

# Why Do Skips Precede Reversals?

## The Effect of Tessitura On Melodic Structure

by Paul von Hippel & David Huron

- Presented by Kevin (Cheng) Zhu

## What is Post-Skip Reversals

- A large melodic interval tends to be followed by a change of direction.

Figure 1 go here

## What is Post-Skip Reversals

- The tendency of reversals after skip can be found many different cultural music. -
  - E.g. Ojibway Indians, Lieder, folksongs from South Africa, China, European etc.
- Three theoretical accounts

## Three theoretical accounts

- Two accounts based on expectation
  - attribute the pattern to hypothetical laws governing listeners' expectations
- One account based on tessitura
  - attributes the pattern to simple constraints on melodic range or tessitura



## Accounts based on expectation

- Meyer's gap-fill
- Four cognitive hypotheses
  - listener needs to infer the scale are down.
  - Feel satisfactory when use every degree of a melody scale.
  - Dissatisfaction persists when scale is incomplete
  - Dissatisfaction relieves when missing scale degrees occur.
- An alternative cognitive
  - registral direction (after small interval expects further same direction, while large one followed a change of direction)
  - registral return (expect an interval to land close to where the previous interval began)



## An account based on tessitura

- Henry J. Watt proposed that post-skip reversals arise from constraints on melodic range
- Every melody has limited range of pitches
- Favor the center of that range
- Tessitura is the term to emphasize on the heart of that range




## Constraints on tessitura

- Interval move toward the tessitura's extremes when it is large
- Regression toward the mean (misconstrued in music here?)




## Hypotheses

- In order to test Watt's claim that post-skip reversals arise from tessitura constraints, propose two hypotheses
  1. If tessitura constraints are controlled, tendency will disappear
  2. If tessitura constraints are applied on any random melody, post-skip reversals will appear as non-random origin.




### Melodic sample

- Ojibway folksongs
- Lieder
- Different cultural scope e.g. folksongs from South Africa, China, and a random sample of European folksongs.




### Study 1: Classifying skips

- In other words, Watt's claim can be explained as post-skip reversal tends toward its median pitch
- Four types
  - Median-departing skips
  - Median-crossing skips
  - Median-landing skips
  - Median-approaching skips




### Study 1: Classifying skips

- Difference between two hypotheses
- Define interval as the distance, in semitones, between any two consecutive notes (?)




### Study 1: Classifying skips

- Figure 4 goes here




### Study 2: Multiple regression

- To avoid using skip thresholds and treat individual melody as the unit of analysis
- Define melodic interval and pitch extremity
- Define post-skip reversal as a negative linear correlation between successive intervals




### Study 2: Multiple regression

- [Figure 5 goes here](#)



### Study 2: Multiple regression

- Measure the unique contribution from (1) the extremity of the interval's starting pitch (2) size of the previous interval, they use multiple regression analysis
- Results show previous interval does not correlate to interval, while extremity does.
- Result also shows correlations between extremity of an interval's starting pitch and interval is very reliably negative.



### Study 2: Multiple regression

- No tendency toward post-skip reversals whether the function was considered linear (previous interval), quadratic (previous interval direction), or cubic (previous interval size)
- It suggests post-skip reversals are a mere side effect of constraints on tessitura.



### Study 3: Markov Twins

- Three different melodic structures
  - contrary step
  - gap-fill
  - registral return
- To contrast actual melodic practice with a control sample of “melodies” that ignore the hypothesized rule above.



### Study 3: Markov Twins

- To generate control melodies with similar levels of gap-fill, contrary step, and registral return, which can not attribute to a rule for interval succession, they use a Markov model.



### Conclusion

- Further refinement such as interacting with tonal or temporal structure would yield different results
- Post-skip reversals arise from constraints on tessitura – lack the space to do otherwise. (music instrument view)
- Melodic structure shapes expectation (music cognition view)