

# Impro-Visor

Jazz Improvisation Advisor

Version 2

## Tutorial

Last Revised: 14 September 2006

Currently 57 Items

Bob Keller

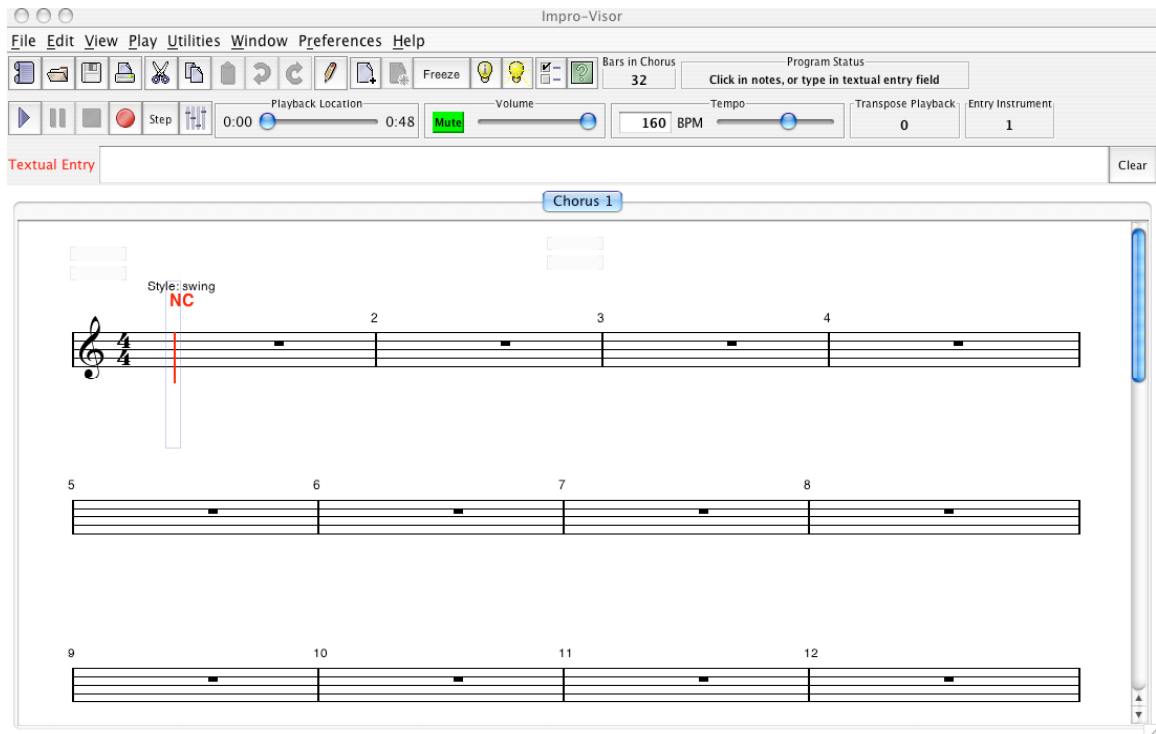
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This brief tutorial will take you through some of the basic editing features and options provided by Impro-Visor. If anything is unclear, please email to improvisor at cs dot hmc dot edu and we will try to correct it.

Impro-Visor runs on MacOSX, Windows XP, and Linux. The screen shots shown here are from the Mac version, with the other versions being similar but not identical.

0. Assuming that Java 1.5 is already installed, open Impro-Visor by double-clicking the improvisor.jar file. The program should open with a small splash screen while the vocabulary loads, then you should see a GUI (graphical user interface) view similar to the following:



At the top is the **Menu Bar**, with drop-down menus File, Edit, View, Utilities, Window, Preferences, and Help.

Below the Menu Bar is the Tool Bar, with icons on the first row for:

- Creating a new lead sheet (in addition to the one showing)
- Opening an existing lead sheet (instead of the one showing)
- Saving the current lead sheet
- Printing the current lead sheet
- Cutting, copying, and pasting
- Undo and redo editing actions
- Toggle to the draw tool from the point-and-click tool
- Create new chorus
- Delete current chorus
- Freeze/thaw the layout
- Advice menu
- Lick generator utility
- Preferences
- Help

Icons on the second row represent:

- Play the leadsheet

- Pause playback
- Stop playback
- Record from MIDI input (real-time)
- Step MIDI input
- Open mixer
- Playback location indicator and control
- Overall volume
- Tempo
- Playback transpose

The Textual Entry field is used for entering chords, and possibly melody notes

Below the text entry is the lead sheet display.

Any number of these windows can be open simultaneously, each with its own lead sheet. It is possible to cut and paste chords and melody from one window to the other.

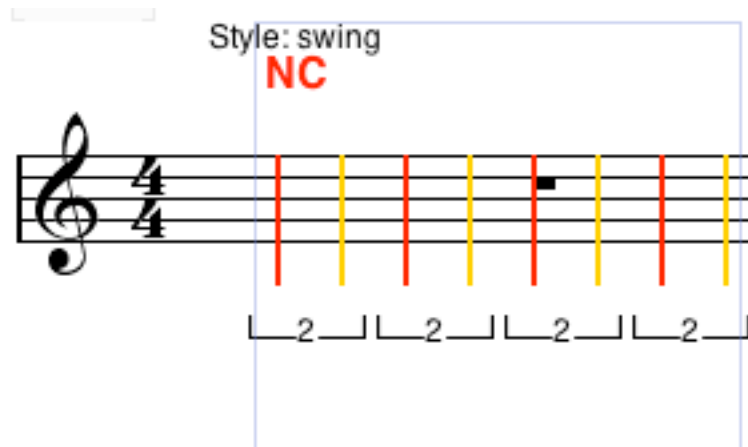
The pointing device (henceforth called the "mouse") can be used to select places for note and chord insertion. While our selection rules may be a little different than those in other products you have used, once you learn them, it is relatively easy to enter an entire lead sheet in a short amount of time.

1. The first (upper left) measure on the leadsheet shows a red line surrounded by a narrow box:
  - a. The red line represents the currently selected **slot**. Slots divide the time of the measure and represent the point at which notes will be inserted. By default, there are two slots per quarter note, although this can be easily changed. Chords are also implicitly aligned to slots.

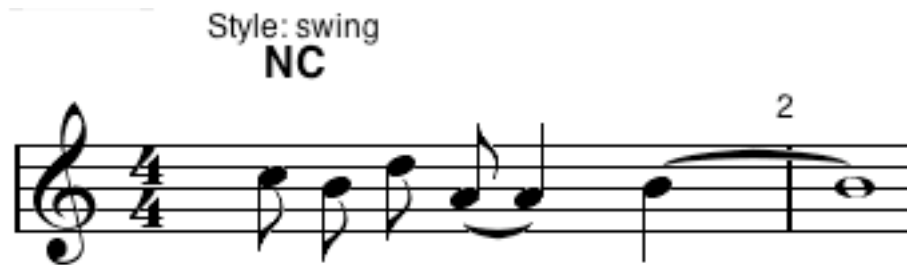
One of a few ways to move the selected slot is by using the f key to move it forward, and the a key to move it back.

- b. The long box around the slot indicates the **selection**, which is a contiguous set of slots, although initially it shows only one slot.

One of a few ways to extend the selection is to drag one of the sides of the box either direction. Here we have dragged the selection to the end of the first measure. Note that more slots are now selected, as shown by red and yellow lines.



- c. NC stands for "No Chord", standard lead sheet terminology.
  - d. To make the selection box disappear, press the *Escape* key.
  - e. The brackets below the selected slots show the sub-division spacing. Key 2 means 2 notes per beat. Pressing one of the keys 1, 3, 4, 5, 6, or 8 will change the selected slots to the indicated number of divisions. For example, 3 is used for eighth-note triplets, and 8 is used for 32<sup>nd</sup> notes.
2. Click on a few of the slot lines and notes will appear. The duration of a note is shortened by overlaying part of a long note with another note or rest. You can overlay any note by clicking again on the slot. There will never be more melody note per slot.



An attempt is made to keep the note a little longer than needed. However, if a still longer duration is desired, the rest following the note can be deleted through the interface.

3. Press the play button to play the melody you have created. You can also press the Return key to play only the selection, or shift-Return to play from the selection to the end.
4. Selecting a different slot depends on the *context* of whether a slot is already selected:
  - a. If no slot is selected, or you want to click *inside* the selection, simply move the mouse to the slot you want and shift-click.
  - b. If you shift-click *outside* a selection, the selection is extended to wherever you click.
  - c. Move b followed by c are often used in sequence to change to a single selected slot.
  - d. Holding the shift key is what prevents a note from being placed in the slot.
5. Enter chord names through the Textual Entry window. Separate measures by the vertical bar |. The default chord names we use are given in the help window. It is possible for the user to configure the tool with additional or different names, however. When return is pressed in the Textual Entry window, the chords are entered starting at the first slot selected. Below is shown the entry of chord names in the

Textual Entry Dm7 G7 | CM7 |

These are the chords as they appear on the lead sheet. If you make a mistake, just edit the Textual Entry and press Return again (making sure that the first slot is where you want to start).

Style: swing  
Dm7 G7 CM7

6. To change a note you just added to a rest, press the **r** key.

Style: swing  
Dm7 G7

7. To copy the selection, press the **c** key if you only wish to copy notes, the **C** key if you only wish to copy chords, or **control-c** if you wish to copy both.

[Incidentally, there are menu items for all the things we are doing with keys, as well as a help menu which lists most of the options.]

To paste what you copied somewhere else on the sheet, select the starting slot (using shift-click) where you wish to paste, then press the **v** key to paste only notes, the **V** key to paste only chords, or **control-v** to paste both. Below we have copied the first two bars and pasted them at bar 3.

