Using Impro-Visor in the Jazz Laboratory

TI:ME 2012 Presentation

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Motivation

- Having taught jazz improvisation as a "side line" for a few years, I desired a notation tool that would:
  - Help students produce clean homework of written-out solos.
  - Provide assistance of some kind to the students.
  - Act as a repository or notebook for improvisational ideas.
- **Impro-Visor** is the result.
- Non-improvisational uses are also possible.

About these Slides

- This talk is being given using Impro-Visor live.
- Not all material covered in the talk is represented in these slides.
- Consult the Impro-Visor web site for more information:

www.impro-visor.com

Please Ask Questions

- Questions are fine during the presentation.

Conventional Wisdom

for learning to improvise

- Choose a solo from some jazz master.
- Transcribe the solo from audio and memorize it.
- Repeat, until you “know how to improvise”.

Problems with Conventional Wisdom

for learning to improvise

- Difficult enough to be a show-stopper.
- The learner does not *own* the result.
- You could end up sounding like (you are trying to be) a clone of the famous master.

Alternative Approach

for learning to improvise

- Pick a tune you like, or be assigned one.
- Construct your own solo over the chord progression of the tune. (Note: You own it.)
- Try to play your solo. Improvise as needed to make it sound good.
- Repeat, with different tunes.

Impro-Visor

- Impro-Visor = “Improvisation Advisor”
- Designed with the Alternative Approach in mind.
- Also usable with the Conventional Approach.
- Provides automated accompaniment and other features.

Free, Open-Source, Software

Impro-Visor

keller91711

sourceforge

@sourceforge Mountain View, CA

SourceForge.net is the biggest and best place to download and develop free open source software.

http://sourceforge.net/community

Leadsheet notation with auto-generated playback, improvisation advice

53 Recommendations

410 Downloads (This Week)

Platform(s) Available

Download

Impro-Visor_macos_5_08.dmg

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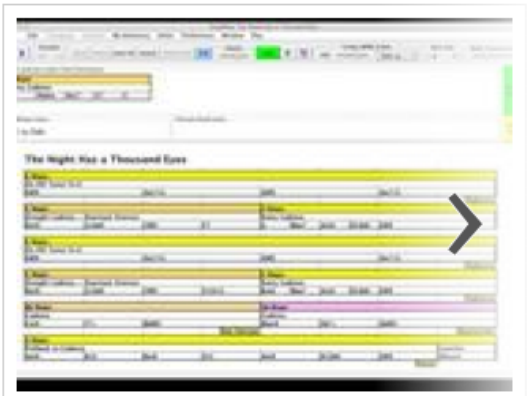
Browse All Files



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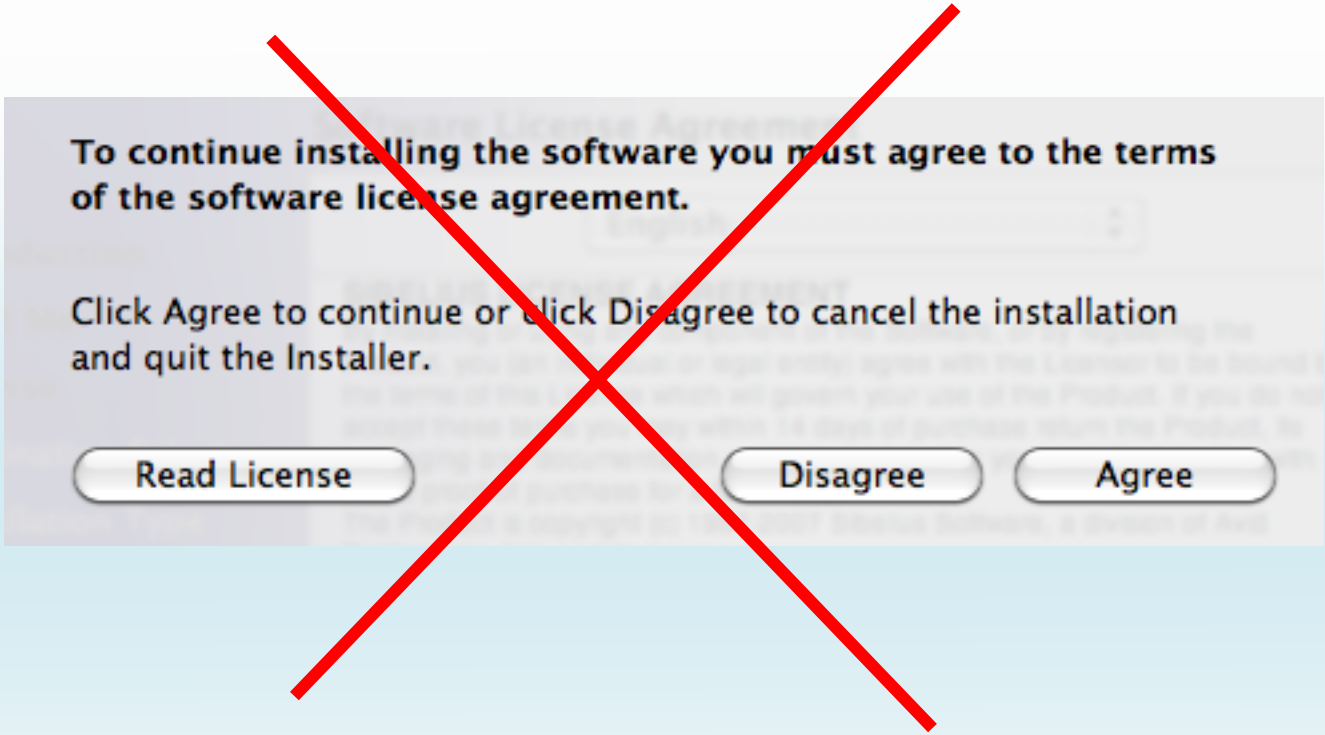

Free User Support

YAHOO! GROUPS Welcome, **keller_91711** [Sign Out, My Account]

keller_91711 · keller@cs.hmc.edu | Group Owner - **Edit Membership** Start a Group | My Groups

impro-visor Search for other groups... Search

- Home
- Messages
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  - Spam? [Delete]
  - Post
  - Attachments
- Files
- Photos
- Links
- Members
  - Pending
- Promote
- Invite
- Management
- Groups Labs (Beta)
  - Applications
  - Chat

Info Settings

Group Information

Members: 6873
Category: Jazz
Founded: Mar 29, 2006
Language: English

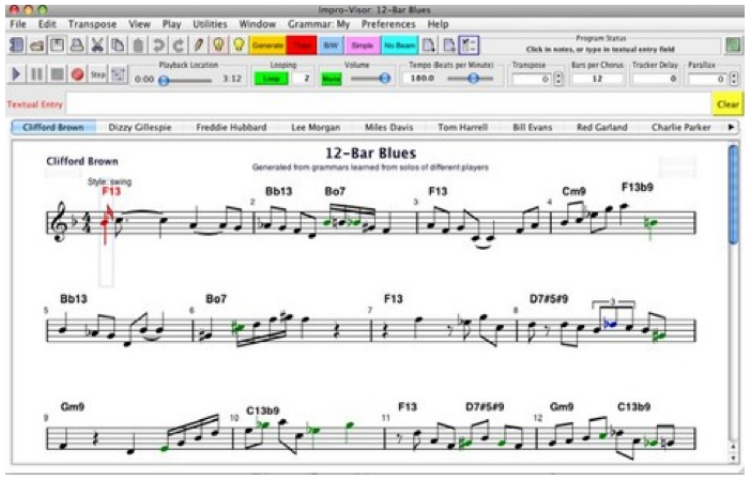
Try Yahoo! Groups Chat Beta! Now available on the left menu. Read more...

Home

Activity within 7 days: 23 New Members - 5 New Messages

Description (Edit)

Forum for Impro-Visor: Jazz Improvisation Advisor, free software for musicians, used to create improvised solos, tunes, transcriptions, or bass lines in the form of lead sheets (chord symbols with melody). Runs on Windows, MacOSX, Linux. Here are example of a solo, tutorial, FAQ.



Generates styled accompaniment automatically from chord progressions. Provides a database for storing and retrieving licks. Creates new licks and full solos based on a user-modifiable grammar that can be learned from transcriptions. Music information is stored as open text files. Sound output is MIDI. Exports MIDI and MusicXML.

Impro-Visor is provided courtesy of Bob Keller. The official home page for documentation is http://www.impro-visor.com/.

