

Impro-Visor Tutorial

keyed to Impro-Visor Version 4 and later

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1. Copyright and Trademark Information

- This document is copyright (c)2009-2011 by Robert M. Keller, all rights reserved.
 - The Impro-Visor logo is a registered trademark and copyright 2010-2011 by Robert M. Keller..
 - Impro-Visor itself is free, open-source, software, licensed under GNU GPL v2 and copyright (c)2006-2011 Robert M. Keller and Harvey Mudd College.
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2. Acknowledgment

- Impro-Visor was designed and developed by Bob Keller, together with Martin Hunt, Stephen Jones, David Morrison, Belinda Thom, David Wolin, and Steve Gomez (Dartmouth College), Jim Herold (Cal Poly Pomona), Brandy McMenamy (Carlton College), Sayuri Seojima, Emma Carlson, Stephen Lee, Jon Gillick (Wesleyan University), Kevin Tang (Cornell University), John Goodman (Open University in the U.K.).
 - 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, and by a grant from the Baker Foundation.
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3. Support

- The best way to get **free** support is to join the user's group:
- The group moderator is also the project director, and author of this document, and I will try to help you.

4. Purpose

- Impro-Visor is a music notation tool designed to help improvising musicians study chord progressions ("changes") and construct monophonic solos over them.
 - Impro-Visor has a number of additional features, such as auto-accompaniment based on chord progressions. Some features are in various stages of research and development. As such, Impro-Visor is both a usable educational product and an on-going research project.
-

5. Downloading

There are only two **official** sources for the software:



<http://sourceforge.net/projects/impro-visor/>

Go the **Files** > **Software Distribution** folder

6. Before Installing

- You must have already installed Java version 1.5 or later (1.6 or later preferred).
 - There is no way that Impro-Visor will run without Java.
 - For MacOS X, this means that you have operating system version 10.5.5 or later.
-

7. Releases

- Generally, it is best to select the most recent release.
- Choose the installer for the platform of interest:

 Windows

 MacOS X

 Linux

 Generic (any Java Platform, no installer)

- Usually this will be determined automatically from your browser. On SourceForge it looks like this:



- Click the green button, or **View all files** for more selections.
-

8. Installing

- a. Double-click the installer to install.
 - b. The installer will take you through the necessary steps.
 - c. Once you have installed, Impro-Visor is launched by the Dog icon.
 - d. Do not try launching by running the installer again.
-

9. The No-Installer Version

- There is a generic version packaged as a .zip file.
- This version does not include an installer or launcher.
- Java 1.5 or later is still required.
- Once the files have been unzipped, double-click the **improvisor.jar** file to launch, or launch from a command-line:

```
java -jar improvisor.jar
```

10. Release Folder Contents

A release folder typically contains these items:

LICENSE.txt copy of the license

README.txt general information

Impro-Visor launcher

uninstaller

Improvvisor.jar (launched by java, or by double-click)

leadsheets leadsheet files

styles style files

vocab vocabulary files needed to run the program

styleExtract sample for style extraction

11. Launching

To launch the program, double-click the Impro-Visor dog icon, or the .jar file if you are using the no-installer version.

12. Splash Screen

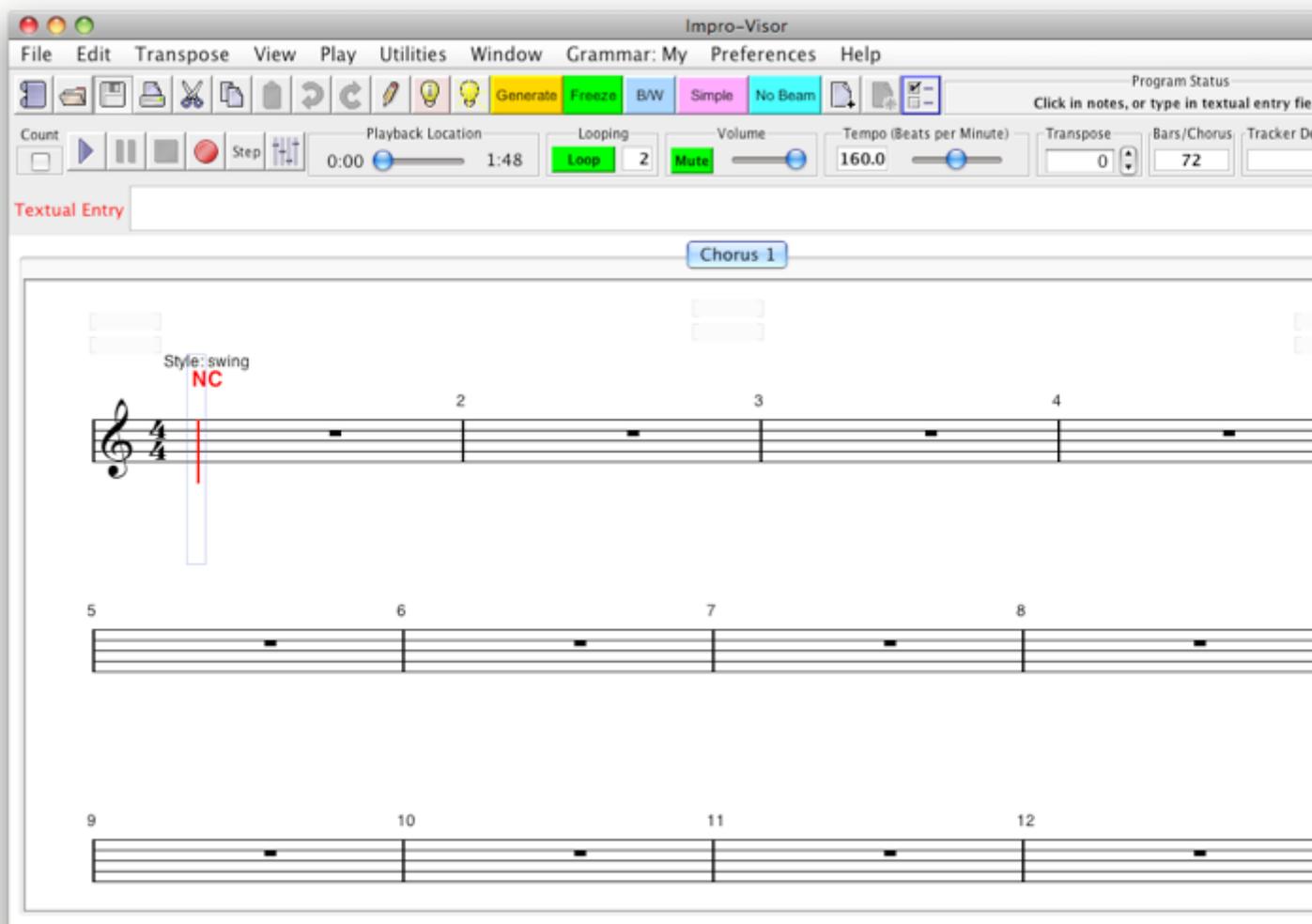
Once Impro-Visor has been launched, the splash screen shown indicates that Impro-Visor is loading the vocabulary and style information.



Impro-Visor Splash Screen

13. Initial Leadsheet Screen

The initial main screen shows a blank leadsheet. A leadsheet consists of a single melody line with chord symbols above. There is an option to use bass clef, or a grand staff with two clefs.



A blank leadsheet

14. Loading a Leadsheet

- a. From File > Open (or **key control-o**) select file `_tutorial.ls`

- b. The result should appear as shown below.
- c. The chord symbols are F13, Bb13, Bo7, etc.
- d. The notes are the melody line.

A partially-complete leadsheet

15. **More Leadsheets**

- A larger set of leadsheets, including user contributions, can be obtained from the Yahoo! Group:
<http://launch.groups.yahoo.com/group/impro-visor/>
 - These leadsheets are not distributed on SourceForge and are not governed by the GNU GPL.
-

16. Playing a Leadsheet

- a. Check your sound by playing the leadsheet:
- b. Press **key i** or this button



to play from the start.

- c. To **stop** playing, press **key k** or the button



17. Playing with a Count-In

- Click the box marked *Count* to have a count-in before playing the leadsheet.
- Count-in applies only only to playing from the start, not for playing individual sections.
- Count-in is currently two measures long.
 - For 4/4 time, the count is jazz style: 1-3-1-2-3-4.
 - For other times signatures, each beat is hit, with the 1 being differentiated by a different tone.



Count-in check box

18. Tempo Slider

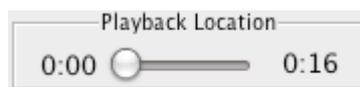
Control the tempo by using the slider provided, or simply type in the number of beats per minute.



Tempo slider

19. Playback Location Slider

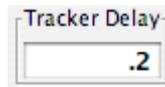
- The location slider indicates the position of the playback relative to the entire leadsheet, including all choruses.
- It can be controlled manually to move around within the leadsheet.



Playback Location Slider

20. Tracker Delay

- When a selection is played, there is a green vertical tracking line that moves along from note to note.
- On some systems, the line starts ahead of the sound.
- This is a function of the MIDI playback, which is not under the direct control of Impro-Visor.
- To delay the line from the sound, enter the number of seconds, in decimal notation in this field.



Tracker delay field

21. Got Sound?

- Impro-Visor emits sound only from a MIDI player or device.
- If you do not get sound, try these:
 - a. Check that your volume is turned up and not on mute.
 - b. Check your Audio/MIDI control panel.
- If you want the sound from the **built-in** Java synth, please disconnect any external MIDI devices.
- If you want the sound from an **external** MIDI device connected, you will need to select it from preferences.
- If using an *external* device with a Mac, you will need to install Mandolane MIDI SPI first to use it: <http://www.mandolane.co.uk/>

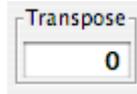


Use Mandolane for *external* MIDI on MacOS X

22. Playback Transpose

- The transpose field transposes the **playback** up or down the indicated number of semitones from what is written in the notation.
- The use envisioned is for transposing instruments.
- For example, for a Bb instrument (trumpet or tenor sax), use -2 and enter notes as if you were writing for that instrument.

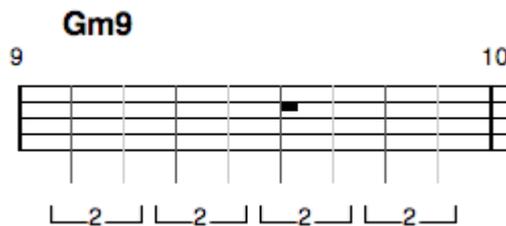
- For an Eb instrument, use +3.
- You need to adjust the key signature manually.
- Transpose does not change the notation, just the playback.



Playback transposition field

23. Positioning the Cursor on the Staff

As you move the mouse over the staves, you will note a some vertical lines become highlighted, and there are brackets beneath, as shown:



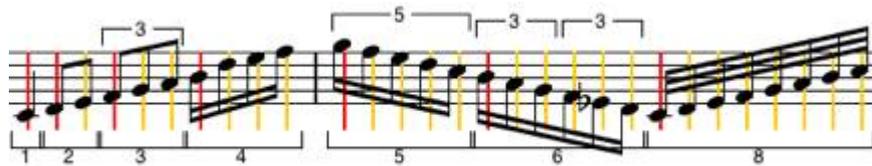
Slot display

24. Slots

- We call the vertical lines that you see above **slots**. They correspond to temporal sub-divisions in the music.
- Slots are places where notes can start.
- These notes can be clicked in using the mouse.
- (Notes can also be typed in, but we will cover this later.)
- By default, there are two slots per beat (as shown by the bracket 2), so the duration between one slot and the next is that of an **eighth note**.
- There are actually 120 slots in one beat, but only a few of them typically show at a given time, to avoid clutter and confusion.

25. Changing the Slot Spacing

- To enter triplets, sixteenth notes, etc., the slot spacing needs to be changed.
- By pressing a numeric key, one of 1, 2, 3, 4, 5, 6, 8 the slot spacing changes to that many slots showing per beat.
- Thus for eighth-note triplets, press 3 and enter the notes or rests. For sixteenth notes, press 4 and enter the notes as shown.
- You can always use more slots than the necessary number, just by skipping over slots on which notes do not start.



1,2,3,4,5,6, and 8 slot spacing settings.

The brackets on top are the triplet brackets. The brackets below show the slot spacing.

26. Selection

- By **selection**, I mean a region on the staff of one or more slots.
- Various user actions pertain to the current selection.
- To extend the selection to include more slots, shift-click the mouse at another slot.
- That is, click the mouse while holding down the shift key.
- The slots in the current selection should be highlighted.
- The figure below shows the result of shift-clicking at the end of the second measure.

Style: swing
F13 Bb13 Bo7

Selection highlighted

27. Playing Just the Selection, or from the Selection to the End of Chorus

- To play only the selection, press the **return key**.
- As before, to **stop** playing, press **key k** or the stop button.
- You may also press the pause button to pause, then resume:

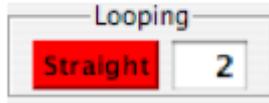
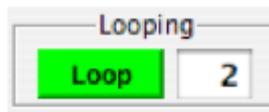


28. Playing from the Selection to the End of Chorus

To play from the start of the selection to the end of the chorus, press **shift-return**.

29. Looping Playback

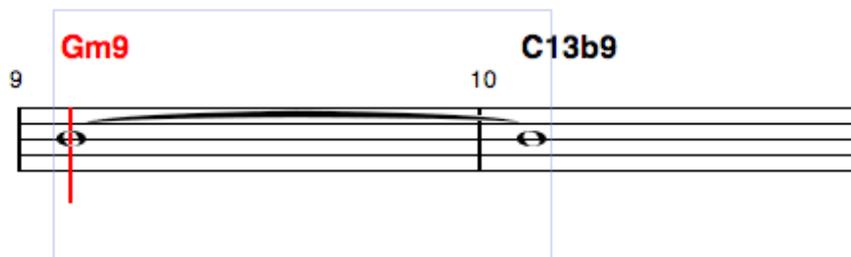
- To loop the current selection or chorus in a loop, press the green **Loop button** to have the playback repeated the desired number of times.
- Looping begins the *next* time you play.
- If you set the times to 0, it will loop until stopped (with the stop button or **k** key).
- Press the **Straight button** to not loop any further the next time playing occurs.



Toggling the Loop button

30. Entering Notes Using the Mouse

To enter a note using the mouse, click somewhere on the staff near the first slot in a bar. You should get a note something like the following:



First note clicked (bar 9)

31. Controlling Sound Volume and Muting

- You should hear your note in the context of the chord being played along with it.
- If you do not want to hear the note, you can silence everything by toggling the Mute button.



