

# Automatic Scoring-up of Mensural Parts

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Bass

12 vice

clerfon

Existe

clerfon

12 vice

Aterium caput

Declaratio tenorem

ordinamson

et sic p totam missam



Mont

vne

clarfon

Clarfe

clarfon

vne

clarfon

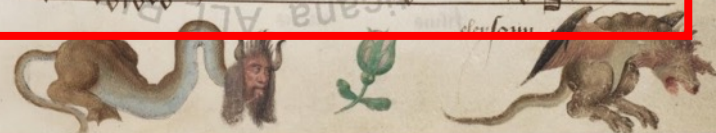
Vrie

clerfom

clerfom

Vrie

clerfom



# Motivation

- The purpose of this project is to take all the notes from each of the mensural parts (i.e., voices) and line them up automatically, in order to present the piece in score format, a process that we refer to as “scoring up”
- To facilitate counterpoint studies (this is, the study of the relation between the voices)





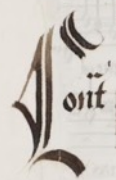
Deckenhem

Handwritten musical notation on five staves. The text "Deckenhem" is at the top. The notation includes various notes, rests, and clefs. There are several instances of the word "clerfon" written below the staves. A large red initial "K" is visible on the third staff. The text "vrie" appears at the beginning of the first staff.



Handwritten musical notation on five staves. The text "Bass" is written below the first staff. The notation includes various notes, rests, and clefs. There are several instances of the word "clerfon" written below the staves. A large red initial "K" is visible on the third staff. The text "vrie" appears at the beginning of the first staff.

*Alterum caput. Descendit tenorem  
primamson et sic p totam missam.*



Handwritten musical notation on five staves. The text "Mont" is written below the first staff. The notation includes various notes, rests, and clefs. There are several instances of the word "clerfon" written below the staves. A large red initial "K" is visible on the third staff. The text "vrie" appears at the beginning of the first staff.



# Mensural Notation

- There is a clear hierarchy in the note duration

*longest*  
↓  
*shortest*

Notes		Values	
Name	Shape	Perfect	Imperfect
Maxima	☐	☐ ☐ ☐	☐ ☐
Long	☐	◊ ◊ ◊	◊ ◊
Breve	◊	⋈ ⋈ ⋈	⋈ ⋈
Semibreve	⋈	⋈ ⋈ ⋈	⋈ ⋈