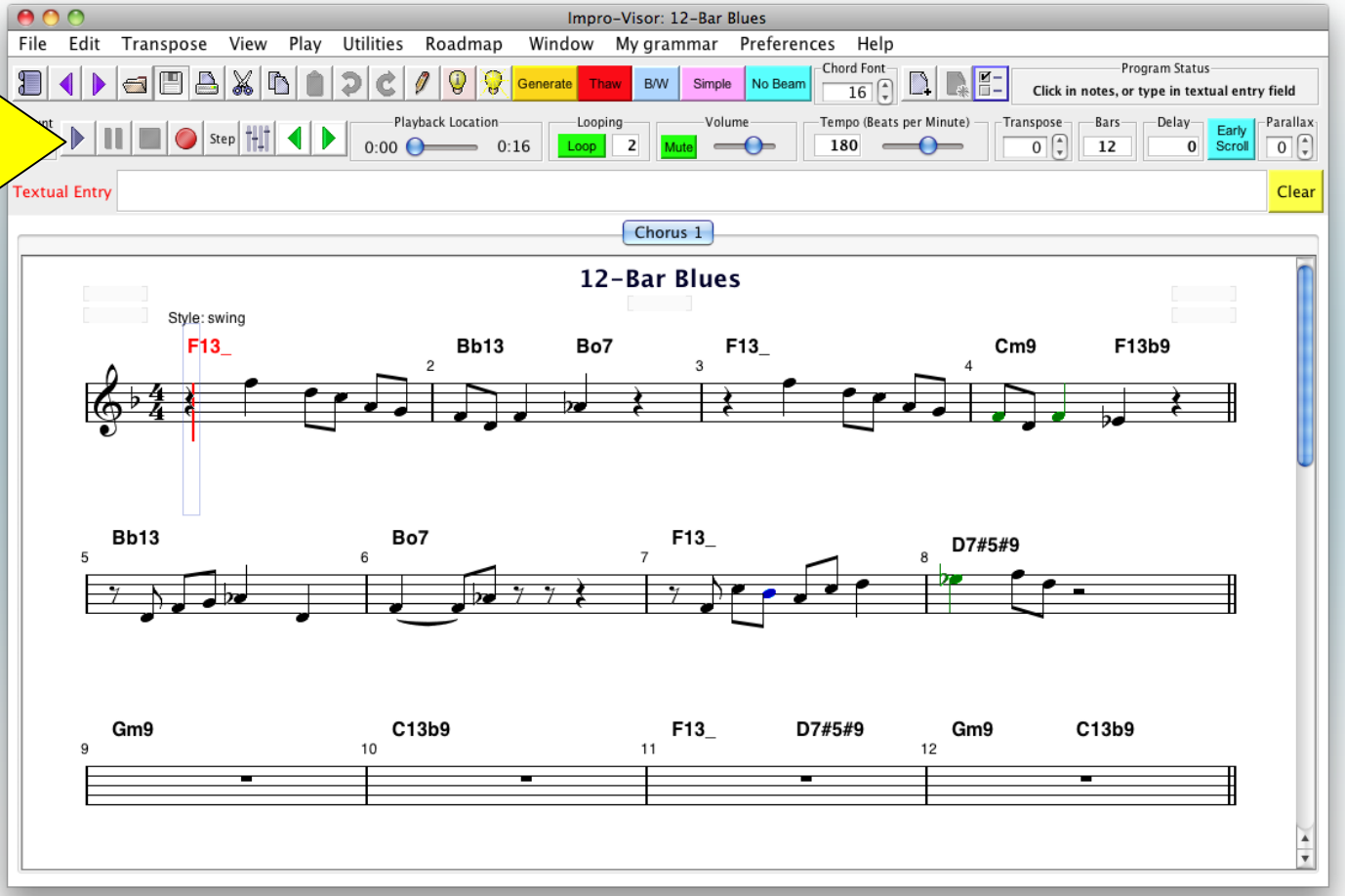
Viewing and Playing Leadsheets

Open a file, such as **_tutorial.ls**

Click here to play, or press I

Press K to stop

Press L to pause or resume



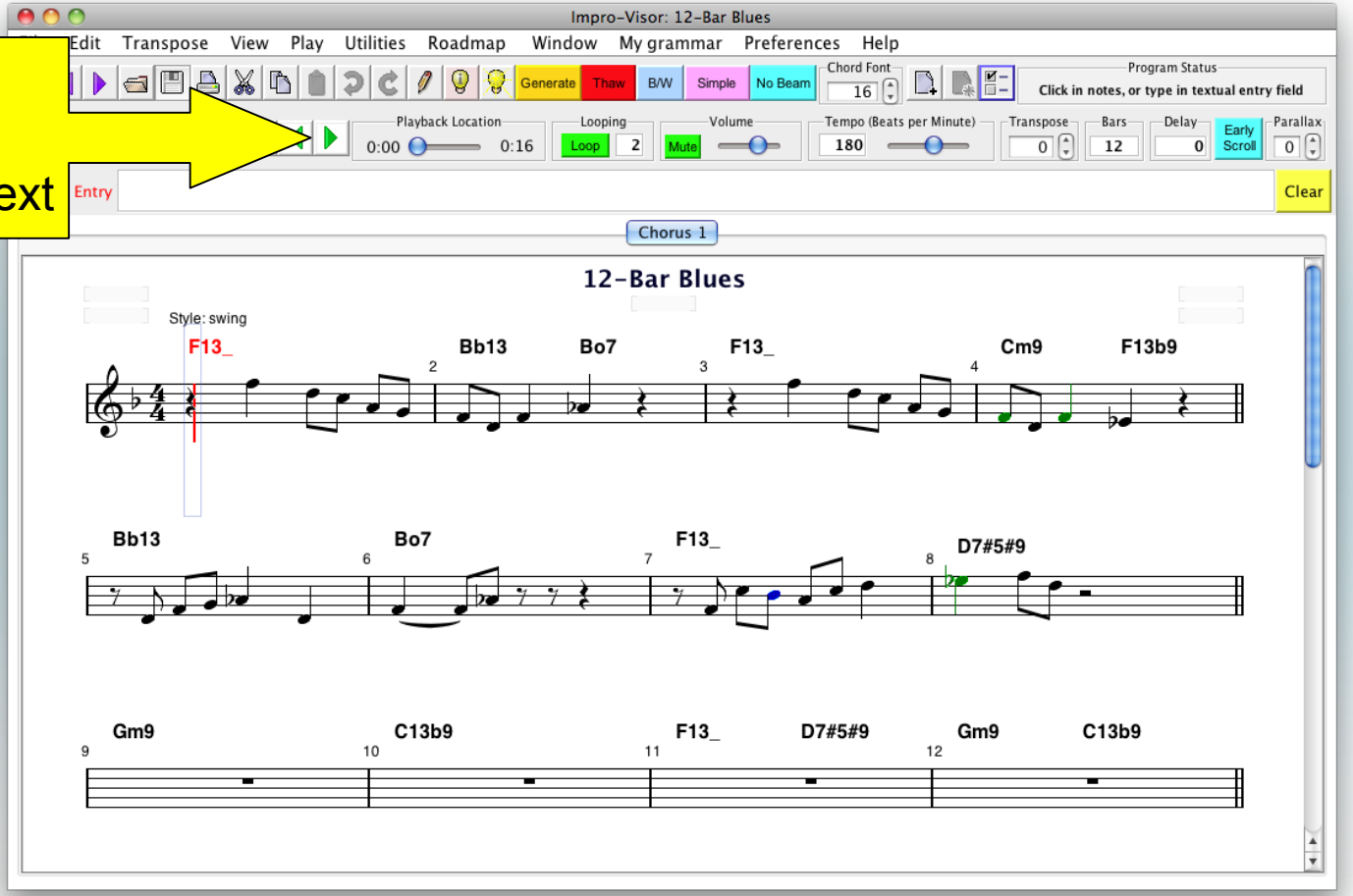
Got Sound?

- Impro-Visor sound is produced through MIDI.
- If you have a non-standard sound setup, you may need to make some adjustments to your system.
- You can use MIDI players, such as Kontakt or ARIA, to provide more realistic sounds than the built-ins.

Use: Playing Chords

Click here
to step from
one chord to the next

Click the arrow
before to go back.



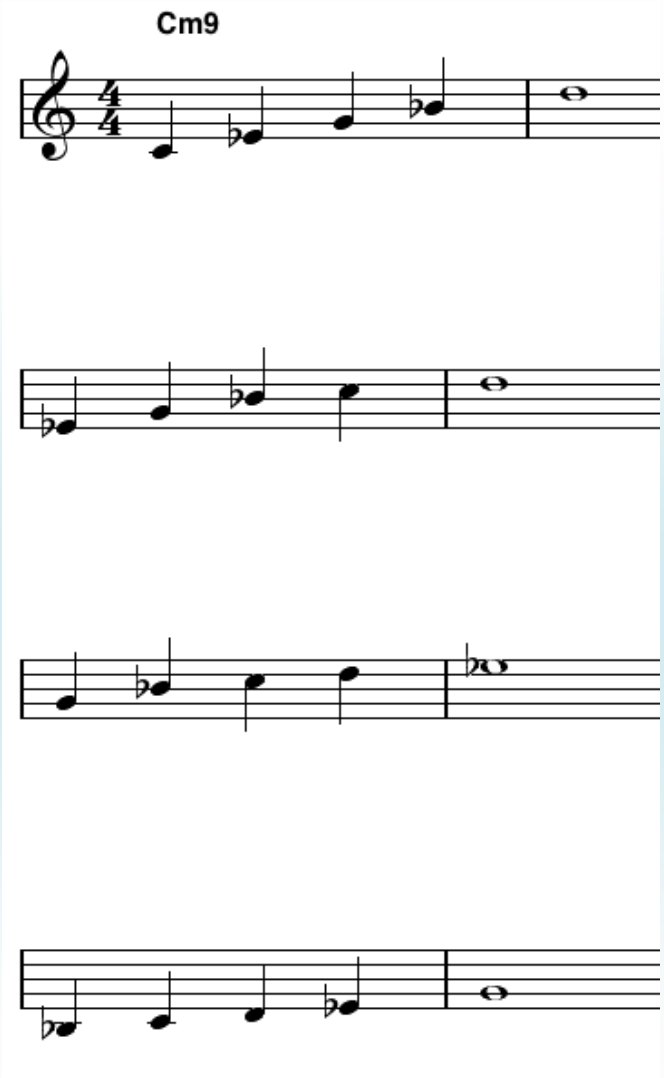
Various Chord Exercises

As each chord sounds, the students arpeggiate the chord on their instruments:

- Up from the root
- Down from the root
- Up/Down from the 3rd, 5th, 7th

Example

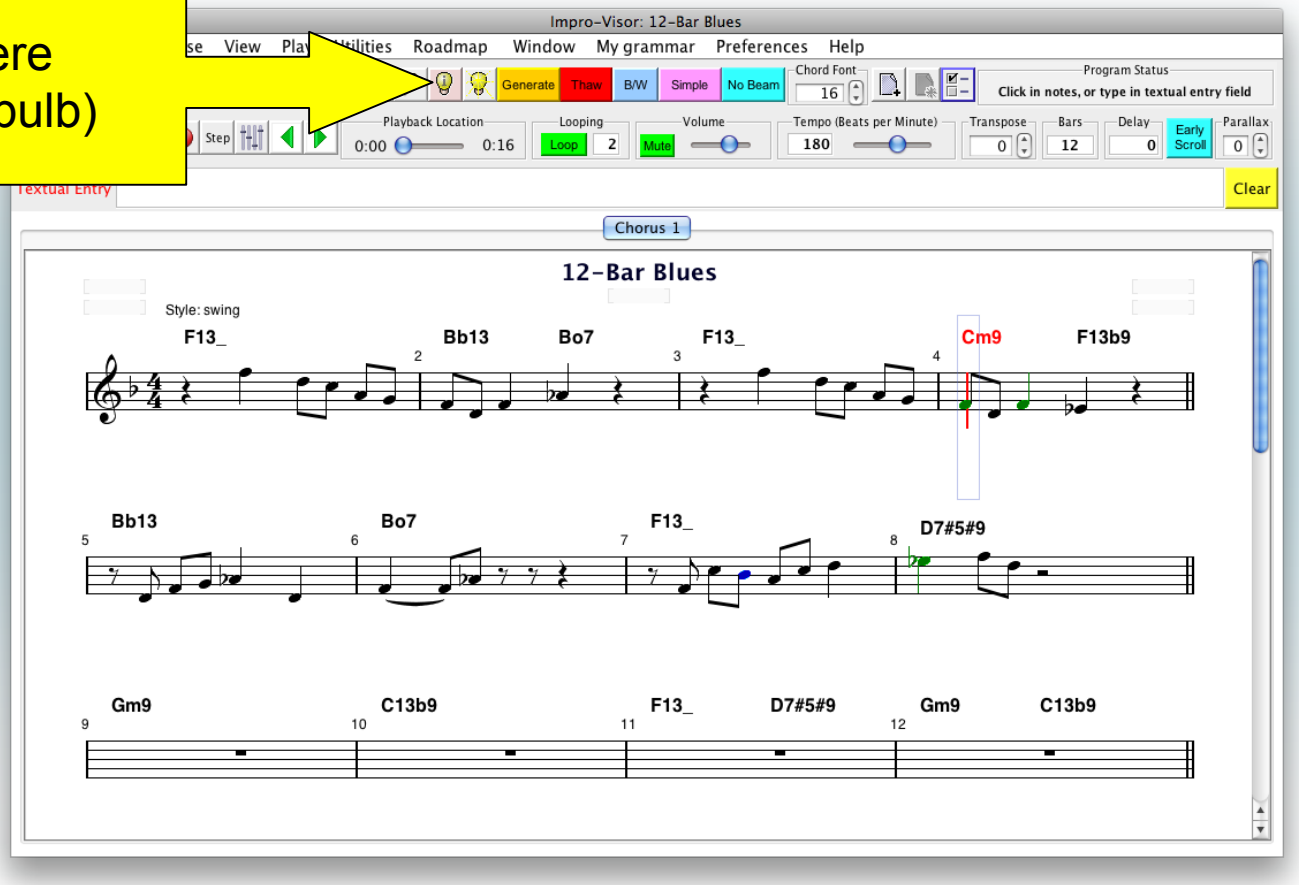
Cm9 (C minor ninth)



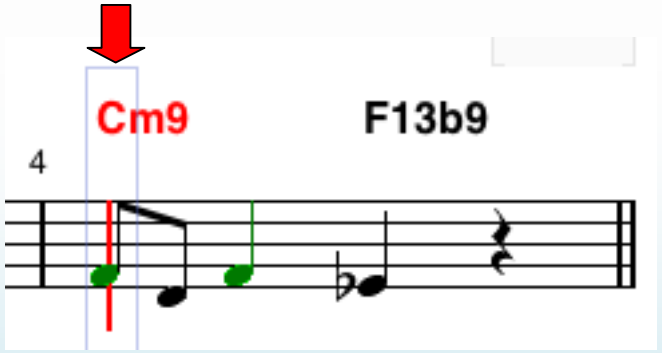
Getting Advice

If the student doesn't know the notes in the chord, **advice** can be consulted. (A chord must be in force.)

Click here
(left light bulb)



Advice is for the chord beneath the *red* (not green) cursor



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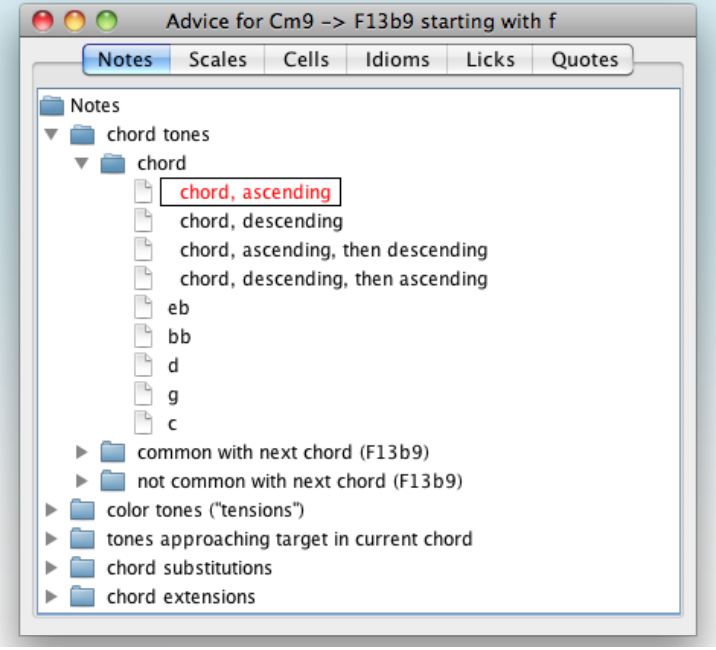
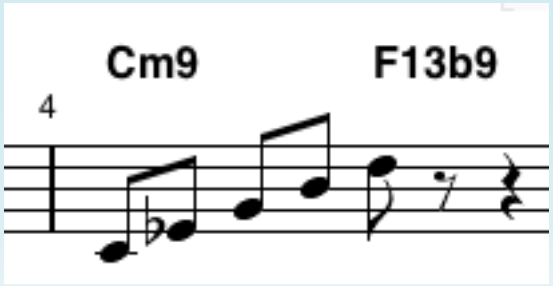




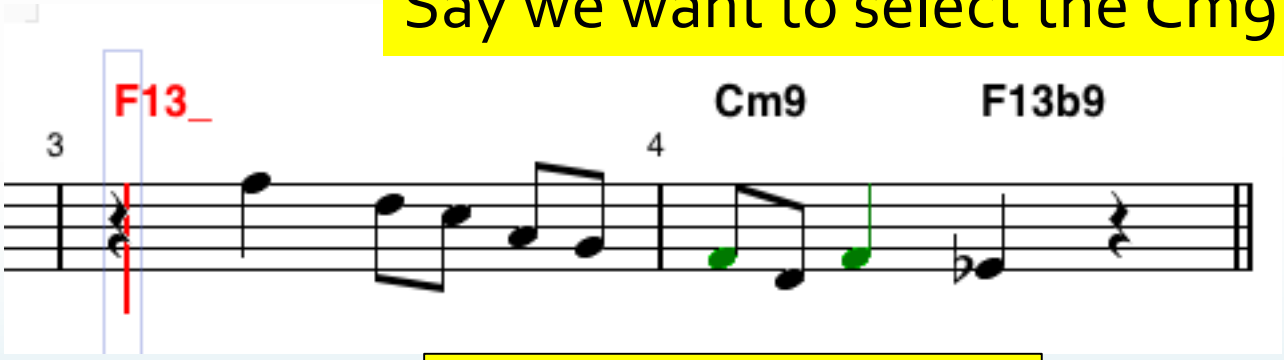
Moving the Red Cursor

- This is a little tricky, but there is a reason for it.
- Holding the **shift** key,
  click the mouse over the slot you wish to select.
- **Then click again** (still holding the shift key).
- (The second click is only necessary if something was already selected.)