Style: swing

Dm7 G7 CM7 Dm7 G7

8. Use x, X, or control-x if you want to cut instead of just copy. You can use these keys to cut a single note or chord and paste it or them somewhere else too.
9. To transpose the selection down, press the d key to transpose only notes, the D key to transpose only chords, or control-D to transpose both. This transposes by half steps. Below we have done this twice:

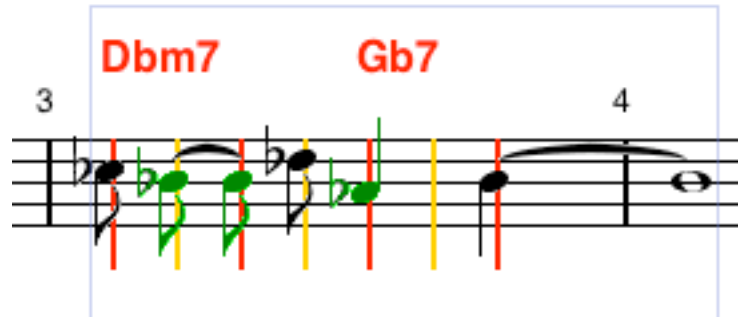
Style: swing

Dm7 G7 CM7 Cm7 F7

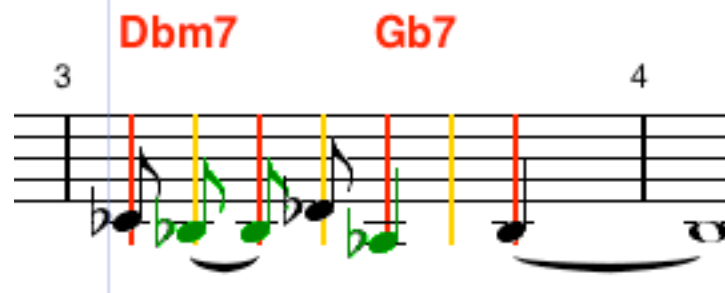
10. If you don't like the result of transposing, pasting, etc., you can often undo them by pressing the z key. If you change your mind and want to redo them, press the y key. (There are a few operations that cannot be undone.)
11. To transpose up instead of down, press the e key. Below we transposed bars 3 and 4 up a half step.

C#m7 F#7

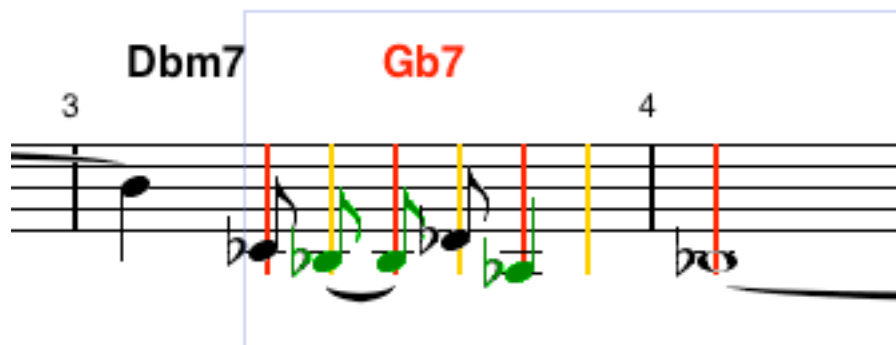
12. If we wish to change the accidentals to their enharmonic equivalents, press space bar to change notes, shift-space to change chords, and control-space to change both. Below this has been done with the previous contents of bar 3 and 4.



13. To transpose notes in a selection down an octave, press the g key.



14. An entire selection can be moved laterally by dragging (moving the mouse while holding the button down) from one slot to another. Below we dragged the selection one beat to the right. Note that the note before is automatically extended to fill the gap. If that is not desired, select that slot and enter a rest by pressing the r key.

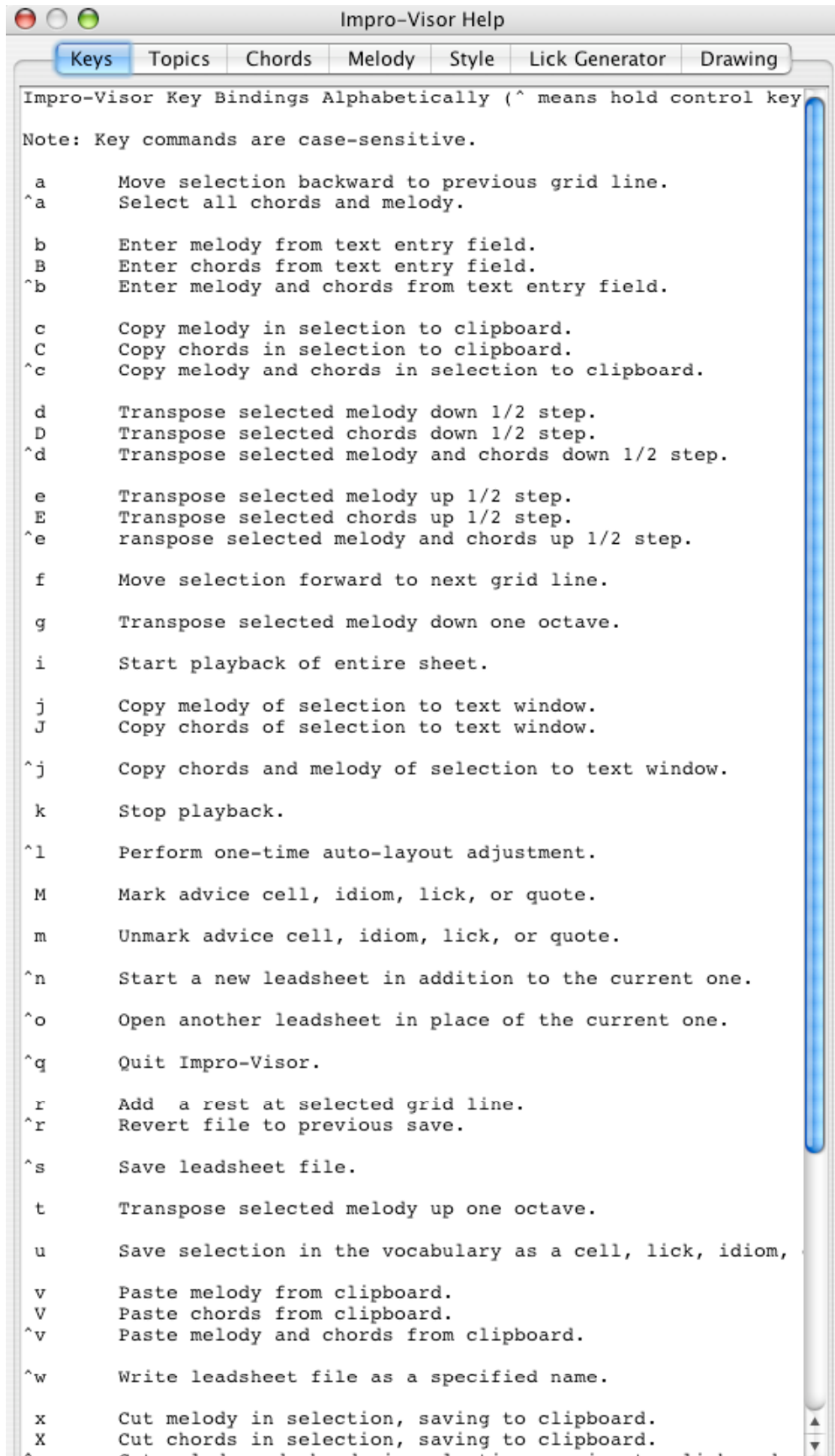


15. By now you might think "How can I remember all of these key bindings?" Most keys are *accelerators* for commands that are available in one of the menus in the menu bar. Click the edit entry in the menu bar, to get a list of the editing commands and accelerators. Note that ^ stands for holding the control key, and ↑ stands for holding the shift key. The grayed menu items are ones that are inapplicable in the current state.

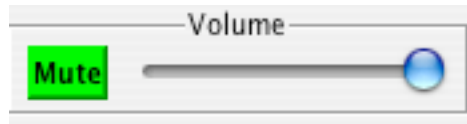


<u>E</u> dit	<u>V</u> iew	<u>P</u> lay	<u>U</u> tilities	<u>W</u> indow	<u>P</u> references	<u>H</u> elp
Select All						^A
<u>U</u> ndo						Z
Redo						Y
Cut Melody						X
Cut Chords						⇧X
Cut Melody and Chords						^X
Copy Melody						C
Copy Chords						⇧C
Copy Melody and Chords						^C
Paste Melody						V
Paste Chords						⇧V
Paste Melody and Chords						^V
✓ Always Overwrite when Pasting						
Enter Melody						B
Enter Chords						⇧B
Enter Melody and Chords						^B
Transpose Melody Up Semitone						E
Transpose Chords Up Semitone						⇧E
Transpose Both Up Semitone						^E
Transpose Melody Down Semitone						D
Transpose Chords Down Semitone						⇧D
Transpose Both Down Semitone						^D
Transpose Melody Up Octave						T
Transpose Melody Down Octave						G
Reverse selected melody						Slash
Invert selected melody						Back Slash
Expand melody by 2						
Expand melody by 3						
Contract melody by 2						
Contract melody by 3						
Copy Melody to Text Window						J
Copy Chords to Text Window						⇧J
Copy Selection to Text Window						^J
Save Selection as Lick, Cell, Idiom, or Quote						U
Insert a Measure of Rest						
Add Rest						R

16. Another source of help is through the Help menu. In contrast to the edit menu, the help menu is its own window, which will stay open so that you can view it while editing. There are different tabs for different organizations of the information.



