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Paper review - *Why Do Skips Precede Reversals? The Effect of Tessitura On Melodic Structure*  
by Paul von Hippel and David Huron

This paper offers a simple explanation for why melodic skips are followed by reversals in both Western and non-Western melodies: tessitura, or range of the instrument/voice. It was found in Watt's 1924 study that, cross-culturally, the chance of a melodic reversal—that is, an interval change in the opposite direction—increased as the size of the preceding interval increased.

Hippel and Huron first discuss the cognitive theories behind this phenomenon. The first theory is Meyer's theory of "gap-fill," whereby listeners expect a melodic gap to be filled. So, if there is a skip, the expectation will be for the skipped notes to be sounded next. The underlying hypotheses were dubious and somewhat simplistic, e.g. that there are basic judgements of "satisfaction" in a melody. The point is often not to make a melody that "satisfies," but one that creates interest and surprise.

The second theory by Narmour explains post-skip reversals in terms of *registral direction* and *registral return*. Registral direction predicts that listeners expect a continuation of direction after a small interval, but a change of direction after a large interval. Registral return refers to the expectation of an interval to land close to where the previous interval began.

In each of these cognitive theories, the Gestalt laws are mentioned. From my knowledge of Sensation and Perception literature and coursework, the Gestalt theories are outdated and unreliable, and generally not considered sound theories on which to base scientific research. The individual laws appear to be arbitrarily labeled, such as "symmetry" in one case, "proximity" in another, and "good figure" in still another aspect of the theories. This is post hoc ascription, simply fitting laws as they go along with the rules at hand.

The authors do make a note of the criticisms of the Gestalt laws, giving the example of how "Gestalt laws fit post-skip reversal no better than they would fit the opposite tendency. That is, if melodies tended *not* to reverse after a skip, their structure would fit the Gestalt law of good continuation" (7).

The alternate explanation proposed by Watt and carried out by the authors is that of tessitura constraints. Since skips in melodies are likely to land near the upper and lower extremes of the tessitura or melodic range, the following motions will tend to move towards the middle. Thus, an upward leap will tend to be followed by a downward motion, while a downward leap will tend to be followed by an upward motion. The authors provide a good explanation for this tendency; however, I'm not sure what they were getting at when they mentioned how "regression toward the mean has been misconstrued in music" as well as other disciplines. This was not relevant to the argument at hand.

The hypotheses are well constructed. They first replicated Watt's results, and broadened the study to include music from around the world. The authors define four types of skips, depending on direction and where they land in relation to the median in the range. They showed that 18 out of 20 results fit the hypothesis of tessitura constraint, since median-landing and median-approaching skips do *not* tend to reverse, as would be expected by the cognitive theories but not by the tessitura theory. The authors proceed with more in-depth revisions, including a

study that avoids using skip thresholds (since the threshold may be arbitrary), and a study involving the Markov Twin, a computer generated melody that begins based on an original melody, but is chance-derived. Most of the differences between the new melodies and the originals were insignificant, suggesting that post-skip reversals in melodies are no more likely than chance. The results thoroughly demonstrated a simple explanation for post-skip reversal.

While the study dealt with the topic extremely well, I think it would help to consider *when* different types of skips occur in a melody, instead of taking the melody as a whole. Whether skips occur more toward the beginning, middle, or end of a piece of music could be important.