

SmartScore Quick Tour

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 SS\INSTALL.EXE.
- c. (*Macintosh*) Double-click SmartScore CD icon on your desktop. Double-click SS\INSTALL.
- d. Follow all installation steps including entering Serial Number, Customer ID and registering your copy of the product.

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: Begin Recognition window



- b. Press **Add Files to List**. In the **Open** dialog box, double-click on the sample file, FANDANGO.TIF, inside the SmartScore folder.
- c. 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**. You will now see a split screen view of processed music.



FIGURE 3: Sample TIFF / ENF view

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.

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.

Editing an ENF File

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

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**”.

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

- In order to see all staff lines in black, go to the **View** menu and uncheck “**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.

Unify Key and Time

It’s a good idea to “Unify” key and time signatures after recognition. This piece does not have transposed instruments in different keys and has no “change-of-key” or “change-of-time” signatures. So we will unify based on the signature found in the topmost staffline (1 flat).

- a. Select **Unify** from the Navigator and accept the key and time default: **Based on topmost staffline**. Hit **OK**.

Entering Grace Notes

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

- a. In Measure 1 / Treble clef, press the “**X**” key on your computer keyboard until you see a grayed-out X or grayed-out note next to the cursor arrow. Click on the misrecognized half note to delete it.
- b. Select a 16th note from the “Notes” tool palette or press the “**5**” key on your computer keyboard. Hit the “**C**” key to toggle to **Insert** mode (mouse pointer becomes a note. 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. Left-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 104.



TIP: Move your cursor over any tool palette on the left-hand side of your screen and right-click (*Win*) / **Ctrl** + click (*Mac*). This allows you to select any available SmartScore tool palette.



Dynamics

- a. Select the “Dynamics” Palette (**F8**). Choose *mf* from the “Dynamics” tool palette. In the **Insert** mode the cursor becomes the object you have selected. Click in Measure 1 to Insert the *mf* dynamic marking.

Triplets

- a. In Measures 2 and 3 the first group of beamed eighth notes are actually triplets. Press the “**T**” key of your keyboard. Then left-click and drag a box around the first triplet group. A triplet will appear over or under the highlighted notes. Repeat for the triplet in Measure 3.
- b. In the Notes palette, push the 32nd note and grace note buttons. In Measure 9, Zoom in (**Ctrl** + **Q**) to get closer. Hit the “**A**” key until

the beam points to the right. Insert the first grace note on *G*. Notice the cursor automatically beams to the left. Enter the last grace note on *A*. Hit “A” key to toggle to “middle beam” and enter mid notes.

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



Chord clusters, barlines and the Quick Select tool

- a. A note is missing from the chord in the treble clef of Measure 9. Press the “Z” key to activate the Cluster Tool. The Cluster Tool is used to build chords or remove single notes from a chord. Click where the *D* belongs below the *F* to insert the missing note.
- b. In Measure 10, a barline is missing. Press the “I” key and click to drop the barline to the right of the 1/4 note cluster.
- c. The 32nd note cluster in the treble clef of Measure 11 needs fixing. To delete a single note from any chord, first hit “Z” (the cluster tool), then “X” (the delete mode). Now click on the *G*, the higher note of the cluster, to delete it.
- d. Hold down the Control button of your keyboard and click the first 32nd note of the 13th measure. Notice how the cursor changes to a 32nd note. This action is what we call *Quick-Select* (**Ctrl + Click**). Press the “S” key to flip the default stem direction. Move the cursor back to Measure 11 and click to insert the *G*.
- e. The first beat of the bass clef in that measure was recognized as a quarter note. *Quick-Select* a beginning beam eighth note from the next measure. Hit the “C” key to toggle to the **Change** mode (with white arrow). Click on the *F* to change to “eighth note-start beam”.
- f. Enter a new dynamic marking in Measure 11. Select *Piano* (**P**) from the “Dynamics” palette. Click in Measure 11 to insert the new dynamic marking.
- g. Measure 15 has a new dynamic level. Click the ***f*** marking in the “Dynamics” palette and Insert the ***f*** into the beginning of Measure 15.
- h. A barline needs to be inserted at the end of Measure 18. Press the “I” key to activate a single barline. Click between the two *E* notes to drop the bar.

