Improvisation Education Support Software
Towards a Personal Improvisation Companion

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Structural Aspects of this Talk

- I will identify some *future* possibilities *along with* current features,

- rather than waiting until the end.
Software Tool for Jazz

- Supports intellectualization, exploration
- Provides aural feedback
- Can act as a companion, e.g.
  - Play-along
  - Trading melodies
- Encourages thought about
  - Tune structure
  - Melodic ideas
Jazz is an Emotional and Intellectual Activity

- We are artists on the stand.
  - There we want to emote, not think.

- But we are analysts in the shed.
  - Plan.
  - Analyse.
  - Experiment.
  - Exchange ideas.
  - Then push everything to the subconscious level.
Improvisation Support Tool:

Impro-Visor™
Background of Impro-Visor

- Began in mid-2005
- Improvisation Course Experience
  - Students compose solos as part of study and preparation
  - Desire legible and playable results
  - Advise the player, without a personal coach

- Personal Improvisation Experience
  - Work out lines
  - Save for later reference
  - Transcribe the work of others
Composition vs. Transcription

- Ownership of Results
- Pride of Ownership
- Enjoyment and Satisfaction
Impro-Visor

= “Improvisation Advisor”

- Composition support tool
- User ideally should do most of the work
  - Assistance provided on music theory
    - Chord spellings
    - Scale choices
  - Archival aspect
    - Licks, Idioms, Cells, Quotes
- Detailed suggestions provided to user, *if needed*
12-Bar Blues
Note Entry Options

- Point & Click
- Textual: e8 g8 bb8 db+8 e+8+4+1
- MIDI keyboard (better developed in future)
- Harmonic Point & Click, or Sketch:
  Notes gravitate to chord/color tones
Future Work on Note Entry

- Optionally indicate functions alongside the notes (e.g. #9).

- Make the sketch aspect smoother and adjustable as a spline.
Micro-Advice on Theory: Chord & Approach Tones
Scale
Choice
Advice
Melodic Cells

Contour profiles
Note Coloration Option

- Black: Chord Tones
- Green: Color Tones ("Tensions")
- Blue: Approach Tone
- Red: Outside
Future:
Automate search for licks based on attributes
Lick Generator

- Addresses Need for Novelty and Robustness
- Arbitrary-Length Chord Progression
Saving Licks for Reference
Future Advisory Work

- Automatically derive and display:
  - Key maps
  - Lego road maps
  - Analytic hints

- Locate chord progressions within a corpus of tunes (subject to any transposition) such as “The Imaginary Book”
Grammatical Basis for Licks

- Grammar generates melodic lines using probabilities.

- Grammar rules indicate how *melodic space* is to be filled.

- Rules can be tuned to generate simple or complex melodies.

- The note coloration *categories* play an important rule.
Grammar Learning Capability

- Impro-Visor can *learn* a grammar from a set of transcriptions.

- The grammar will generate lines containing figures similar to ones in the transcription, but still novel.

- The chord progression for generation need not be the same as in the transcriptions.
Expandable Grammar Repertoire

- Some preliminary grammars available:
  Hand-crafted, or
  Derived automatically from a few transcriptions.

- We need more transcribers.
Future Work on Grammars

- Provide a more **user-friendly** interface for manipulating:
  - Editing and tuning
  - Mix-and-match rules
  - Automatically derive trading grammar from a given base grammar
Multiple Purposes

- As Impro-Visor was improved based on further R&D, it developed a split personality:
  - Play-along tool
  - Composition tool
  - Ability to improvise on its own
  - Multiple styles and style extraction
  - Ability to learn aspects of soloist styles

Thus forming the basis for an improvisation companion.
Real-Time Usage

- Impro-Visor **auto-accompaniment** generated from
  - tune’s chord progression, and
  - a style specification.

- Grammars can be used to specify **trading** 4’s, 8’s, etc.

- Can improvise in real-time, and **continue indefinitely**, in principle.
Future Work on Real-Time Aspects

- Smooth out MIDI sequence transitions.
- Port the tool to hand-held devices, e.g. iPod
- Better MIDI input.
- React to user audio input.
- Lick learning in real-time.
Current Classroom Usage

- Students are assigned the task of writing a chorus over the “tune of the week”.

- Students email their work to me.

- I composite the choruses and bring them to class.

- We listen to what they’ve written.

- They critique each others work.
Composite Tabbed Choruses

Rob

Style: swing

Em

Am

Em

Am

Em

Am

D7b9

G
Textual Information Saving

- Lead sheets are saved in an openly-readable textual form I call “leadsheet notation”.

- Related notation is used to store:
  - Vocabulary
    - Scales, licks, etc.
  - Chords, voicings
  - Style specifications (swing, latin, rock, …)
  - Grammar specifications
Download Free (Mac, PC, Linux)

- Visit
  www.impro-visor.com
  (include the dash).

- User group (about 5500 members):
  http://launch.groups.yahoo.com/group/impro-visor/

- See also: Bob Keller’s Jazz Page
  www.cs.hmc.edu/~keller/jazz