Automatic Scoring-up of Mensural Parts

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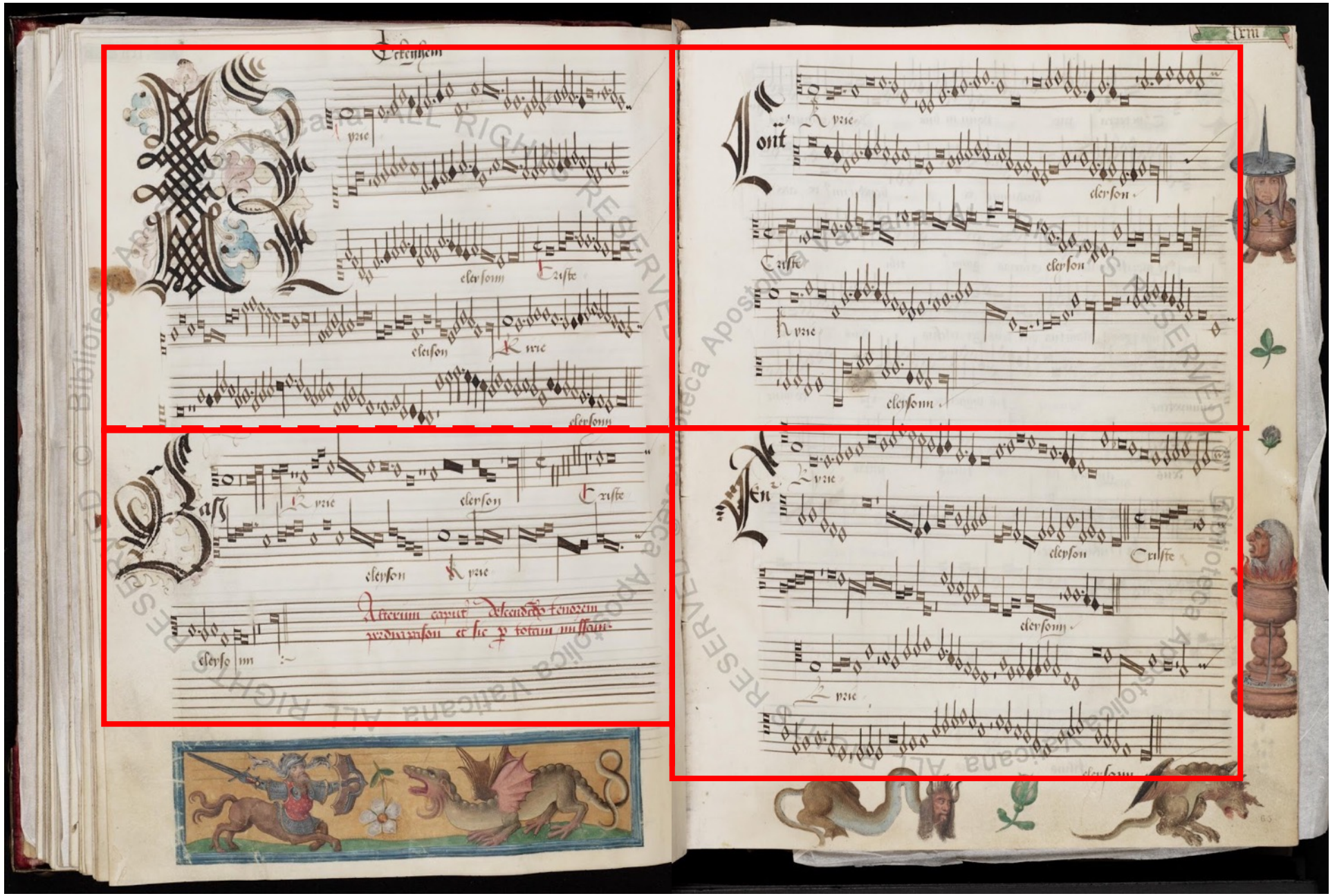
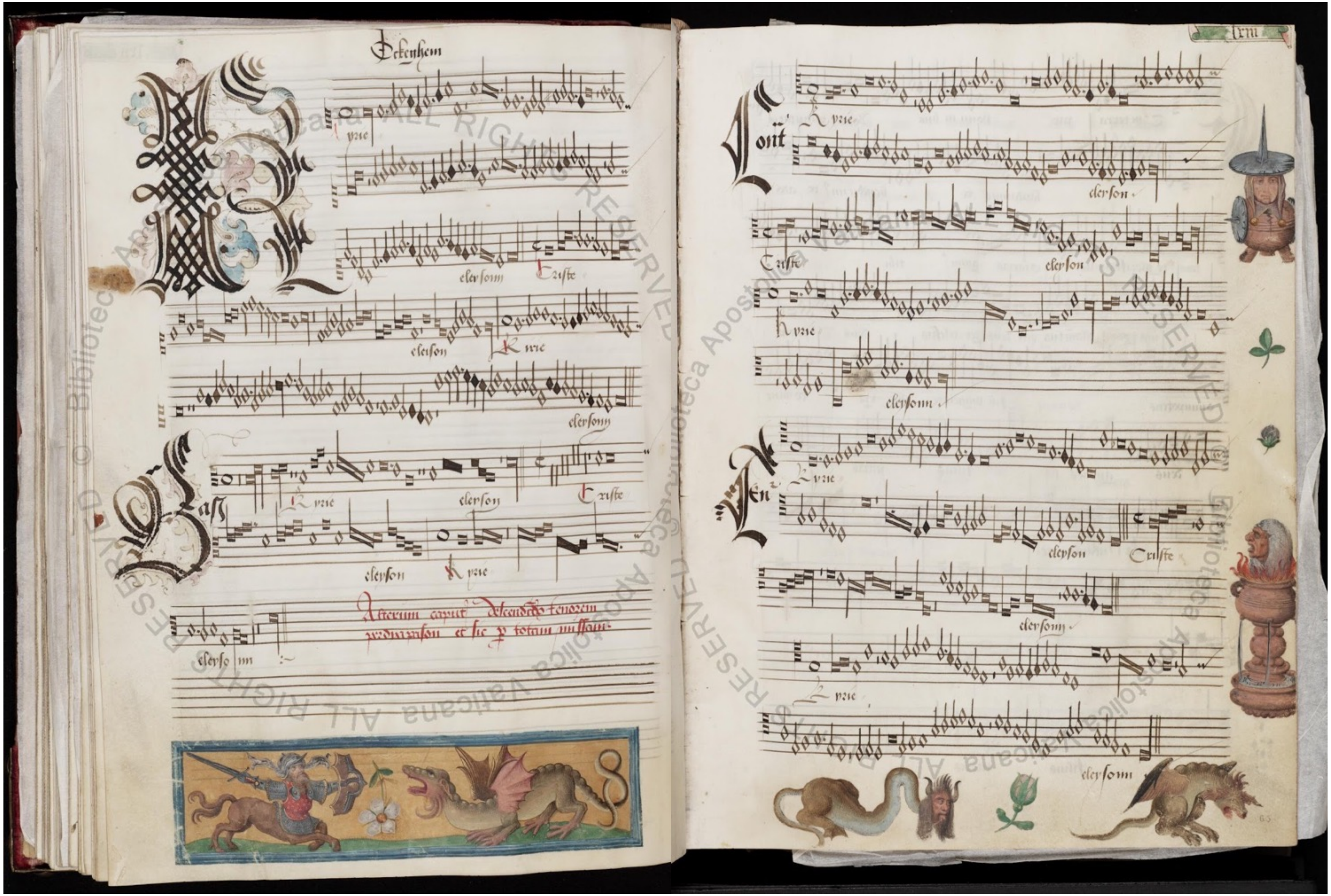