Mute button and volume control

- You can control the volume of individual instruments and note entry by opening the **mixer panel** using this button:



Mixer panel open button

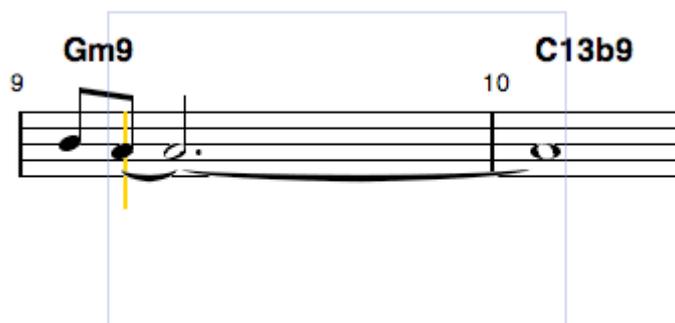
- The **mixer sliders** control the volume of each instrument separately:



Mixer panel

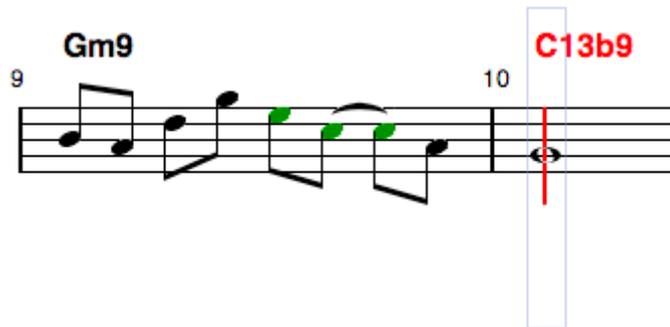
32. Entering Shorter Notes

- If you did not want a note as long as Impro-Visor gives use, this is easy to change.
- Impro-Visor is just trying to make it faster to enter notes, by not requiring you to enter a duration for each note separately.
- To see how this works, click on the next slot, to get a display similar to the one below:



One note clicked in

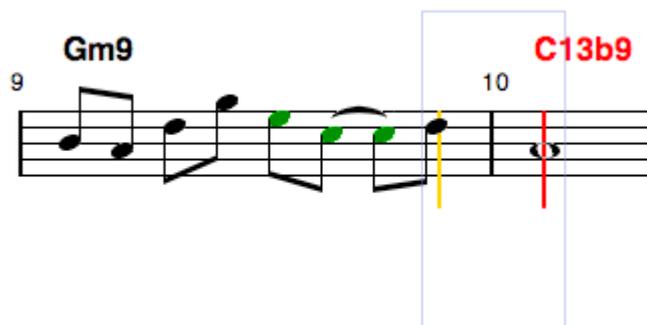
- Continue entering notes with different durations, until you have 7 or 8 notes, something like what is shown:



Several notes clicked in

33. Making corrections

- If at any point you do not like what you entered, just go back and click over it.
- Impro-Visor will **never** put more than one note in a slot.
- Moreover, as you click a different pitch in a slot, then **duration** of the note will remain the same.



Pitches were modified, but durations remain the same.

34. Note Beaming

- Impro-Visor renders eighthnotes-, sixteenth-notes, etc. with beams automatically.
- There is no user specification of beam usage or placement.
- Currently dotted note combinations, such as dotted-eighth with sixteenth, are not beamed.
- Beams can be turned on and off by the button labeled **No Beam**.



toggling note beaming

35. Note Entry Parallax Correction

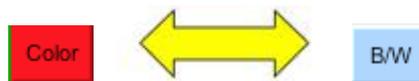
- The parallax text field in the menu bar adds the indicated number of pixels in the vertical dimension to your click position when entering notes.
- This can be used to accommodate variations in monitors, monitor positions, and tastes.
- Use a negative number to subtract pixels.



Parallax field

36. Note Coloration

- You may notice that notes are shown in various colors.
- These colors have tutorial significance, as explained below.
- If you do not want coloration, you can turn it off by pressing the button labeled **B/W** (for black and white), and toggle it back by pressing **Color**.



Toggle note coloration

- Here is the default meaning attached to the colors, of which there are four:

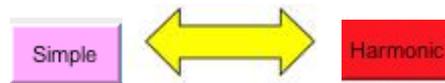
Note Coloration Default Options		
Color	Name	Meaning
Black	Chord-tone	The note is in the current chord.
Green	Color-tone	The note is not in the current chord, but is complementary and compatible with it.
Blue	Approach tone	The note is not one of the above, but approaches a note in one of the above categories chromatically. This is a common device used in jazz.
Red	Other	This note is not one of the above. If it is a

	short note, it might be acceptable as a passing tone or neighboring tone. If long, it might suggest reconsideration, as it will tend to make an aural statement.
--	--

- The user can easily experiment with changing to a different note, for example by using the e (up) and d (down) keys to transpose.
 - Impro-Visor note categorization comes from the vocabulary file.
 - If you disagree with a categorization, it can be changed to suit by modifying the vocabulary.
-

37. Simple vs. Harmonic Note Entry

- Notes entered by point and click are generally *rectified to fit the harmony* upon entry.
- For example, if the current chord is C7 and the b line on the staff is clicked, you will get an B-flat, corresponding to the chord, rather than a B-natural, regardless of how the key signature is set.
- If you prefer simple, rather than harmonic entry, toggle the simple button on the menu bar:



Toggling simple vs. harmonic note entry

38. Undo and Redo

Another way to make corrections is to use the undo feature.

- Pressing **key z** will undo the most recent action.
 - Pressing **key y** will redo what was just undone.
 - Arbitrarily-many steps can be undone or redone.
-

39. Selecting a Slot Without Entering a Note

- To do serious editing with Impro-Visor, you will want to know **how to select a slot without setting or changing a note**.
- This is the most complex editing action in Impro-Visor, and it is different from other software, **so please read carefully**.
- Once you have mastered this move, many other actions will be easy.
- To select a single slot **inside the current selection**, simply shift-click the slot.
- To select a single slot **outside the current selection** is a two step process:

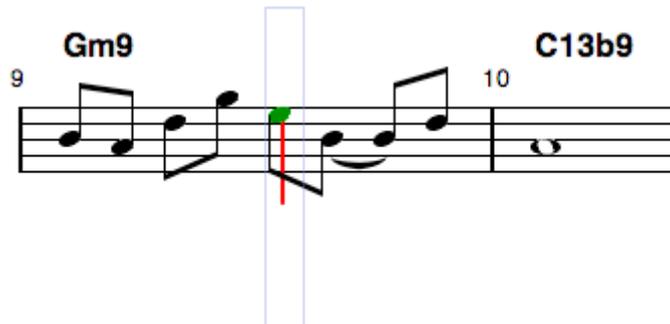
1. Hold the shift key and click on the slot, which extends the selection to that slot, then
2. Click again.

- For example, to click on the e note in the previous diagram, I hold the shift key and click there, then click again.

The first step extends the current selection, while the second reduces the selection to a single note.



Step 1.: shift-click on e slot extends the existing selection to that slot.



Step 2.: shift-click reduces the selection to a single slot.

- Had it been the case that there was no selection initially, only step 2 would have been necessary.

40. Summary of Selection Sequences

Keystroke	Effect
click without shift	enters a note
shift-click, with no current	selects a slot, without entering a note

selection	
shift-click, outside current selection	extends selection to the slot on which you clicked
shift-click, inside current selection	selects just one slot, without entering a note

41. Selecting or Unselecting Everything

- To select everything, press **control-a**.
- To unselect everything, press the **escape key**.

Keystroke	Effect
escape	un-selects everything
control-a	select all slots

42. Adding Rests

- To add a rest, you simply select a single slot, as above, then press the **r key**.
- Rests have characteristics similar to notes. They just have no pitch.
- Impro-Visor may merge adjacent rests together into a single long rest.

- Thus the value of the rest will be that of the note it replaces (or longer, if the note was followed by a rest).
- An alternate way to add a rest is to click on a slot while pressing both shift and control.

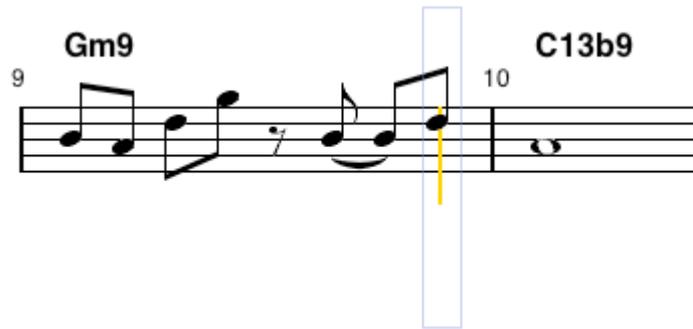
The figure below shows a rest added where the e had been.



Adding a rest using the r key.

43. Lengthening Notes

To lengthen a note, taking away the time from the note that follows, select the note, then press the **x** key.



x key is pressed.



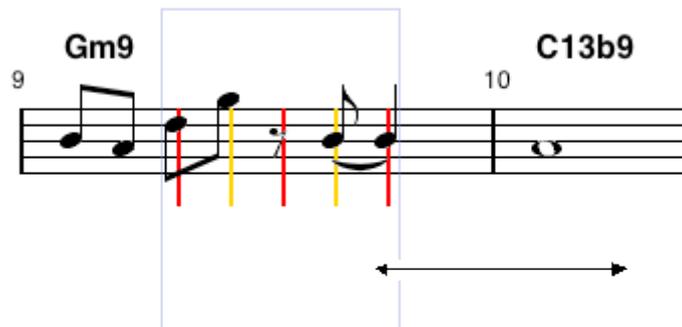
Lengthening a note, by taking time from the note that follows.

Keystroke	Effect
r	put a rest in the selected slot
shift-control-click	select a slot and put a rest there
x	remove the note, adding its duration to the previous note

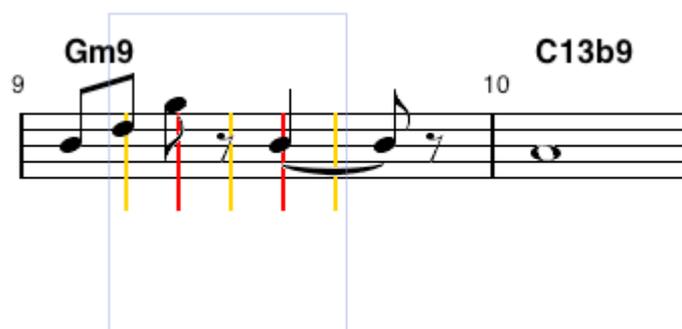
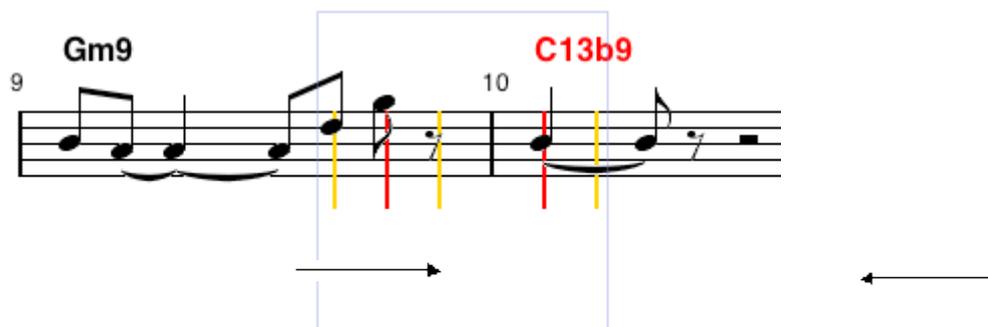
44. Moving a Bunch of Notes

- Notes can be moved by dragging.

- Notes over which dragging occurs will be over-ridden.
- Select the notes to be moved, then drag left or right on any note in the selection.



Notes to be moved are selected

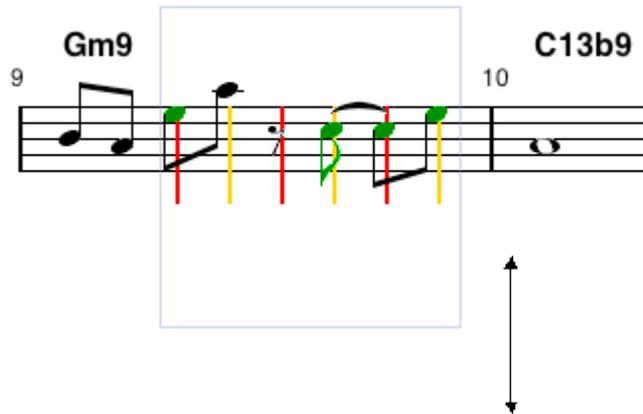


Dragging notes right

Dragging notes left

45. Transposing a Bunch of Notes

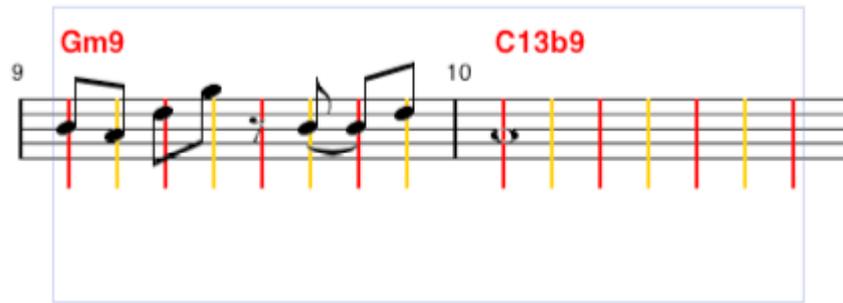
Notes can be transposed uniformly up or down by dragging.



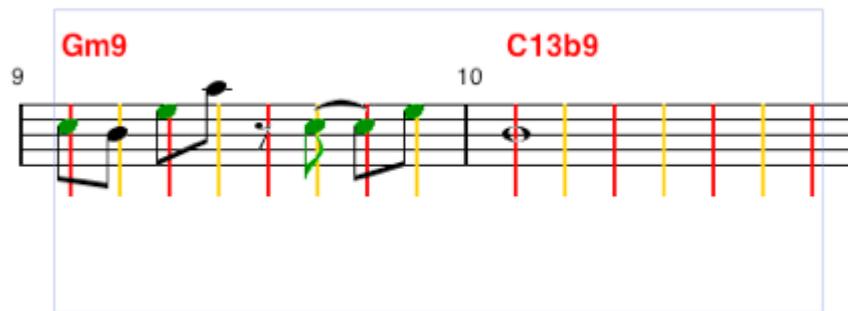
Dragging notes up or down

46. Harmonic Transposition Using Key Strokes

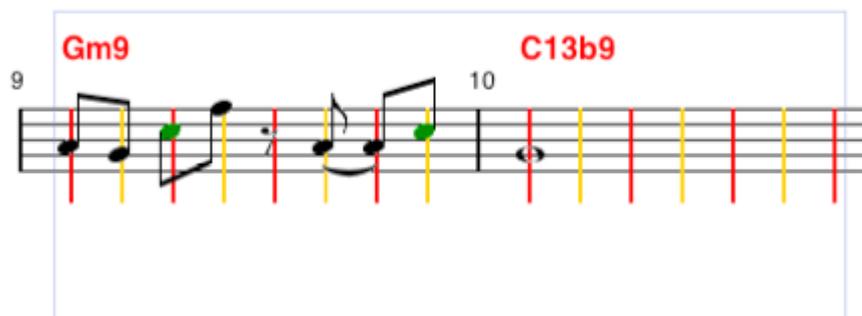
- Notes can be transposed up or down by key strokes.
- Probably the most useful is **harmonic transposition**, in which notes are automatically aligned to conform to the current chord in effect.
- To transpose a note or group of notes *up* harmonically, use **key w**.
- To transpose a note or group of notes *down* harmonically, use **key s**.



