

# Slicing Up Music: Computational Approaches



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## BACKGROUND

How do we define a harmonic or rhythmic event when analyzing music?

Typically, this is left to the analyst.

### Goals:

- Develop objective and consistent techniques
- Evaluate best technique for specific analyses (i.e., Dissonance vs Tonal Attraction)

### Techniques:

- Subdivision
- Grouping
- Reduction

## SUBDIVISION

- Every pitch change defines an event: the shortest rhythmic event is represented

ORIGINAL

OUTPUT

*Mazurka Op. 7 No. 1, Fryderyk Chopin mm. 1-4 (dynamics and markings removed)*

### Advantages:

- High resolution
- All pitches are represented in their original metrical position

### Disadvantages:

- Requires sophisticated rhythmic weighting process
- In some cases, may oversample

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## GROUPING

- Group all pitches within a beat to a single event

ORIGINAL

OUTPUT

*Mazurka Op. 7 No. 1, Fryderyk Chopin mm. 1-4 (dynamics and markings removed)*

### Advantages:

- Standardized event length within a piece of music
- High resolution

### Disadvantages:

- Events are often distorted and not representative of rhythmic structure

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## REDUCTION

- Eliminate decorative or non-structural elements, leaving only a harmonic skeleton

The image displays two musical staves for comparison. The top staff, labeled 'ORIGINAL', shows a melodic line in the treble clef and a bass line in the bass clef. Several notes in the melodic line are circled in red, representing decorative elements. The bottom staff, labeled 'OUTPUT', shows the same piece but with only the harmonic skeleton remaining, where the melodic line consists of single notes and the bass line consists of chords.

*Mazurka Op.7 No. 1, Fryderyk Chopin mm. 1-4 (dynamics and markings removed)*

### Advantages:

- Simplified for analysis
- Focuses on relevant information

### Disadvantages:

- Difficult to create an objective procedure for what is decorative
- Subject to idiomatic features