17. Toggle the mute button if you don't wish to hear the notes as you enter them.



18. Alternatively, you can control this volume by opening the mixer panel using this button:

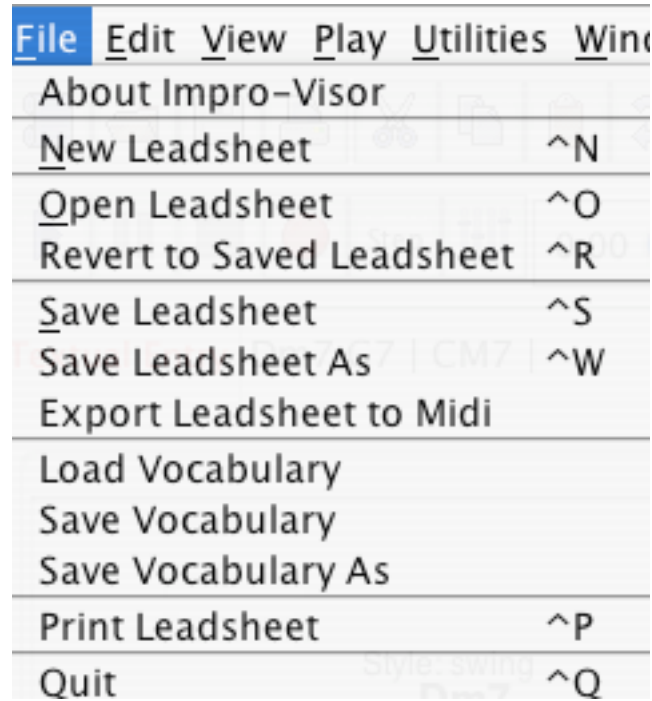


The Entry slider controls the volume of the note entry specifically:

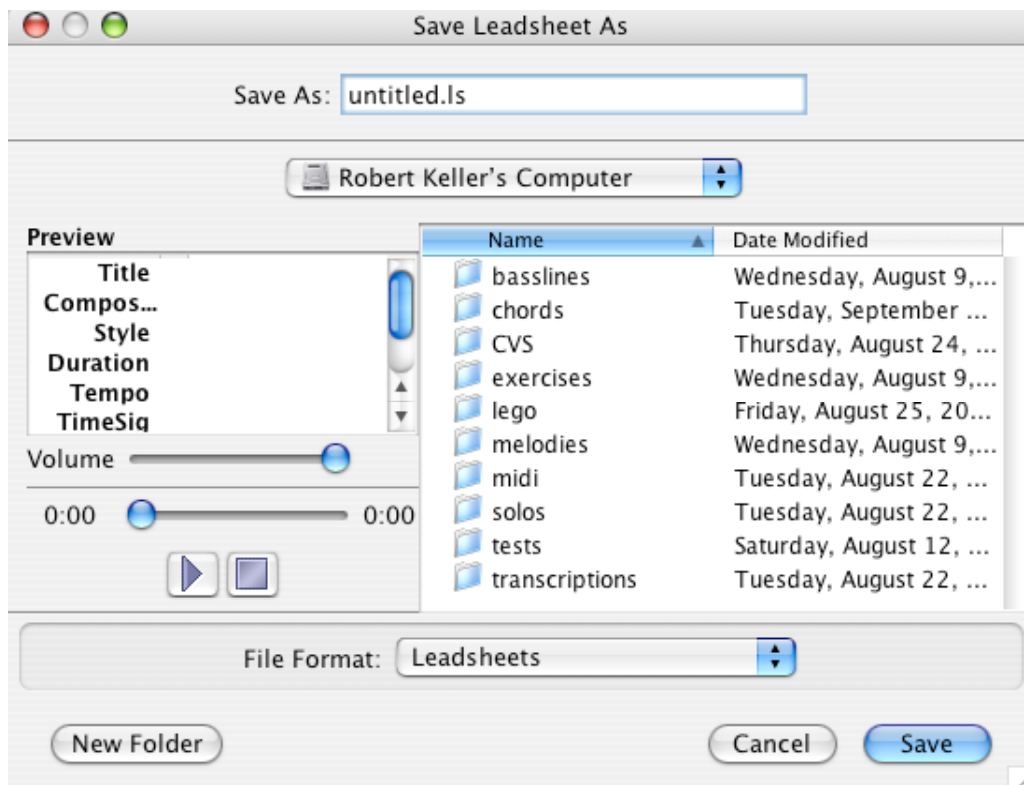


T

19. To save your work, open the file menu and select **Save As**. You will be prompted for a directory and a file name.



20. Files should be saved with the extension .ls (for leadsheet).



21. To save again, once you have named the file, use control-s. To revert back to the previous saved version, use control-r.
22. Any text file can be used to initialize the chords in a lead sheet. Simply edit the file using your favorite editor, such as Emacs, Notepad, Word, BBedit, etc. Save the file with extension .ls. Then open the file from Impro-Visor.

For example, below we have typed the chords for a simple 12-bar blues in a text file:

```

F13 | Bb9 Bo7 | F13          | Cm9 F13 |
Bb9 | /  Bo7  | F13          | D7alt   |
Gm9 | C7b9     | F13 D7alt   | Gm9 C7b9 |

```

(It is important not to put in gratuitous bar-lines at the beginning of a line. Those will create extra measures.)

We load the file into improvisor using the Open-Leadsheet item (or control-o) and it appears as shown below:

Style: swing  
F13

2 Bb9 Bo7 F13 Cm9 F13

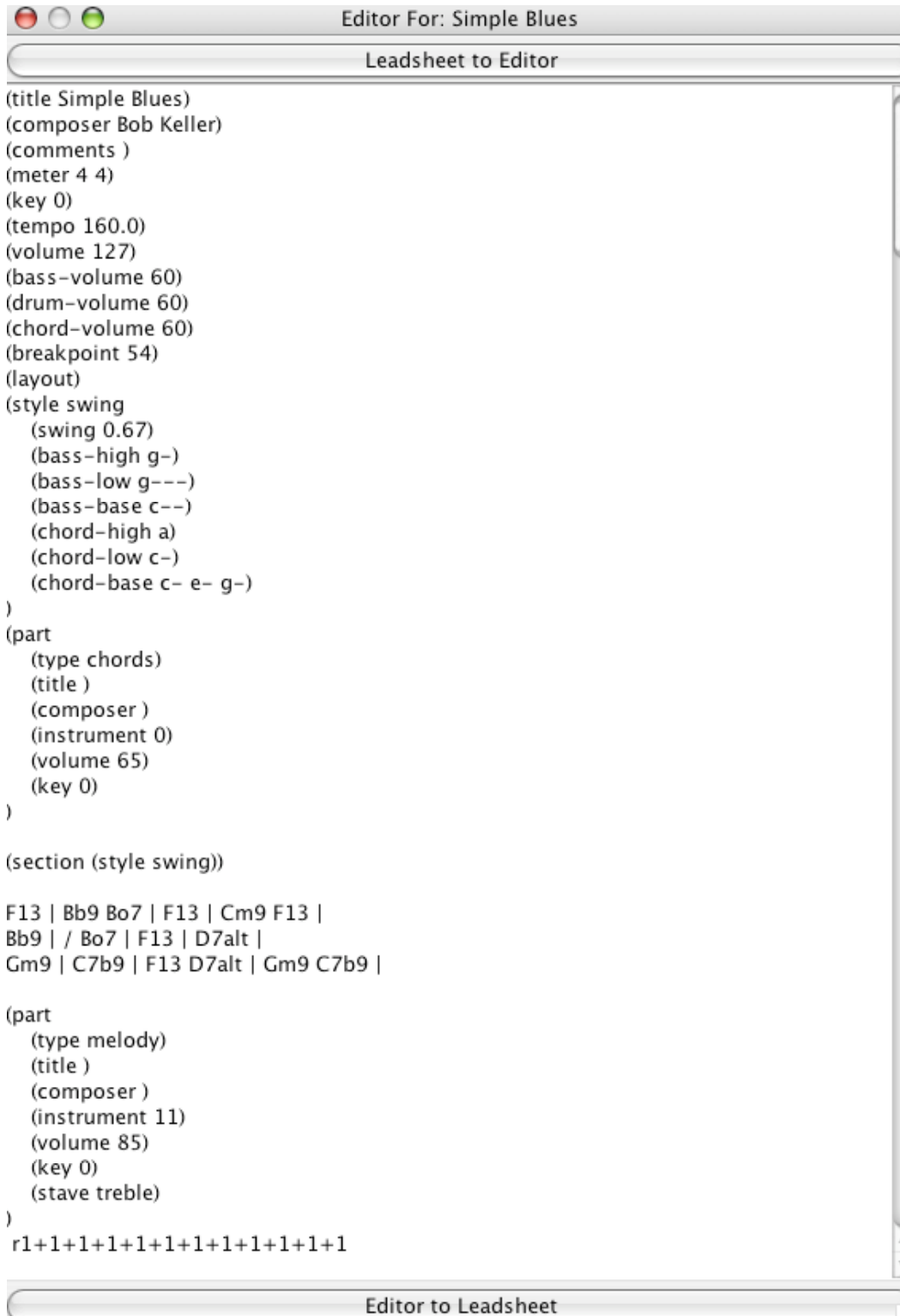
5 Bb9 Bo7 F13 D7alt

9 Gm9 C7b9 F13 D7alt Gm9 C7b9

10 11 12

When the file is saved from Impro-Visor, additional meta-data will be saved, such as the key signature, tempo, and so on. This can be edited through Impro-Visor itself, or by editing the text.

Impro-Visor itself also provides a minimal text editor that can be used to edit the file. If we open this editor from the Utilities menu, we can see the form in which Impro-Visor will save it. Changes made in this editor will not take effect until the Editor-to-Leadsheet button is pressed.