Notes before harmonic transposition up.



Notes after harmonic transposition up.



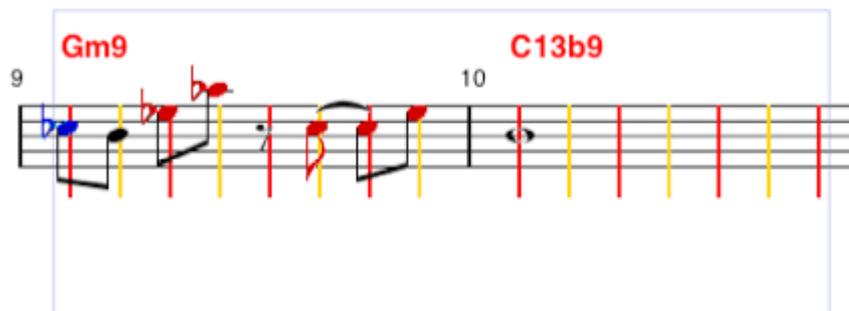
Notes after harmonic transposition down.

- A frequent use for harmonic transposition is to correct mis-entered notes. This is how I use it.
- This allows one to be inaccurate in pointing to a staff line and quickly make a correction to be in line with the chord.

47. Uniform Transposition Using Key Strokes

A second way to transpose is **uniform transposition**, in which notes all transposed the same amount

- To transpose a note or group of notes *up* one semitone, use **key e**.
- To transpose a note or group of notes *down* one semitone, use **key d**.
- To transpose more than one semitone, use several presses in a row.
- To transpose a note or group of notes *up* one **octave**, use **key t**.
- To transpose a note or group of notes *down* one **octave**, use **key g**.



Notes after uniform transposition up a semitone.

Keystroke	Effect
t	transpose selected notes up an octave
g	transpose selected down up an octave
e	transpose selected notes up a half-step
d	transpose selected notes down a half-step
shift-t	transpose selected notes up harmonically
shift-g	transpose selected notes down harmonically

shift-R	rectify the selection (bring in line with the harmony)
----------------	--

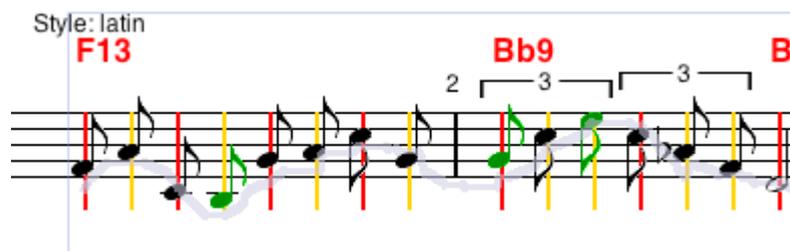
48. Melody Drawing Feature

- The Drawing 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 button with the pencil icon:



Drawing button

- 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.



Drawing a melody with the mouse

49. Transposing Chords

To transpose chords, or chords and melody:

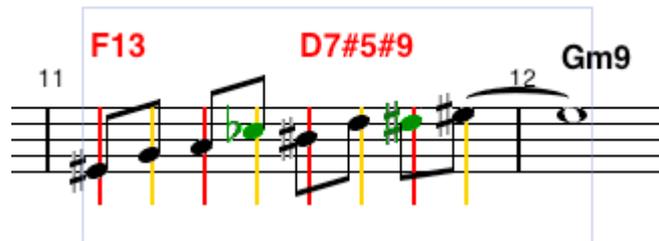
Keystroke	Effect
shift-E	transpose chords up a half-step
shift-D	transpose chords down a half-step
control-e	transpose chords and melody up a half-step
control-d	transpose chords and melody down a half-step

50. Toggling Enharmonics

- To toggle the enharmonic representation of **notes** in a selection (e.g. switch eb to d#), simply press the **space bar**.
- This only changes the visual representation of the notes, not the sound.



Before toggling enharmonics



After toggling enharmonics

- To toggle **chords** enharmonically (e.g. Db7 to C#7), press the space bar while holding shift.
- To toggle for both notes and chords, press the space bar while holding control.

Keystroke	Effect
space	toggle enharmonics of all notes in selection
shift-space	toggle enharmonics of all chords in selection
control-space	toggle enharmonics of all chords and notes in selection

51. Copying, Cutting and Pasting Melodies:

To copy a melody and paste it somewhere else on the sheet:

- Select the notes to be copied.
- Press the **c key** (for *copy*).
- Select the starting slot where you wish to paste the melody.
- Press the **v key** (standard abbreviation for pasting).
- Use the **x key** instead of c if you wish to cut the original selection.

Cutting, copying, and pasting is also achievable by the following three buttons, respectively:



Cut, copy, and paste buttons

- You may paste a copied selection any number of times.
- Use the **z key** to undo recent pastings.
- Once you have pasted, you may wish to transpose the result or modify it in some other way.
- You can also click in different pitches to the same rhythmic pattern, as I have already described.

Keystroke	Effect
c	copy melody (to invisible clipboard)
v	paste copied melody (from invisible clipboard)
x	cut melody (and copy to invisible clipboard)

- A selected melody can also be transferred to and from the **textual entry area**, which is **not** the same as the invisible clipboard used for cut and paste.
- Pressing enter in the textual area will paste the melody starting at whatever slot is currently selected.
- This is convenient for pasting the same melody more than one place.
- The following commands are also useful in this context:

Keystroke	Effect
j	copy melody selection to text area

b	paste melody in text area onto leadsheet at selected slot

52. Cutting and Pasting Across Leadsheets

- Any number of leadsheets may be open simultaneously.
 - One can copy or cut from one leadsheet and paste to another.
-
-

53. Entering Chords

- Focus on the last two bars of the tutorial leadsheet, where the chords are as shown below.

11 **F13** D7#5#9 Gm9 C13b9 12

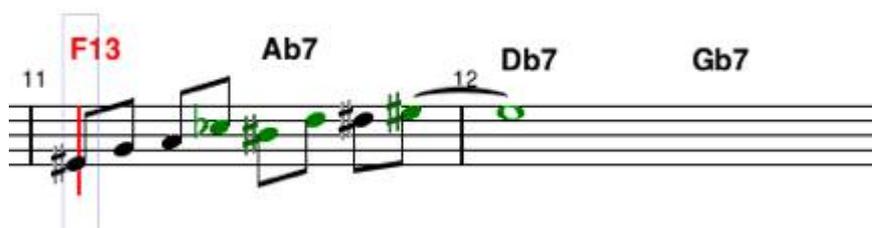
Two bars of a leadsheet

- Let's say that we want to change the chords in these two bars.

- Go to the **Textual Entry** field and type in the four chords.
- To indicate the bar lines, you may use either a comma or a vertical bar |.
- Comma is probably more convenient on most keyboards.

Textual Entry F13 Ab7,Db7 Gb7

- To enter these chords in place of the existing ones, press **enter**.



Two bars of a leadsheet, with new chords entered

- The same method is used to enter chords into a blank leadsheet.
- Simply select the starting slot.
- If you make a mistake, you can edit the contents of the **Textual Entry** field and use the cut and paste commands provided by the operating system.
- Then press **enter** again to over-ride the previously-entered chords.
- You can repeat as many times as you want, until it is as desired.

54. Irregular Spacing of Chords

- Uneven spacing of chords is achieved by using single slash characters (separated from chords by blanks).
- The slash indicates sustainment of the previous chord, without restriking it.

- The rule is that all chord and slash symbols within a bar are counted up and the space **divided evenly** among them.
- For example, to produce the following distribution, where the A and B chords each get one beat, but the C chords gets two.

Style: swing

A B C

Uneven chord distribution

- To get the distribution above, enter the the text A B C /.
- The number of symbols, including / as a symbol, are tallied up and the bar is divided evenly among the chords.
- The / symbol does not **restrike** the chord.
- If you want a restrike, enter the actual chord name.
- This is much more convenient that the alternative of clicking each individual slot and entering the chord separately.
- As another example, in $\frac{3}{4}$ time, we might want the following, where A gets two beats and B one.

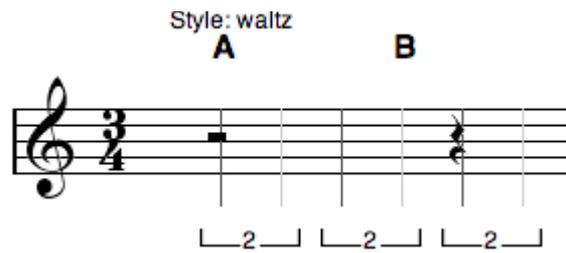
Style: waltz

A B

Uneven chord distribution in $\frac{3}{4}$ time

- To achieve the preceding, use A / B, since there are 3 beats to a bar.

- If you were to instead to use just A B, you would get a duplet rhythm, which, while interesting, would be less common.



Duplet chord distribution in $\frac{3}{4}$ time

- **Chords can be aligned to any slot**, by using enough slashes to divide up the space.
- Currently 120 slots per beat are available, giving many gradations.
- Slashes can be combined with the **NC** (no-chord) symbol to achieve hits, breaks, and other effects.

55. Slash Chords and Polychords

- **Slash chords** (which specify a bass note after the slash) are indicated with a forward slash, such as D/E.
- **Polychords** (one chord stacked atop another) are indicated with a backward slash, such as D\Bb.

56. Copying Chords from the Leadsheet Back to the Textual Entry

- **An alternate way to transfer the chords to the leadsheet** is to select the slot where the transfer is to begin after entering the chords, then press the (upper-case) **B** key.

- This is particularly convenient when the same sequence is to be transferred multiple times, as you do not have to return to the textual entry field and press return each time.
- To transfer chords in a selection back to the leadsheet, select the chords, then press the **J** key.

57. Cutting and Pasting Chords

To copy, cut, and paste chords from the leadsheet,

- The commands are analogous to those for melody, except the shift key is held.
- The (upper-case) **C** key copies the chords.
- The (upper-case) **X** key cuts the chords.
- The (upper-case) **V** key pastes the chords.

Keystroke	Effect
shift-C	copy chords (to invisible clipboard)
shift-V	paste copied chords (from invisible clipboard)
shift-X	cut chords (and copy to invisible clipboard)
shift-J	copy chords from selection to text area
shift-B	paste chords from text area to current slot

58. Cutting and Pasting Chords with Melody

To copy, cut, and paste chords *and* melody together from the leadsheet:

- The commands are analogous to those for melody, except the control key is held.
- The **Control-c** key copies melody and chords.
- The **Control-x** key cuts the melody and chords.
- The **Control-v** key pastes the melody and chords..

Keystroke	Effect
control-c	copy chords and melody (to invisible clipboard)
control-v	paste copied chords and melody (from invisible clipboard)
control-x	cut chords and melody (and copy to invisible clipboard)
control-j	copy chords and melody from selection to text area
control-b	paste chords and melody from text area to current slot

59. Entering Melody Textually

- Melody is saved, and may be loaded, using a textual notation, in the same textual entry field as chords.
- In distinction to chords, which always begin with upper-case letters, melody notes begin with lower-case letters.
- A melody note consists of:
 - a pitch designator (a, b, c, d, e, f, g) possibly followed by an accidental (#, b) for sharp and flat.

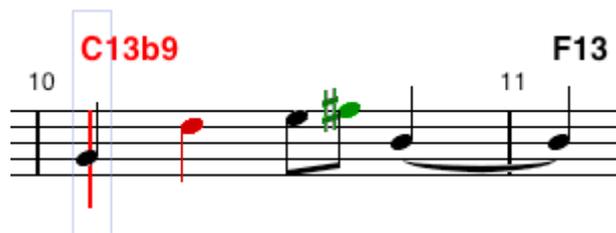
- an optional octave designator (+, ++, +++, -, --, ---) for octaves above or below the octave including middle C and above. The default is the octave just mentioned.
- an optional duration designator (4 for quarter note, 8 for eighth note, etc.) with + being used to add durations. The default is an eighth note.

For example, entering the following melody as text, with the selection starting at bar 10

Textual Entry `g4 d+4 e+8 f#+8 bb2|`

Using textual entry for melody

produces



Melody entered textually

A good way to learn the textual notation is to read some existing melodies from the available leadsheets.

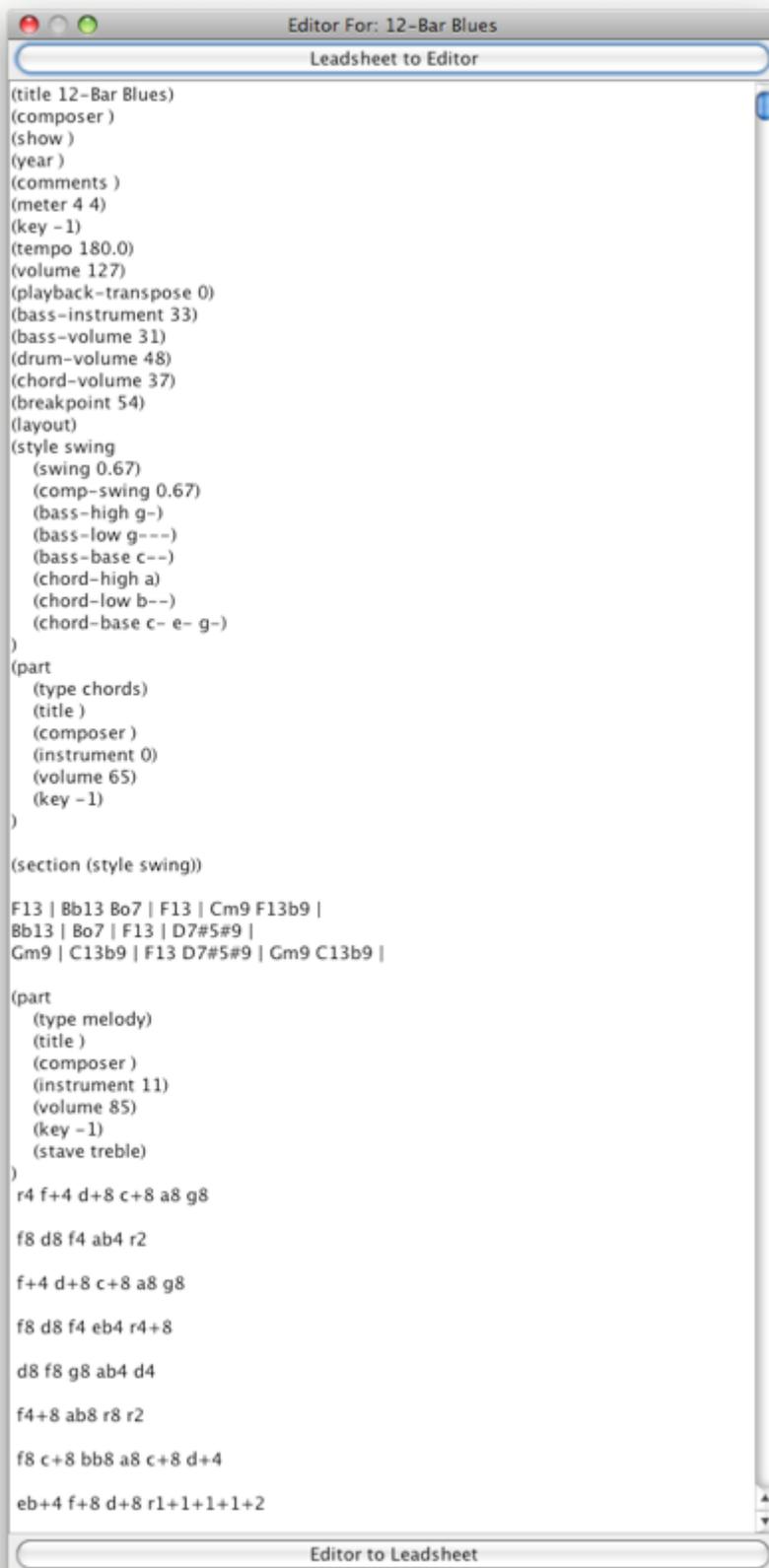
60. Copying Melody from Leadsheet to Textual Entry

- To transfer selected melody from the leadsheet back to the textual entry field, press the **j** key.
- Both melody and chords can be entered at the same time. The two are separated into tracks using the upper- and lower-case distinction for chords vs. melody.