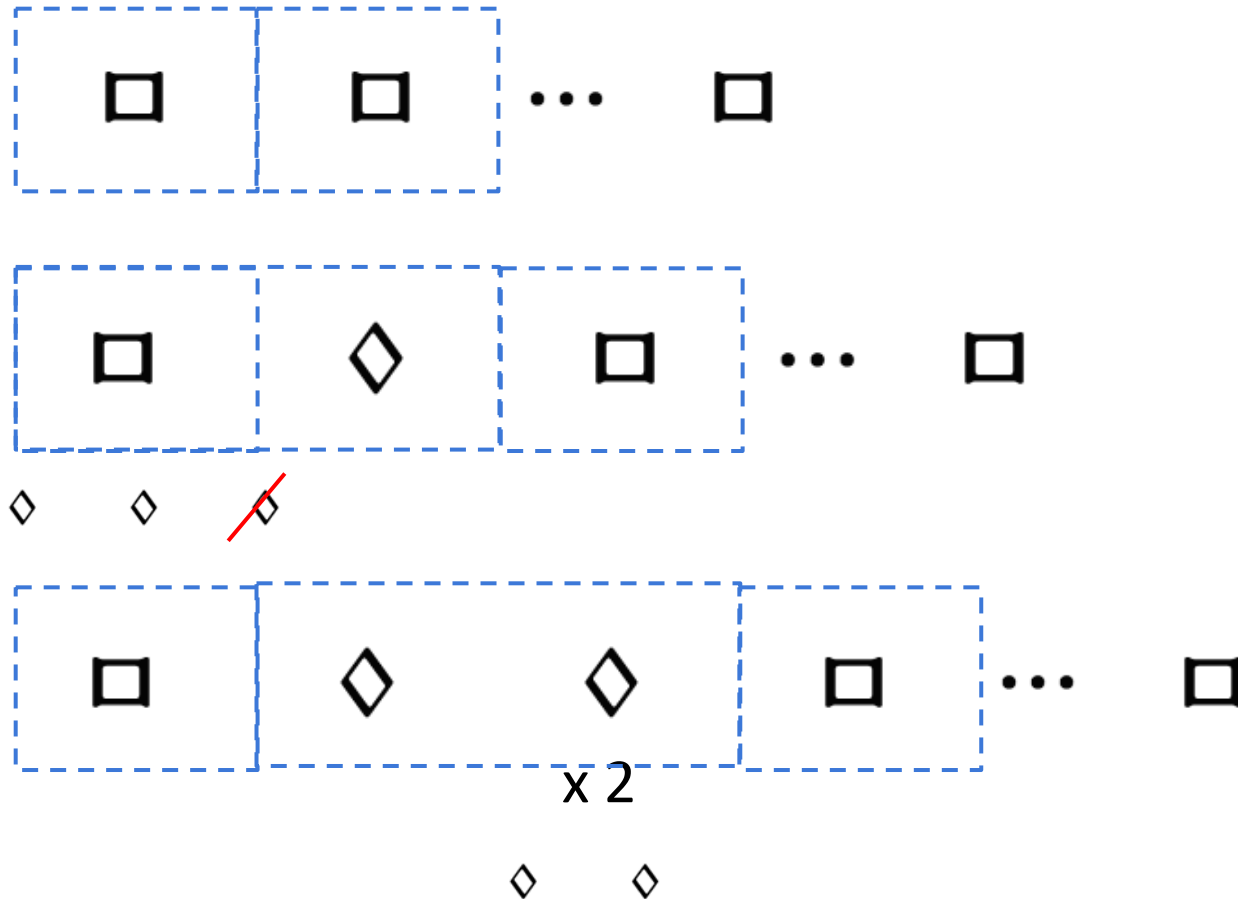
## Mensuration

Establishes the relation between the note values (“perfect” or “imperfect”)

In perfect mensurations, the duration of the individual note symbols is not absolute, but rather depends on context

# Examples of Context Changing the Note's Value

Mensuration: Breve = 3 → Breves are perfect by default



*Principles of  
Imperfection  
and Alteration*

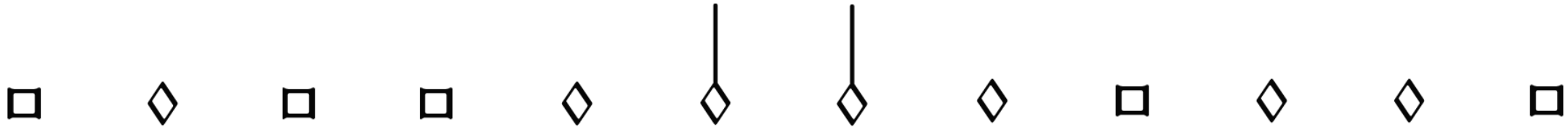
**Imperfection**

Perfect → Imperfect

**Alteration**

# Algorithm

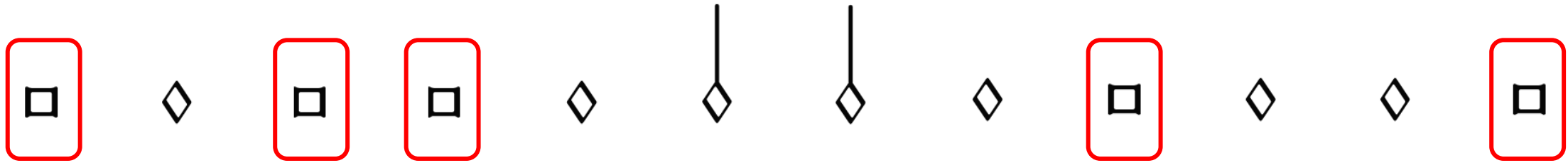
Mensuration: Breve = 3  $\rightarrow$  Breves are perfect by default