23. The textual entry can also be used to enter notes in Impro-Visor's leadsheet notation described in a separate document. Here is a simple example. The notes and chords are essentially in two separate tracks



that can be commingled. Notes begin with lower case letters and chords with upper case letters. Notes do not observe bar slots. A note is the pitch class (a, b, c, d, e, f, g, possibly followed by # or b; or r for rest), optional + to raise the octave or - to lower the octave, followed by a duration (4 for quarter note, 8 for eighth note, etc.).

Here is a short line for the first three bars of our blues as it could be entered textually.

```
r4 c+8 a8 g8 a4. r4 c+8 ab8 g8 f4. eb1 r1
```

Below is how the line appears once return is pressed in the Textual Entry field.

The same line could have been entered in the text file initially, like this for example:

```
F13 | Bb9 Bo7 | F13 | Cm9 F13 |
Bb9 | / Bo7 | F13 | D7alt |
Gm9 | C7b9 | F13 D7alt | Gm9 C7b9 |
r4 c+8 a8 g8 a4. r4 c+8 ab8 g8 f4. eb1 r1
```

The position of the melody relative to the chords is unimportant, because they are treated as two separate tracks.

24. To set the key signature using the mouse, drag the mouse up or down in the area after the clef symbol. Drag upward for sharps and downward for flats.

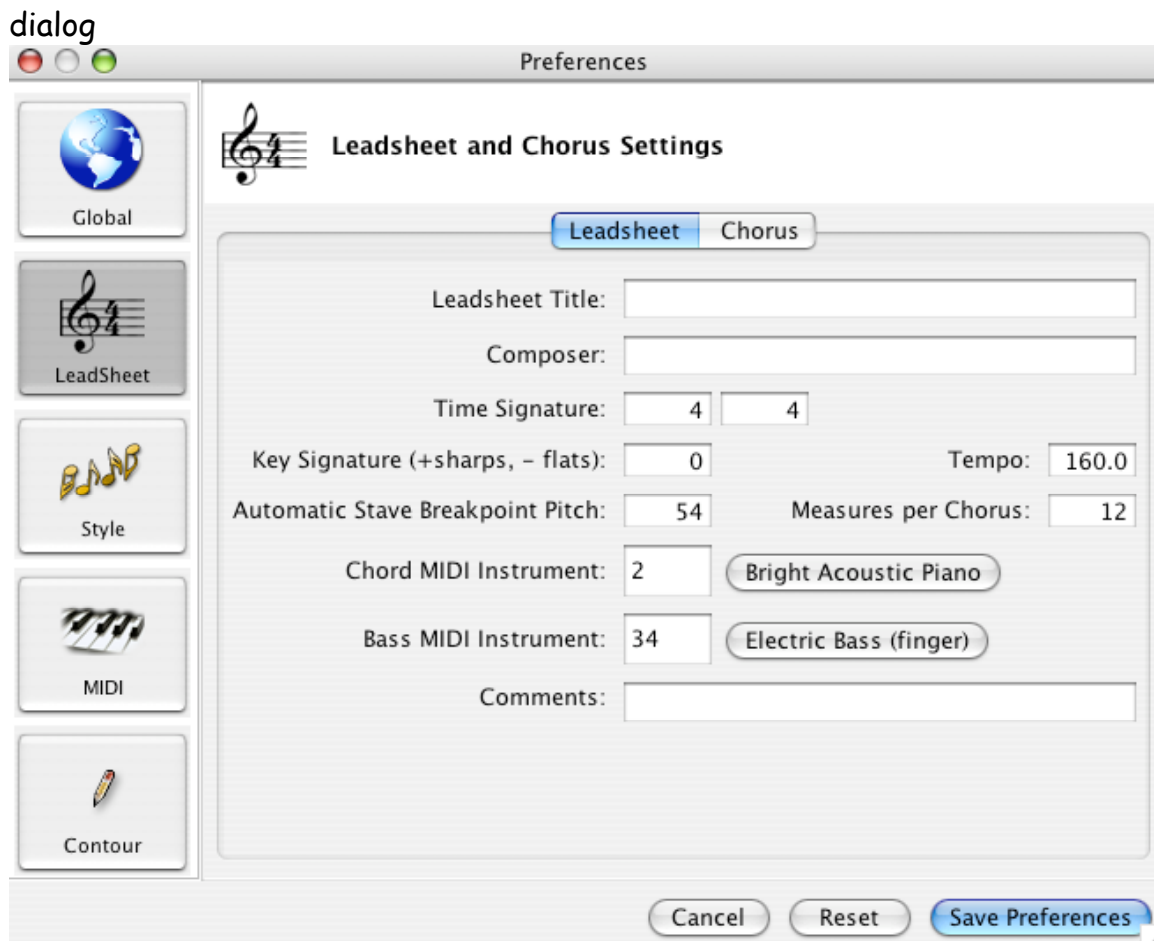


25. To change the time signature, you may drag up or down over the existing time signature to scroll through the options.

26. Key signature and other information can also be set using the leadsheet preferences dialog, which is identified by the note symbols icon on the toolbar. Clicking this



opens the following



27. A lead sheet consists of one or more "parts". The intention is that these parts are successive choruses in a solo, and they are assumed to have the same chord structure, so there is currently just one chord part for all choruses. Each chorus shows as a separate tab on the top of the window. When the piece is played, all choruses are played in succession. Below the third chorus has been selected.

Textual Entry

Chorus 1 Chorus 2 Chorus 3

Style: swing

F13

2 Bb9 Bo7 3 F13 4 Cm9 F13

To add a chorus, press the button with this icon:



To delete a chorus, press the button with this icon:



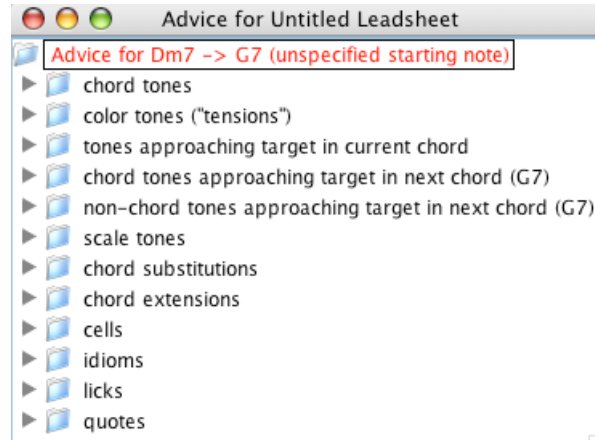
28. To get **advice** for melodies over a chord, a single slot must first be selected. *If multiple slots are selected, advice will intentionally not function.*

2 Dm7 G7 3 CM7

29. With a single slot selected, press the left light bulb icon on the toolbar.

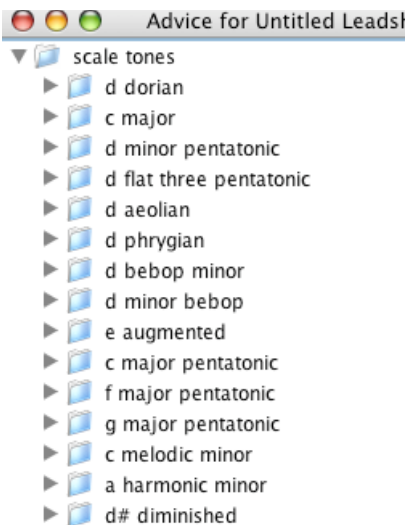


This will open the Advice menu for that slot. (**Note:** To get Advice, a *single* slot only must be selected. If there are multiple slots, nothing will happen.)

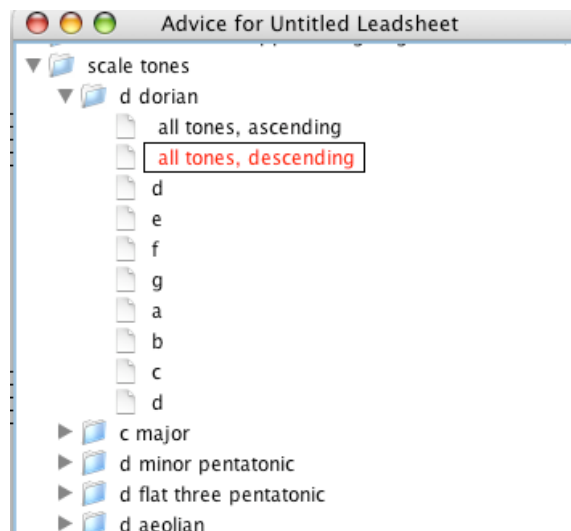


Any of the folders may have sub-folders that organize the material. Some of the folders may pertain only to the first chord, others to two chords in succession.

30. Selecting an item that is not a folder will introduce melody notes to the lead sheet. For example, suppose we select the **scale tones** item. It lists several scales that can be used over a Dm7. (These are determined by the vocabulary file, and can be changed at the user's or instructor's discretion.)



31. Suppose we select d dorian, then "all tones descending".

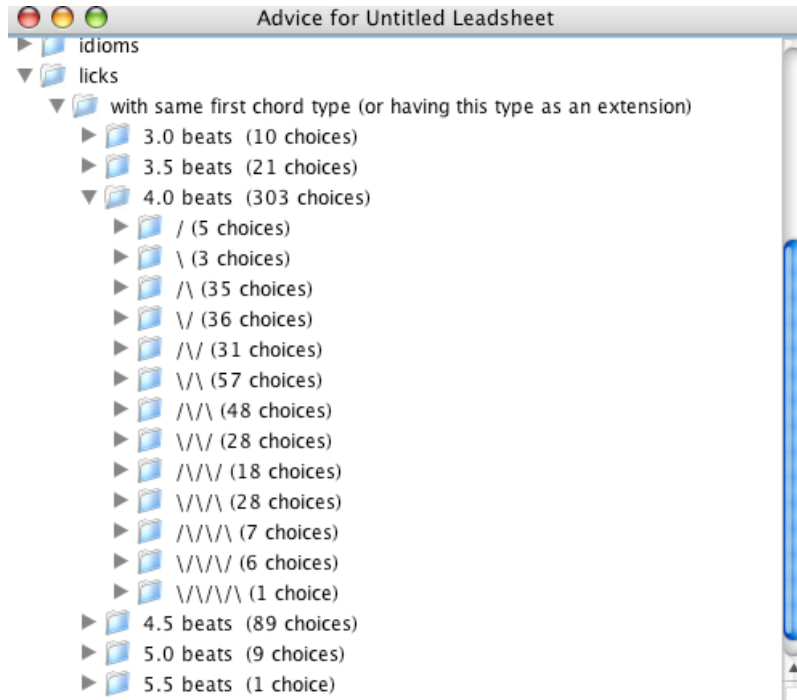


32. The descending scale will appear in the lead sheet and the notes will be selected.



33. At this point we can move on to focus on another slot, make a different choice from the menu, or press x to delete the selection. Let's assume the latter.