- To transfer both selected chords and melody to the leadsheet from the textual entry, use **Control-b**, and to transfer back, use **Control-j**.
-

61. Textual Editing An Entire Leadsheet

- Additional **meta-data**, such as the key signature, tempo, and so on, will be automatically saved when a leadsheet is saved from Impro-Visor.
- One can simply start with a fairly bare file of chords, read it into Impro-Visor, then write it back out and the meta-data will have been inserted.
- These items can be edited with any text editor, such as NotePad, Emacs, Word, etc.
- 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, or using the shortcut **Control-f**, 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.
- These changes are not undoable, although you can always re-edit the content and press the **Editor-to-Leadsheet** button again.



Leadsheet Textual Editor Window

62. Entering Melody from a MIDI Keyboard

- MIDI recording from an external MIDI instrument can be done by clicking the red circle button for continuous record.
- **Disclaimer:** This is one of the lesser developed features of the software, so do not expect it to work perfectly.
- In particular, there will be quantization errors for short notes.
- Press the Stop Button to stop recording.



Record button

- On the Macintosh, this feature requires a third-party MIDI program, such as Mandolane (<http://www.mandolane.co.uk/>).
- This is because Java sound is not well supported on Macs.
- Mandolane is not included with Impro-Visor because it is not our property.

63. Step Entry from a MIDI Keyboard

- Notes can be entered one step at a time from a MIDI keyboard.
- The duration of the notes is determined by the grid line spacing.
- Press the **Step** button to begin.
- Each time a note is pressed on the keyboard, it is entered into the leadsheet and the cursor advanced to the next visible slot.



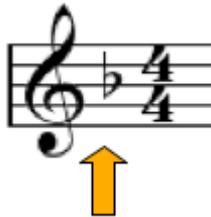
Step entry button



Use your own MIDI keyboard

64. Setting the Key Signature

- The key signature can be changed in the Preference > Leadsheet menu,
- or by the following action: Position the mouse in the key signature area.
- Then *slowly* drag up to subtract flats and add sharps, or down to do the opposite.

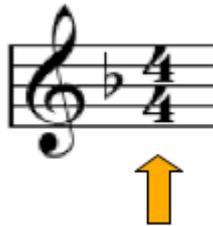


Drag up or down here to change key signature

65. Setting the Time Signature

- The time signature also can be changed in the Preference > Leadsheet menu,
- or by the following action: Position the mouse over the time signature.
- Then *slowly* drag up or down.
- The numerator (upper number) increases the fastest, then the denominator (lower number).

- The highest time available is 12/8 and the lowest is 1/1.
- Odd times, such as 11/4 are allowed.
- Currently there can be only one time signature in a given leadsheet. (Ability to change times during a piece is a requested feature.)



Drag up or down here to change time signature

66. Adding Choruses

- Any number of choruses can be played.
- The current model for Impro-Visor is that there is **exactly one chorus structure**, which can be played any number of choruses with different melodies.
- Although the chord sequence and length is the same for each chorus, the background will vary among choruses.
- To add a new chorus, press the page + icon:



Button for adding a new chorus

- Currently, new choruses must be added at the end of the existing choruses.
 - The only way to rearrange choruses is to use a combination of cut and paste of the individual melodies.
-

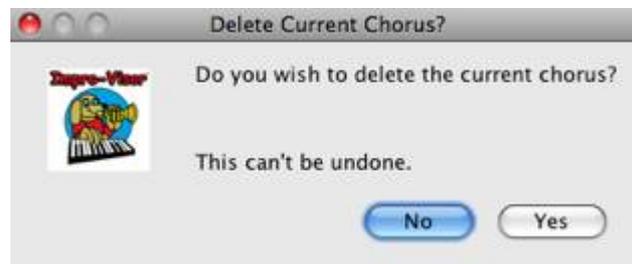
67. Removing Choruses

- To remove the currently-selected chorus, press the page * icon:



Button for deleting the current chorus

- **Caution: Removing a chorus is not undoable.** The contents will be lost, unless you have previously copied it. You will be asked whether you want to delete a chorus:



Chorus deletion dialog

- Choruses are sometimes referred to as tabbed parts because they are accessible by clicking the tabs at the top of the stave area:

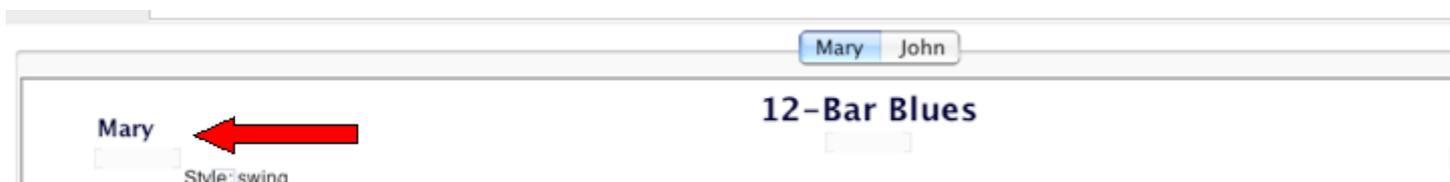


Chorus tabs

- The highlighted tab corresponds to the current chorus.

68. Titling Individual Choruses

- Each chorus may be given a separate title and composer.
- This information is entered on two fields on the right of the leadsheet.
- The title of the chorus will appear in the chorus tabs.



Showing chorus title entry on the leadsheet

The composer can be specified immediately below.

The title appear in the tab.

69. Changing the Number of Measures in All Choruses

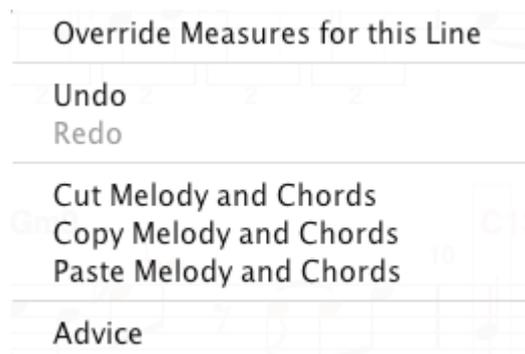
- Changing the number of bars in choruses may be done with the **Bars per Chorus** field. I
- Impro-Visor opens a new leadsheet with a generous number of bars (e.g. 72).
- Often, this number should be shortened to accommodate the current song.
- If shortening would **truncate** chord or melody information in any chorus, a warning dialog is issued first, so that content is not inadvertently lost.
- Again, all choruses have the same length, so that shortening one will shorten them all.
- Note: that changing the length of choruses is not undoable currently.



Chorus truncation dialog

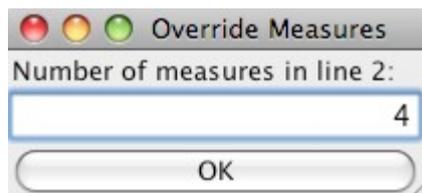
70. Adjusting the Number of Measures in One Stave

- Impro-Visor tries to lay out the measures based on the note and chord density.
- However, it is not perfect.
- There are two ways to adjust the layout to suit:
- By **control clicking** on a stave, a menu will open giving you the option of setting the number of measures for that stave:



The control-click popup contents

- By selecting the first item, you get a dialog:

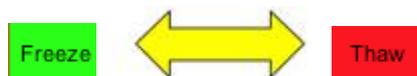


Single-line measure adjustment

- Enter the desired number of measures. This approach is best for temporary fixes.

71. Freezing and Thawing the Layout

- A more permanent layout is obtained by freezing the layout.
- Pressing the Freeze button will keep the measure distribution as it is now.
- Thawing will allow Impro-Visor to auto-adjust the layout.



Toggling to freeze or thaw the layout

72. Specifying the Layout

You can also specify the layout explicitly in the Chorus preference menu:



Chorus layout adjustment

- Specified in this line are number of measure per line, line by line.
 - If there are fewer numbers than there are lines, the last number is used for the remaining lines.
 - For example, the specification above indicates 4 bars for the first line, 2 each for the next two lines, 4 for the next, then 2, then 4 for all remaining lines.
 - Having any numbers in the Layout field is equivalent to having the layout frozen.
 - (Since this layout really affects *all* choruses, it more properly belongs in the Leadsheet preferences menu.)
-

73. Starting a Fresh Leadsheet

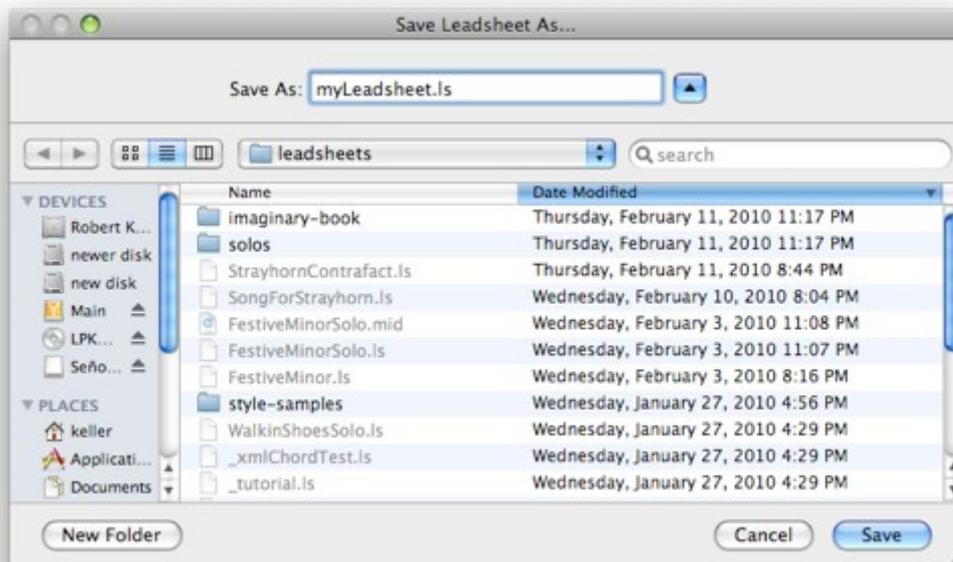
- From the File menu, select New Leadsheet, or use the shortcut **control-N**.
 - This opens a new blank leadsheet, in addition to ones that may be open already.
 - The blank one will look like the one at the beginning of this tutorial.
 - You may cut and paste melody and chords from one to the other.
 - You can close one or more of the open sheets.
 - If you have unsaved modifications, it will offer to save them first.
-

74. Opening Another Existing Leadsheet

- This uses the current window. It does not create a new one.
 - If there are unsaved modifications, you will be given the chance to save them.
 - If you want a fresh window, see the preceding section.
-

75. Saving an Open Leadsheet

- Use Control-W to save the current leadsheet under a specified name.
- Files should be saved with extension **.ls** (leadsheet) for future loading.
- Use Control-S re-save a leadsheet under its current name.



Leadsheet save-as dialog

76. Exporting MusicXML

- MusicXML files can be exported from the File menu.
 - Currently each chorus must be exported separately.
 - MusicXML can be imported by a wide variety of notation programs.
 - Currently Impro-Visor does not *import* MusicXML.
-

77. Exporting MIDI Files

- MIDI files can be exported from the File menu.
 - Any selectable segment, or the entire leadsheet, can be exported.
-

78. Getting Advice

- Returning to the _tutorial.ls leadsheet, select the first slot in measure 11



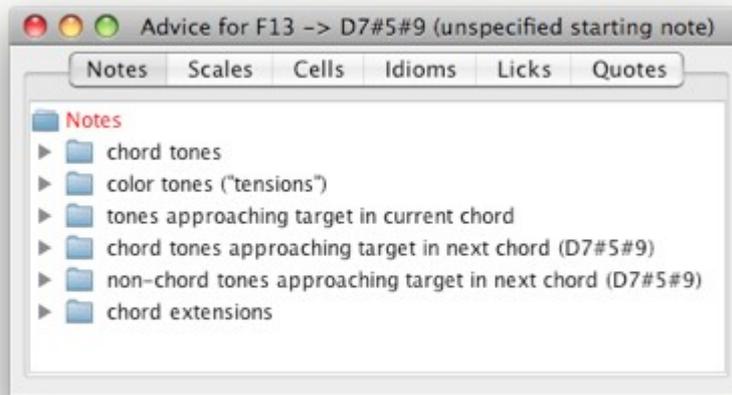
Select first slot in bar 11

- To ask Impro-Visor for advice on what might be played, we could click left-hand light bulb icon:



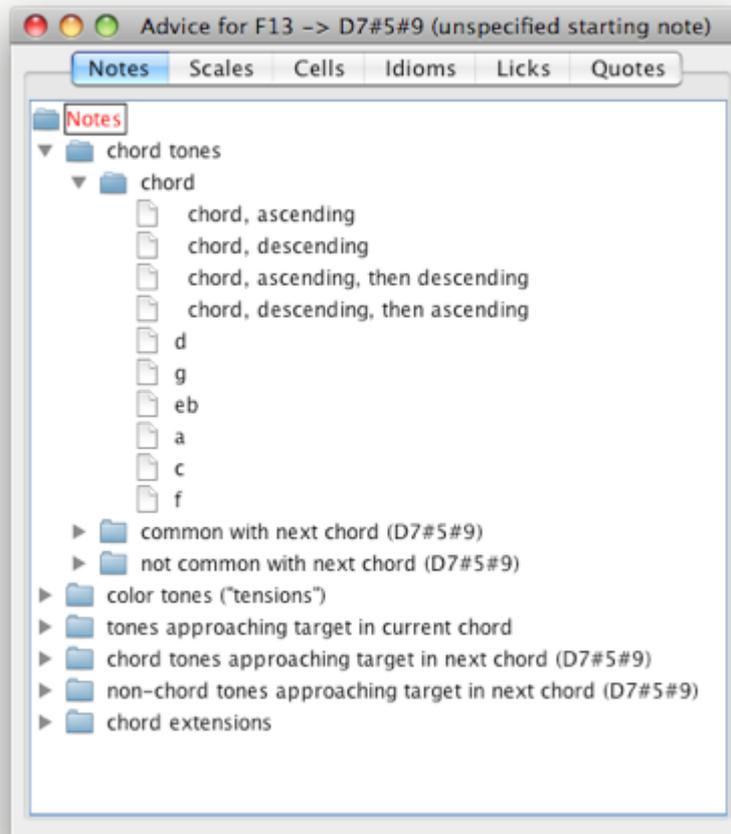
Advice icon

- A menu similar to the following should open.