Motivation

- 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)

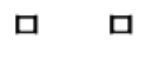
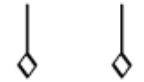


Mensural Notation

- There is a clear hierarchy in the note duration

longest

shortest

Notes		Values	
Name	**Shape**	**Perfect**	**Imperfect**
Maxima			
Long			
Breve			
Semibreve			

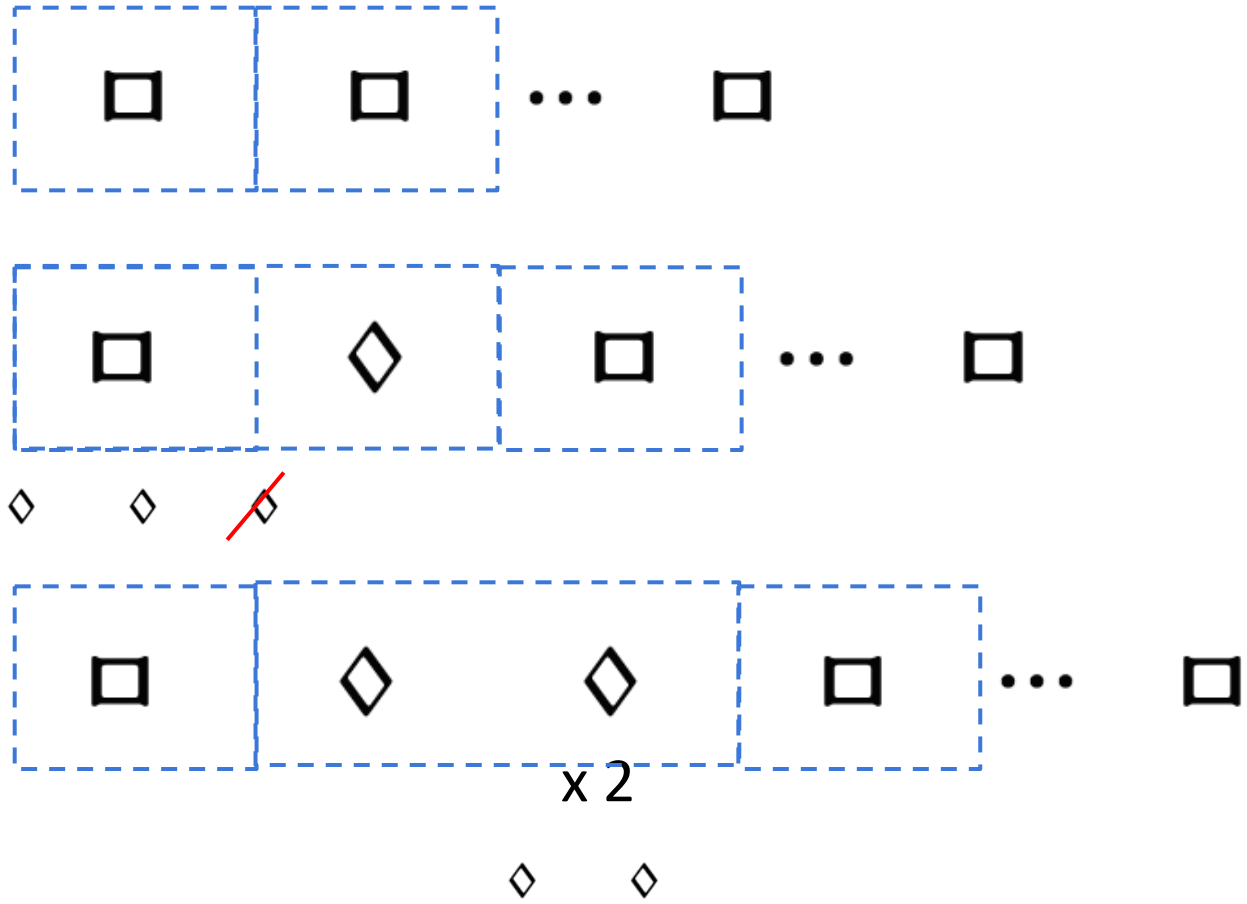
Mensuration

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