34. Again making sure that a single slot is selected, select the *licks* item from the Advice menu and open the sub-folder therein, then the folder showing 4.0 beats.



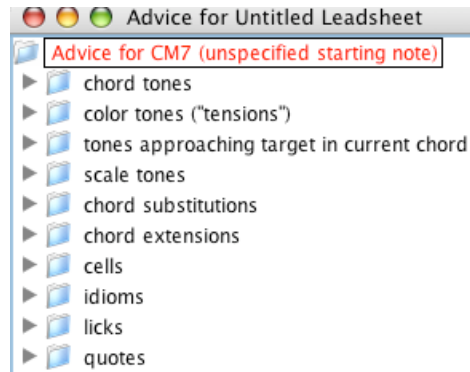
35. The slashes and back-slashes are used to indicate the *shape* of the lick, where shape is defined by the up and down sub-sequences. Let's choose the one marked  $\backslash /$ , which stands for down-up. We get a menu of licks, any of which can be tried, until we find one we like. For example, in this particular instance the second lick looks like the following.



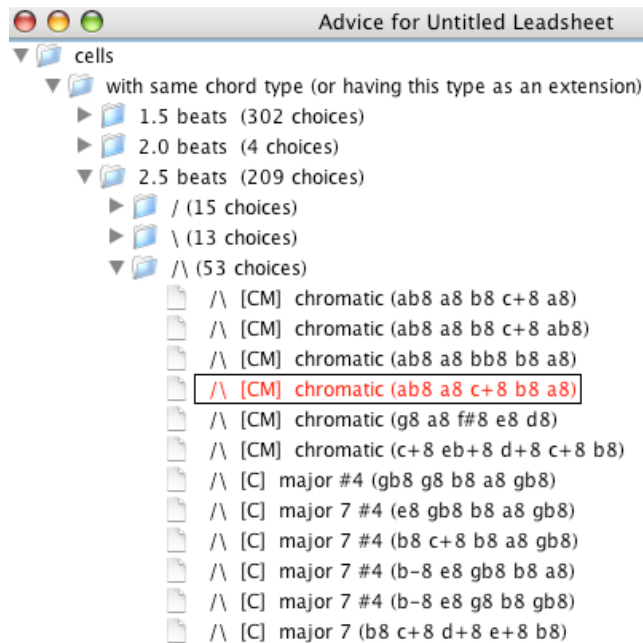
36. Once the notes of the lick have been entered on the lead sheet, we are totally free to modify them. For example, we could select the last two notes and reverse them by pressing / (for Reverse Selected Melody), giving the following.



37. Now select the first slot in measure 3, the *CM7* (C major 7) chord. Notice that the Advice menu changes to indicate the new chord.



38. Open the *cells* (sequences over a single chord) folder, and select a cell with 2.5 beats, shape /\ (up-down).



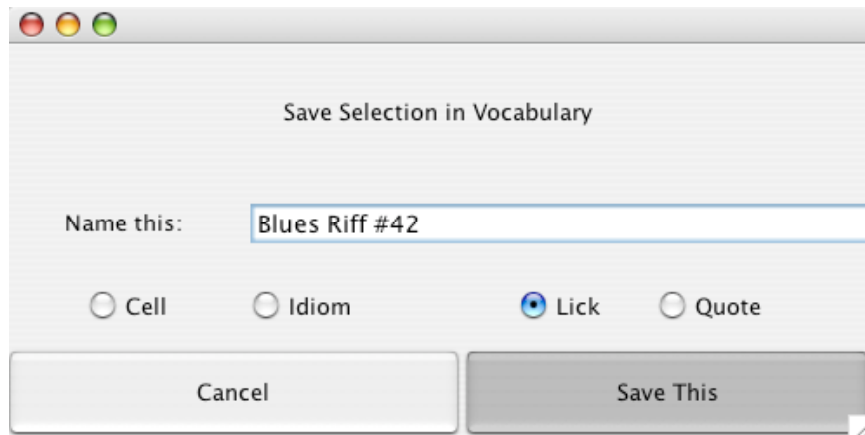
39. The overall result, after this cell has been entered, appears on the lead sheet as shown.



By continuing in this fashion, we can create a solo for any chord sequence. Of course, we do not have to use licks and cells at all; we can do everything with individual notes.

40. Suppose we have constructed a particularly cool sequence that we want to save as a unit for future reference. Select that sequence, then press **u**.

A dialog will open that appears something like the following, and we've typed in the name we wish to give it. Names need not be unique, and have no significance other than mnemonic or informative.



41. At this point, we can either save the sequence as a lick, or cancel. Or we can save it with any of the other attributes: cell, idiom, or quote. The following distinctions are made:

**Cell:** Associated with just the first chord

**Idiom:** Like a cell, but something well-known or clichéd

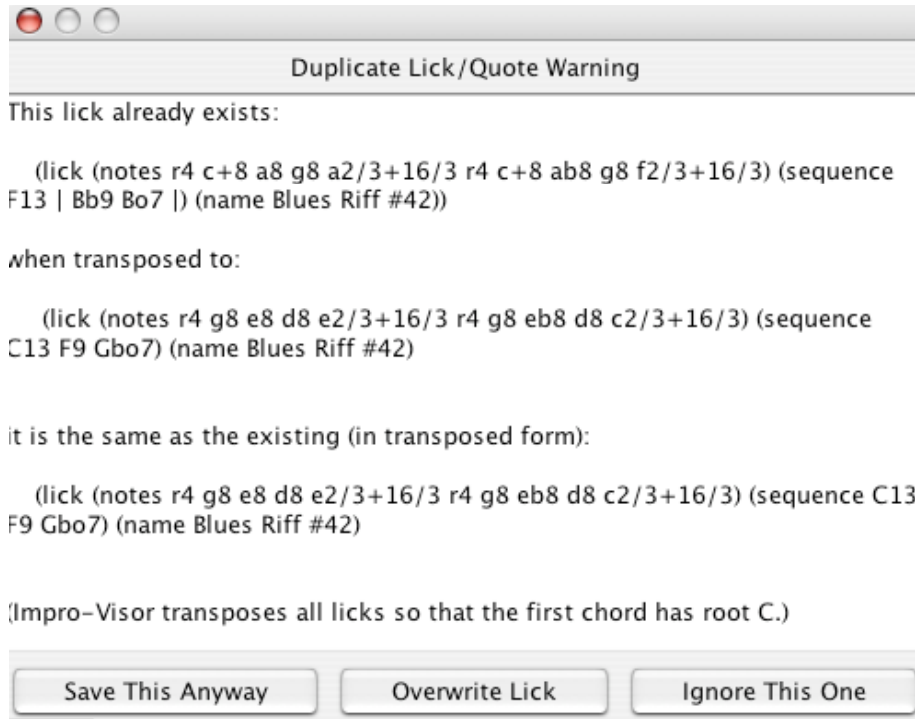
**Lick:** Associated with one or two chords

**Quote:** Like a lick, except from a known tune or solo

These categories are subjective and discretionary on the part of the user.

42. Suppose we try to save the lick again. The following dialog will appear. The reason we want to avoid saving licks more than once is that they take up space in the vocabulary, which can slow things down. So it is best to select ignore.

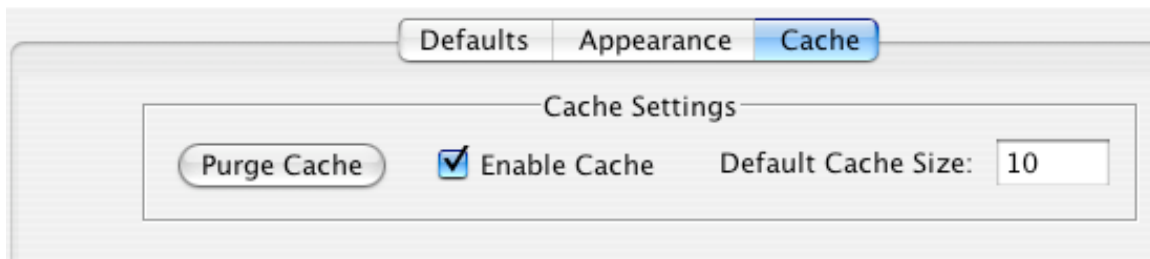




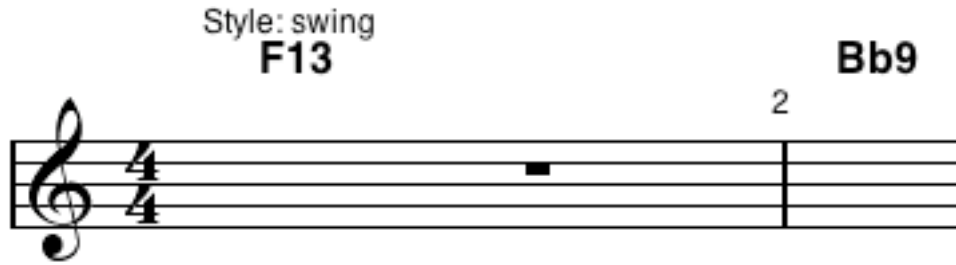
43. Once a lick has been saved, it becomes a part of the vocabulary as Advice and can be used in any key. Impro-Visor does the transposition for you. However, Impro-Visor caches the menu structures that it creates, so you might not see your lick immediately in the menu. The cache can be purged through the Global Preferences menu, which is opened by the icon with the check boxes, selecting Global, then the Cache tab.