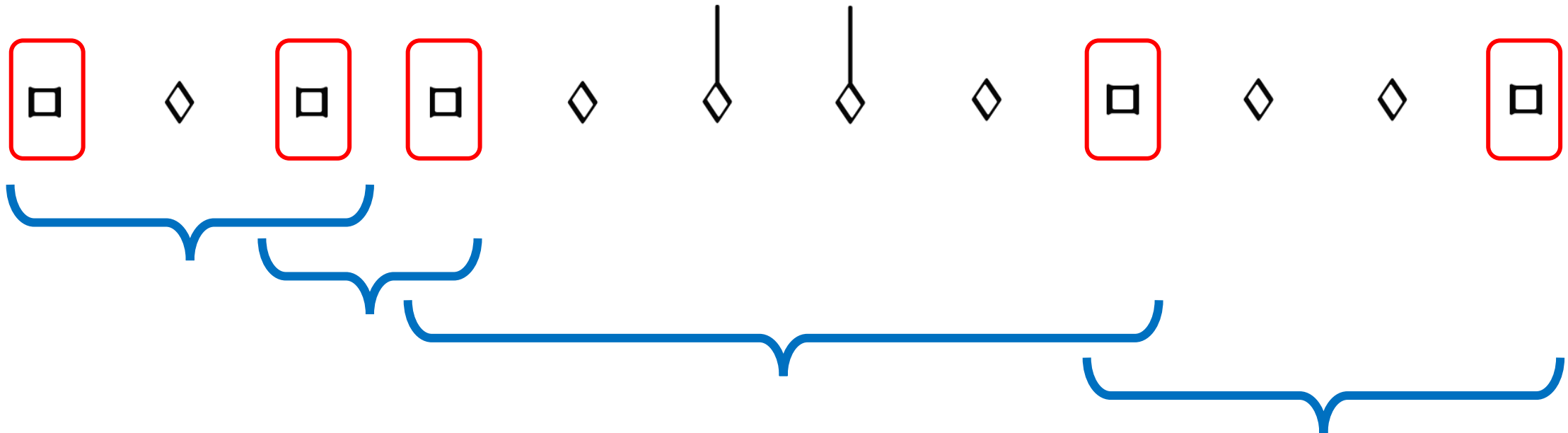
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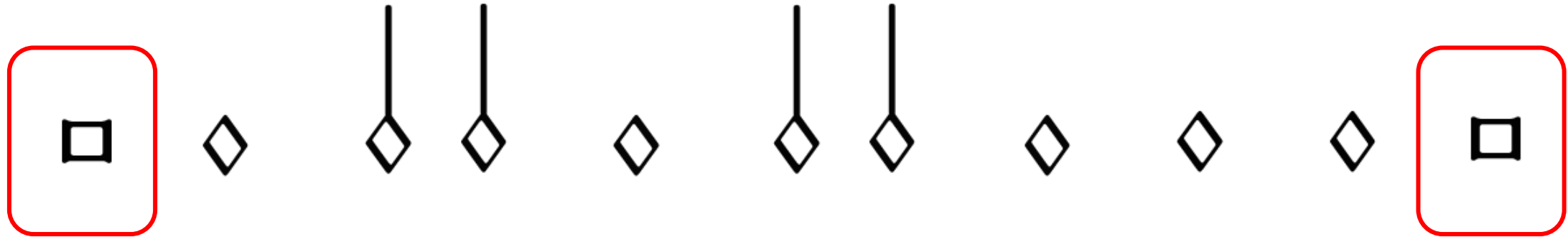