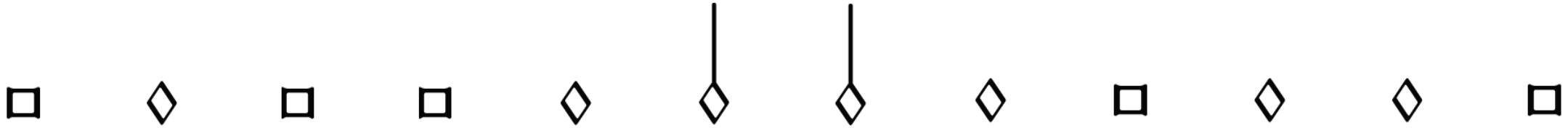
Principles of Imperfection and Alteration

Imperfection
Perfect → Imperfect

Alteration

Algorithm

Mensuration: Breve = 3 → Breves are perfect by default



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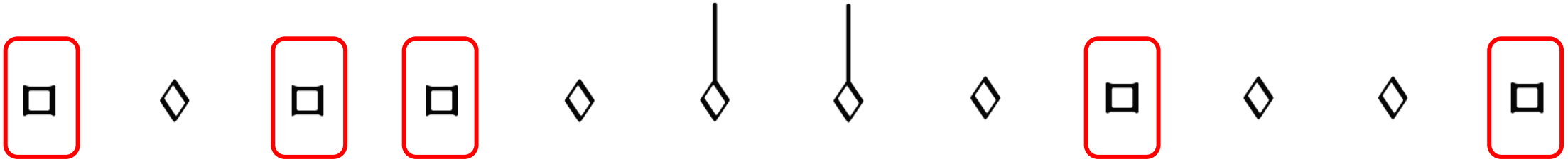

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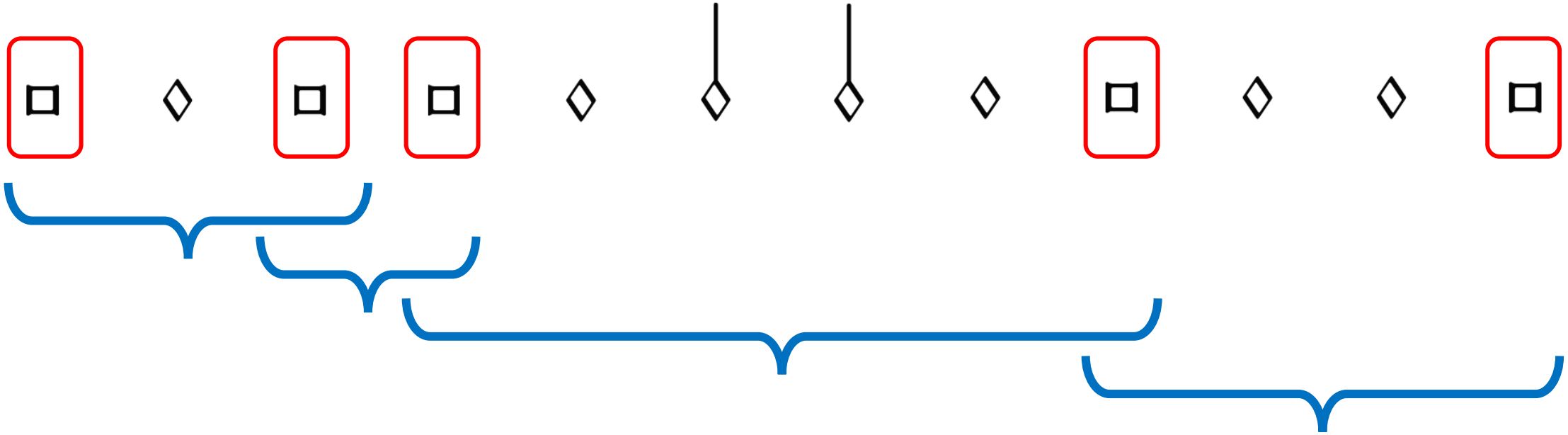
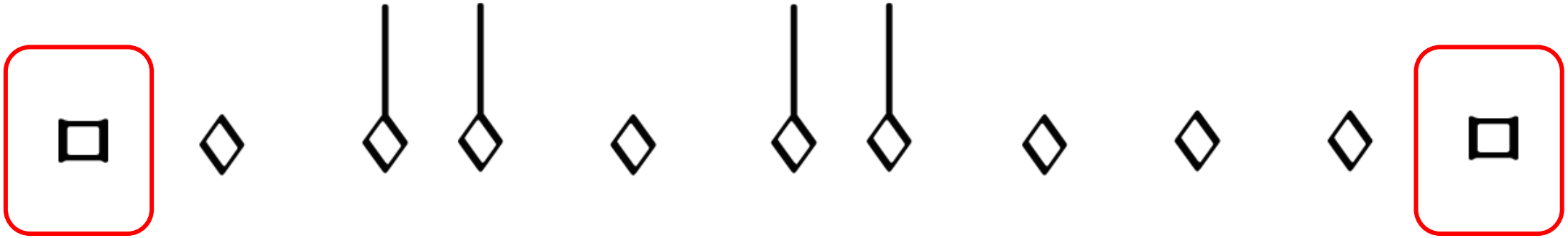