Example of Cursor Moving

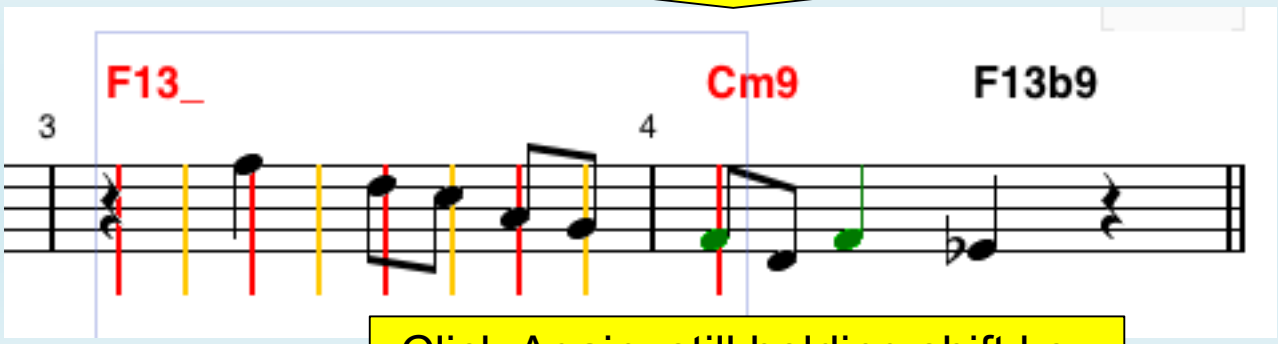
Say we want to select the Cm9.

Before:



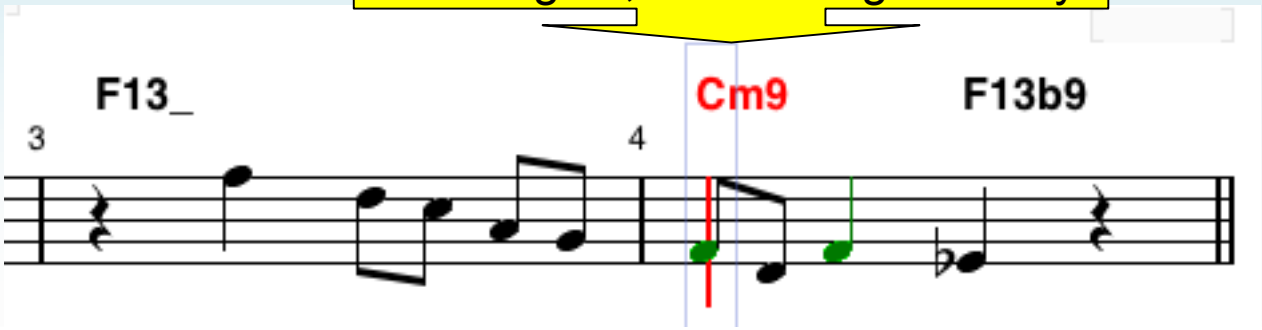
Click Here, holding shift key

Click:



Click Again, still holding shift key

Click Again:



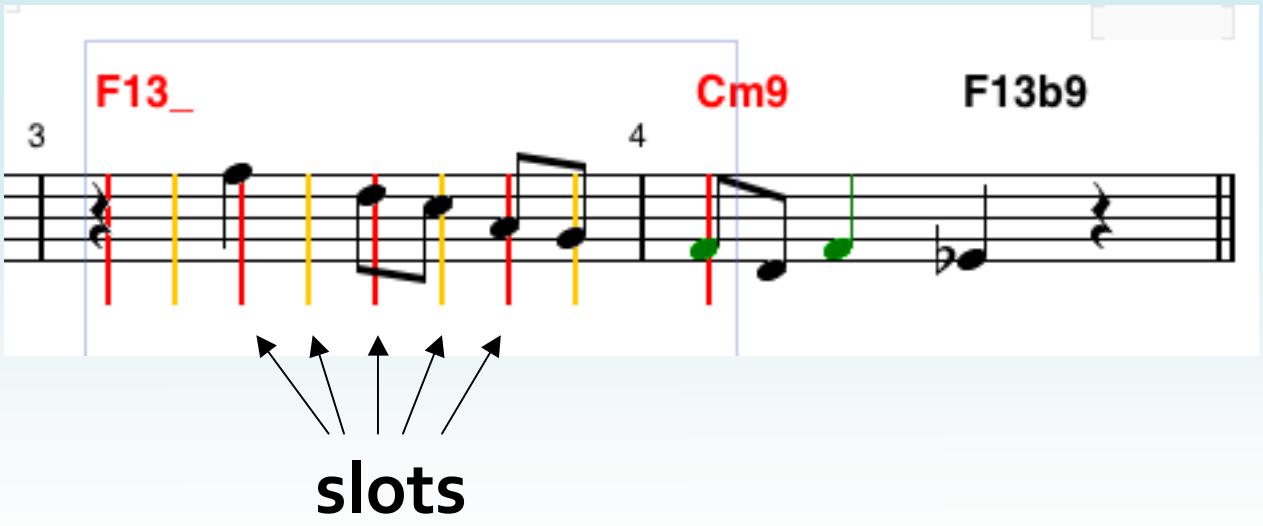
Let's Click Again …

- … like we did last summer.

- See if you can select the F13b9

Without a click …

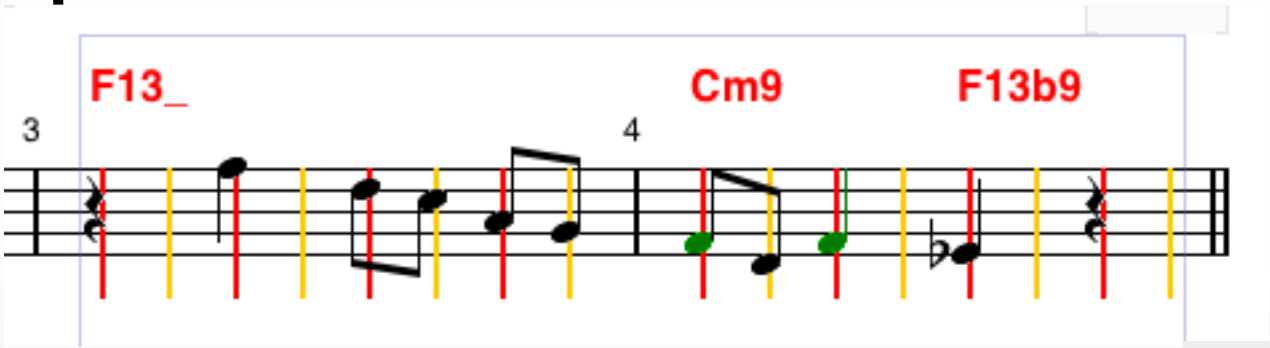
- … the day would never end.
- If the second click is not done, then several "slots" are left selected. This can be a **useful** option.



What can be done with one or more slots selected:

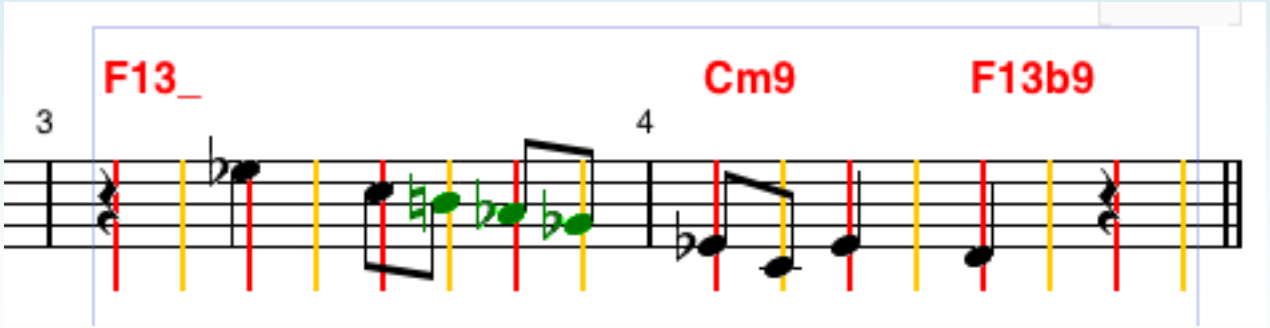
- Play the selection
- Transpose
- Move laterally
- Cut, Paste, Copy

Operations on Selections



- To **play**, press Enter. For looped play:

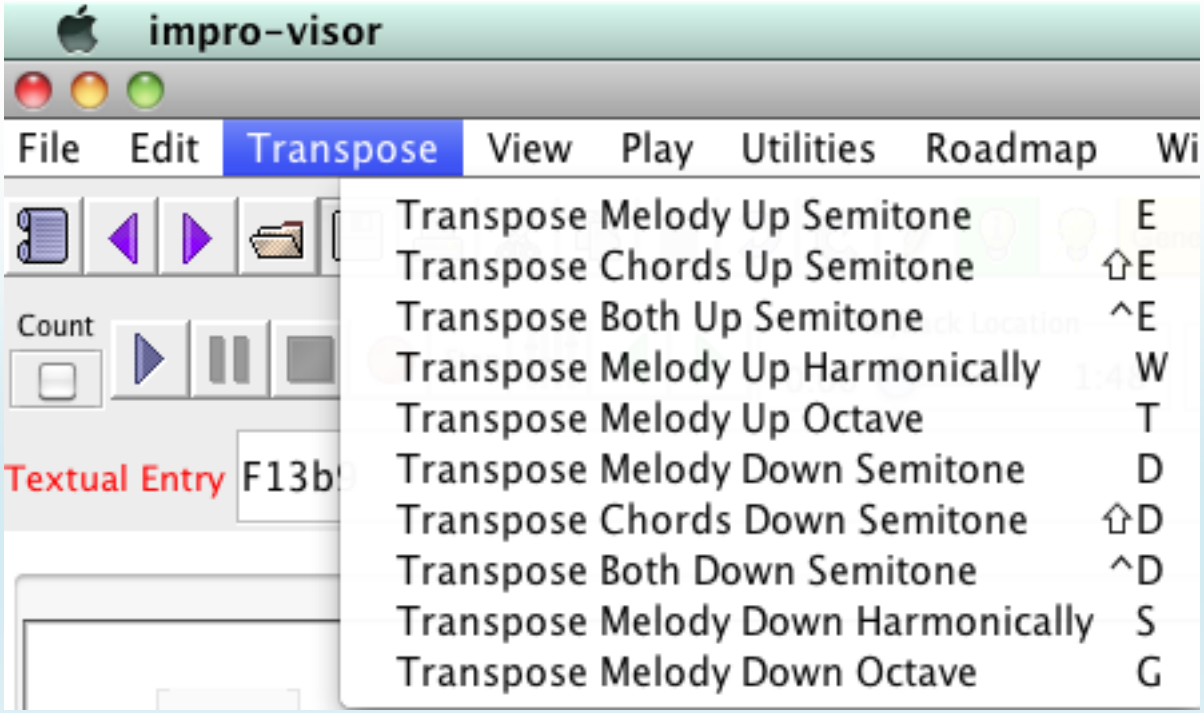
- To **transpose** down or up, press **d** or **e**.
- To **transpose** "harmonically", press **s** or **w**.



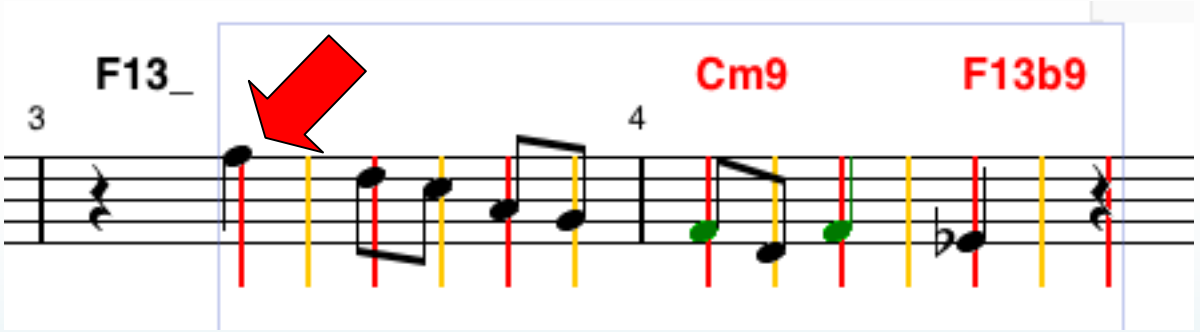
Octave Transpositions

- Press **t** to transpose notes up an octave.
- Press **g** to transpose notes down an octave.