# Algorithm

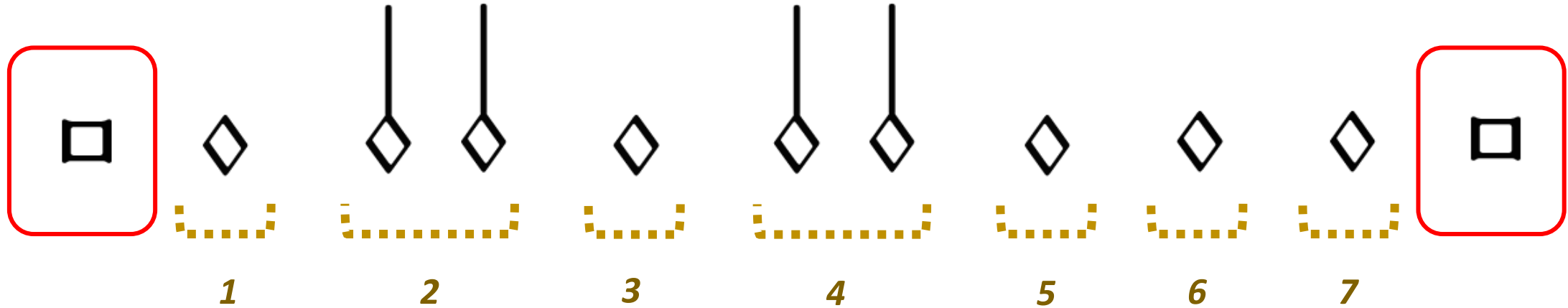
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Example: (sequence bounded by breves)

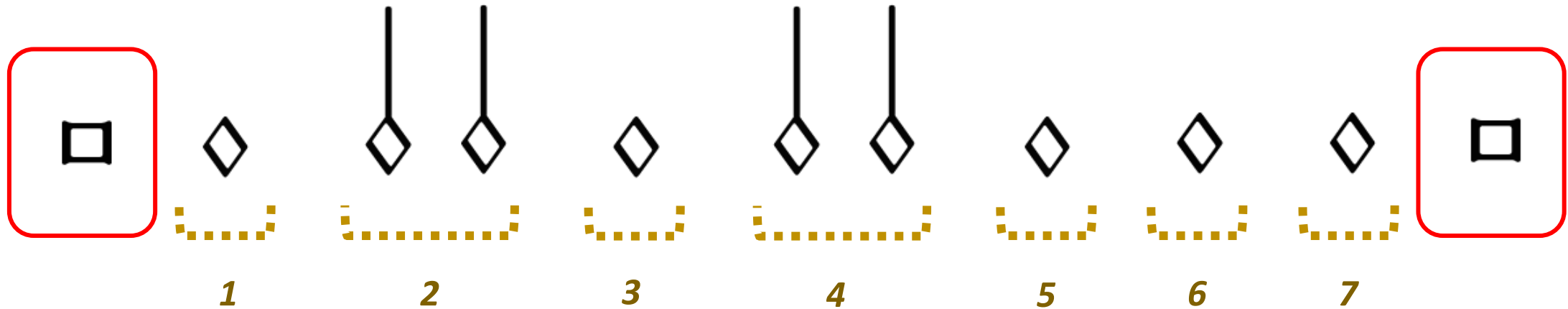


Example: (sequence bounded by breves)



7 semibreves

Example: (sequence bounded by breves)