Example: (sequence bounded by breves)



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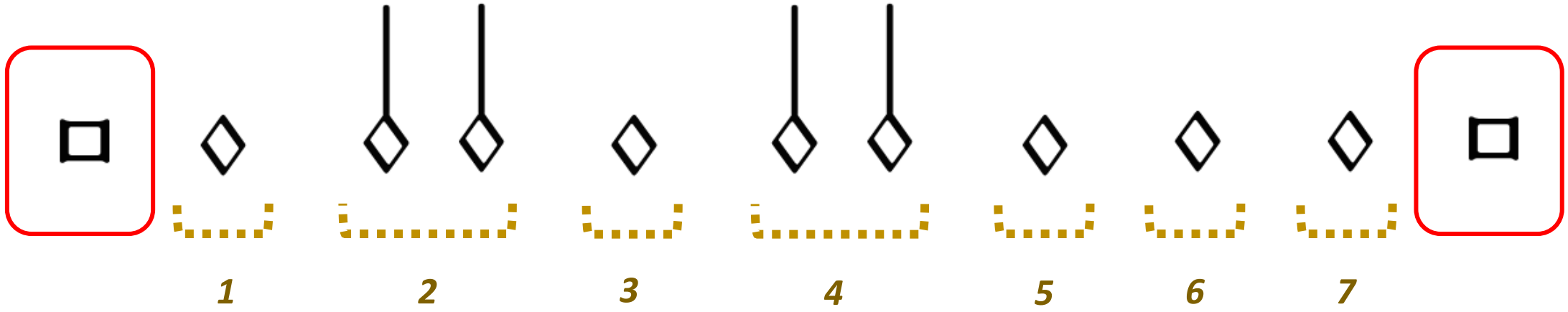
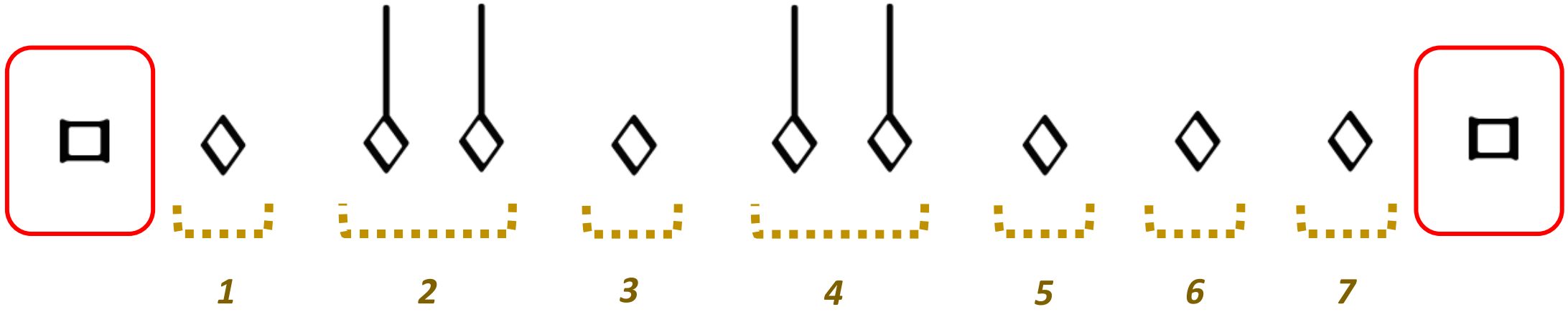


