

Rules for Music Performance

Differentiation Rules:

- **Duration Contrast:** The contrast between long and short note values, such as half note and eighth note, is sometimes enhanced by musicians. They play the short notes shorter and the long notes longer than nominally written in the score.
- **Melodic Charge:** Increases loudness and IOI of notes far away from the root of the current chord along the circle of fifths.

In traditional tonal music, e.g., Western music from the 18th and 19th centuries, there is no equality between scale tones. Some are remarkable and some are trivial. For example, the root of the chord is trivial while the augmented fourth above the root is very special.

The remarkableness of the scale tones can be accounted for in terms of melodic charge of the scale tones. The duration, loudness and vibrato extent of the tones vary according to the melodic charge.

- **High Sharp:** This rule plays high tones sharp and low tones flat, just like some musicians tend to do when they play.

Grouping Rules:

- **Punctuation:** Automatically locates small tone groups and marks them with a lengthening of the last note and a following micropause.

The smallest unit in the hierarchical musical structure is tone groups of up to about 7 tones, so called *melodical gestures*. In playing it is important to mark the boundaries between such gestures.

This rule automatically identifies these melodical constituents by means of a patented set of context dependent rules. The boundaries are marked micropauses.

- **Double Duration:** Decreases the IOI contrast for two adjacent notes having the nominal IOI ratio 2:1, e.g., a quarter note followed by an eighth note. In other words, the short tone is lengthened at the expense of the long note.
- **Tuning:** A common principle in communication seems to be to enhance the differences between categories. For example, females and males enhance the sex differences by adding some others, e.g. in clothing, and architects choose different colors for different parts of houses, e.g. windows, roof, basement etc. Likewise musicians tend to enhance differences between scales by playing the major third interval wide and the minor third interval narrow. Given the principles of harmony in traditional tonal music, this implies a need for narrow minor second intervals, too. If the scale tones are derived from a set of pure fifth intervals, a tuning with narrow minor seconds emerges. This scale is called Pythagorean tuning. If used, the melodic intervals sound just fine but the harmonies generate disturbing beats.
Melodic Intonation, Harmonic Intonation, Mixed Intonation.

- **Phrase Arch:** Music has a hierarchical structure, so that small units, such as melodic gestures, join to form subphrases, which join to form phrases etc. When musicians play, they mark the endings of these tone groups.
This rule marks the phrase and subphrase endings by creating minute accelerandos and decelerandos within phrases and subphrases according to a parabolic function. Thus it increases the tempo in the beginnings and decreases it towards the endings.
The loudness is changed similarly creating crescendos and diminuendos.
- **Inégales (or swing):** This rule lengthens the stressed notes in sequences of notes having the same note value. The rule reflects a convention used in Baroque music as well as in jazz. You can vary the duration relations between the stressed and unstressed notes.
- **Ensemble Swing:** This rule applies long-short patterns on consecutive eighth notes for the soloist and the drummer and delays the onsets of the soloist's downbeat. The amount of swing ratio (ratio between long and short note) and delay for each instrument is taken from average values of measurements of classical jazz group recordings, such as Miles Davis Quintet from '64, Wynton Marsalis group, Live at the Blues Alley, and Keith Jarrett Trio.
- **Final Ritard:** When a piece with a strong motoric character comes to its end, musicians generally slow down the tempo somewhat. The slowing down generally follows a parabolic.
- **Harmonic Charge:** Produces rallentando and crescendo when a chord harmonically remote from the current key is approaching and vice versa.
Just as with the scale tones, the harmonies in traditional Western tonal music are not equal: there are *trivial chord* and *fantastic chords*.
Harmonic charge is a concept reflecting the remarkableness of chord in its harmonic context. It is a weighted sum of the chord tones' melodic charges, using the root of the main chord of the key, i.e. the root of the tonic as the reference.
- **Faster-uphill:** Decreases IOI of notes in uphill motion of melody.
- **Leap-tone-duration:** Shortens the first note of an ascending leap and lengthens the first note of a descending leap.

Reference:

The Science of Music Performance

<http://www.speech.kth.se/music/performance>