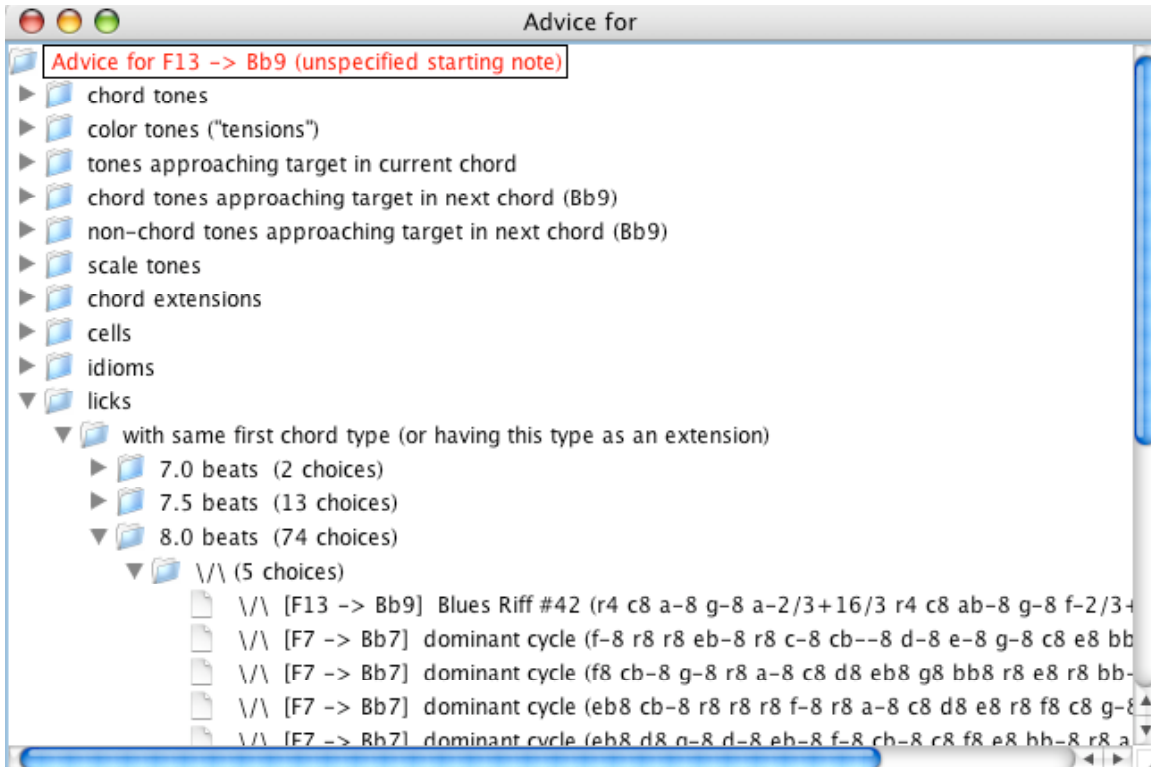
### Global Program Settings



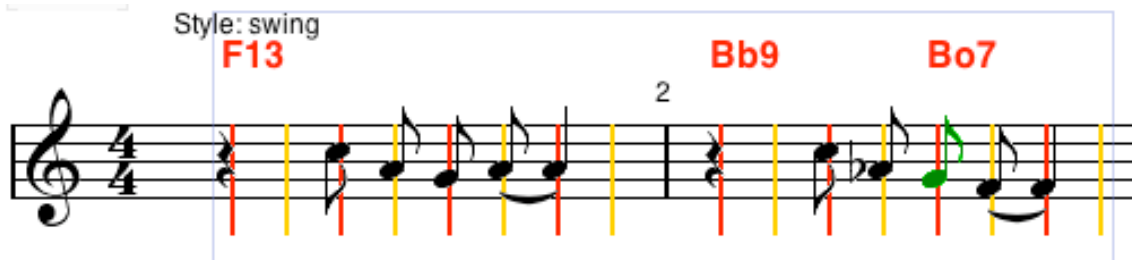
44. If we purge the cache and close the global preferences dialog, then open advice with a note b entered at the start of the F13 Bb9 chord sequence:



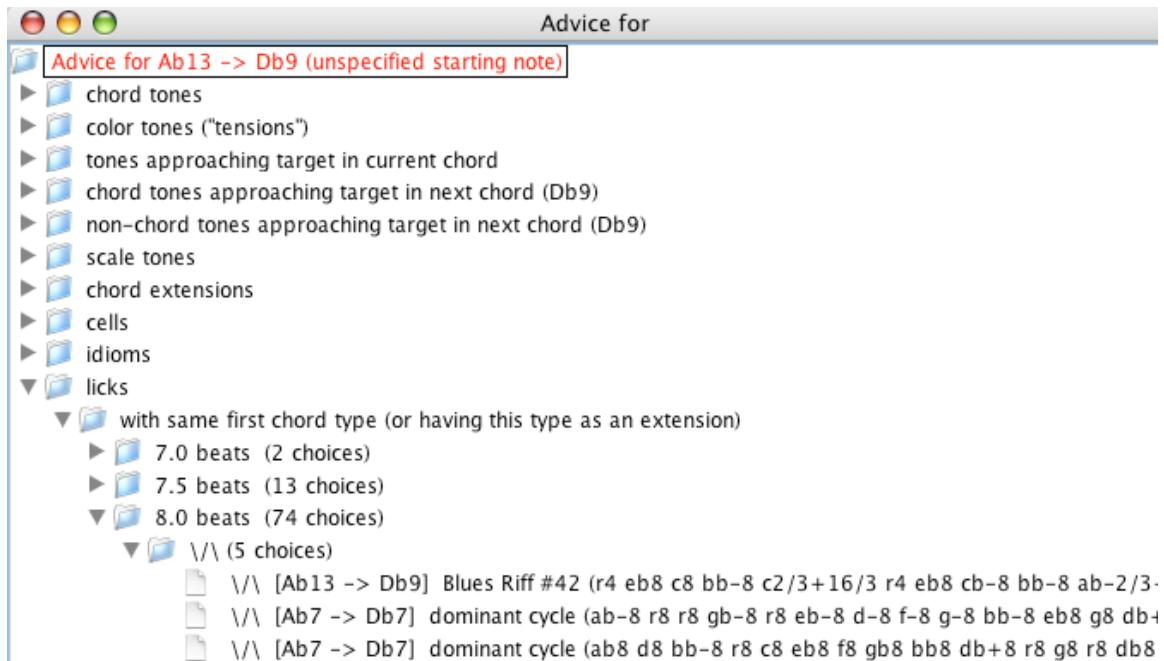
we will see our lick in all of its glory:



45. Selecting that lick will enter it on the sheet.



46. Suppose, on the other hand, that our chord sequence was a transposition of the original chord sequence, such as Ab13 Db9. Then our lick would appear in transposed form in the menu



and will be entered that way on the lead sheet if we select it.

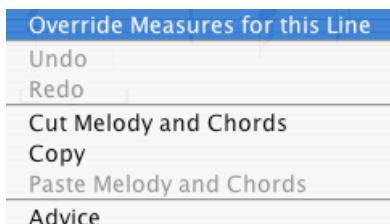
Style: swing

Ab13 Db9 Do7

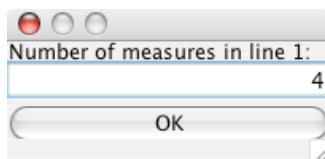
2

Note that it may be necessary to transpose it up or down to the proper octave, by pressing the **t** or **g** keys.

47.Impro-Visor attempts to layout the melody with reasonably uniform spacing, by controlling the number of measures on each staff.. If you wish to dictate the exact number of measures on a staff, control-click on the staff. The following menu should appear:

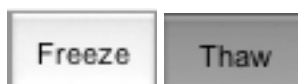


Select *Override Measures for this Line*, to get:



and set the number of measures you want for that staff line.

48. Impro-Visor may change the layout of a staff line subsequently, unless you **freeze** the layout. Click the green button marked Freeze to do this. To thaw the layout, click the same button, which has since turned red. When frozen, the layout information is saved in the leadsheet file as meta-data.



49. To change the visible slot spacing, either drag the edge of the bracket under the staff, or type the number of slots you want to show (currently must be 1, 2, 3, 4, 5, 6, or 8, but not 7 or 9). For example, use 4 if you want sixteenth notes (4 per beat), 3 if you want eighth-note triplets. Currently Impro-Visor divides a beat into 120 slots, so the number you choose must divide 120 evenly.
50. The playback of the entire lead sheet can be exported as a MIDI file, which can be played on a stand-alone MIDI player. Simply select from the file menu whether you want to export everything, just the chords, or just the melody.
51. Another possible reason for exporting is to import the file to another software tool, for purposes of other types of editing. If you do this, it is probably a god idea to set the swing value (in the lead sheet preferences dialog) to 0.5. Otherwise the notation will show the tune as rendered for playback, rather than as notated.
52. Using the Lick Generator

The lick generator will generate licks automatically without referring to the database. Moreover, it is not limited to at most two chords as the database currently is. Generated licks may be sometimes inferior, but you can cycle through them rapidly until you find one you like.