7 semibreves

=

Two groups of 3 semibreves

+

1

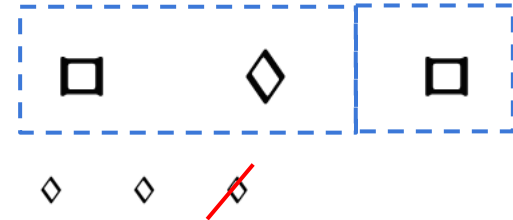


Number N of semibreves between the boundaries	Number P of perfect groups of semibreves	General Interpretation	Alternative Interpretation
$N = 3P + 1$	$P \geq 0$	Imperfection a.p.p.	Imperfection a.p.a.
$N = 3P + 2$	$P = 0$	Alteration	Imperfection a.p.p. & Imperfection a.p.a.
	$P > 0$	Imperfection a.p.p. & Imperfection a.p.a.	Alteration
$N = 3P$	$P = 0$	-	-
	$P = 1$		Imperfection a.p.p. & Alteration
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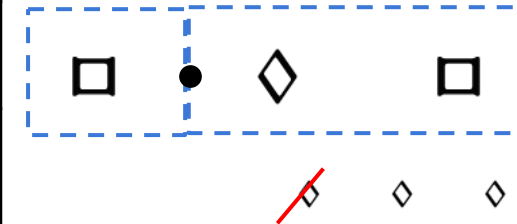
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# Scoring-up tool

- Deals with the context-dependent nature of mensural notation
  - By implementing the “principles of imperfection and alteration”
- Deals with other non-context related features:

- Dots of Augmentation



## **When?**

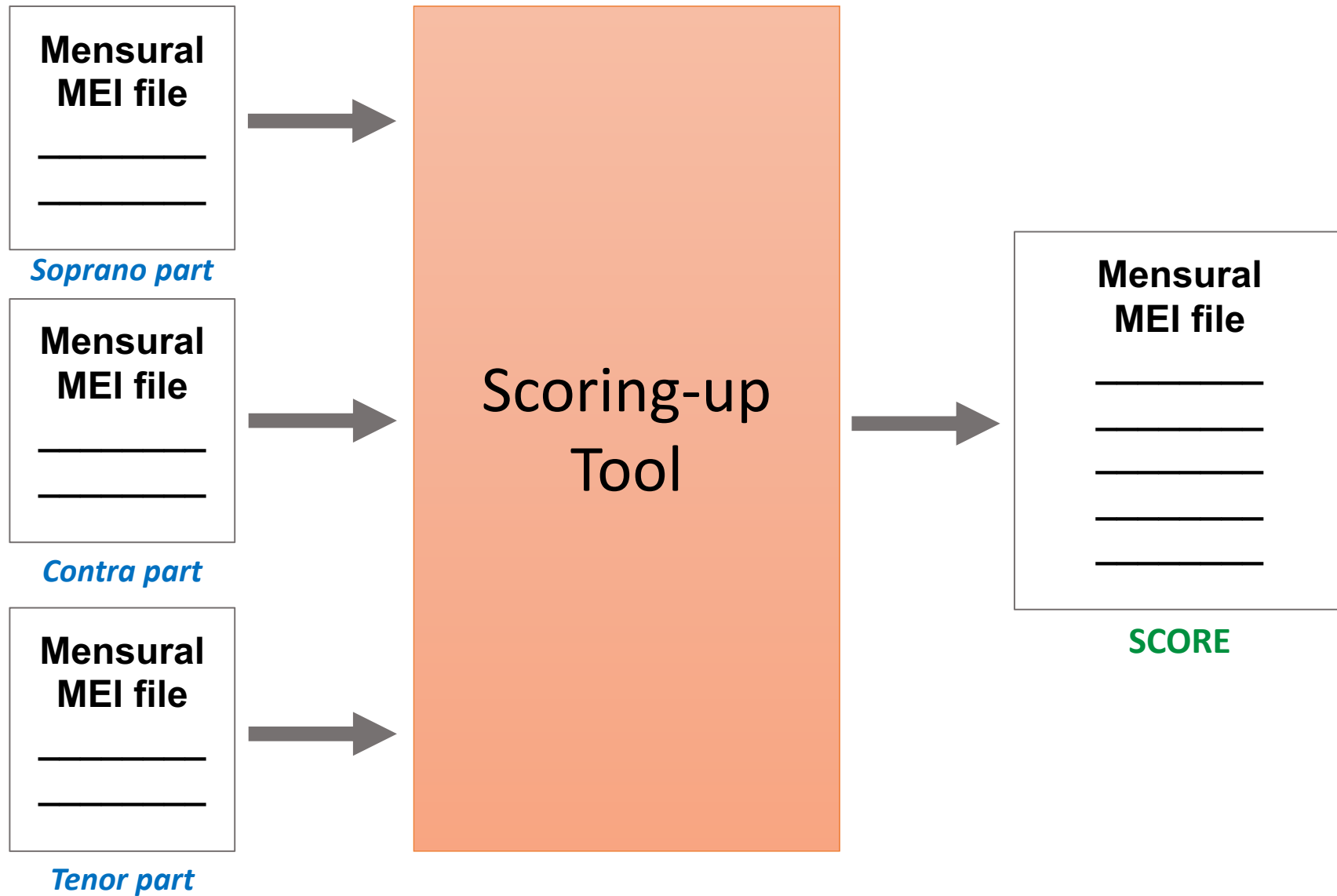
Distinguish between “dots of division”  
and “dots of augmentation”