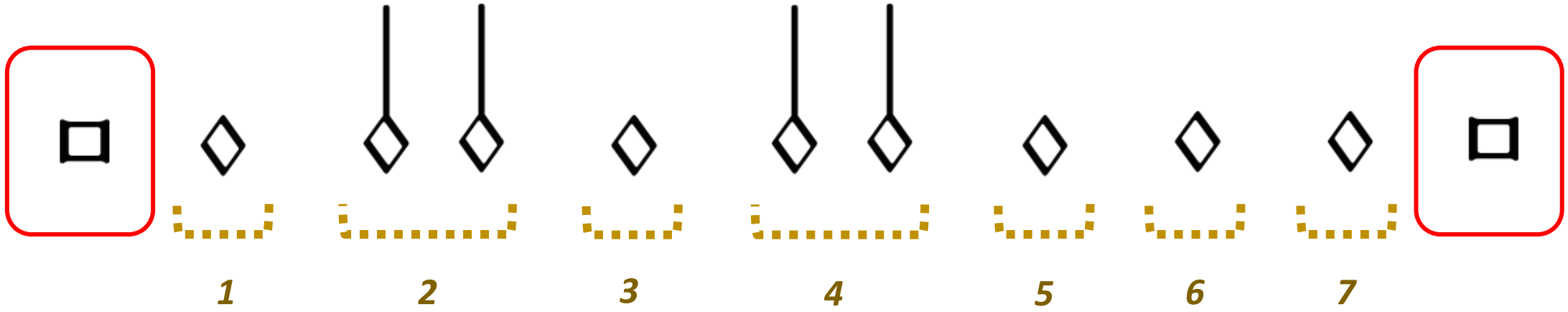
7 semibreves

Example: (sequence bounded by breves)



7 semibreves = Two groups of 3 semibreves + 1

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 >= 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
	P > 1	Imperfection a.p.p. & Alteration	-

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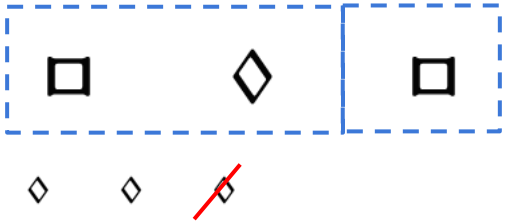

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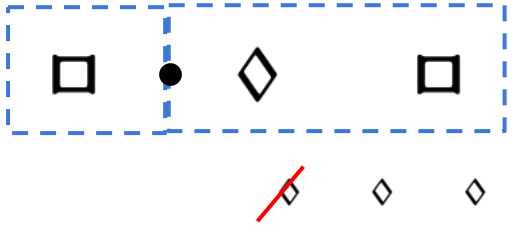
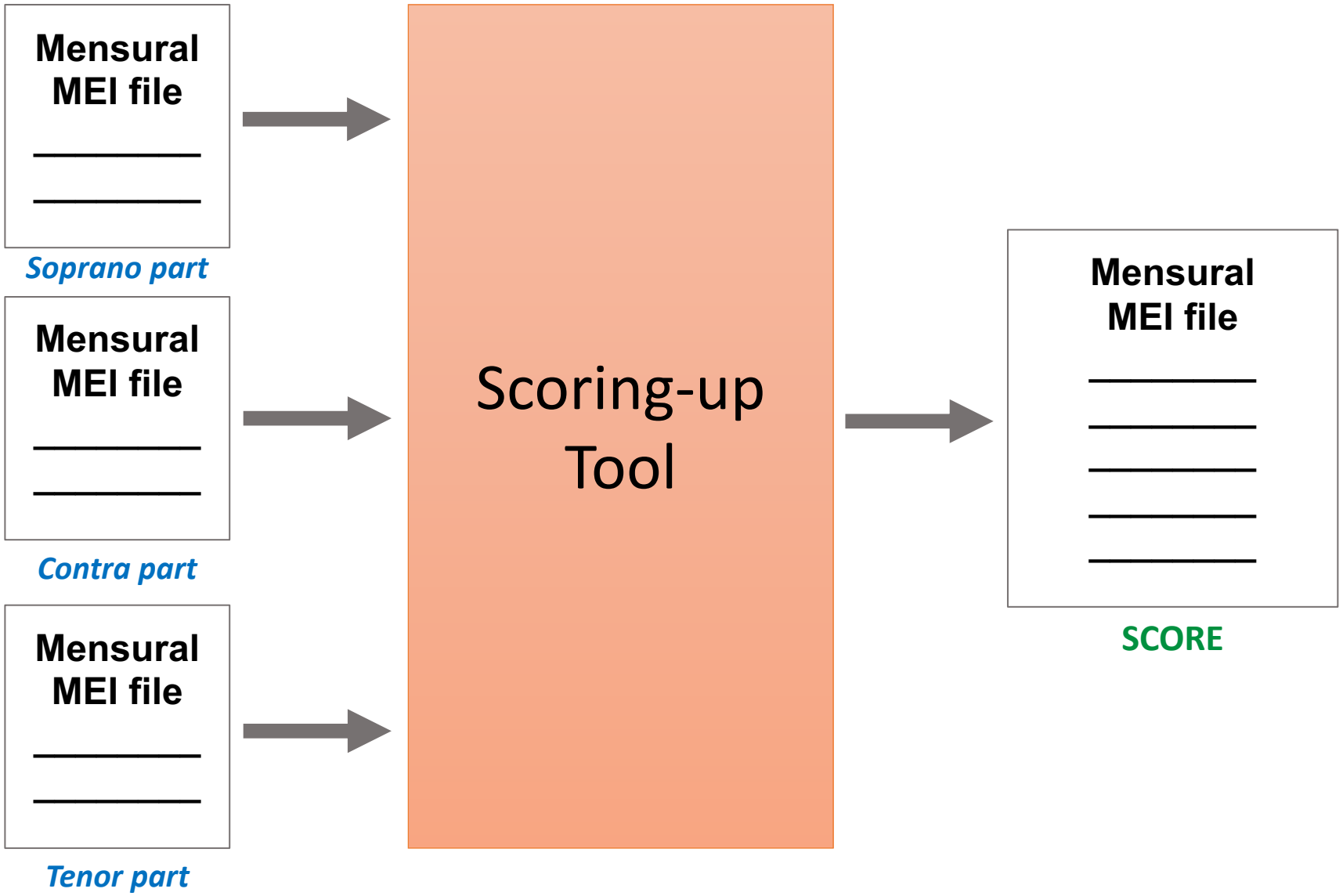