Use Menus to Help Remember



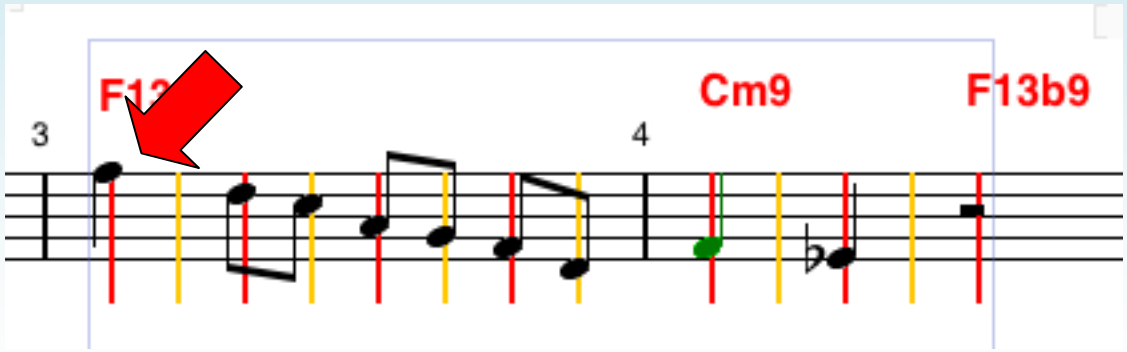
Operations on Selections



- To **move laterally**, grab a note and drag.

  (Recent bug discovered: **Do not include the rest on the left in the selection.**)

- Drag left two slots:

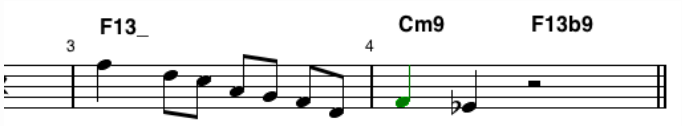


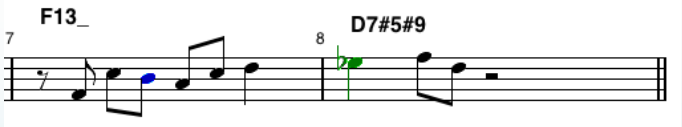
More Operations on Selections

- Copy notes: Press **c**
- Cut notes: Press **x**
- Paste copied or cut notes:

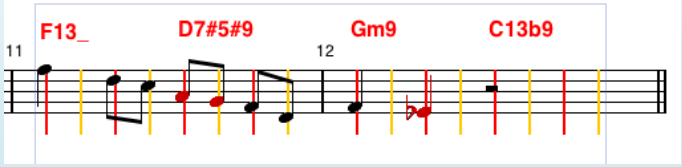
  Press **v** after selecting new starting slot.

c





v



Undo & Redo

- To undo cut, copy, paste type operations:

  Press **z**.

- To redo what you just undid: Press **y**.

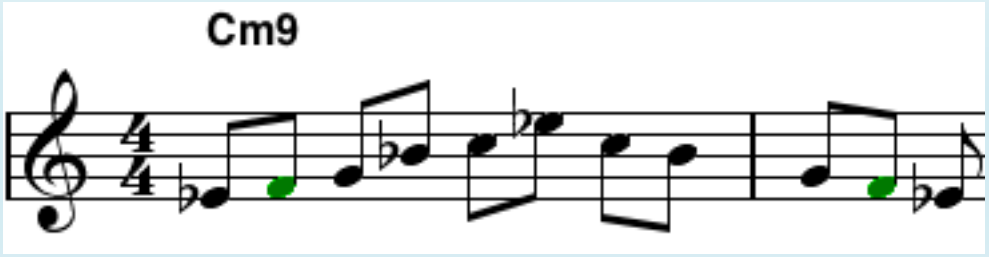
- **Any number** of steps can be undone.

Managing Chords

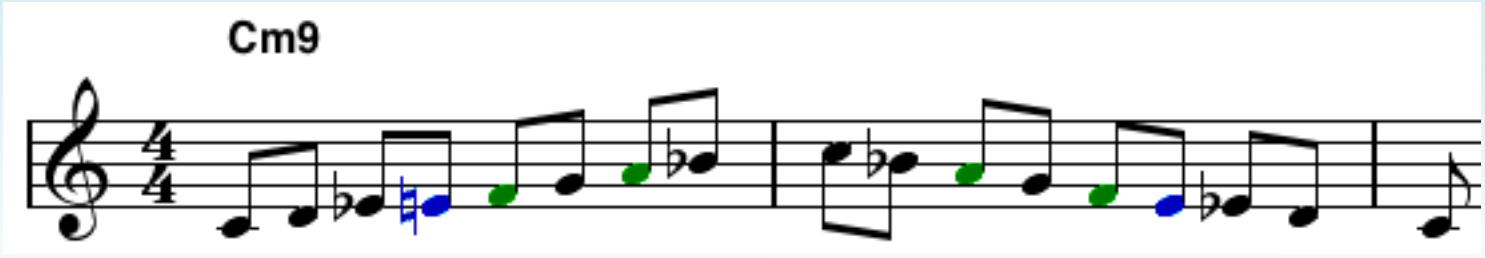
- Similar operations (cut, paste, etc.) work on chords.
- For **chord** operations, hold the **shift** key.
- For **both** chords and melody, hold the **control** key.
- The presentation will demonstrate.

Scale Exercises

As each chord is played, the students play an appropriate scale on their instruments.



(Eb major pentatonic)



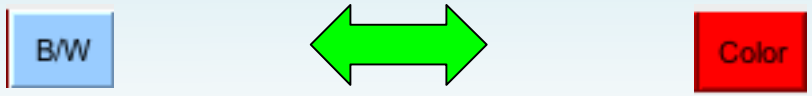
(C bebop minor)

What do the colors mean?

Optional **color coding** for visual feedback:

- **black**: chord tone
- **green**: “color” tone (aka “tension”)
- **blue**: chromatic approach tone to one of the above
- **red**: none of the above (error or “outside”?)

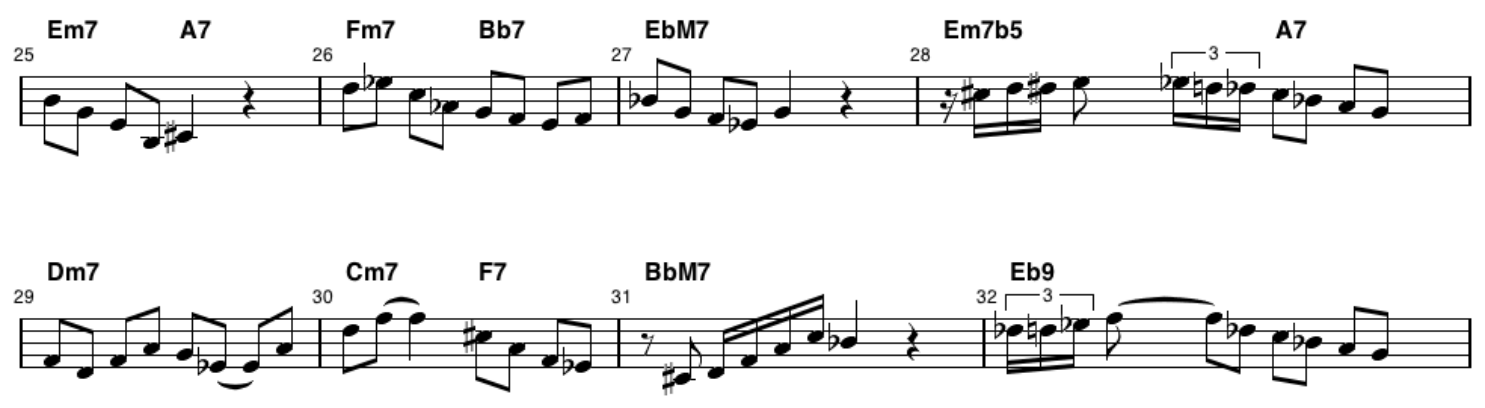
Coloration can be toggled on or off:



Coloration is on Coloration is off

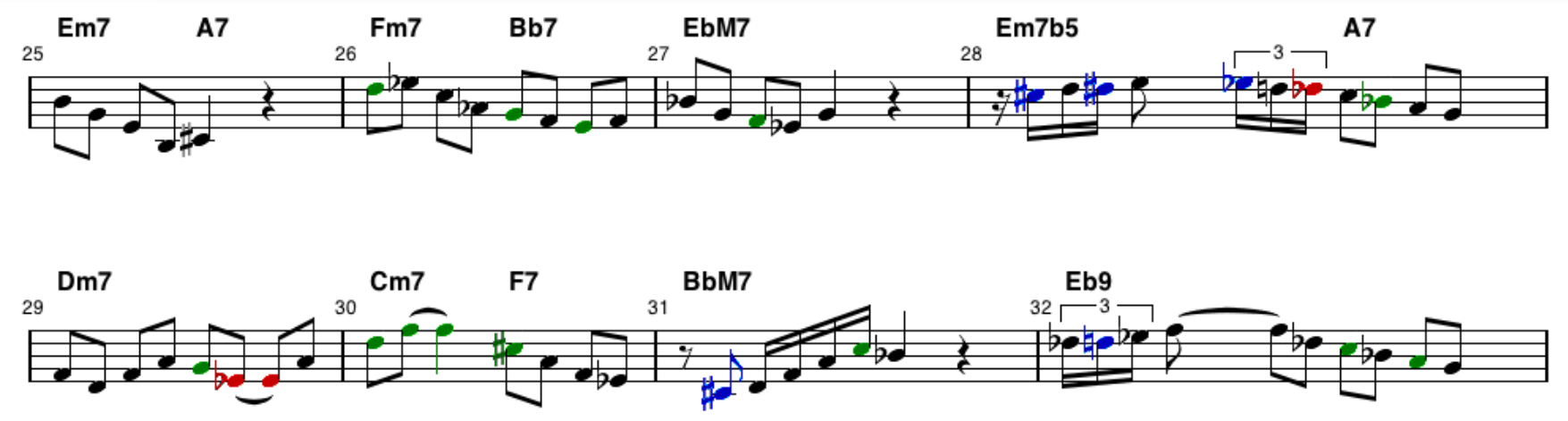
Coloration Exercise

- Load a leadsheet of a solo with coloration *off*.
- Ask students to identify coloration for the notes, then check their answers.



Eight bars from a transcription of John Coltrane's solo on "Moment's Notice".

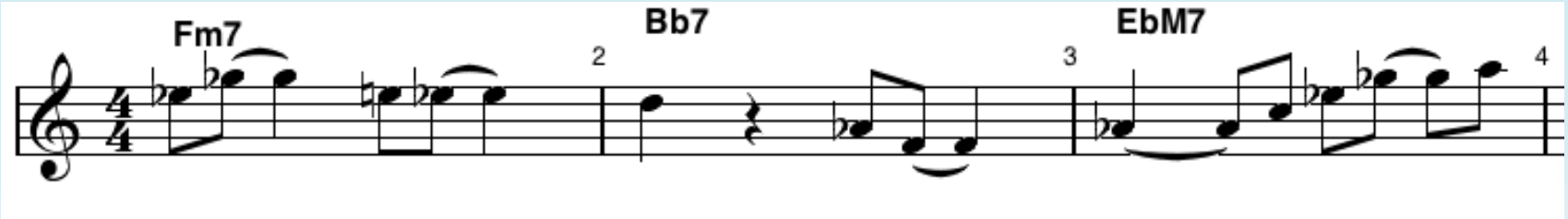
Coloration Exercise



Eight bars from a transcription of John Coltrane's solo on "Moment's Notice".

Students' Use of Coloration

- Students (should) use coloration (+ their ears) to spot mistakes in their own solo compositions.



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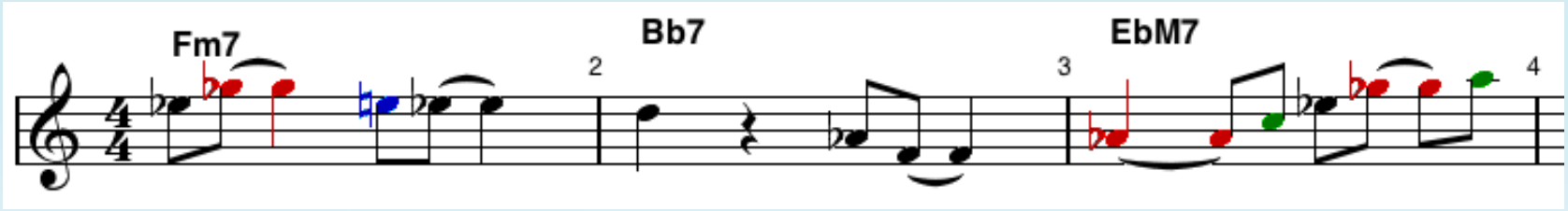


Composing Simple Melodies

- The setup is similar to previous exercises, one chord at a time.
- The chord is played and the student improvises a simple melody over the chord on his/her instrument.
- Go around the room, sequencing through the chords in the piece under study.

Composing Solos

- This is the original intended use of Impro-Visor.
- For the tune under study, compose a solo of one or two choruses, or maybe just a fragment.
- Ideally, be able to play the solo.
- Don’t make it too complex.