- Coloration



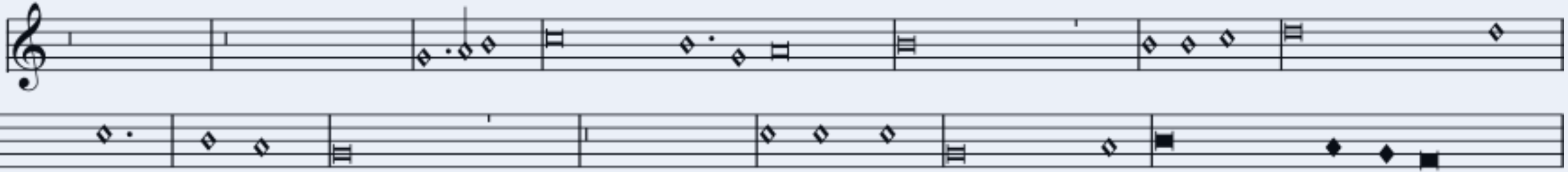
**When does coloration affect the note value?**

# Scoring-up tool



# Example: Parts

Superius



Tenor



Contratenor



# Without using the Scoring-up Tool

A musical score for three voices: Superius, Tenor, and Contratenor. The score is written on three staves, each with a treble clef and a key signature of one sharp (F#). The Superius staff is the top staff, the Tenor staff is the middle staff, and the Contratenor staff is the bottom staff. The score is divided into measures by red vertical lines. The music consists of diamond-shaped notes, some with stems, and some with flags. The Tenor and Contratenor staves have a '8' below the first measure, indicating an octave. The score is presented in a clean, minimalist style with a white background and black notation.