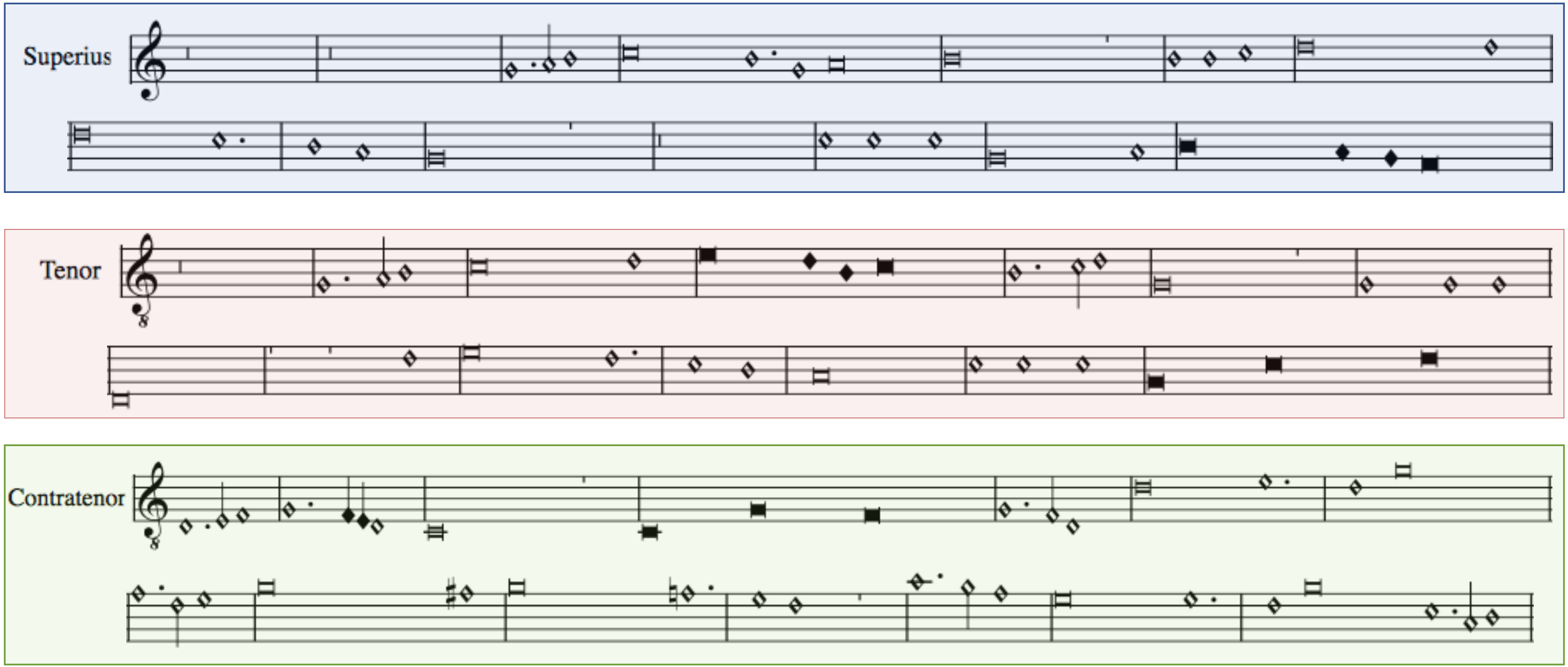
Scoring-up tool

- 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?**

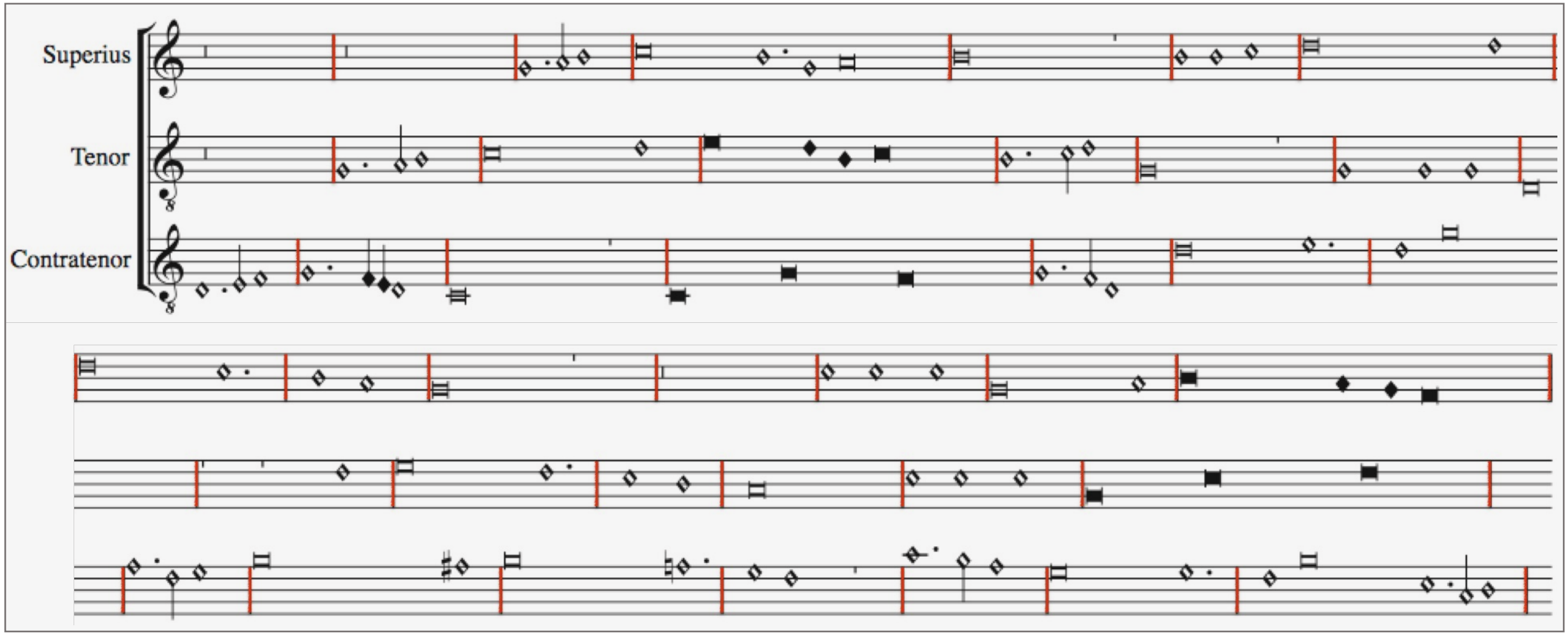
Scoring-up tool



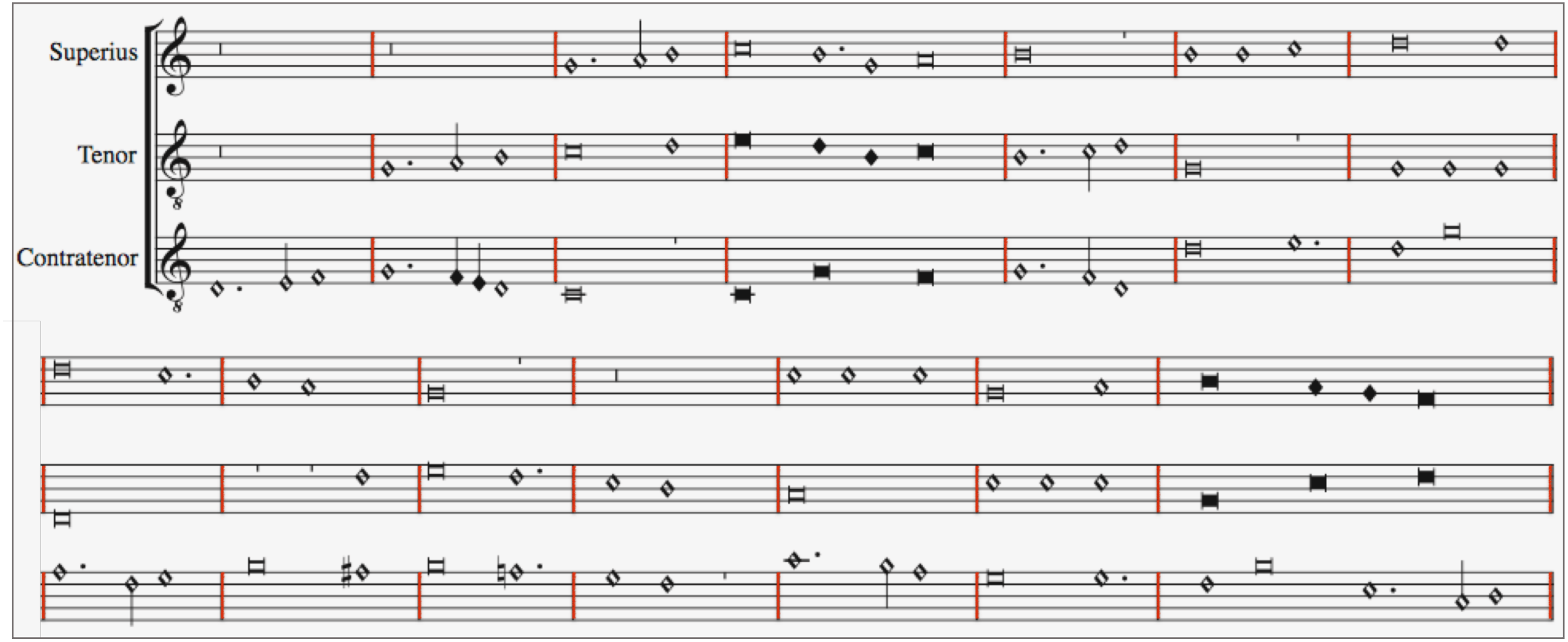
