    editing 165  
ENF 256  
    adding or removing parts 147  
    associate view with image 232  
    bracketing 103  
    creating a new page 89  
    creating from scratch 88  
    Cut, Copy and Paste 223  
    editing files 11  
    editing modes 79  
    editing scanned files 32  
    Error Check 83  
    Graphical Controllers 69  
    joining files 125  
    multiple endings 165  
    Paging 130  
    playback 14, 57  
    preliminary cleanup 78  
    Save as PDF 221  
    saving and exporting 90  
    Score Header 227  
    scrolling 130  
    Select area 90  
    set play range 71  
    Status Bar 78  
    System Manager 143  
    Templates 89  
    tempo marking 227  
    to CD 222

Zoom 77, 181, 185

ENF - MIDI

- relationship 177
- remove articulations 91

ENF Menu Items 218

ENF playback 57

- real-time settings 62

Ensemble 251

- creating part scores from 126

Error Check 61, 83

expanded systems 122

exporting ENF files 90

Extended Notation Format 10

extracting

- voices 21

extracting parts and voices

- Apply-New 146

**F**

fermata

- editing 159
- playback 211

FILE menu 218

Finale

- exporting to 91

Fine 168

flagged notes

- beaming 134

Folio 252

fonts, changing styles 96

Format Score 227

**G**

glissando 161

Go to... 130

grace notes 81

Graphical Controllers

- ENF 69

MIDI 185

guitar frets & chord symbols

- display 231
- editing and adding 101
- inserting 99
- moving 102
- recognizing 40
- scaling 103

guitar, tutorial 22

**H**

hairpin

- inserting 158
- properties 162

Help menu 238

Hewlett-Packard scanners 31

Hidden Symbols 155, 235

horizontal nudging 97

horizontal reformatting 98

**I**

image background 55

Image Editor 50

- Cut/ Copy and Paste 55
- image info 50
- pen options 53

indent, first system 120

Insert mode 12

Insert/ Change toggle 79, 132

inserting new systems 225

Installation 9

Instrument Templates 73, 147

instrument, select for playback 63

instruments

- selecting for playback 17

Invert Image 26, 37

**J**

Join Voices 65

**K**

Key Signature 253

key signature

change 215

at end of line 216

unifying 169

key transposition 87, 139

**L**

Landscape 251

Lock to Time Signature 58, 67

Lyrics 94

aligning 235

recognizing 39

when found under last staff 39

**M**

Mac OS X MIDI Setup 59

Macintosh / Windows shortcut

conventions 11

map, Quick Keys 174

Measure 253

Measure Numbers 234

melisma 235

merging

ENF files 125

systems 121

metronome markings 156

MIDI

closing MIDI views 180

Cut/Copy and Paste 192

display controls 201

Event List 197

event selection 189

Graphical Controllers 185

importing files 170

inserting note events 198

Instrument settings 187

measure settings 193

metronome 202

note characteristics 190

Note Event 191

patch 186, 255

playback 182

playback range 184

Program Change 186

recording 202

new tracks 204

Refresh 177

repeats and endings 195

select by time frame 189

shuttle tool 186

snap to 204, 242

Step Time Recording 206

switching tracks 186

Track Overview 180

velocity and duration 191

Zoom 181

MIDI Devices 58, 183

MIDI Event 255

MIDI Files

burn to CD 222

opening from ENF document  
179, 233

MIDI instruments

assigning 144

MIDI Menu Items 239

MIDI Refresh 61, 178

MIDI to ENF 170

miniatures, scanning 29, 35

Mini-Console 57

modes

color 149

insert and change 79, 132

mordent

- editing 159
- playback 212

multiple endings 165

**N**

navigating around ENF 77, 129

Navigator 9, 256

NIFF 219

normalize graphical controllers 69

Note 253

notes 132

- add to (cluster) 80
- associated with lyric block 94
- beaming 84
- changing pitch 83, 132
- changing values 132
- color 82
- delete from chord 80
- dotted 85
- forming chords 80
- grace notes 81
- horizontal nudging 87
- insert, change & delete 79, 132
- nudging 98
- overlap or offset 153
- splitting 151
- stem direction 85, 135
- swapping noteheads 153
- nudging objects 87, 98

**O**

offset notes 153

OMS 60

optimized systems 18, 122, 225

**P**

Page Setup 120

page, creating new 89

Paint Brush 54

Part 251

parts

- adding to score 118, 147
- color mode 150
- extracting 115, 145
- insert or remove from system 226
- naming in System Manager 144
- re-linking / optimized 122, 147
- removing from score 147
- show names in ENF 230

Paste 224

Paste / Replace 224

PDF 221

pedals 39

Percussion clef 107, 215

Piano Roll 184

pickup measures 58, 67

pitch shift 83

- select range 258
- selected notes 134

Playback

- changing instruments 17
- linking parts 121
- lock to time 58
- tempo 61
- transposing 61
- with spacebar 14