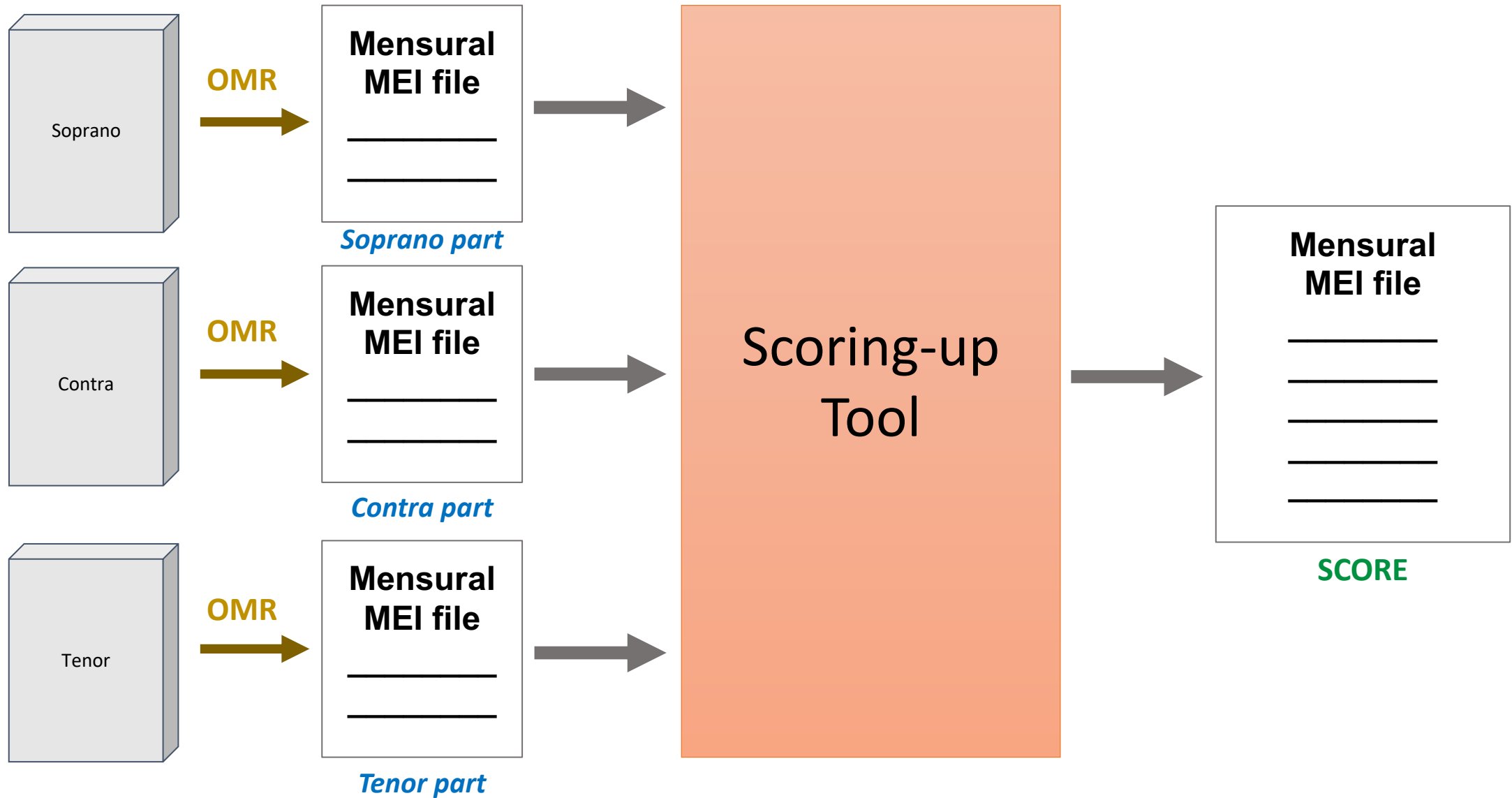
# With the Scoring-up Tool

A musical score for three voices: Superius, Tenor, and Contratenor. The score is written on three staves, each with a treble clef and a key signature of one flat (B-flat). The Superius part is the top staff, the Tenor part is the middle staff, and the Contratenor part is the bottom staff. The score is divided into measures by vertical red lines. The notes are represented by diamond shapes, and there are various accidentals (sharps, flats, naturals) and rests throughout the piece. The Tenor and Contratenor parts have an '8' below the staff, indicating an octave shift. The score is presented in a clean, modern style with a white background and black notation.



# Conclusions

- The scoring-up tool presents the piece in score format
- Facilitates visualizing the vertical sonorities and studying the relation between the voices of a piece, which was difficult given the separate-parts layout of the original sources
- Preserves the original note values



# Thank you!

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