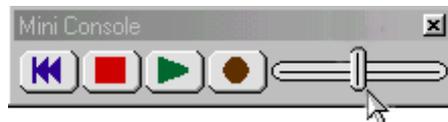


- i. Measure 19 returns to p , press the “**P**” key again and click to drop.
- j. In Measures 23 and 24, a flat was recognized instead of a grace note. Select the b from the “Notes” palette. Press “**X**” on your keyboard to toggle to the **Delete** (grayed flat) mode and click on the noteheads, G in Measure 23 and the D in Measure 24 to delete each accidental.
- k. *Quick-Select* (**Ctrl** + **Click**) the flagged eighth note from the last note in Measure 22. Push the Grace Note icon in the “Notes” palette and click to insert the grace note in Measure 24. Now go back to the “Notes” palette and select a 16th note (**5**) and the “Right Beam” icon (**A**). Click on the E in Measure 23 and then click on F to complete inserting the grace notes.
- l. Go to Measure 23, *Quick-Select* the sharp belonging to the $C\#$ and then click on the head of the grace note in Measure 24.

Playback

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.

- To listen to any file after recognition, press the spacebar of your keyboard. 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 gradually speeds up or slows down playback the further the slider is moved from the center. Letting go returns the “spring-loaded” slider back to the center and the default tempo resumes.



“Spring-loaded” tempo controller

FIGURE 4: Mini Console

Ensemble Scores (Joined Parts)

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. 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.

NOTE: A given part may or may not appear in every system. We call these irregular or “expanding / collapsing” systems. See “Part visibility” on page 115 and “Part Linking” on page 94 for more details on controlling visibility and linking of parts.



- 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, select **GLUCK.TIF** from the SmartScore folder and press **Open**. Press **Begin Recognition** to start the recognition process. **Save** the recognized file when prompted.
- b. As with FANDANGO, **UNIFY** the score by pressing the “**U**” key. Change the default selection to “**Based on 1st system**”. Hit **OK**.
- c. To listen to **GLUCK.ENF** just press the spacebar of your keyboard.
- d. Press the “**P**” key of your keyboard to select **p** (piano dynamic marking). Insert the dynamic markings for each part in Measure 1.
- e. In Measure 5, two eighth note rests were missed. In the “Rests” palette (**F2**), select the eighth note rest (**Shift + R**). Click to insert the rests into their correct positions.
- f. There is also a new dynamic marking in Measure 9. Click the **mf** marking from the “Dynamics” tool palette (**F8**) and insert it into the beginning of Measure 9 for each part.

Edit Shapes



- a. The slurs (legatos) in the piano right-hand aren't very pretty and need adjusting. Push “Edit Shapes” button in the SmartScore toolbar. Position your cursor over the middle staffline to make it “active”. Slowly move your cursor to the “handle” associated with

the first “anchor” of the slur beginning in Measure 9. Click and drag the handle up to increase the arc of the left half of the slur. Pulling the handle associated with the anchor on the right side finishes the job. Repeat with slurs in Measures 11 through 15. Push the “Edit Shapes” button again to return to normal editing mode.

- b. Hold the **Ctrl** button down and left click on the first note of the eighth note beamed group in the solo part in Measure 11. Hit the “C” key to toggle to **Change** mode and click on the quarter note C.

Accidentals

- a. The *B* in measure 17 needs to be inserted back into the score. First, the natural must be removed from the *C*. Select the \natural from the “Notes” palette and press “X” to toggle to the **Delete natural** mode. Click the *C* to remove the natural. Next, *Quick Select* any middle beamed eighth note and click to insert the *B*.
- b. The *B* in the right hand of the piano needs a natural. Select the \natural from the “Notes” palette. Click on the notehead to add the natural.
- c. Measure 19 has a new dynamic level. Select the ***f*** (forte) marking and insert it into the beginning of Measure 19 in both parts.
- d. Measure 21 returns to ***p***, press the “P” key again to insert the new dynamic marking for each part.
- e. In Measure 25, the second note in the bass clef of the piano part is wrong, it should be an *F*. Hold down the “Shift” key, left-click and drag the note on *G* to an *F*. Adjust the slur with “Edit Shapes”.