Example: Parts



Without using the Scoring-up Tool

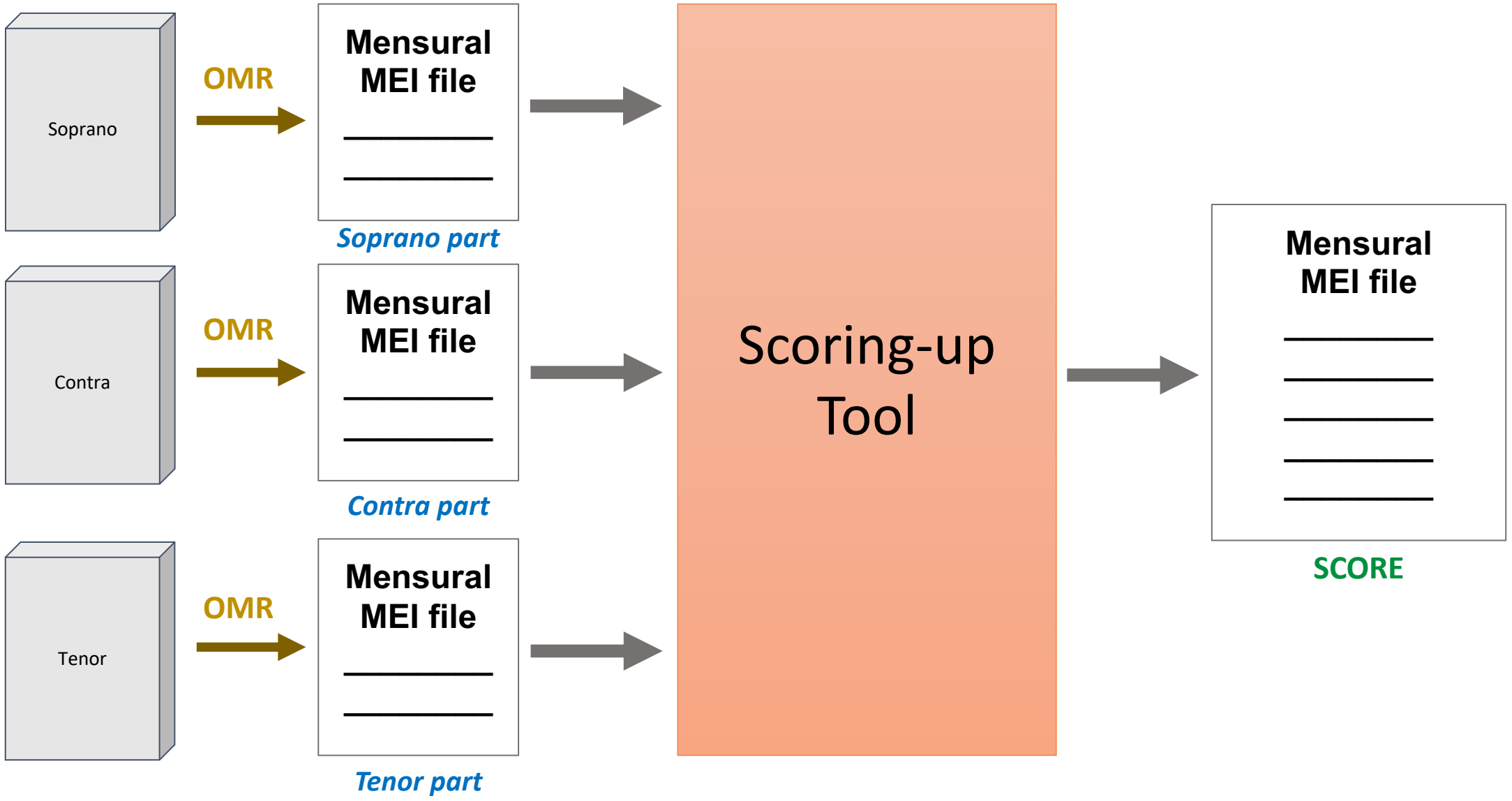


With the Scoring-up Tool



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


Soprano
OMR
Mensural MEI file
Soprano part
Contra
OMR
Mensural MEI file
Contra part
Tenor
OMR
Mensural MEI file
Tenor part
Scoring-up Tool
Mensural MEI file
SCORE

Thank you!


SIMSSA
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