Accents and expression in piano performance

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Outline:

- Analysis theory of expressivity in music performance:
  Focuses on classical piano performance
  relationship between accents and expression analysed from a
  musicological point of view

- Analogy to speech

- Application of the theory in software for computer-based
  expressive performance generation.
Accents:

Expressivity of a performance relates to accents.

« a relatively salient event » / « an event that attracts the attention of the listener »
(not only stress or dynamic)

essential for clear understanding in both speech and music.

Gives a feeling of the importance of events relative to each other
## Classification and terminology:

<table>
<thead>
<tr>
<th>IMMANENT ACCENTS</th>
<th>PERFORMED ACCENTS</th>
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<tr>
<td>time</td>
<td></td>
</tr>
<tr>
<td>- grouping</td>
<td>- onset time (agogic)</td>
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<tr>
<td>- metrical</td>
<td>- duration (articulatory)</td>
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<tr>
<td>pitch</td>
<td>- amplitude envelope</td>
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<td>- melodic (contour)</td>
<td>- intonation</td>
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<td>- harmonic</td>
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<td>- reductional</td>
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<td>loudness</td>
<td>- dynamic</td>
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<td>- dynamic</td>
<td>- stress</td>
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<tr>
<td>timbre</td>
<td>- instrument/orchestration</td>
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<tr>
<td>- instrument/orchestration</td>
<td>- coloration</td>
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Table 1: A Taxonomy of Accents in Music
Accents overview:

- Immanent accents are apparent in the notated score.

- Performed accents are added to the score by the performer.

- Both relates to the 4 aspects of sound: time, pitch, loudness, timbre.

- Most important notational parameters in a score are pitch and time. Most important aspects for immanent accents.

- Performed accents make use of those four parameter: vibrato, tremolo, crescendo, rallentando, ...
  in piano music: only key velocity and timing.

- Performed accents can vary within the boundaries implied by the notated score (determined perceptually).
Immanent accents in piano music:

1. Melodic accents:

**turns:** peaks and valleys of the melodic contour

**skips:** disjunct interval between two consecutive tones

(distance from mean pitch)

Stronger in outer voices
2. Harmonic accents:

Occurs at:

- harmonic changes (horizontal aspect)
  e.g: modulation of tonality, like rise of ½ tone in popular music

- harmonic dissonances (vertical aspect):
  when a single melodic tone clashes with its accompanying harmony.
3. **Metrical accents:**

relate to the underlying beat, or pulse.

Listeners tend to focus on a single level of moderate tempo, and perceive other levels relative to that level.

Quarter note vs eigth notes: accentuate down-beats
4. Grouping accents:

Structure of music can be segmented into phrases. The notes are grouped into phrases at different levels.

Grouping accents are present at the beginning and end of phrases.

The strength of a grouping accent depends on the number of hierarchical levels that it demarcates (can it be subdivided?)

Ex. 4a. Bach: Chorale No. 98, O Haupt voll Blut und Wunden.
5. Reductional accent:

« corresponds to notes at a deeper reductional level than the musical surface »

(what does it mean??)

Ex. 1f. Bach: Prelude No. 1, Bk. 1, Well-Tempered Clavier (reduction).
Accents in speech:

Immanent accents in speech: only grouping and reductional

Attention attracted to important syllables/words/sentences by manipulating time, loudness, pitch and timbre, as in music

Very important for a clear understanding.

The changes are usually correlated.
E.g: Loudness and pitch may be raised at the same time.

Text without interpretation only carries a part of the message.

The same rules applies to music.
Performed accents in music:

As in speech, clear relationship between performed and immanent accents.

Performed accents are used to reinforce immanent accents.

Pianists bring out grouping, melodic and metrical accents by systematically varying key velocity, onset time, and articulation.

This allows for a wide variety of different interpretations.

Which accents should be more emphasized? Which parameter should be used for this purpose?

More important aspects are usually loudness and timing.

Problem: How to model it in order to create satisfying computer-based expressive performances?
Some examples on real performances
Design of a computer-assisted expressive performance rendering system:

How a system for rendering of expressive musicale performances should be designed?

Not practical for users to adjust timing and intensity of each individual note. The system should allow for the adjustment of several notes at once, in a way that mimic real music performance.

Theory of immanent and performed accent used as a basis.
Design overview:

- Score is used as input.
- The system presents a structural analysis of the score with immanent accents to the user.
- Shows the relative salience of events.
- Can be adjusted by the user.
- Choice of accents to emphasize, and how much.
- Allows for modulation of loudness and timing for chosen immanent accents.
- Should allow gradual change
- The result could then be synthesised and eventually adjusted.
Example of a curve used to define a performed accent:

Figure 1. A Schematic Timing Curve For Individual Accents.

Applied to all accents of the same type, or adjusted individually
Applications:

piano teaching:

Details of interpretations often described using imagery/analogy: not precise and subjective. The presented taxonomy gives a more precise technical vocabulary to communicate with students.

Performance analysis:

Hypothesis that performed accents emphasize immanent accents can be used in reverse. Performed accents of a particular performance can be mapped to immanent accents and used to estimate their relative importance in the performer's conception of the piece.