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.



- a. Push the speaker icon to open the **Playback Console** or use the keyboard shortcut, **Ctrl+9 / ⌘+9**.

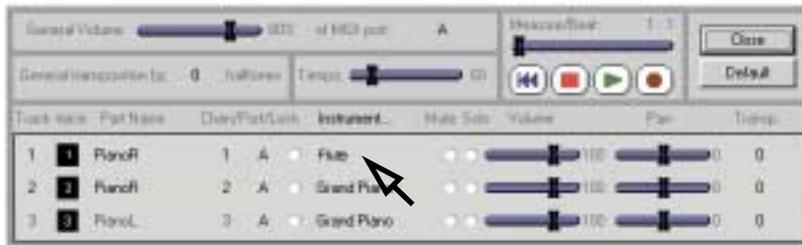


FIGURE 5: Changing instruments in Playback Console

- b. 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.



Working with the Master System

The **Master System** 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.

Extracting a part in Master System

- Hit (**Ctrl +M** / **⌘ + M**) or select **Master System** from **Edit** menu. Remove the “**Visibility**” checkmarks for PianoR and PianoL parts in the left-most column. Check “**Visibility**” in the “**Apply**” region. Push the “**Apply to New**” button to create a new document which will include only the part(s) selected by visibility checkmarks.



Flute part
extracted
from the
original
ENF
document.



FIGURE 6: Extracting a part in Master System

Changing Parts and MIDI instruments in Master System

We will now use Master System to select parts and assign MIDI sounds. MIDI instrument assignments can be changed in the Master System either by choosing one of a number of preset Part Names or by changing the MIDI instruments assigned to contrapuntal *voices* within a staff line.

- a. Return to the original Gluck.enf score and from the **Edit** menu, select **Master System** again (or hit **Ctrl + M** / **⌘ + M**). In the Part Name column, click on the first part (*Flute*). Scroll down and select *Harpisichord* from the list of Instrument Templates. Notice the MIDI instrument assigned to **Voice 1** becomes *Harpisichord*.



FIGURE 7: 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 or staff line. Refer to the next figure, **Changing MIDI Instrument of a voice in Master System**. 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.

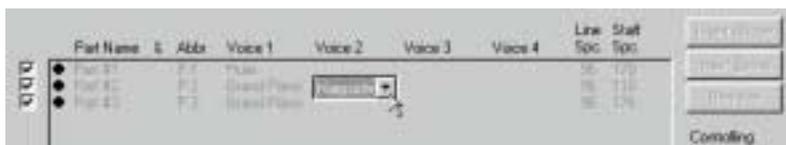


FIGURE 8: Changing MIDI instrument of a voice in Master System

- c. Press **OK** to apply the change and close Master System. Now hit the spacebar to play back. Whenever the secondary voice in the right hand is played, you will hear a harpsichord sound as distinguished from the piano sound in the first voice of the same part.

Activating contrapuntal Voices

Voice color mode will display contrapuntal voices in different colors. This will allow you to view secondary voices (both notes and rests) in red.

- a. Go to **Options** menu and select **Color Mode > Voice**.

- a. Notice in each staff how notes and rests appear as either black or red. This represents the two voices in each staff line. To see how multiple voice colors are represented in MIDI, reopen the **Playback Console (Ctrl +9 / ⌘ + 9)**. Notice that Track 2 (PianoR in Master System) has two voices: Black = Voice 1 / Red = Voice 2.