Top-level advice menu

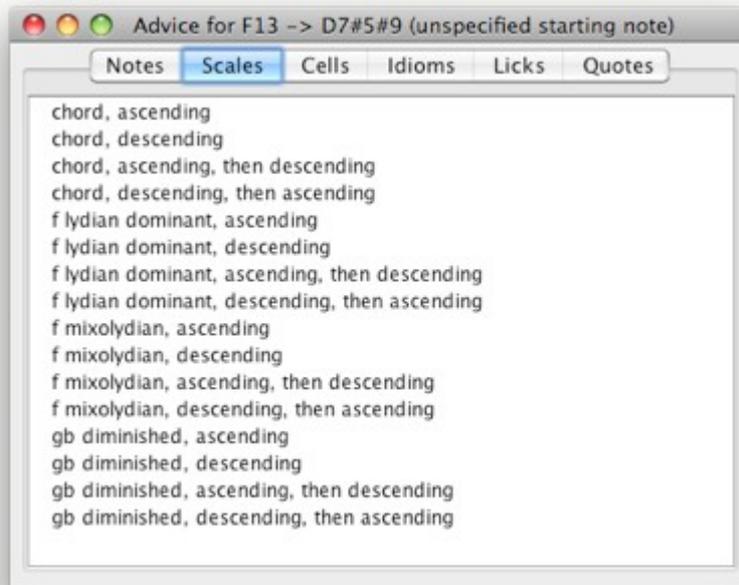
- Each tab opens to a set of things that might be played at this point.
- We encourage you to explore these, as they contain elements of jazz music theory, including:
 - the spelling of the first chord,
 - notes that are common between two chords
 - notes in one chord that approach notes in another
- The Note choices are shown in the dialog below:



Notes tab of the advice menu

79. Scale Choices

- Within Advice, for example, the **Scales** tab opens the following menu of choices:



Scales tab of the advice menu

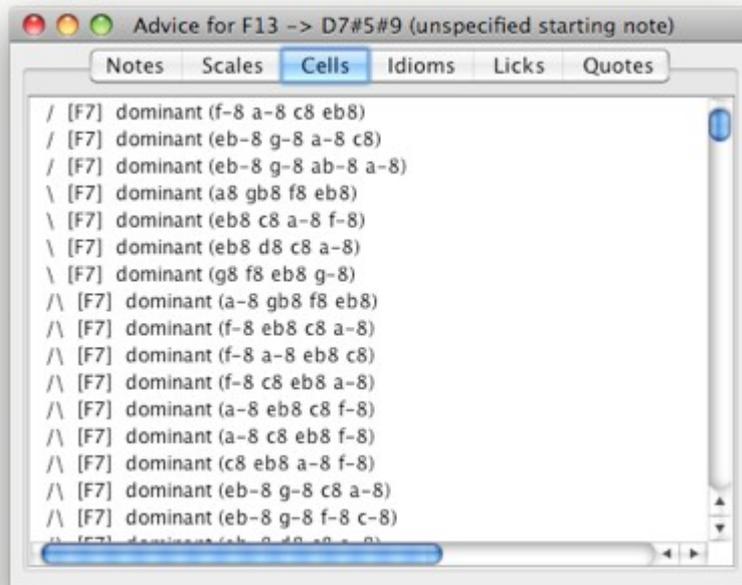
- From this menu, we can select one of the suggested scales to see how its tones fit the progression.



F Lydian dominant scale

80. Cell Choices

- Alternatively, selecting the **Cells** tab shows a variety of cells (short note sequences) over the current chord:



Cells for the F13 chord

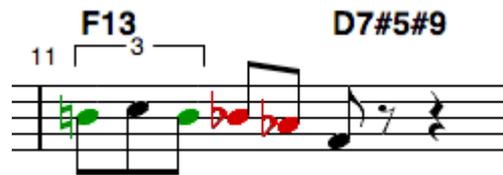
- The slashes on the left indicate the directionality of the sequence (/ for up, \ for down).



A simple cell from the vocabulary

81. Idiom Choices

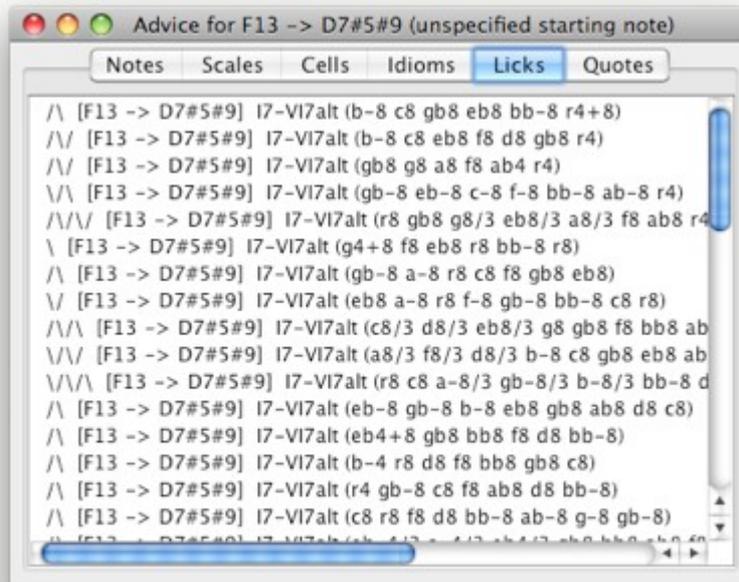
- **Idioms** are similar to cells, in that they are selected based on one chord. However, the term idiom suggests a melody that is a familiar jazz cliché.
- Below is an example of an idiom, which happens to be blues oriented, /\ [F7] blues (b-8/3 c8/3 b-8/3 bb-8 ab-8 f-8):



A blues idiom from the vocabulary

82. Lick Choices

- Licks are melodic lines that are based on one chord or two consecutive chords.



Licks menu for selected chords

- Here is an example of a lick for the current two-chord sequence, \ / / [F13 -> D7#5#9] I7-VI7alt (a8/3 f8/3 d8/3 b-8 c8 gb8 eb8 ab8 r8):



A two-chord lick from the vocabulary

- Although licks are indexed over at most two chords, they can be used over any number of chords. They just might not sound as good.
- The reason we index on only two chords is to keep the licks short, which permits combining them together in more ways than if we stored long licks.

83. Rectification

- For licks that do not quite fit the harmony, Impro-Visor provides a **rectify** feature that will pull arbitrary notes in line with the chords.
- For example, if we try a lick intended for two chords over a 4-chord sequence, we may get some disagreeable notes (shown in red):

Musical notation showing a lick over a 4-chord sequence: F13, D7#5#9, Gm9, C13b9. The lick consists of notes: 11 (black), 12 (black), 13 (black), 14 (black), 15 (blue), 16 (green), 17 (red), 18 (red), 19 (red), 20 (red), 21 (red), 22 (red). The notes 15, 16, 17, 18, 19, and 20 are highlighted in red, indicating they are disagreeable notes.

A lick that does not quite fit the chord progression

- We can **rectify** the sequence by pressing **shift-R** with the sequence selected.

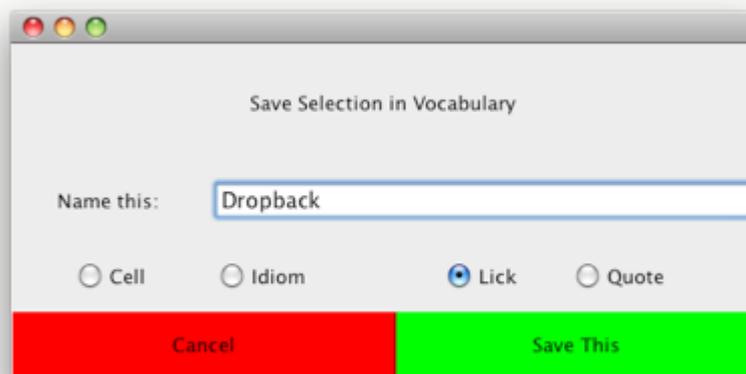
Musical notation showing the same lick over the 4-chord sequence: F13, D7#5#9, Gm9, C13b9. The notes are: 11 (black), 12 (black), 13 (black), 14 (black), 15 (black), 16 (black), 17 (green), 18 (black), 19 (black), 20 (black), 21 (black), 22 (black). The notes 15, 16, 17, 18, 19, and 20 are now black, indicating they have been rectified.

Rectified lick

- The final tab in the advice menu is **Quotes**, which are melodies borrowed from other songs or solos. Quotes are considered a form of humor in jazz improvisation, and the musician will learn to recognize when a quote will work over particular chords based on sounds.

84. Saving Licks, etc.

- When you run find or create a lick that you would like to save for future reference, you may save it in your vocabulary.
- Impro-Visor can recall saved licks as advice, and transpose them to the key of the moment.
- Pressing Save Lick or the **u** key will open the following dialog.
- You can give the lick a name for recall.



Lick-saving dialog

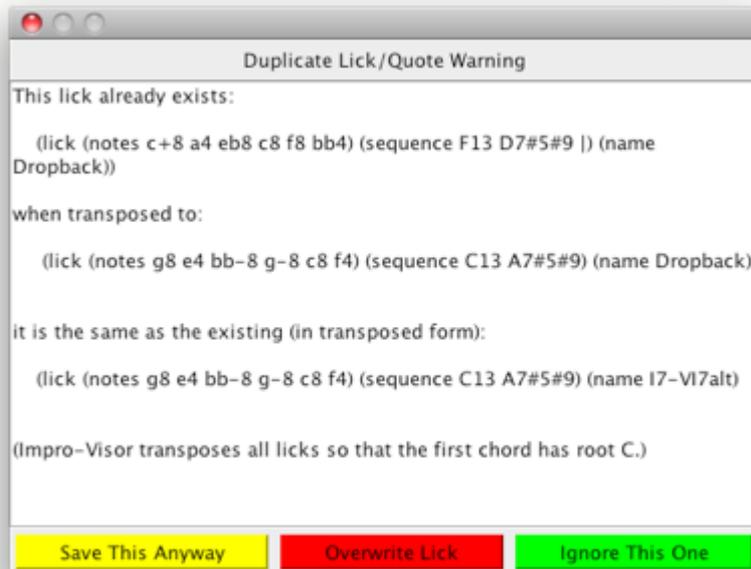
- The names do not have any formal significance for indexing, but they do show up in the advice menu.
- Select one of the four categories, then press either Save or Cancel.

- Once again, here is the meaning of the four categories:

Keystroke	Effect
u	save lick, quote, cell, idiom

Category	Meaning
Cell	small sequences of notes, often of uniform duration, such as eighth notes. Cells are indexed in Impro-Visor by just the first chord in the selection.
Idiom	familiar-sounding sequences. As with cells, they are also indexed by just the first chord.
Lick	tend to be more complex sequences. Licks are indexed by the first two chords, or the first chord if there is only one.
Quote	a melodic fragment from a known tune or solo. As with licks, they are indexed by up to two chords. I suggest naming quotes using the tune from which they are taken.

- To avoid saving a duplicate lick or quote, Impro-Visor checks new licks against all licks in the database, modulo transposition.
- If a duplicate is found, you will get a warning:



Duplicate lick or quote warning

- No corresponding check is made for duplicate cells, as cells generally can serve more than one chord.

85. Generating Licks

- An alternative to using the licks from the database is to generate new licks on the fly.
- To generate a lick, select some number of slots.
- Then press the *Generate* button.



Lick generate button

- Impro-Visor will generate a lick to fill the selected space.
- If only one slot is selected, it will generate from that slot to the end of the chorus.

- If no slot is selected, it will generate the entire chorus.

86. Grammar Choices

- Lick generation is controlled by a linguistic specification known as a **grammar**.
- The grammar governs whether the licks are complicated or simple.
- A grammar can also create various stylistic nuances.
- There is a menu of grammars located on the toolbar. Many of the grammars are named after famous musicians. They were created from solos played by those musicians.
- The creation of a grammar from a corpus of one or more solos can be done automatically inside Impro-Visor. Thus the user can add new grammars.



Grammar Menu

87. User Preferences

- The preference dialogs can be opened using this button:



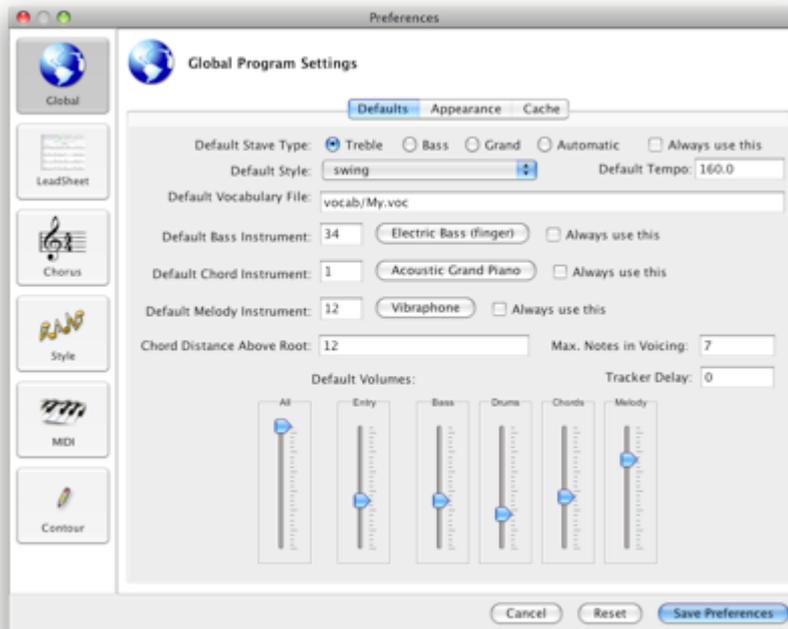
Preferences button

- There are several separate panels. The current preference panel can also be opened with just the **p** key.
- Finally, there is also a Preferences item in the menu bar, which may be used for opening specific preferences menus.

Keystroke	Effect
p	Open the preference dialog.

88. Global Settings

- These preferences are used to control default values, such as are used when new leadsheets are opened.



Global preferences

- The **Always use this** boxes over-ride the setting in the leadsheet itself.
- For example, if you always want the leadsheet to open with bass clef, click **Bass** and **Always use this**.
- Similarly, you can over-ride the instrument choices that are present in the leadsheet.