To open the lick generator, select a chord or chords over which you wish to generate a lick.



The lick generator opens with lots of buttons and numbers, but you can ignore most of them for starters. Simply press the *Generate* button below the small window in the upper left. If you don't like what you get, press again.

Lick Generator

Grammar Help

Pitch: Max 82, Min 60; Interval: 6, 0; Duration: 8, 8

Quarter Notes: 8; Rest Prob.: 0.1; Leap Prob.: 0.01

Weights: Chord Tone 0.7, Scale Tone 0.05, Color Tone 0.25, Chord Tone Decay Rate 0.0

Scale: Type: Use First Scale; Root: C

Grade: 1 2 3 4 5 6 7 8 9 10; Save Label: <Generated Lick>

Clear All Fill  Auto-fill Weights

F13 probabilities:

C	C#	D	E <sub>b</sub>	E	F	F#	G	G#	A	B <sub>b</sub>	B
0.7	0.0	0.7	0.7	0.0	0.7	0.0	0.7	0.0	0.7	0.05	0.25

B<sub>b</sub>9 probabilities:

C	C#	D	E <sub>b</sub>	E	F	F#	G	A <sub>b</sub>	A	B <sub>b</sub>	B
0.7	0.0	0.7	0.05	0.25	0.7	0.0	0.05	0.7	0.0	0.7	0.0

B<sub>o</sub>7 probabilities:

C	C#	D	D#	E	F	F#	G	G#	A	A#	B
0.0	0.05	0.7	0.0	0.05	0.7	0.0	0.05	0.7	0.0	0.05	0.7

Below are some samples generated by the Lick Generator in this particular instance.

Style: swing

**F13** **B<sub>b</sub>9** **B<sub>o</sub>7**

Style: swing  
F13

Bb9

Bo7

2 3 3

Style: swing  
F13

Bb9

Bo7

2 3 3

53. Note coloration is an optional aid to the composer. In the default settings,  
Impro-Visor automatically colors the notes in this order:

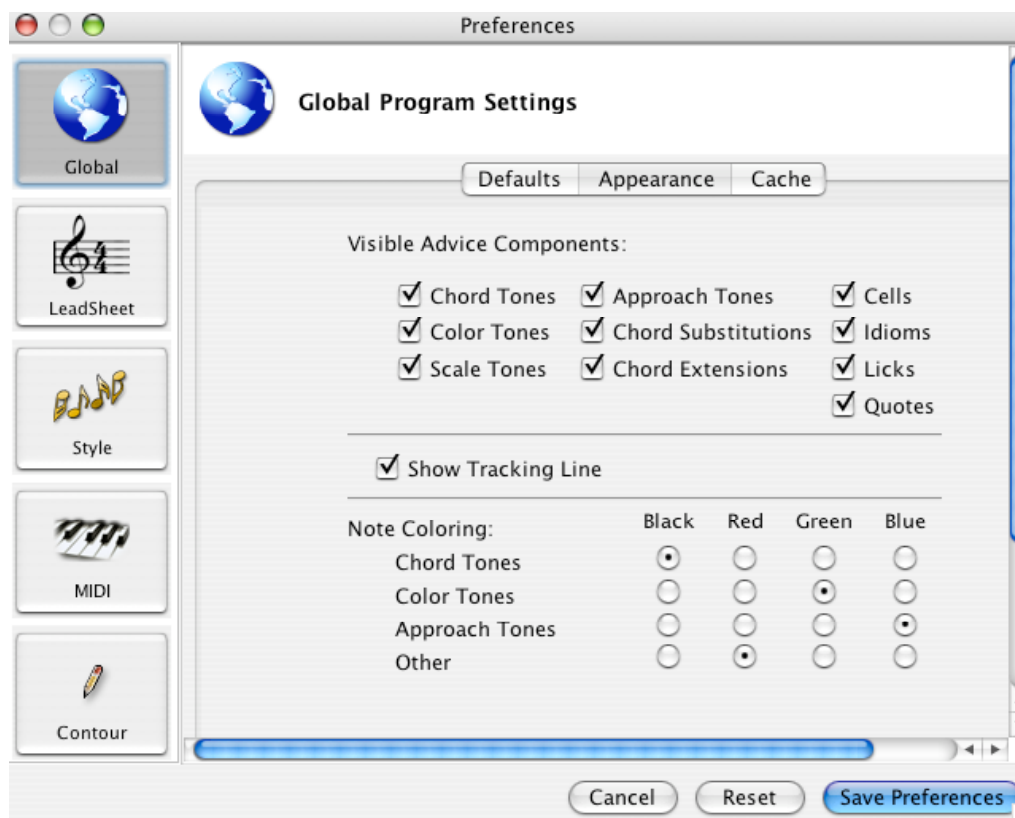
**Black:** chord tones

**Green:** color tones (or "tensions"), tones that are in common extensions of the chord, as specified in the vocabulary

**Blue:** approach tones to chord tones

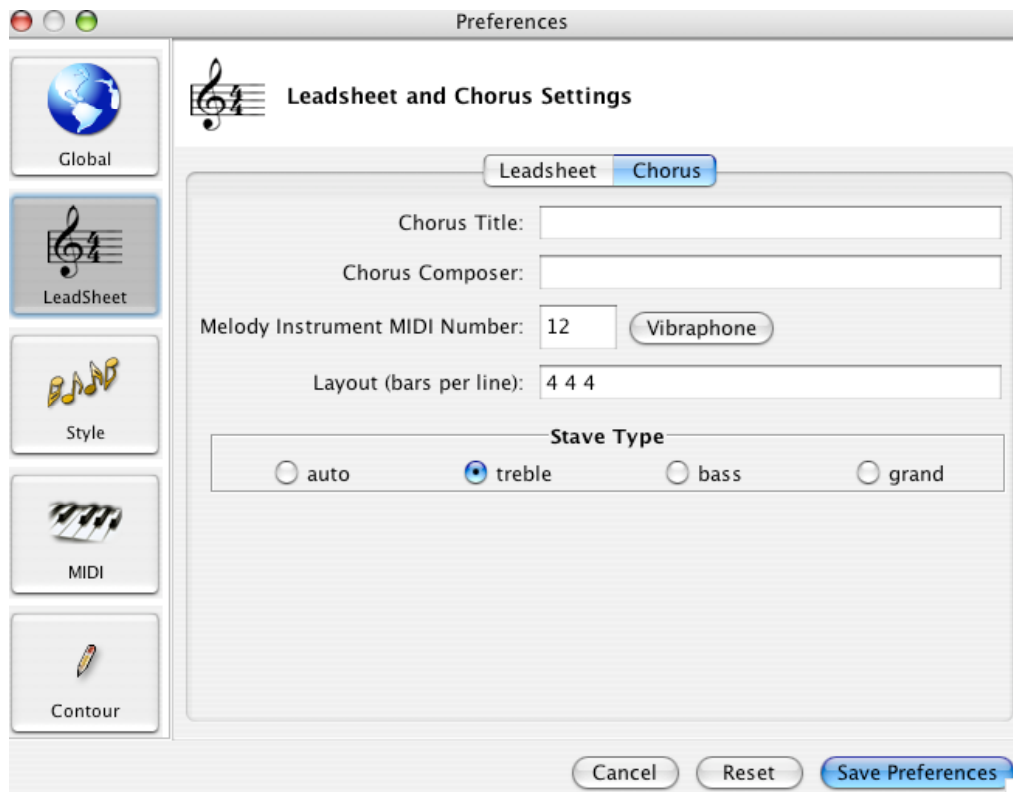
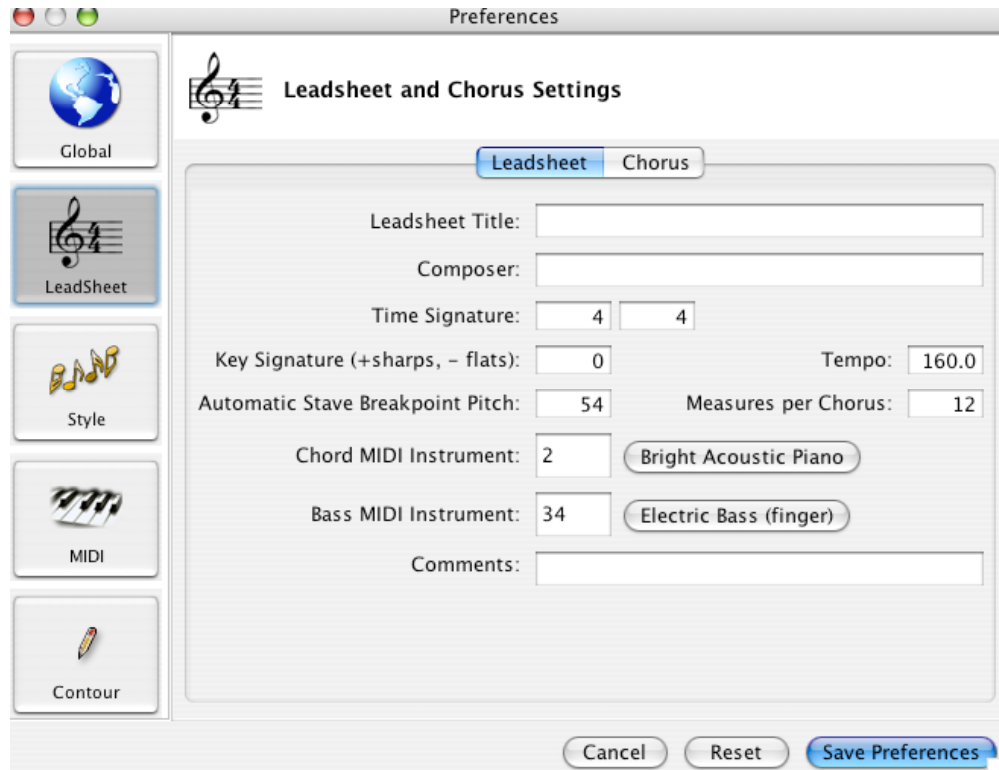
**Red:** none of the above

These can be changed in the *Global Appearance* menu, so that, e.g. all notes are black.