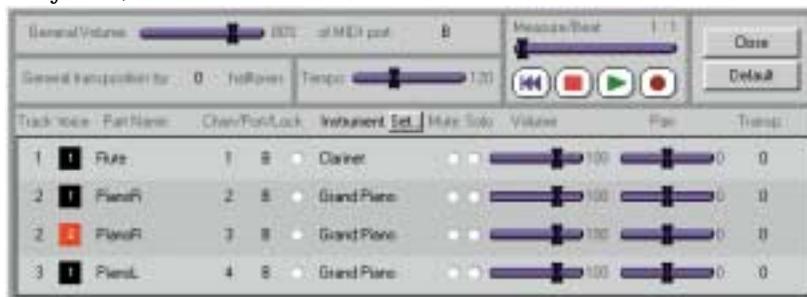


FIGURE 9: Playback Console with Options> Color Mode > Voice selected

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 with different voices moving independently. This is called “horizontal voicing” or what we refer to as “Voiceline Threading”, a method of writing *contrapuntal* or polyphonic music. 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).



- Push the **Recog** button on the Navigator.
- Press the **Add Files to List** button in the *Begin Recognition* window. Select CHORALE.TIF from the SmartScore folder in the **Open** window and then press **Open**. In Options area, leave *Triplets*, *Endings* and *Text Recognition* unchecked.
- 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. Sometimes recognition inserts objects that do not belong. Because the music was scanned from a book, stafflines curve downwards on the right side. This effect created two “false positive” slurs in the top two stafflines. Hit the “**X**” key a couple of times so the cursor becomes a greyed **X** (Delete Any). Click on either of the false slurs to delete them. Be careful not to click on any other object.
- e. Hold the **Ctrl** button down and click on the natural sign in the alto line of Measure 3. Hit the “**X**” key so the cursor displays a greyed natural sign and click on the notehead of the quarter note *E* alto to delete the natural. Hold the **Ctrl** button down again and click on the flagged eighth note at the beginning of the measure. Hit the “**S**” key to reverse the default stem direction from up to down. Position the notehead of the cursor on *G* just between the two quarter notes in the soprano line. Left-click to insert the eighth note.
- f. Move the cursor down to the next line and with **Ctrl** held down, click on the sharp sign to the left of the half note in the upper voice. Position the cursor over the notehead of the eighth note you just entered and click on the notehead to insert the sharp.
- g. Move your cursor down to the next staff. **Ctrl** + click on the first beamed note in the upper voice of Measure 3. Now hit the “**C**” key to enter into **Change** mode. Click on the quarter note on beat 4. Notice how the note becomes beamed. Notice too that the bass notes turn green. Now click on the half note to the right.
- h. **Ctrl** + click on the quarter note in the upper voice of Measure 2 and hit the “**C**” key. Left click on the third ledger line (*E*) at beat 4. Be sure you insert the note directly above the eighth note *F* below.
- i. **Ctrl** + click on the second beamed note of the tenor part in Measure 1. Hit the “**S**” key to reverse default stem direction and insert the second beamed note, *C*, in the bass part.
- j. Right-click on any open tool palette (**Ctrl**+click for Mac) and select *Barlines and Repeats*. Click on the *Right-repeat* sign. Hit the “**C**” key to enter **Change** mode and click on the last barline in the staff.
- k. Fermatas are not automatically recognized by SmartScore. Select *Fermata* from the “Articulations” tool palette. While still in the **Change** mode, click on the soprano and bass stems, away from the notehead, in Measure 3. Repeat this step in Measure 6.

- l. Press the Spacebar on your computer keyboard to play back the chorale. Push the “diskette” icon in the Main Toolbar to save the edited file. You can also select **Save** from the **File** menu or **Ctrl + “S”** (⌘ + **S** for Mac) to save any open file.

Extracting Parts using Score Structure

- a. From the **Edit** menu, choose **Score Structure**.
- b. Click on the box titled “*PianoL*”. Push the **Remove** button.
- c. 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 untouched.
- d. Press the spacebar to hear just the women’s voices. Now, we will extract the alto voice and hear it by itself.