89. Leadsheet Settings

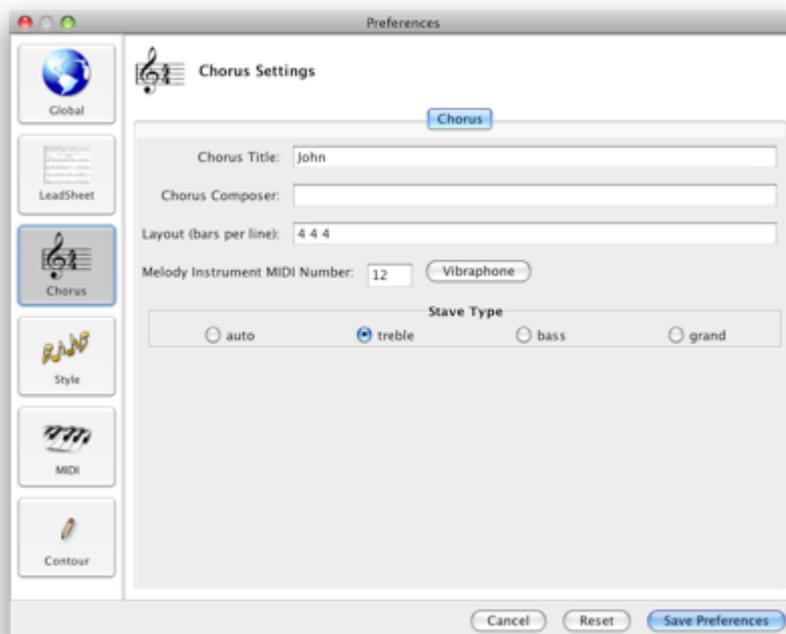
- These preferences control those things that are specific to the leadsheet (vs. specific choruses):



Leadsheet preferences

90. Chorus Settings

- These preferences control those things specific to a chorus:

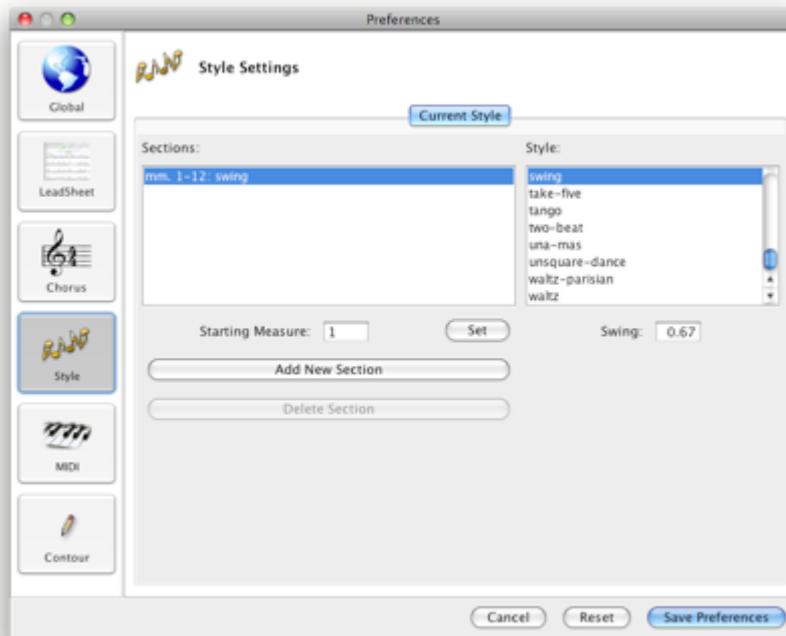


Chorus preferences

- Currently the **Layout**, however, applies to all choruses, not just this one.
 - It is a series of numbers indicating the number of measures on each line of the leadsheet.
 - If this is blank, Impro-Visor will adjust the layout automatically.
 - This field can be set manually, or automatically, by toggling the Freeze button on the menu bar, as was described earlier.
-

91. **Style Settings**

- These settings control the style, and permit the introduction of new sections of a chorus with different styles.
- If the leadsheet has only one style section, it may be changed by selecting a different style in the right-hand menu.
- If there are multiple style sections, as indicated by the left-hand menu, then each section is set independently.
- Adding a new section splits the current section into two equal pieces.
- The boundary is then adjusted by setting the **Starting Measure** of the second section of the split.



Style settings

92. MIDI Settings

- These preferences control the MIDI interface.
- If external MIDI devices are used, you must select them here.



MIDI settings

93. Drawing Settings

- These preferences control the drawing tool interface.



Contour settings

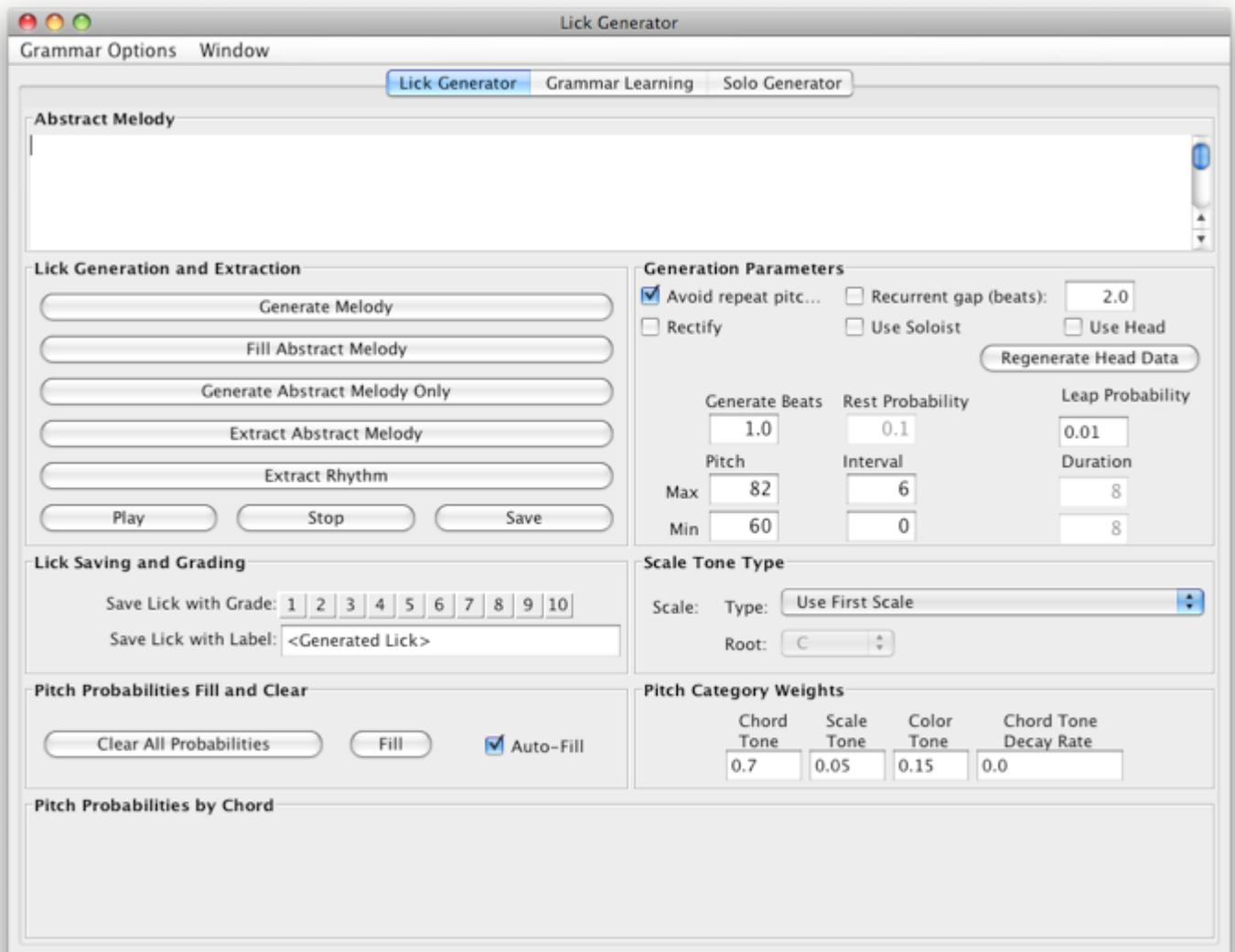
94. Lick Generator Settings

- The lick generator controls are in a separate panel, which can be opened by clicking the right-hand light bulb button.:



Lick-generator opening button

- The lick generator panel opens with lots of buttons and numbers, but you can ignore most of them for starters.

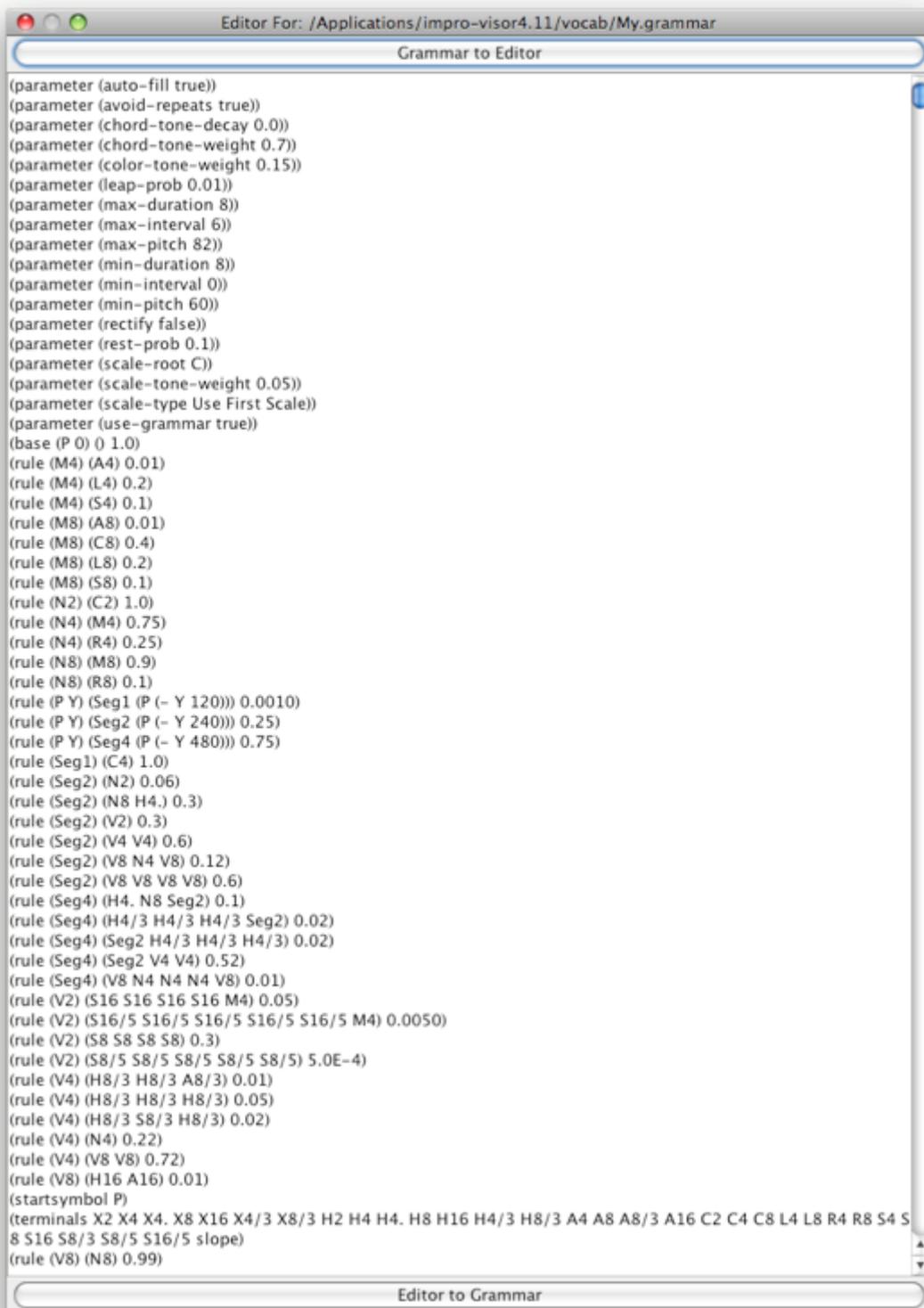


Lick-generator control panel

- The **Generate Melody** button operates the same as the Generate button in the main window.
 - With the control panel open, pressing Generate will fill the field called **Abstract Melody**.
 - The actual melody is derived from the abstract melody.
 - Once an abstract melody is present, it can be re-filled using Fill Abstract Melody, which means the rhythmic values will stay the same, but the pitches may be different.
-

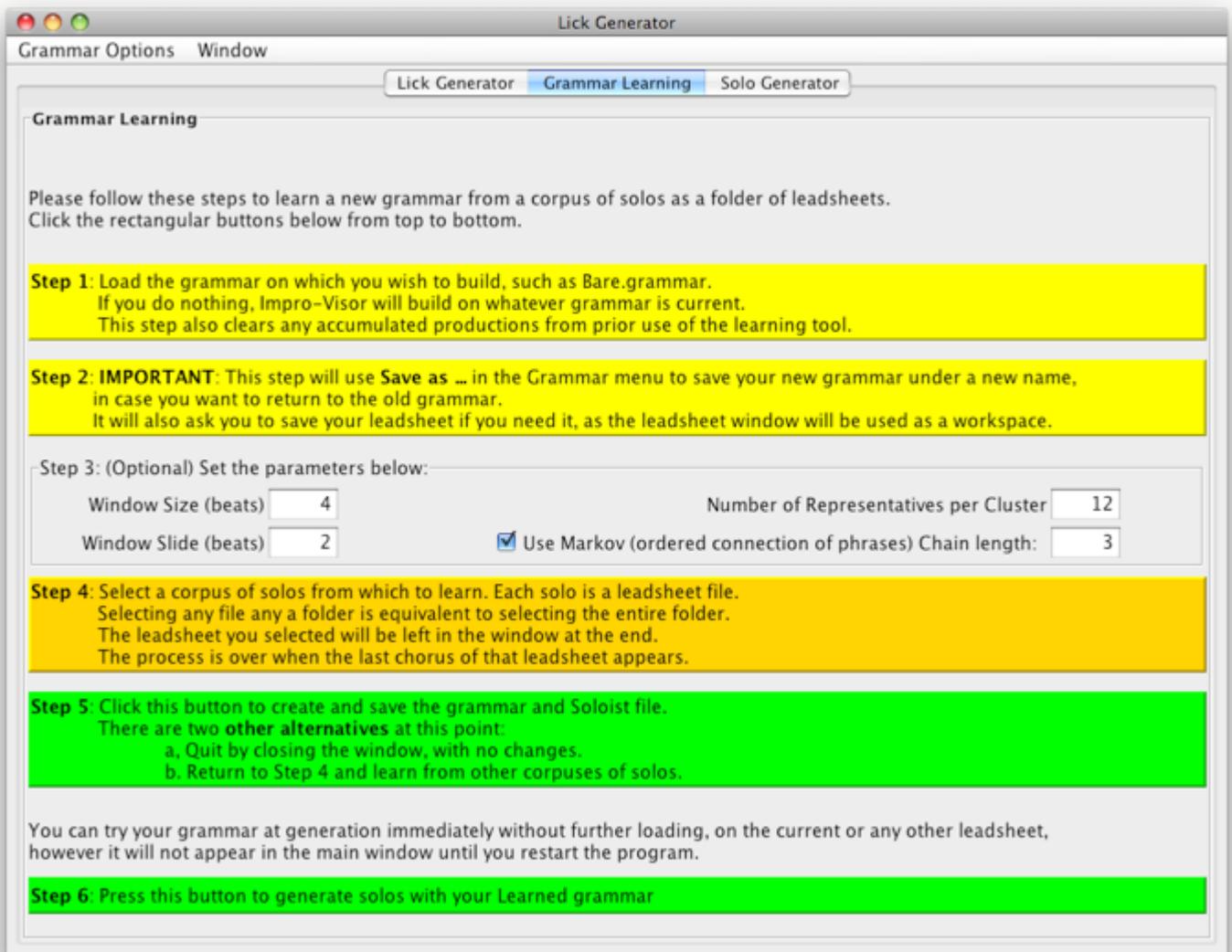
95. Grammar Editor

- From the File menu in the Lick Generator panel, one can open the grammar editor.
- At present, grammar editing is based on editing text.
- You can read about grammars in our various technical papers.
- A better description is forthcoming.