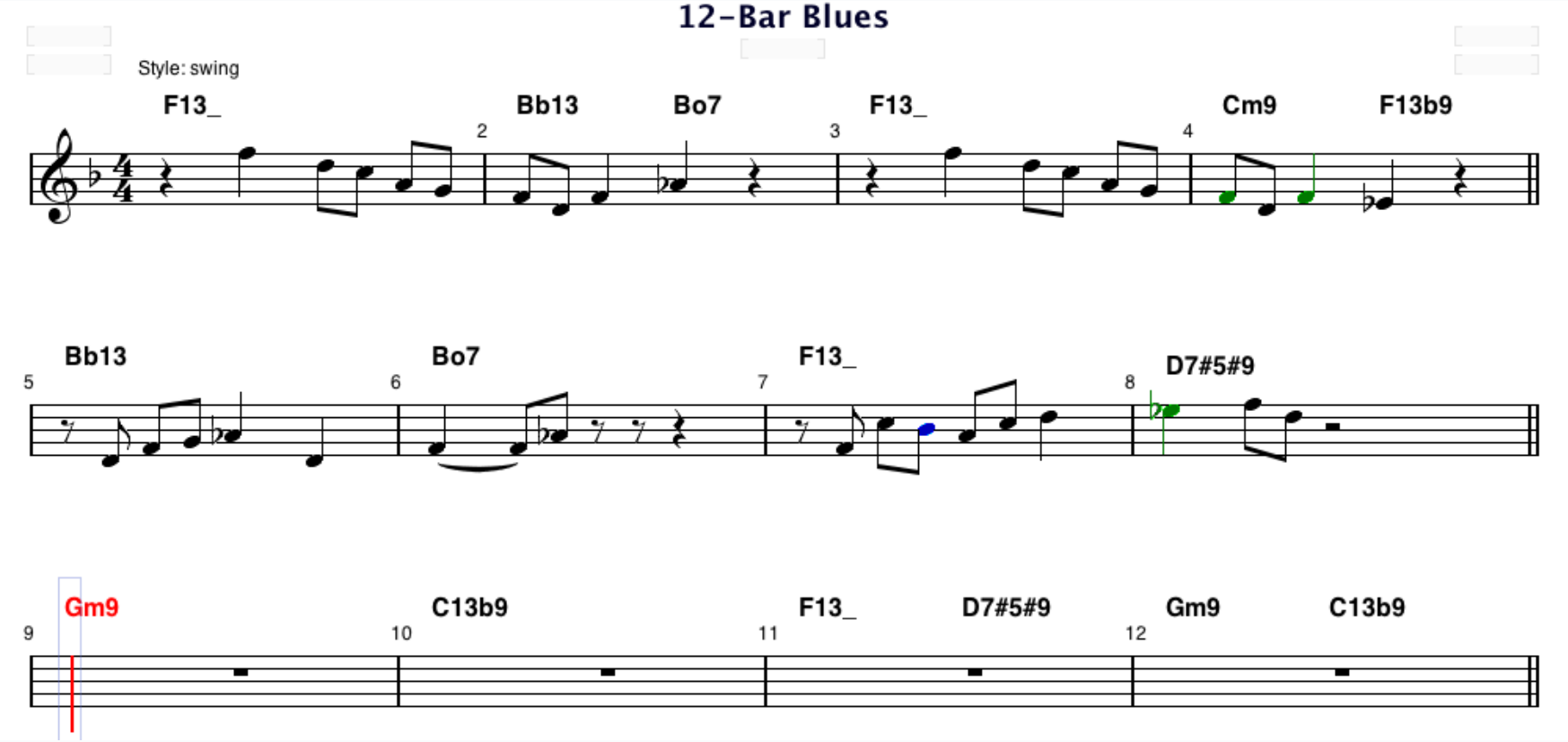
Impro-Visor Provides Help

- **Coloration**, as discussed
- **Harmonic** point-and-click entry:

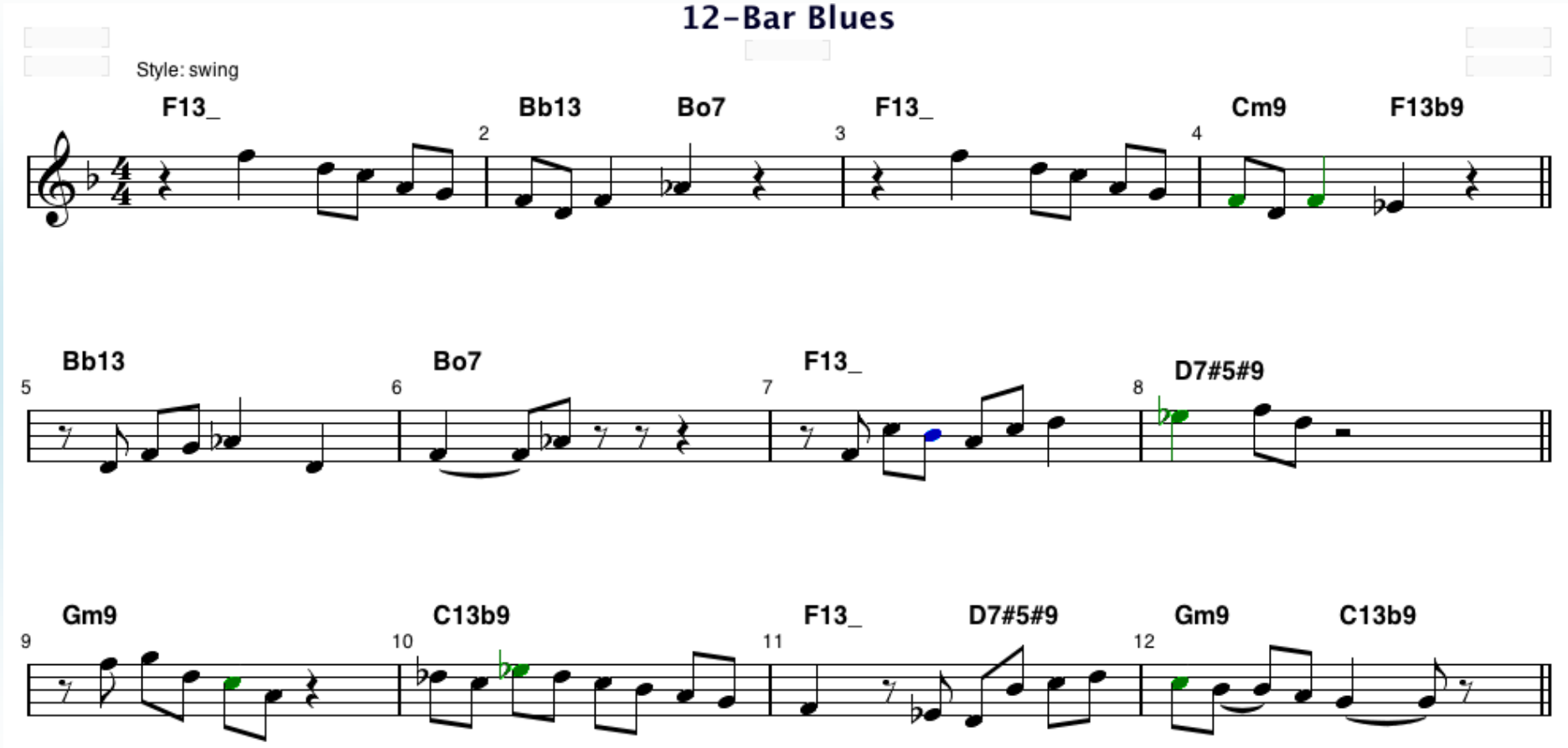
  Notes **gravitate** to chord and color tones.
- **Rectification** to clean up melodies.
- **Aural feedback** (note + chord)
- **Advice** (suggestions for scales, licks, etc.)

Tutorial Example

Compose something for the last 4 bars:



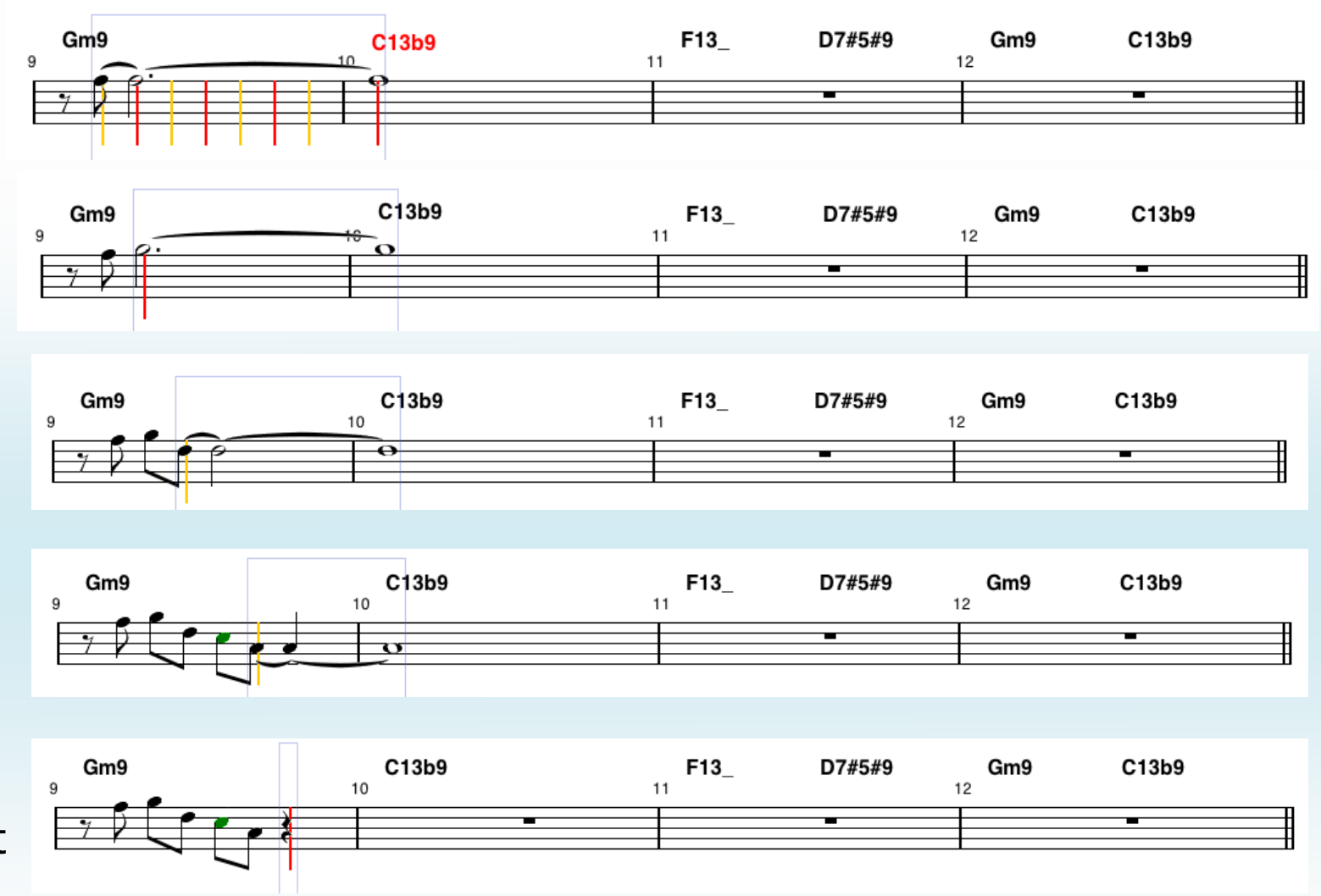
Tutorial Example Sample Solution



Point-and-Click Features

- Only one note can stand in a given slot.
- If you make a mistake, **just click over it**.
- Click over tails of long notes to shorten.
- Use undo/redo, copy, paste, etc.

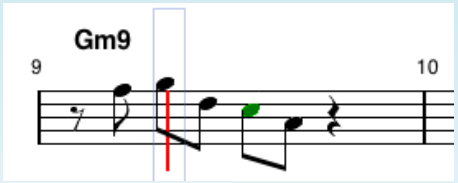
Entry Steps



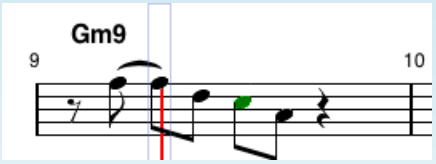
Press **r** for rest

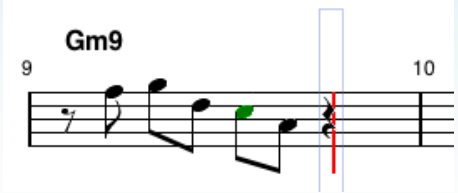
Deleting Notes

- Select note, then press **x**.
- The duration value of the note is added to the note preceding. Other notes do not move.
- Delete rests to elongate notes before them.

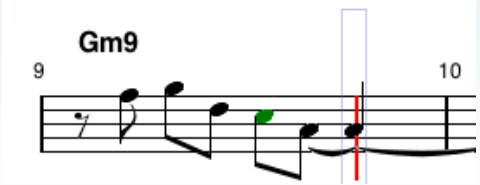


press **x**





press **x**

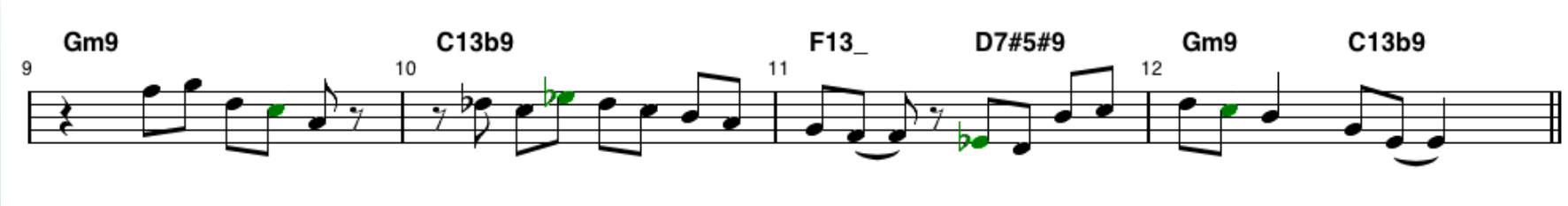


Other Ways to Enter Notes

- Impro-Visor provides a textual notation
- MIDI keyboard:
  - Step entry
  - Real-time entry (less developed)

Textual Notation

- This will be explained in the presentation.
- It is potentially faster than point-and-click.