Extracting Voices in Master System

- a. Hold down **Ctrl + “M”** (⌘ + **M** for Mac) keys to open the Master System. Select the PianoR part by clicking on the black dot to the left of the part name. *Voice Visibility* check boxes become active.
- b. Uncheck the box under Voice 1 to make the soprano part invisible. In the *Apply* region below, check the *Visibility* box since the only change we are making in the Master System is to visibility.
- c. Press **Apply to New** to create a new ENF document containing only the alto voiceline.
- d. Press the spacebar to hear just the alto line.

Viewing all open files using Tile



- a. Click on the “*Tile Windows*” icon in the Main Toolbar to view all windows that are open in SmartScore.
- b. Using scrollers on the right margins, nudge each display up so that all three views can be seen. Click into any of the documents and press the spacebar to hear each document play back independently.

Editing Lyrics and Text



- a. 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 / No Spell Check*.

NOTE: Spell Check is normally off because lyrics tend to be formed in syllabic blocks. For best recognition of English lyrics, keep *Spell Check* off. Non-lyric text may lose some accuracy, but most music contains far more lyrics than non-lyric text. For non-English languages, applying *Spell Check* may or may not improve lyric accuracy. Experiment for yourself to get best text and lyric recognition results.

- c. Press the **Begin Recognition** button. Once Recognition is complete, save the ENF file, SONGBOOK.ENF.
- d. **UNIFY** the score by pressing the “U” key. Change the default selection to **“Based on topmost staffline”**. Hit **OK**.
- e. Notice the lyrics and the numbers “1.” and “2.” They are not quite aligned (lyrics and text are recognized separately).
- f. Press the *Edit Shapes* icon in the *Text and Controllers* toolbar. In Edit Shapes mode, all objects appear in brown. Move cursor to the top line. Click and drag lyrics upward to align with the text on the left.
- g. In the right-hand part of the piano, locate the end of the 1st slur. Click into the “control” box above the far right anchor and drag up.
- h. Click the *Edit Shapes* icon again to return to normal edit mode.
- i. In Measure 5, there is a small fragment in the word “you”. Using the Zoom tool (**Ctrl** + “Q”). Left-click to zoom in on the word “you” until you see the remnant between “y” and “o”. Activate the Select Tool with **Ctrl** + “O” (⌘ + O for Mac), select the remnant until it highlights in a pink color. Hit **Delete** to remove it.
- j. Right-click (hold down **option** + click for Mac) to zoom back out.
- k. Press the *L* (Lyric) icon in the *Text and Controllers* toolbar. Locate Measure 7. With the lyric cursor activated, click on the third quarter note in the topmost staffline. The associated lyric “the” will highlight. Hit the **down arrow** to move to the lyric block immedi-

ately below. Hit the **right arrow** twice to move two characters to the right and press **Backspace** to delete the period.

1. Hit **Tab** to move to the next lyric block. Hit the **right arrow** five characters to the right and press **Backspace** to delete the apostrophe. Press the *L* (Lyric) icon again to exit Lyric Edit mode.

Editing Solo Guitar and Violin Music

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 cluster of several simultaneously sounding voices may be represented as three or four disconnected notes, stems pointing in either direction with their noteheads slightly offset and yet, close enough to one another to represent a “chord”. Such interesting formulations pose real challenges to intelligent music-scanning software...

- a. Push the **Recognition** button in the Navigator. Press **Add Files to List** in the *Begin Recognition* window. In the **Open File** window select BOUREE.TIF from the SmartScore folder and press **Open**. In *Limit Voices* of the *Options* area, choose “**to three voices**”. Leave *Triplets*, *Endings* and *Text Recognition* unchecked. Press **Begin Recognition** to start the recognition process.
- b. Push spacebar to **Play**. Notice as the music plays from Measures 12 through 14 that notes have three colors, including green. Hit spacebar again to **Stop**.
- c. In Measure 14, there are two whole notes that were mis-recognized from the numbers “0”. Hit the “X” key to get the “**Delete Any**” cursor and click on the two whole notes in the measure. Repeat in Measure 16 to delete the whole note there.
- d. Open the **Playback Console (Ctrl +9 / ⌘ + 9)**. Click into Instrument selection for Track 1 / Voice 1. Change *Nylon String Guitar* to

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

