

Huron, David. "Tone and Voice: a Derivation of the Rules of Voice Leading from Perceptual Principles"

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Huron defines voice leading as the way in which individual "voices" in a musical work move successively from one tone to another. A "voice" in this sense, refers to either a vocal line, or an instrumental part. Along with harmonic progression, voice leading is a fundamental component of Western harmonic theory, and has been topic of concern since the 17th century. The range of voice-leading guidelines put forth by theorists extends from universal maxims to mere stylistic conventions, but according to Huron the ultimate goal is the same: to create "perceptually independent musical lines" regardless of the musical texture. With references to a wide array of perceptual research Huron restates this goal as an attempt by composers to segregate auditory streams in order to produce clear auditory impressions. Finally, in a somewhat bold interpretation of the data, he then suggests an analogy between clear auditory impressions and "perceptual success," which is revealed as the aesthetic foundation of voice leading.

There are six perceptual principles described by Huron, from which he maintains that the most basic traditional "rules" of voice leading can be derived. He states clearly that his intention is not to posit a universal theory of voice leading, since the process of enculturation must also be considered. Even so, non-Western musical examples are often put forth to support the principles. Although the principles do ostensibly engender voice-leading rules, Huron is still left with the difficult task of resolving stylistic transgressions of the rules. In practice, the rules are shown to arbitrary guidelines that vary according to individual and stylistic goals. If voice-leading rules are grounded in "perceptual success," Huron asks, why would composers purposefully diverge from them? Put

differently, how can these rules be both physiologically and culturally determined at the same time? The question is left open, but the implication is that though sense is bounded, an infinite number of subtle possibilities exist within these limits.

Huron's Perceptual Principles of Voice Leading

1. Toneness: the auditory impression produced by a tone can be described as *toneness*. A clear impression (akin to a sharp image) has a high degree of toneness, and a diffuse impression has a low degree of toneness. High toneness is found in harmonic complex tones within the range of F2-G5 (the second 'F' note to the fifth 'G' note, starting from the bottom, on a piano keyboard). This is consistent with the "registral compass rule" of voice leading, which limits melody to this same range. F2-G5 is also significant for the fact that it encompasses the range of typical male and female voices.
2. Temporal Continuity: in order for melodies (pieces, movements, etc.) to be perceived as perceptually distinct, sound events should be continuously sustained. To achieve this intermittent sounds must have no more than 800 milliseconds of silence. The principle does not directly reflect a voice-leading rule, however, it is an important feature of all music. Although Heron does not allude to this, it has been claimed elsewhere that the temporal frame in which sounds are organized is even the *definition* of music (Varese/Cage).
3. Minimum Masking: since the domain in which a pitch is susceptible to masking changes according to its frequency, pitches must be spaced differently to avoid masking. In other words, spectral energy should be evenly distributed. The practice of spacing voices according to soprano, alto, tenor, and bass apparently corresponds to this principle.
4. Tonal Fusion: some pitches harmonically “fuse” together when occurring simultaneously. This results in a slowing or halting of musical motion. In order to sustain the motion fusible pitches should be avoided. Pitches that have the most potential to be harmonically fused are (in priority order) the unison, the octave, and the fifth. In music where voice leading plays an important role, unisons, octaves, and fifths are typically avoided except at structural points—such as at the ends of phrases and sections.
5. Pitch Proximity: to achieve coherence in melodic lines, pitches should move successively to pitches that are close by as often as possible. This principle accounts for the reportedly universal penchant to compose melodies mainly by step, or at least the preponderance of step-wise motion. Particularly with voice leading there is an explicit attempt to move by step whenever possible.

6. Pitch Co-Modulation: regardless of the interval between them, when pitches move in the same direction simultaneously their sounds begin to fuse. To maintain the integrity of each voice this should be avoided. If similar motion occurs with highly fusible intervals the effect is even more apparent. In polyphony, therefore, pitch co-modulation is very carefully restricted.