Grammar editor, showing the default grammar (My grammar)

- A second tab of the Lick Generator panel enables grammar learning.
- By carrying out the six steps indicated, a new grammar can be learned from a corpus of solos.
- This grammar can then be added to the menu of grammar choices.

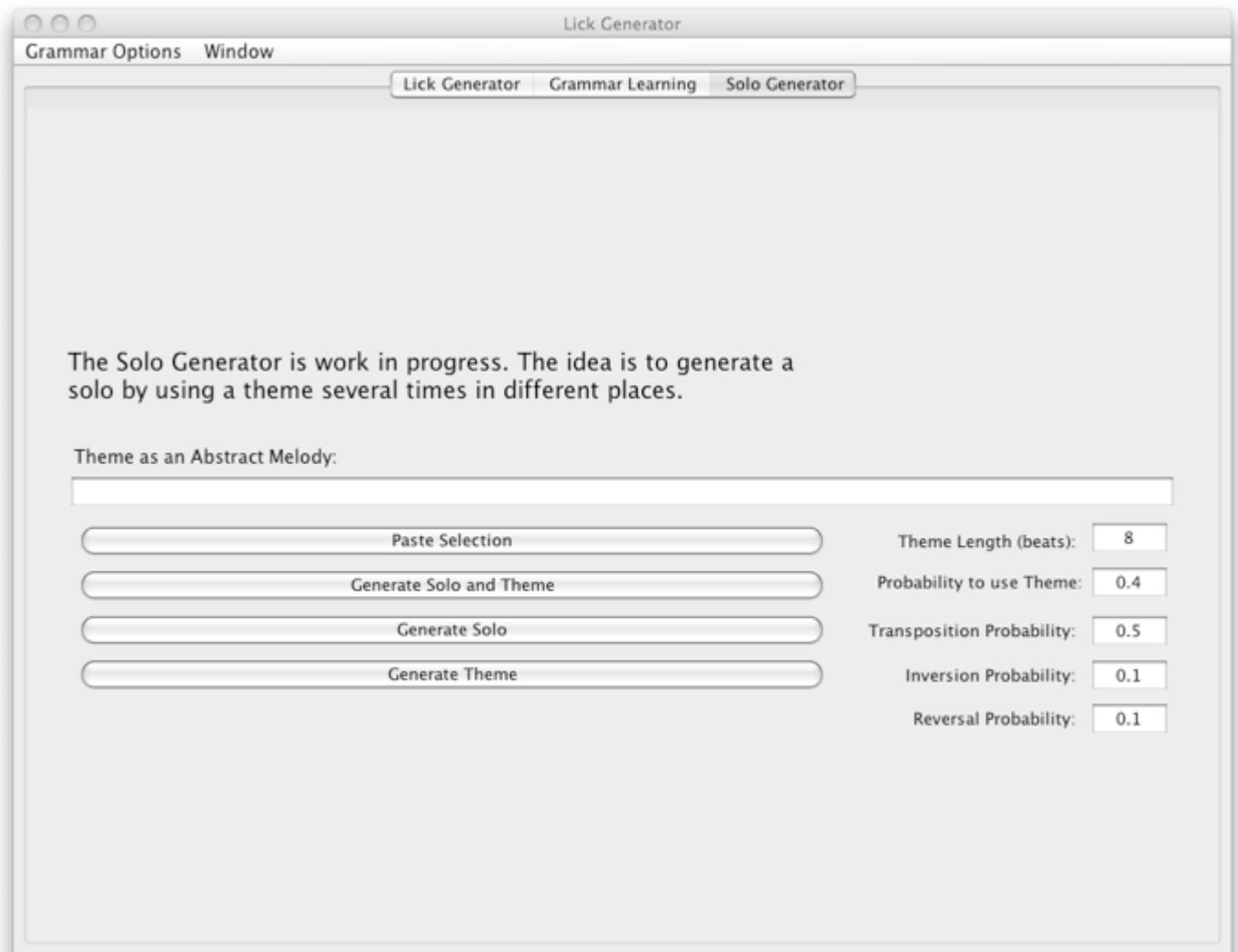


Grammar learning tab

97. Solo Generator

- The Solo Generator tab represents some work that is not fully developed.

- The idea is to generate a solo that reuses a theme from time to time, based on specified probabilities of reuse.



Solo generator tab

98. Style Editor

- Impro-Visor provides tools for editing styles.
- New styles can be created using the tools.
- The style editor is opened through the Utilities Menu, or use key **Control-Y**.
- The style editor is organized as a spreadsheet.

- There are three bands: Bass, Chord, and Drums.
- Each numbered column corresponds to a style pattern.
- **Caution:** There is currently no undo in the style editor, so please create backups.
- All the drum pattern elements are considered part of a single pattern, but the bass and chord elements are separate, not linked to the others or each other.
- There is a special pattern language used to specify the pattern entries. There is also a piano-roll style editor used to edit the patterns, so that it is not necessary to learn the language.

The screenshot shows the 'Style Editor: even-blues.sty' window. It features a menu bar (File, Edit, Extract, Help, Window), a comments section, and several control panels for Bass, Chord, Melody, and Comp attributes. Below these are editing tools (File, Column Edit, Row Edit, Cell Edit, Time) and a 'Play Saved Style' section. The main area is a spreadsheet with columns for 'Use', 'Volume', and 10 numbered columns. The rows represent different musical elements like Bass Beats, Chord Beats, Drum Beats, etc.

Clipboard

Mirrored patterns, most recent pattern at the bottom

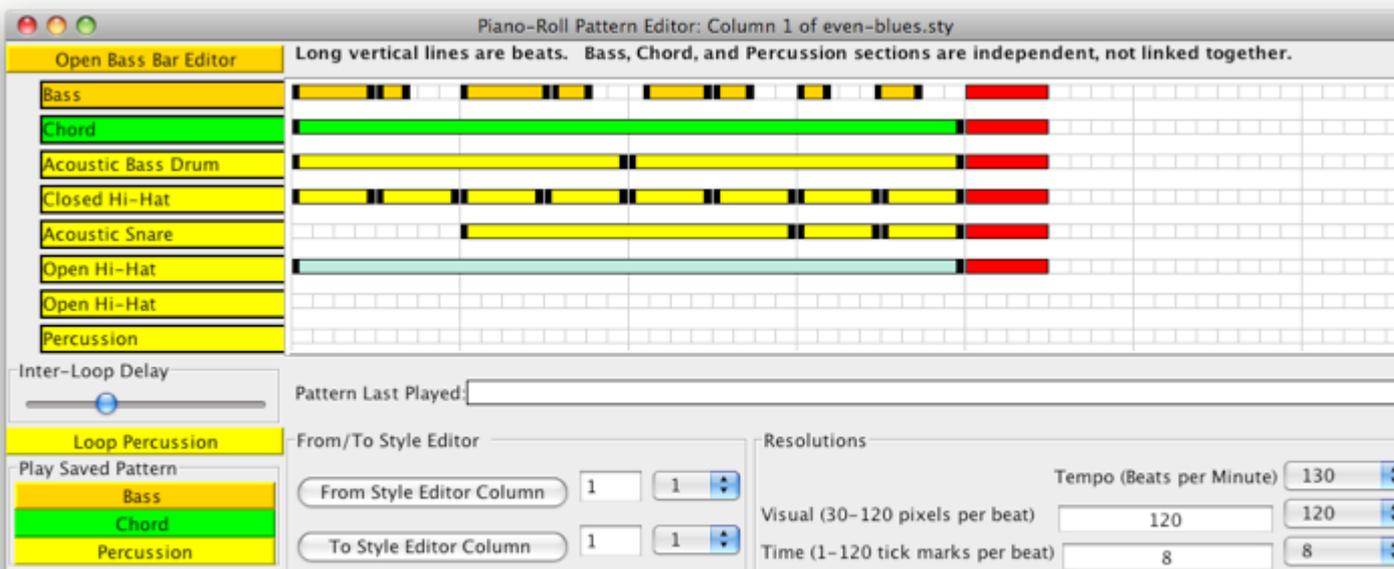
	Use	Volume	1	2	3	4	5	6	7	8	9	10
Bass Beats			4.0	2.0	4.0	2.0	4.0	0	0	0	0	0
Bass Weight			1	1	50	50	50	10	10	10	10	10
Bass	<input checked="" type="checkbox"/>	100	B8 (X 3 16	C8 (X 6 16	B8/3 R8/2	B8/3 R8/3	B8/3 R8/2					
Chord Beats	<input checked="" type="checkbox"/>		4.0	2.0	1.0	0.5	0	0	0	0	0	0
Chord Weight	<input checked="" type="checkbox"/>		53.0	3.0	100.0	100.0	10	10	10	10	10	10
Chord	<input checked="" type="checkbox"/>	100	X1	X2	X4	X8						
Drum Beats			4.0	0	0	0	0	0	0	0	0	0
Drum Weight			100.0	10	10	10	10	10	10	10	10	10
Acoustic Bass...	<input checked="" type="checkbox"/>	100	X2 X2									
Closed Hi-Hat	<input checked="" type="checkbox"/>	100	X8 X8 X8 :									
Acoustic Snare	<input checked="" type="checkbox"/>	100	R4 X2 X8 :									
Open Hi-Hat	<input checked="" type="checkbox"/>	100	X1									

Cancel Save Style

Style editor spreadsheet

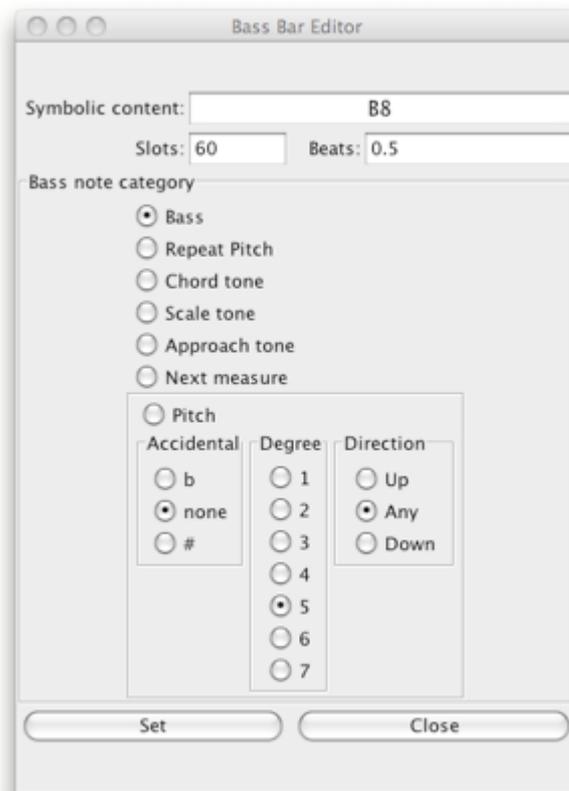
99. Piano-Roll Style Pattern Editor

- To edit a column of the pattern spreadsheet, one can use the piano roll editor.
- First select the column of interest, by shift-clicking somewhere in that column.
- The piano roll editor will open.
- Each horizontal bar represents the instrument being played for a specified duration of time.
- The selected bar is highlighted in light blue.
- Bars can be lengthened, shortened, added, and removed, using the mouse.
- The various elements of the pattern can be played by pressing the buttons on the left.
- Drum instruments can be added in or out, while the drum parts are playing.
- **Caution:** There is currently no undo in the style editor, so please create backups.



100. **Bass Bar Editor**

- This dialog is used within the piano-roll style pattern editor to edit the pitches and directionality of the bass bars in the bass style pattern.
- The editor is relative to the currently-selected bass note
- A bass note is in one of 7 categories:
 - Bass means the root of the chord
 - Repeat means the previous pitch repeated
 - Chord tone means an arbitrary tone from the chord
 - Scale tone means a tone from the first scale associated with the chord
 - Approach tone means a chromatic half-step away from a chord tone in the next chord
 - Next measure means to anticipate the pitch in the next measure (used for tumbao bass, for example)
 - Pitch means a specific pitch, based on a scale degree of the first scale associated with the chord
 - The direction for a pitch indicates the relative direction from the previous note

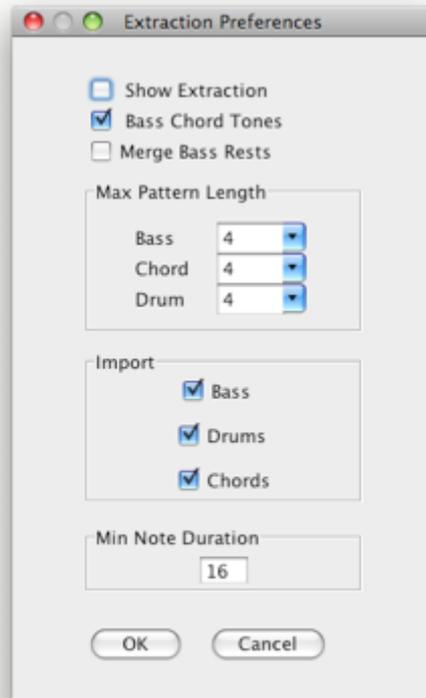


Bass bar editor

101. Style Extractor

- The style extractor is used to extract an approximation of a style, given a MIDI file and a leadsheet .ls file expressing the chord progression.
- There is a sample MIDI file with corresponding leadsheet in the styleExtract folder that comes with the release.
- The purpose of the leadsheet is to interpret the notes of the bass line.
- There is a control panel for setting the parameters of style extraction.
- The Style Extractor has its own set of windows, which will be opened if the corresponding preference box is checked.
- These windows give details of how raw data is clustered to produce the style rules.
- However, it is not usually necessary to view the workings at this level to be able to extract a style.