Textual Entry r4 f+8 g+8 d+8 c+8 a8 r4 db+8 c+8 eb+8 db+8 c+8 bb8 a8 g8 f4 r8 eb8 d8 bb8 c+8 d+8 c+8 bb4 g8 e4+8

r4 f+8 g+8 d+8 c+8 a8 r4

db+8 c+8 eb+8 db+8 c+8 bb8 a8

g8 f4 r8 eb8 d8 bb8 c+8

d+8 c+8 bb4 g8 e4+8

Entering Chords, Very Briefly

- Chords are entered entirely by text.
- The starting bar must be selected.
- Separate measures by , (comma) or |.
- Chords within a measure are equally spaced out.
- Use / to repeat chord and control uneven spacing.
- Slash chords e.g. D7/C and polychords e.g. D\C7.
- Example: _tutorial.ls

```
F13_ |  Bb13 B07 |  F13_ |  Cm9 F13b9 |
Bb13 |  B07    |  F13_ |  D7#5#9 |
Gm9 |  C13b9 |  F13_ D7#5#9 |  Gm9 C13b9 |
```

Class Assignment

- Assign the class the task of writing a solo for the tune of the week.
- They email their submissions to the instructor.
- The instruct creates a composite of the submissions.
- Each submission is one chorus of the composite.

Reviewing Class Assignment

- In class, the composite is played for the students.
- Watch on an LCD display while listening.
- Critique each others work.
- The instructor also provides critique.
- Examples:
  - http://www.cs.hmc.edu/~keller/jazz/improvisor/classroom/MomentsNoticeSolos.htm
  - http://www.cs.hmc.edu/~keller/jazz/improvisor/classroom

Advice for Writer's Block

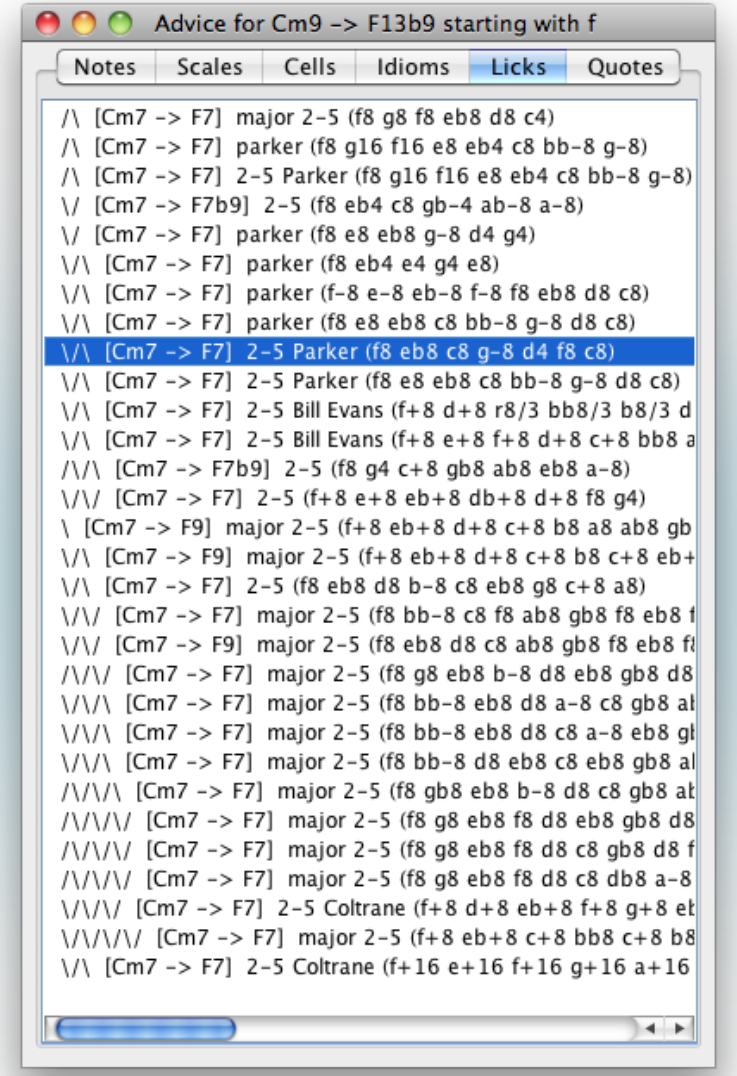
- In addition to chords and scales,

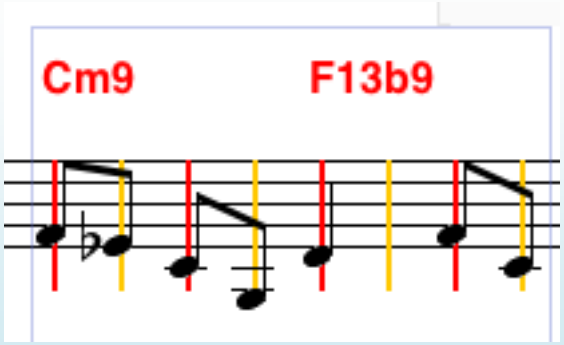
  Impro-Visor provides a library of:

  - Cells
  - Idioms
  - Licks
  - Quotes

- The user can use these in solos, and add to them.

Licks, etc. Advice

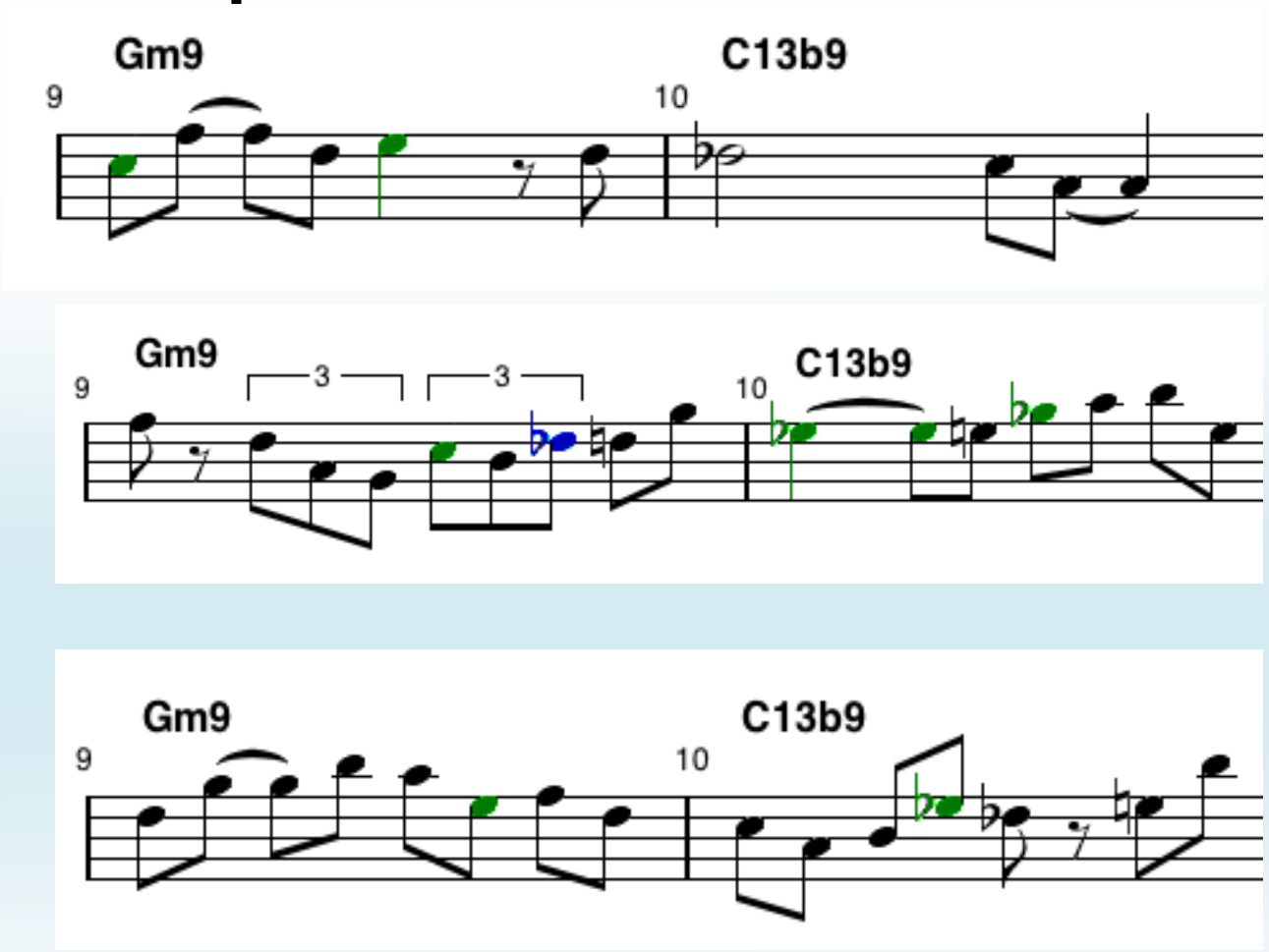




Lick Generation

- Impro-Visor will also **generate** new melodic material on its own.
- Some of this material can be informed by solos absorbed from other players.
- There is a **grammatical** basis underlying this technology.

Examples of Generated Licks



Avoiding Overuse

- Students should be warned not to overuse lick generation in composition assignments.

- Ideally, generated licks are a **source of ideas**, not a substitute for thinking and engagement with the material.

- The lick generator can do the entire assignment in real-time, but the hope is the students will be able to create a better sounding solo.

Play-Along Exercises

- These can be done in class or individually.
- Soloing with the program's accompaniment.
- Trading with the program.
- Comping the program as it generates a melody.
- Playing bass or drums
  while the program plays other parts.
- Sight-reading practice.

Fixed Trading with Impro-Visor

- Starting with an existing solo,
  delete every other group of four bars.

- Play the result and have the students trade fours
  with the fixed solo.

- Adjust tempo to suit the tune and abilities
  (30 to 300 beat-per-minute available).

Soloing with Impro-Visor

- Delete the melody entirely.
- Students solo over the generated background.

Dynamic Trading with Impro-Visor

- Instead of fixed trading,

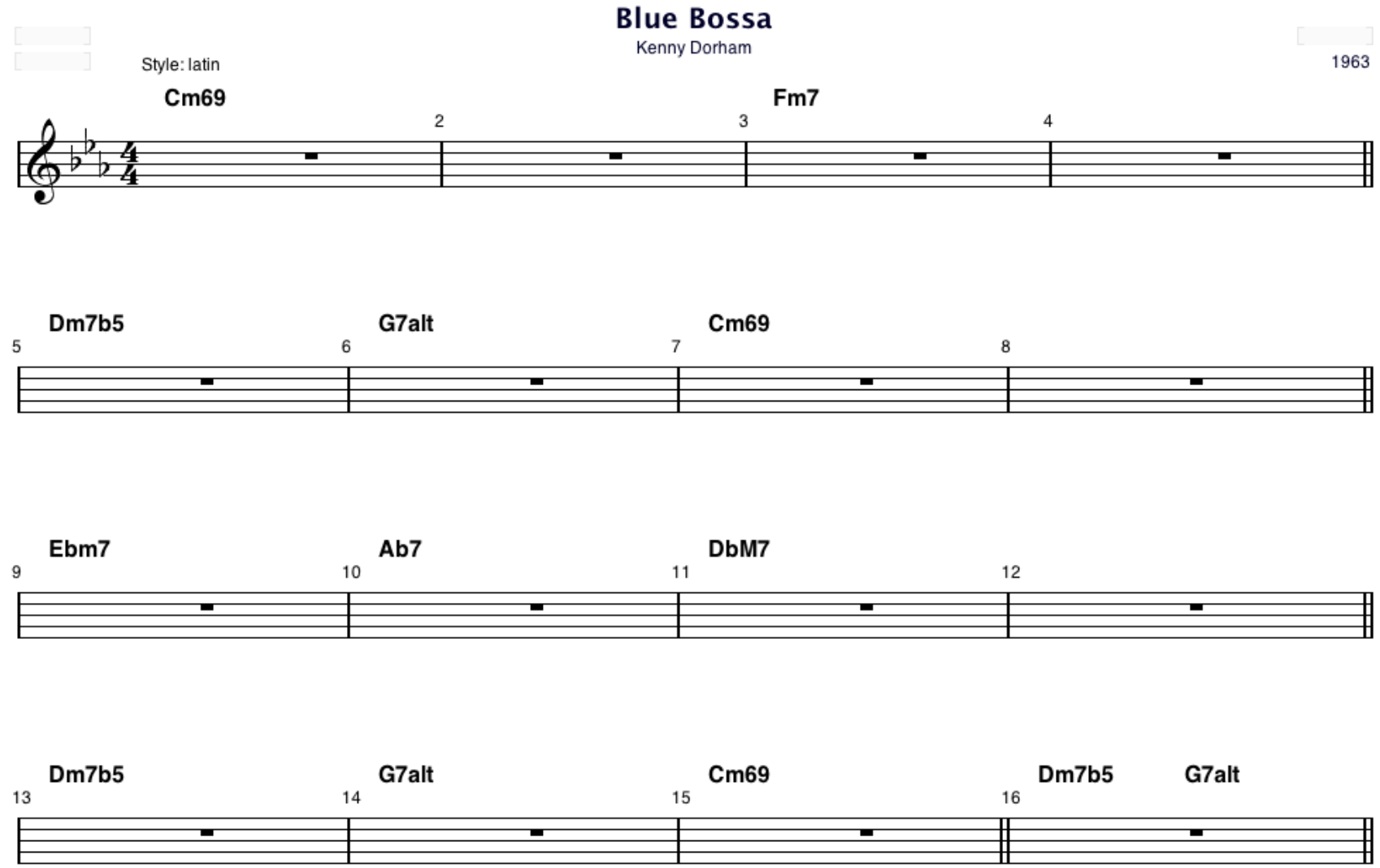
  Impro-Visor generates fours dynamically.