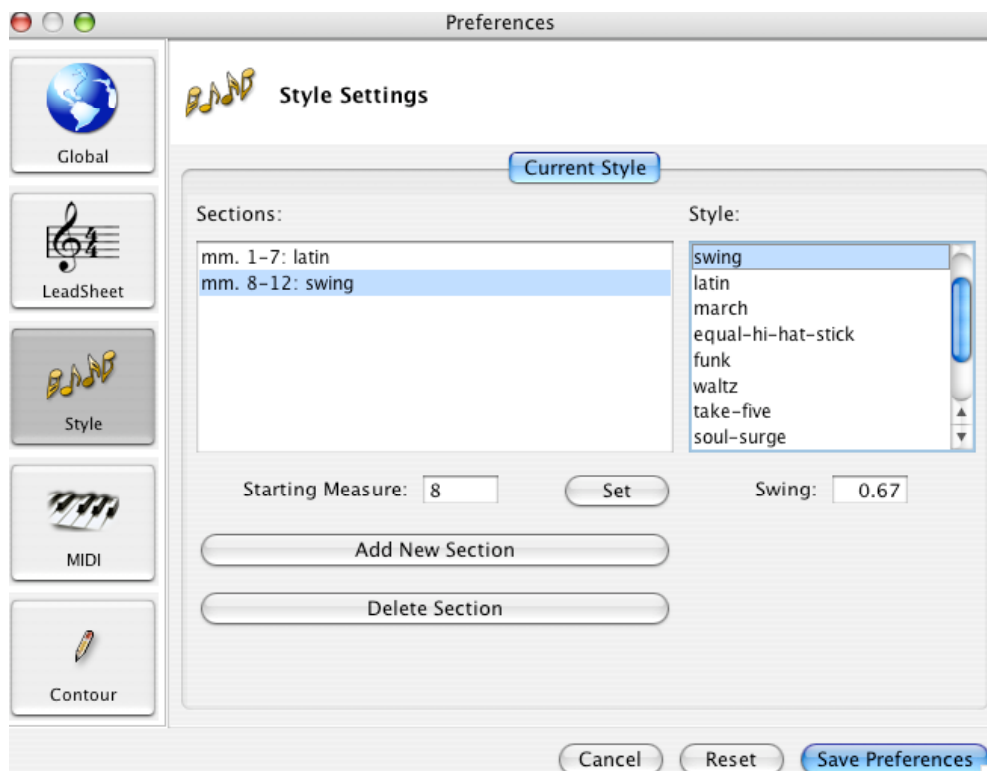
54. Instrument choices can be made through the Leadsheet Settings menu for the bass and chord instrument, or through the Leadsheet Chorus menu for the melody instrument:



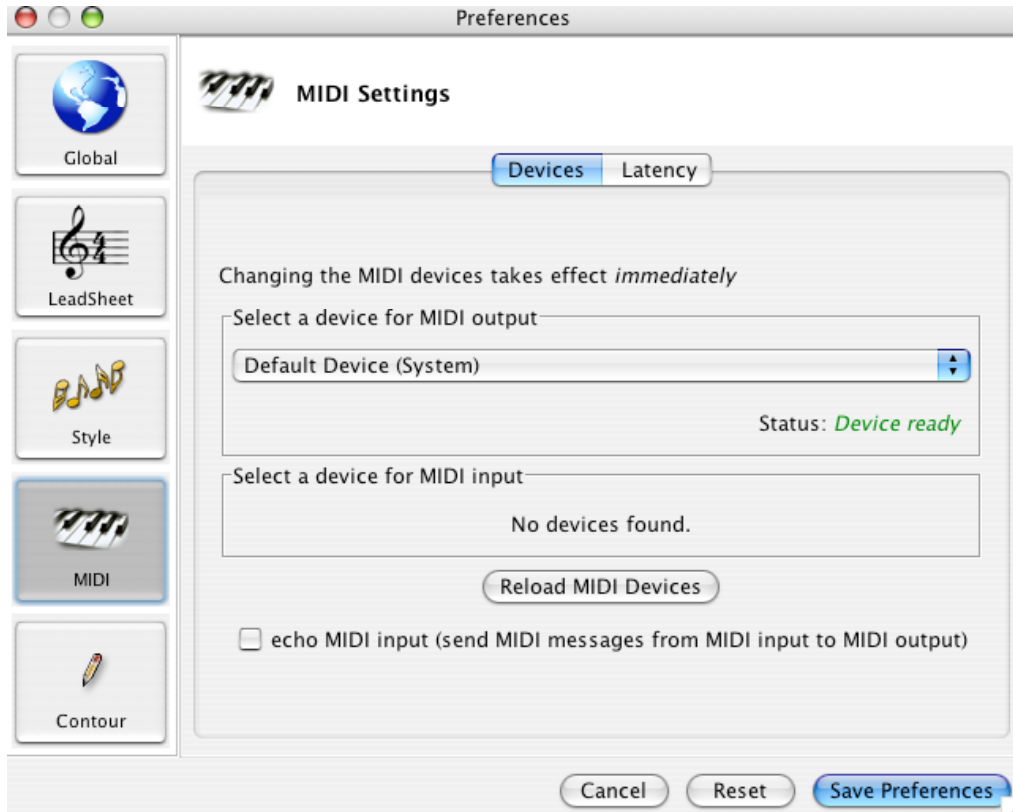


Style choices are made through the Style preferences menu. Currently the set of styles is quite limited. We welcome contributions of additional styles.

There is a brief tutorial on how to construct styles in the Help menu. Note also that a given piece can have multiple styles in various measures. These are also set in this menu.



55. External MIDI devices are controlled through the MIDI Preferences menu.



For the Macintosh OSX, it is necessary to use a third-party product such as plumstone to control external MIDI devices, as Java does not include proper support for this at the moment.

56. The Contour feature allows a melody to be drawn on the screen. It is automatically adjusted to conform to chords and scales. Thus this is a feature that could be used by the musically unsophisticated to draw a melodic line with a particular shape. To use it, click the pencil icon:



Then drag the mouse over the part of the staff at which a melody is desired, moving up and down as you go. The notes are determined by the slot spacing.

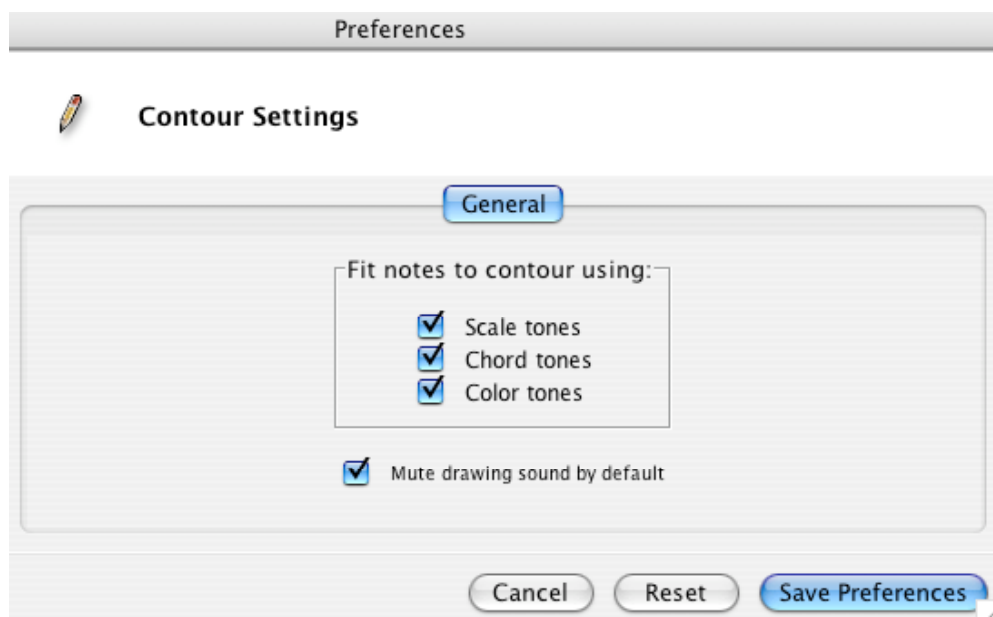
Style: latin

**F13**

**Bb9**

**Bb**

The contour drawing behavior is controlled by its own preferences:



57. Default settings are determined by the Global Defaults menu:



## Global Program Settings

Defaults
Appearance
Cache

Default Stave Type:  Treble  Bass  Grand  Automatic

Default Style:  Default Tempo:

Default Vocabulary File:

Default Bass Instrument:  Electric Bass (finger)

Default Chord Instrument:  Acoustic Grand Piano

Default Melody Instrument:  Vibraphone

Chord Distance Above Root:  Max. Notes in Voicing:

Default Volumes:

All

Entry

Bass

Drums

Chords

Melody

This concludes the Impro-Visor tutorial for the present. We plan to extend it to demonstrate other features in the near future. Please contact us if anything is unclear. For additional information, visit the Impro-Visor home page:

<http://www.cs.hmc.edu/~keller/jazz/improvisor>

**Acknowledgment:** The software described here were designed and developed by Martin Hunt, Stephen Jones, Bob Keller, David Morrison, Belinda Thom, David Wolin, and Steve Gomez (Dartmouth College). This project was supported by a Mellon Foundation Faculty Enhancement grant to Professors Keller and Thom, and by the National Science Foundation REU Program under grant Award No. 0451293 to Harvey Mudd College.