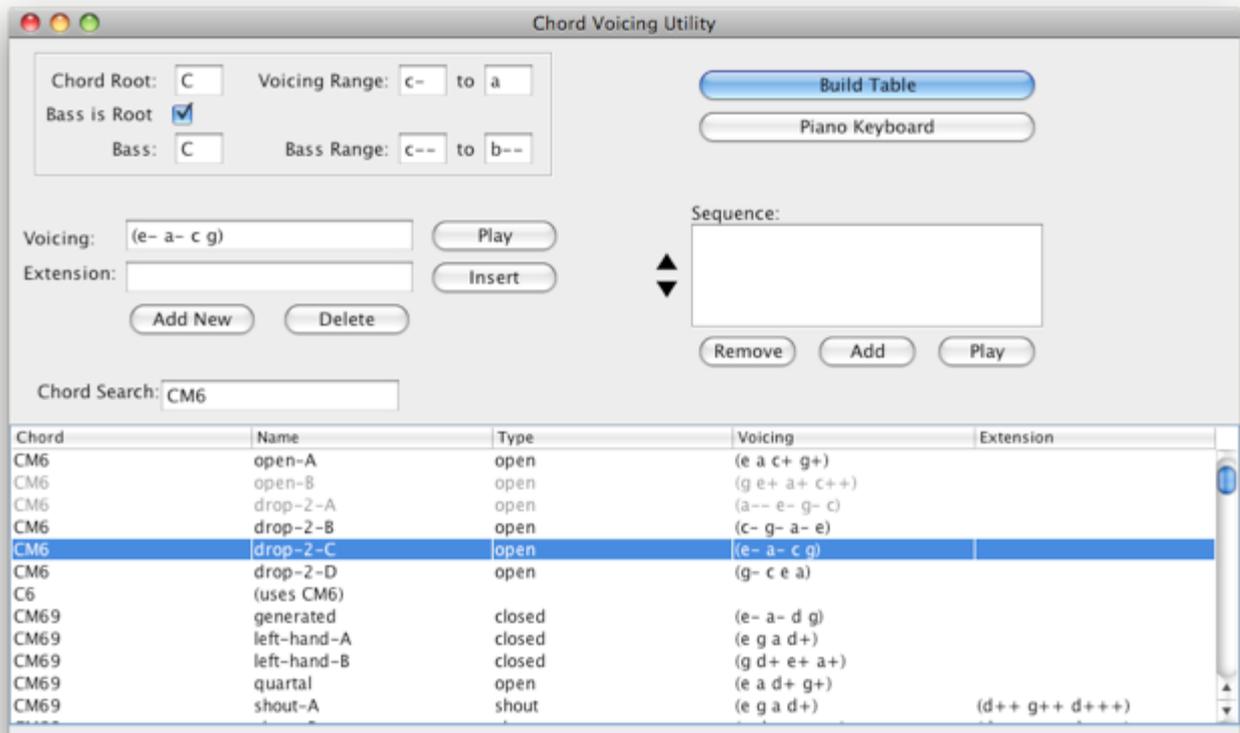
- Once the style is extracted, it sometimes needs to be tweaked, e.g. using the style editor.



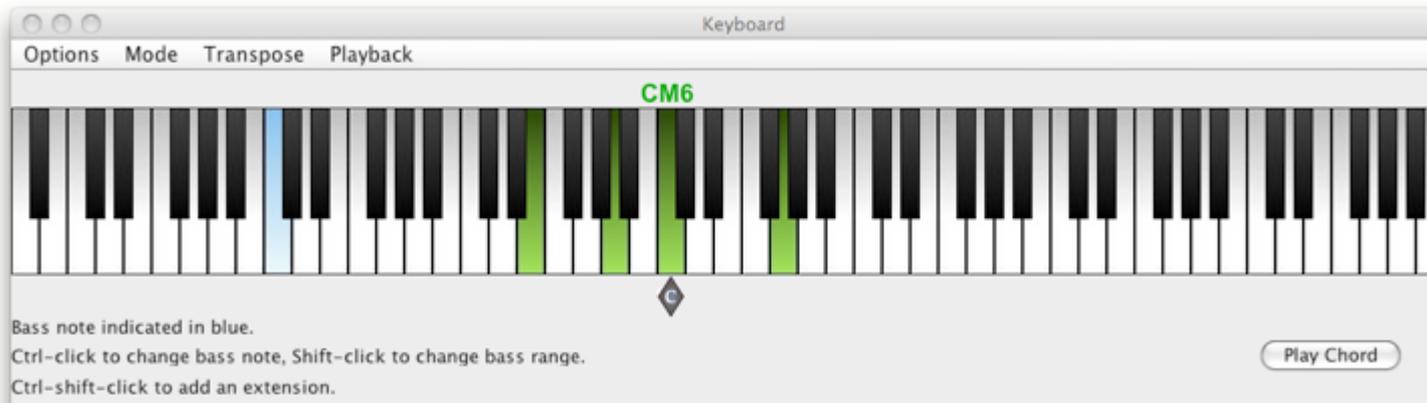
Style Extractor Control Panel

102. Chord Voicing Editor

- Impro-Visor uses both pre-planned and generated chord voicings in its auto-accompaniment.
- It will try to choose voicings that both fit in the specified range and that exhibit voice-leading from the previous voicing.
- It will generate a voicing using an algorithm if no appropriate voicing is found.
- Voicings can be edited or added using the voicing editor.
- Use the Utilities menu or **Control-I** to open.
- The attendant piano keyboard can be opened by itself for visualizing voicings.
- (Note: the piano keyboard cannot be used for entering melodies at this time.)



Chord voicing editor



Piano keyboard for visualizing or entering voicings

103. Conclusion

- This concludes the current version of the tutorial. Check back from time to time, as it will undoubtedly be revised.
- If you have comments, suggestions, or questions, please post to the Yahoo! Group. I will be happy to take them into consideration.

104. Glossary

Glossary of Impro-Visor Terminology	
Term	Meaning
advice	Suggestions for melodies that can be played over given chords.
approach tone	A tone not in a chord that is adjacent to a tone that is in the chord.
bar	A colloquial term for a measure of music.
cell	A small melodic fragment aligned with one chord.
chord symbol	A somewhat standardized notation for representing chords with a few characters.
chorus	One time through the chord changes of a piece.
clipboard	A metaphor designating a place off-screen to which content is copied.
color tone	A tone not in a chord but compatible with the sound of the chord.

dialog	A user interface feature for entering information, such as preferences.
freeze	To set the numbers of measures per line in a leadsheet.
harmonic entry	Entering notes that are aligned to the current chord, rather than chromatically.
idiom	A familiar jazz melodic fragment aligned with one chord.
jar	A file type, standing for <i>Java archive</i> .
leadsheet	A sheet with chord symbols and a melody line, which can be used to represent a song or a solo over the chords.
lick	A short melodic fragment aligned with one or two chords.
meta-data	Data that is not melody or chords directly, but which provides additional information, such as key signature, time signature, etc.
MIDI	Musical Instrument Digital Interface
mixer	A device that combines several sound tracks together in specified volumes.
NC	Abbreviation for No Chord.
parallax	The change of apparent location depending on viewing angle.
pickup	A note or a few notes placed before the downbeat of a melody.
polychord	A chord constructed of one smaller chord stacked atop another, such as a triad over a dominant chord. Polychords are noted using the back-slash \ in Impro-Visor. See also

	slash chord.
quote	A melodic fragment from a familiar song or solo.
rectify	To align a melody to be consistent with a chord sequence.
slash chord	A chord consisting of a chord and a specific bass note, which may or may not be in the original chord. In Impro-Visor, slash chords are indicated with /. See also polychord.
slot	A symbolic time at which a chord or melody note can be played. Impro-Visor currently has 120 slots per beat. A subset of the slots typically shows within the beat at a given time.
style	A specification of how the accompaniment (chords, bass, percussion) are generated.
thaw	To unset the numbers of measures per line in a leadsheet, leaving those numbers open to dynamic adjustment.
transpose	To raise or lower the pitch of all notes or chords in a selection.
vocabulary	A file containing the specification of musical material, such as scales, chords, licks, etc.
voicing	The order in which the various notes of a chord are stacked.

Area	Stroke	Effect
Playback	k	stops (kills) the playback
	i	starts playback from the beginning
Select all of chorus	escape	un-selects everything
	control-a	select all slots
Add rest	r	put a rest in the selected slot
	shift-control-click	select a slot and put a rest there
Transposition	t	transpose selected notes up an octave
	g	transpose selected down up an octave
	e	transpose selected notes up a half-step
	d	transpose selected notes down a half-step
	w	transpose selected notes up harmonically
	s	transpose selected notes down harmonically
	shift-E	transpose chords up a half-step
	shift-D	transpose chords down a half-step
	control-e	transpose chords and melody up a half-step
control-d	transpose chords and melody down a half-step	
Rectification and other edits	shift-R	rectify the selection (bring in line with the harmony)
	/	reverse the selected melody
	\	invert the selected melody

Enharmonics	space	toggle enharmonics of all notes in selection
	shift-space	toggle enharmonics of all chords in selection
	control-space	toggle enharmonics of all chords and notes in selection
Undo/Redo	z	undo last action
	y	redo last undone action
Licks	control-u	generate lick
	u	save lick, quote, cell, idiom
Cut/Paste/Copy	c	copy melody (to invisible clipboard)
	v	paste copied melody (from invisible clipboard)
	x	cut melody (and copy to invisible clipboard)
	j	copy melody selection to text area
	b	paste melody in text area onto leadsheet at selected slot
	shift-C	copy chords (to invisible clipboard)
	shift-V	paste copied chords (from invisible clipboard)
	shift-X	cut chords (and copy to invisible clipboard)
	shift-J	copy chords from selection to text area
	shift-B	paste chords from text area to current slot
	control-c	copy chords and melody (to invisible clipboard)
control-v	paste copied chords and melody (from	

		invisible clipboard)
	control-x	cut chords and melody (and copy to invisible clipboard)
	control-j	copy chords and melody from selection to text area
	control-b	paste chords and melody from text area to current slot
Editors	control-f	open the textual leadsheet editor
	control-y	open the style editor
	p	open the preference dialog
Files	control-n	open a new leadsheet window
	control-o	open a new file in the current window
	control-s	save the current file
	control-w	save the current file, specifying the name
	control-r	revert the current file from the saved copy
	control-p	print the leadsheet
	control-q	quit Impro-Visor

106. Scale Vocabulary

- The meaning of each scale is defined in the vocabulary text file vocab/My.voc, where each scale is defined relative to a tonic C.
- Note that some scales are synonyms for one another.

altered	flat six pentatonic	lydian dominant pentatonic	neopolitan major pentatonic
arabian	flat three pentatonic	lydian minor	neopolitan minor
augmented	flat three pentatonic	lydian pentatonic	oriental
augmented heptatonic	gypsy	lydian pentatonic	pelog
balinese	harmonic major	major	pentatonic
bebop	harmonic minor	major blues	persian
bebop dominant	hindu	major flat two pentatonic	phrygian
bebop locrian	hirajoshi	major pentatonic	piongio
bebop major	hungarian minor	malkos raga	pomeroy
bebop minor	in-sen	melodic minor	prometheus
blues	indian	melodic minor fifth mode	purvi raga
chinese	ionian pentatonic	melodic minor second mode	ritusen
composite blues	iwato	minor #7 pentatonic	romanian minor
diminished	kafi raga	minor bebop	scriabin
diminished whole tone	kumoi	minor blues	spanish
dominant	kumojoshi	minor hexatonic	spanish heptatonic
dorian	leading whole tone	minor pentatonic	super locrian
dorian augmented	locrian	minor seven flat five pentatonic	super locrian pentatonic
double harmonic lydian	locrian major	minor six diminished	todi raga
double harmonic major	locrian pentatonic	minor six pentatonic	vietnamese 1
	locrian#2		vietnamese 2

egyptian	lydian	mixolydian	whole tone
enigmatic	lydian #5 pentatonic	mixolydian pentatonic	whole tone pentatonic
flamenco	lydian augmented lydian dominant	mystery #1 neopolitan major	

107. Chord Vocabulary

- The root pitch is placed in front of any of the following.
- Any may be followed by a slash for the bass note, or a backslash for a polychord for more combinations.
- The meaning of each symbol is defined in the vocabulary text file *My.voc*, where each chord is defined relative to a tonic *C*.
- Note that some chords are synonyms for one another.
- My preference for chord symbols is:

Symbol	Meaning
M	Major
m or _	Minor
o	Diminished
sus	Suspended (4 by default)
7, 9, 11, 13	Dominant if used alone

- I have introduced other symbols such as **Maj** or **maj** because people have asked for them.

- I do not prefer them myself because they take up precious space on the chord line, and also take longer to type.
- Also, the list of possible alternatives is pretty open-ended.
- I introduced **h** as a short-hand for half-diminished, which would ordinarily be m7b5 (minor-seven, flat five) for this reason.

Here is the full list of chords in the vocabulary as I write this.

+	7#5b9#11	7sus4	M7#5sus4	add9no3	mM9b6
+7	7#5sus4	7sus4b9		addb9	mMaj7
+add#9	7#9	7sus4b9b13	M7#9#11	aug	mMaj7b6
+add9	7#9#11	7susb9	M7+	aug7	mMaj9
11	7#9#11b13	9	M7add13	dim	mMaj9b6
11b9	7#9b13	9#11	M7b5	dim7	madd4
13	7+	9#11b13	M7b6	h11	madd9
13#11	7add13	9#5	M7b9	h7	maj#5
13#9	7add6	9#5#11	M7sus4	h9	maj13
13#9#11	7alt	9+	M9	m	maj13#11
13b5	7aug	9b13	M9#11	m#5	1
13b9	7b13	9b5	M9#5	m+	maj7
13b9#11	7b5	9b5b13	M9#5sus4	m11	maj7#11
13no5	7b5#9	9no5		m11#5	maj7#5
13sus	7b5b13	9sus	M9b5	m11b5	maj9
13sus4	7b5b9	9sus4	M9sus4	m13	maj9#11
2	7b5b9b13	Bass	Madd9	m6	maj9#5

4	7b6	Blues	Maj#5	m69	mb5
5	7b9	M#5	Maj13	m6b5	mb6
6	7b9#11	M#5add9	Maj13#1	m7	mb6M7
6#11	7b9#11b13	M13	1	m7#5	mb6b9
67	7b9#9	M13#11	Maj7	m7add11	o
69	7b9b13	M6	Maj7#11	m7add4	o7
6b5	7b9b13#11	M6#11	Maj7#5	m7b5	o7M7
7	7b9b13sus4	M69	Maj9	m9	oM7
7#11	7b9sus	M69#11	Maj9#11	m9#5	phryg
7#11b13	7b9sus4	M6b5	Maj9#5	m9b5	sus
7#5	7b9sus4	M7	Mb5	mM7	sus2
7#5#9	7no5	M7#11	Mb6	mM7b6	sus24
7#5b9	7sus	M7#5	Msus2	mM9	sus4
			Msus4		susb9
			add2		
			add9		

- On editing, be sure the parentheses balance, otherwise some aspects of your vocabulary could be ignored.
- It is best to use a text editor such as Emacs, which flashes matching parentheses.

This is the end, for now. Thank you for using Impro-Visor.