- This requires a special grammar and settings.

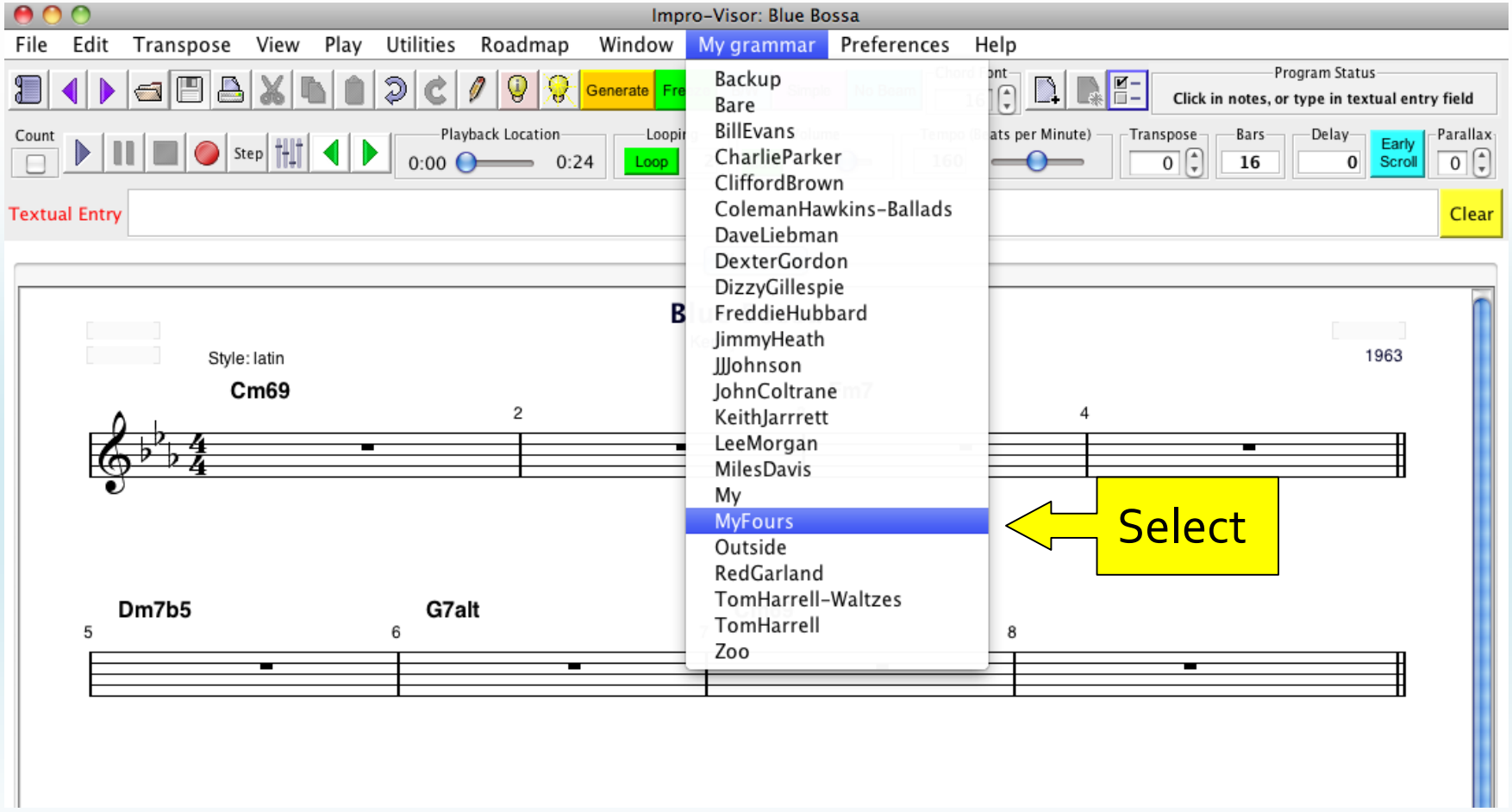
Trading Fours: Details

- **The tune must be a multiple of 8 bars long.**
- Select the grammar MyFours.
- Unselect everything on the leadsheet (press Escape).
- Open the Lick Generator control panel.
- Click Recurrent and Rectify.
- You man need to adjust Gap, which is the number of beats lead-time to generate the next chorus (usually 1 to 4).
- Press Generate (do not use Loop).