Playback Console 154, 200

polyphonic voices 3, 16

Polyphony 254

Port 256

Print Preview 220

Printing 221

Program Change 255  
Event List 200  
Piano Roll 186  
Properties Tool 16, 162

**Q**  
quantization 242  
Quick Keys 132  
    Barlines 137  
    Beam Direction 135  
    Dots 134  
    Dynamics 137  
    Flags and Beams 135  
    Note Values 137  
    QuickSelect 132  
    Rests 137  
    Select Tool 133  
    Stem Direction 135  
    Ties 135  
    Tool Palettes 81, 130  
    Tuplets 137  
    Unify Signatures/Clefs 137  
    Vertical Alignment 65

Quick Tour 9  
Quick-Select 13, 81

**R**  
recognition  
    adding a staff missed by 119  
    bowings 40  
    endings 39  
    fretboard 40  
    hymnal fonts 40  
    join offset voices 40  
    languages 39  
    lyrics and text 39  
    lyrics under every staff 39  
    merging separated systems 121

options and preview tabs 38  
pedals 39  
poor 29, 46  
pre-scanned music 43  
relink parts 40  
scanning music 9  
System Report 10  
triplets 39

record a CD 222  
record new MIDI track 204  
Refresh MIDI 72, 178  
refreshing ENF playback 177  
Re-link Parts 121  
Relink Parts  
    after Unify 169  
    before inserting staff 119  
Repeat previous measure mark 165  
repeats  
    editing 165  
repeats and endings 72  
reset windows and palettes 80  
Resolution, scanning 29, 35  
Rest 253  
rests 77, 132  
    associated with lyric block 94  
    multi-measure 132  
Rotate scanned image 52

**S**  
SATB scores 20  
Save ENF 90, 218  
Scanner Drivers for Macintosh 32  
scanning music 25  
    HP scanners (OS X) 32  
    Mac OS X 32  
    manual/automatic 30  
    user interface 30

score formats 251  
Score from Scratch 89  
Score Header 227  
Score Structure 124  
Score-Part 124, 226, 251  
scanning in 45  
Segno 167  
    Piano Roll 195  
Select Tool 133  
shift pitch 15  
shortcut conventions 11  
Sibelius  
    exporting to 91  
signature  
    unifying 169  
signatures 215  
Slur 211  
slur  
    editing 85, 159  
    playback 211  
SmartScore scanning interface 26  
soft accent  
    playback 212  
solo violin tutorial 22  
spacing  
    line, staff and system 119  
split measures 67  
Split-screen Viewing 129  
staccato  
    editing 160  
    playback 211  
staff  
    active 230  
    adding a part 118  
    when not recognized 119  
Staff (Stave) 252  
stem direction  
    changing 85, 135  
selected note 15  
Step Time Recording 206  
Super System 117  
    apply changes to 146  
System 252  
system  
    active 117  
    apply changes to 146  
    collapsing and expanding 225  
    fix distances and number 225  
    indent first 120  
    insert above/below/remove  
        225, 226  
    merging 121  
    relink parts in 122  
System Manager 5, 18, 143, 256  
    Active vs. Super 117  
    Controlling system 147  
    part extraction 115  
    Part Names 144  
    Super System 117  
    Visibility 145  
    visibility 115  
    voice extraction 116  
System Report 41  
System+, apply changes to 146

T

tempo  
    change mark (metronome) 156  
    change properties 157  
    properties 164  
    set default 227  
    setting default 68  
Tempo Controller  
    ENF 69  
    MIDI 185  
Tempo slider 194

- tenuto
  - editing 160
  - playback 212
- Text
  - deleting 94
  - editing 93
  - moving 94
- This 230
- Ties 86, 254
- ties 15
- tiling views 139, 185
- Time Signature 253
- time signature
  - change 215
    - at end of line 216
  - unifying 169
- Tool palettes 211
  - changing 12
  - palette modes 81, 131
  - resetting 80
- Toolbars 229
  - open at startup 230
- transposed instruments 73, 148
- Transposition 87, 139
- tremolo 160
  - playback 213
- trill
  - editing 160
  - extended 160
  - playback 212
  - Up or Down 238
- trills and mordents 159
- triplets 39, 85
  - change bracket type 235
  - implied 39
  - nested 86
- True Scrolling 231
- Tuplet 254
- user-defined 86
- turn
  - editing 159
  - playback 211
- U
- Undo 13, 80
- Unify key, time and clefs 168
- V
- Velocity 255
- Velocity Controller
  - ENF 69
  - MIDI 185
- vertical alignment 64
  - correcting 65
  - verifying 65, 99
- vertical event 40, 97
- View > Color > By Voice 63
- views, tiling 139
- violin, solo 22
- Visibility 115
  - Parts 115
  - Voices 116
- Voice 251
- voice color 16, 63
  - override automatic 82
  - switching 149
- Voceline 62, 252
- voiceline
  - color 150
  - threading 20, 256
  - visibility 145
  - visiting another staff 152, 230
- voices
  - assigning instruments to 63, 144, 187
  - color modes 149

extracting 116, 145  
in Score Structure 127  
offset 40, 64  
    swap position 66  
polyphonic 20  
splitting 151  
using hidden rests 155  
vertically aligning 65

W

What's new? 3  
window synchronization 120

Z

Zoom  
    ENF 77  
    MIDI 181  
    Piano Roll 181  
Window view 129