Trading Fours: Example

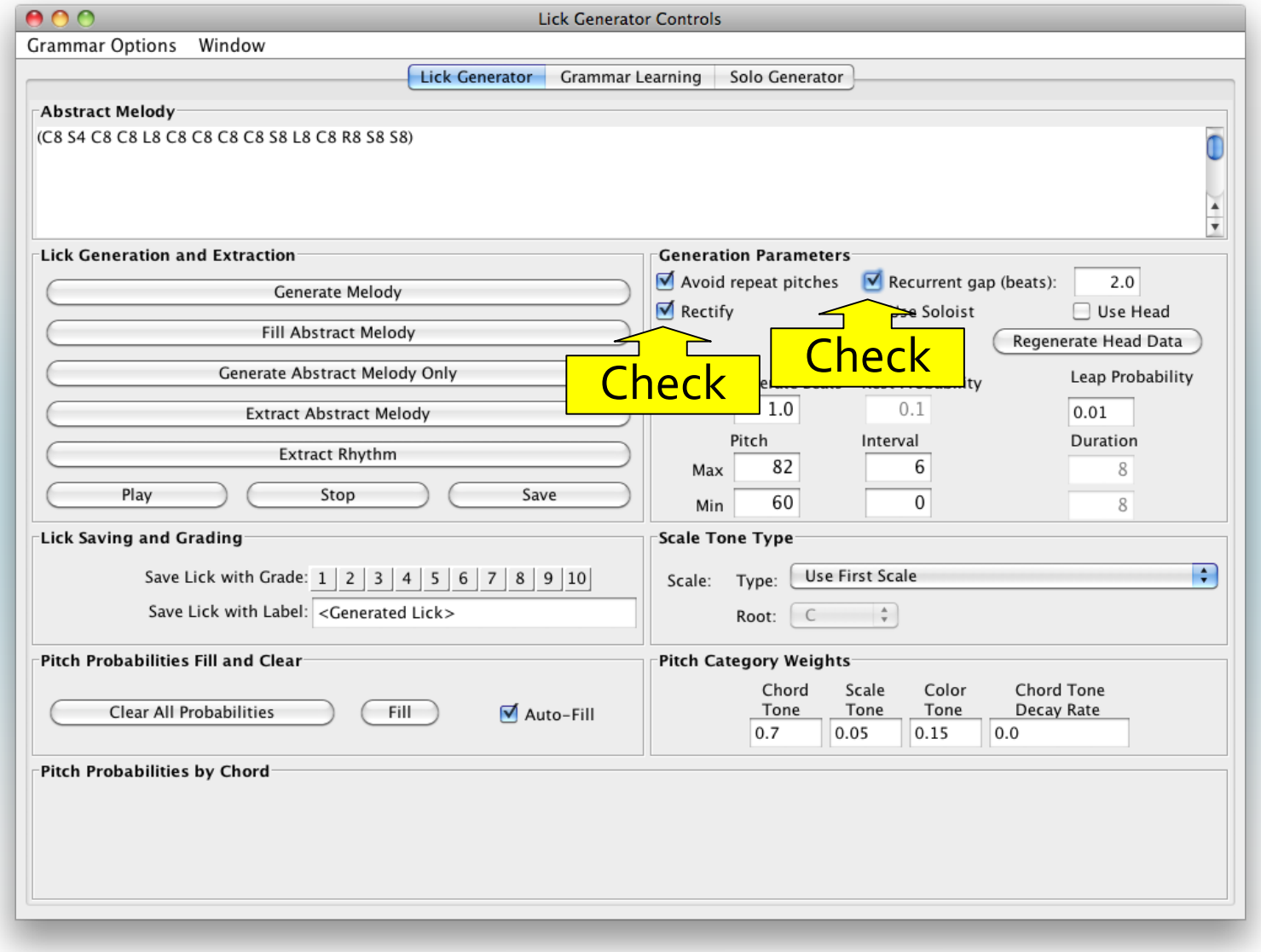


Trading Fours: Grammar Selection

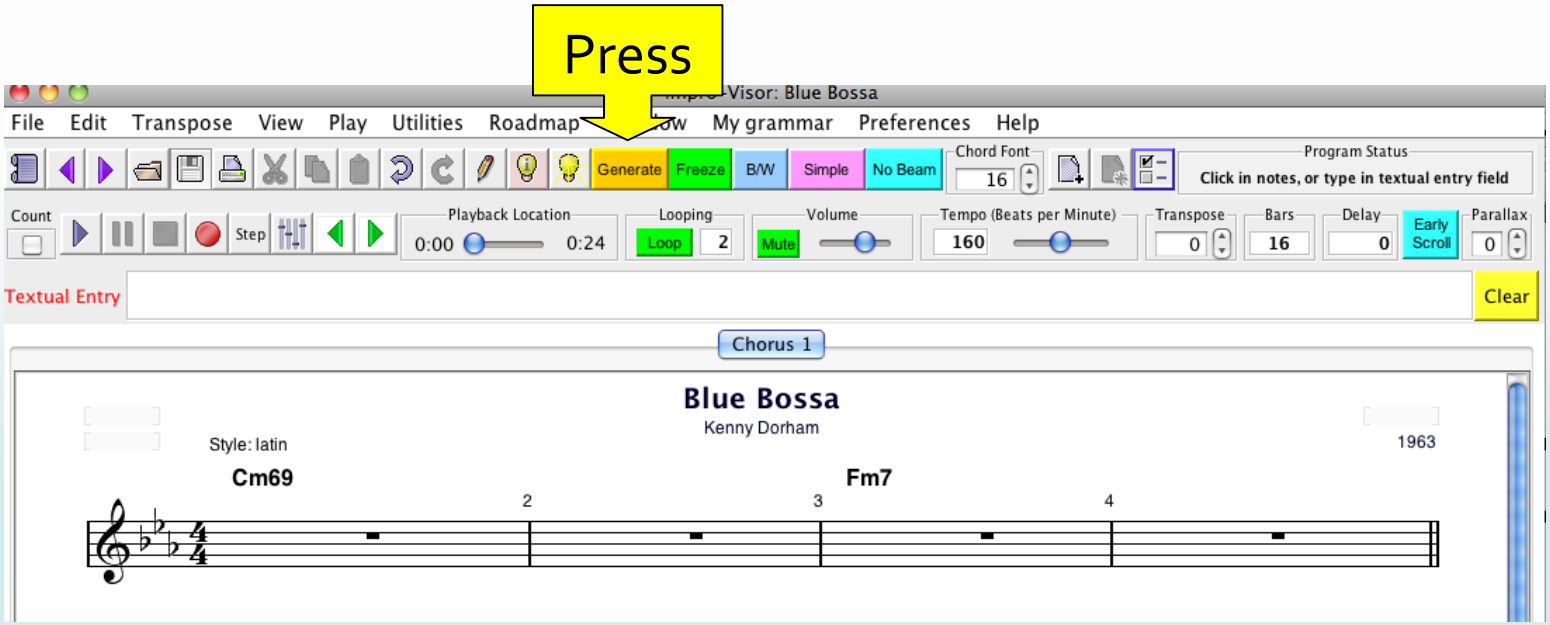


Trading Fours: Example

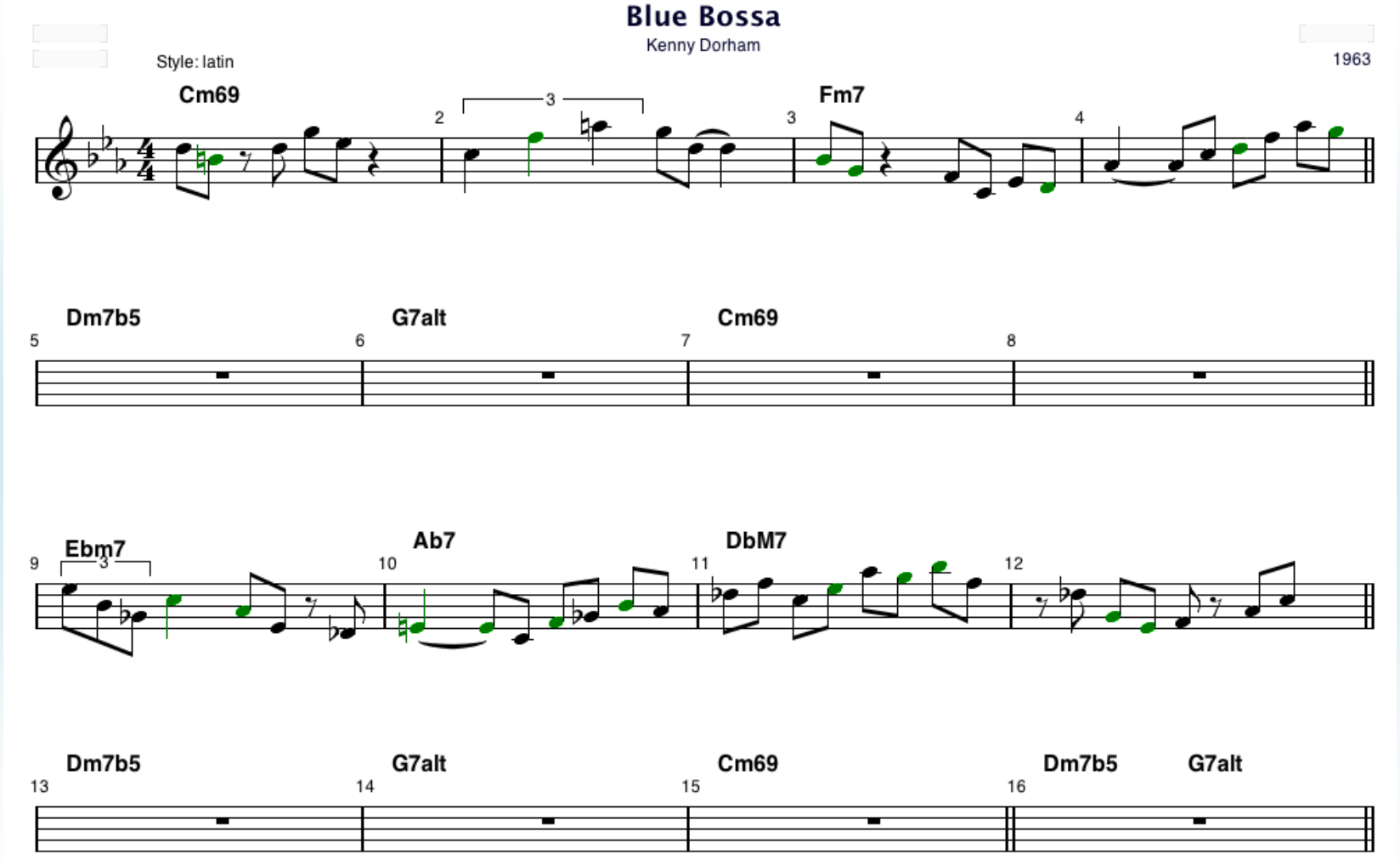
Open with right-hand light bulb



Trading Fours: Launching



Chorus of Fours, Dynamically Generated



Forthcoming Improvements

- Fours, Eights, etc. over artist grammars
- Removal of occasional hiccup between choruses.

Postmortem of Generated Melodies

- Melodies are saved in memory.
- You can access them by pressing undo (z).
- Each undo will go back one chorus.
- See example of 66 generated choruses:

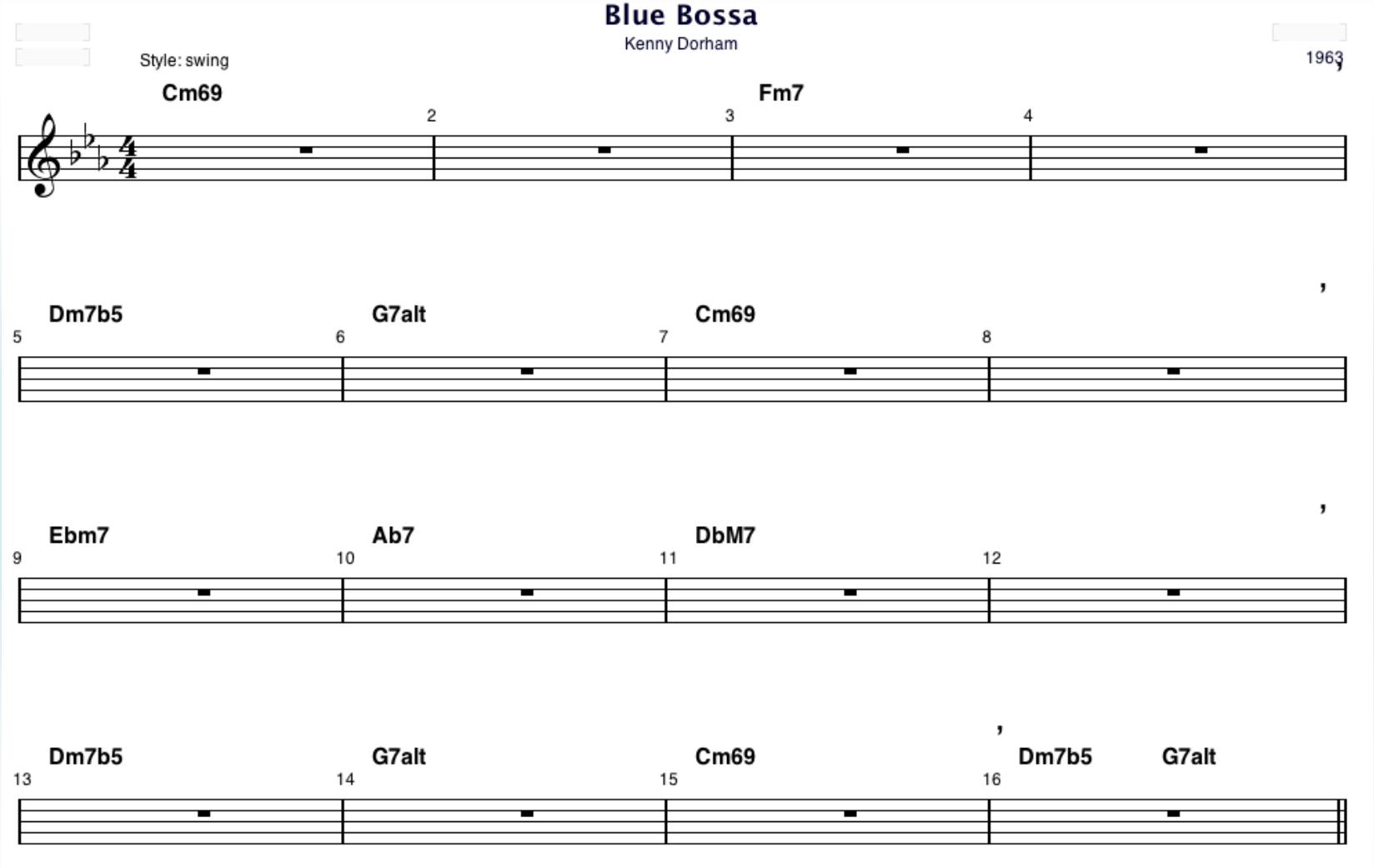
  http://www.cs.hmc.edu/~keller/jazz/improvisor/Solos/12BarBlues66Choruses.htm
- Eventually memory will run out, indicated by the program slowing down or stuttering.

  In this case, it is best to **restart**.

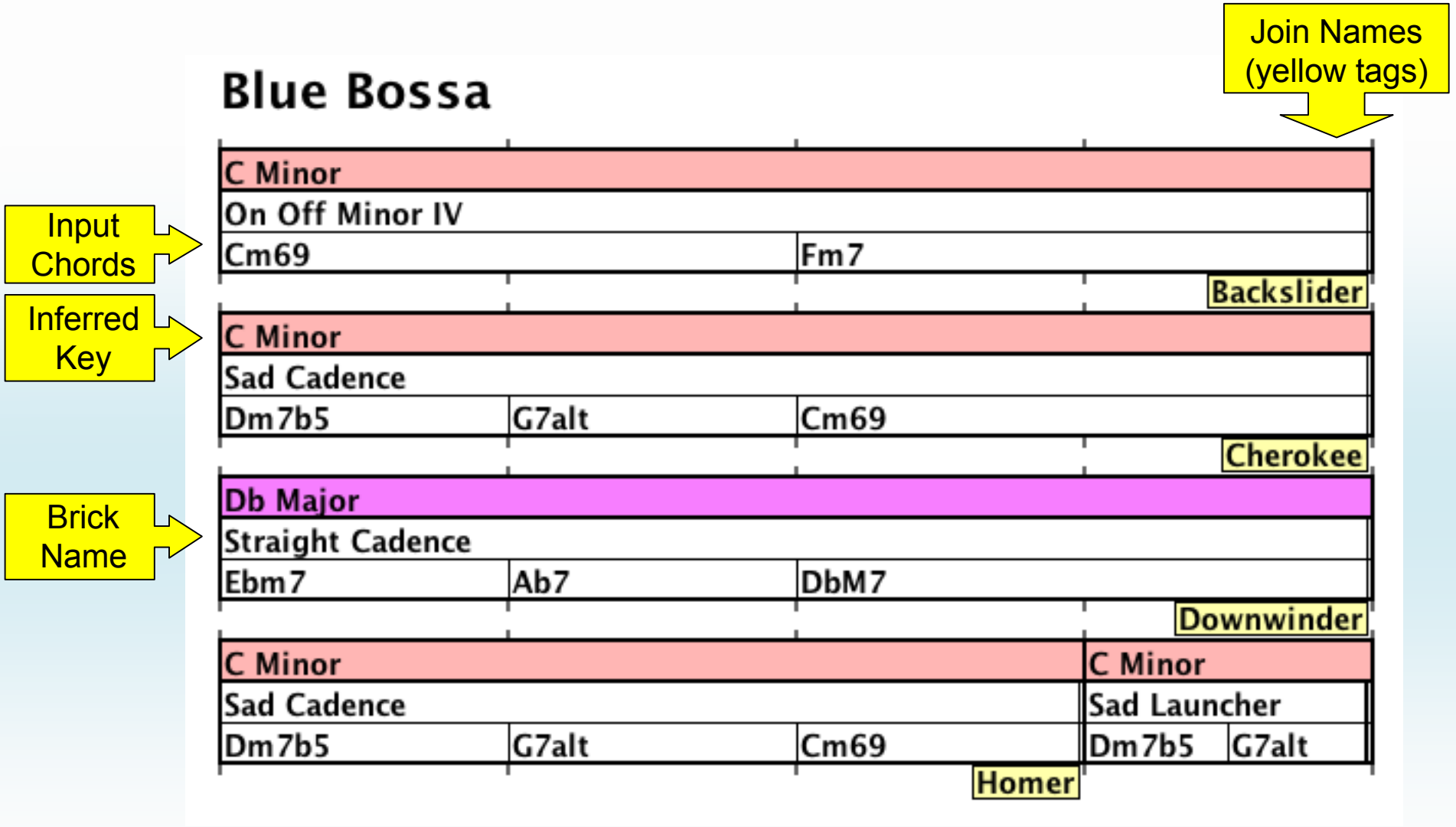
Road Maps

- Road maps are Impro-Visor's newest feature.
- Tunes can be automatically analyzed into keys and bricks.
- Bricks are idiomatic chord progressions, such as cadences and turnarounds.
- These help the beginner to intermediate player understand the tune.
- The idea of bricks is from Conrad Cork in the U.K.

A Tune for Analysis



Generated Road Map for "Blue Bossa"



Using Road Maps for Play-Along

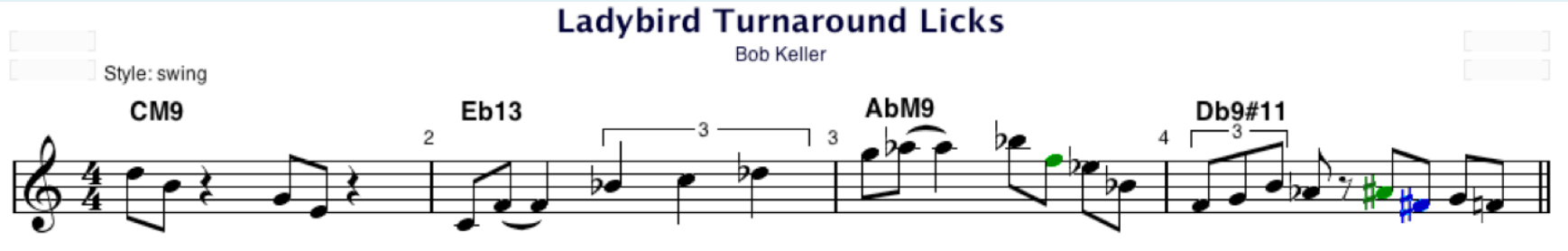
- Because roadmaps nicely decompose a tune, each brick can be practiced separately, allowing concentration on specific progressions.

- Impro-Visor allows one to **play** individual bricks or contiguous sequences of them.

Licks over Bricks

- See: http://www.cs.hmc.edu/~keller/jazz/improvisor/licks/

Name	Chord Progression			
Cadence + Dropback	IIm^7	V^7	**I**	VI^7
Sad Cadence + Dropback	IIm^{7}b5	V^7	**Im**	VIm^{7}b5
POT (*Plain Old Turnaround*)	**I**	VI^7	IIm^7	V^7
Minor POT (*Minor Plain Old Turnaround*)	**Im**	VI^7	IIm^{7}b5	V^7
Pullback	IIm^7	V^7	IIIm^7	VI^7
Ladybird Turnaround	**I**	bIII^7	bVI	bII^7
Turnaround to II + Straight Approach	I IV^7	IIIm^7 VI^7	**IIm^7**	V^7
Rainy Approach Turnaround	IIIm^7	bIIIo^7	**IIm^7**	V^7
Red Clay Turnaround	**Im**	bVIIm^7 bIII^7 (IIm^7 V^7 of bVI)	**bVI**	IIm^{7}b5 V^7



Bricks for Composition

- I have found that thinking in terms of bricks and joins helps me in tune composition.

- For example, the bridge of "Benny's Dream" starts with three **cadences**, separated by **downwinders**.

- Video of "Benny's Dream"

End of Talk Slides