Preventing Conversion Failure across Encoding Formats: A Transcription Protocol and Representation Scheme Considerations

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Abstract

Conversion issues across musical symbolic representations, such as musicXML, MEI, and humdrum, are well known. Often, these depend on methodological choices undertaken during the generation and processing of the data. For a better understanding of this topic, we present a transcription protocol, result of trial and error transcription attempts performed with Finale engraving software, which aims to prevent conversion errors (Verovio 2.1.0 and VHV were taken into account for conversion) from musicXML (export format from Finale) to MEI and **kern (symbolic representations also evaluated).

Introduction

Original written sources, both manuscripts and prints, represent an enormous part of western music heritage; these, since only the original remains for some repertoires, possess an invaluable historical value. To encourage preservation, analysis, and performance, the transcription of these sources is of great interest in musicology, whose goal is often the creation of diplomatic, critical, and practical editions [1]. Despite these sources have raised great interest also in Music Information Retrieval (MIR), and although the understanding of this repertoire would incredibly benefit from a Musicology–MIR collaborative approach, the connection between these two disciplines is limited by the application of generally accepted practice. Musicologists’ strong predisposition towards specific notation software [2, pp. 43–66] and the lack of maintenance of MIR tools no longer sponsored by the creator’s institutions [3], impair, e.g., an effective translation across encoding formats [4, 5]. We present a case study based on the 18th century Italian opera—handwritten versions of Demofoonte by different composers were considered—which analyses Musicology–MIR methodological incompatibilities by evaluating the transcription techniques traditionally used in musicology, as well as examining two typical symbolic data representations: MEI [6], rendered with Verovio;¹ and the Humdrum representation scheme **kern [7], engraved through Verovio Humdrum Viewer (VHV).²

Transcription protocol to guarantee musicXML quality

Engraving software configuration

1. To prevent data loss and ‘artefacts’ generation, metadata, as e.g., composer, should be indicated in the score manager.
2. To reduce misinterpretation risks, all the parameters defined in the engraving software, such as dynamics or repeat marks, should be introduced, when possible, prioritising the software’s default options, rather than using text indications.

¹ https://www.verovio.org
² https://verovio.humdrum.org
Transcription of 18th century hand-written sources

3. Missing repeat expressions, such as Fine, are typical in 18th arias, e.g., it might be pointed out Da Capo al Fine without having previously indicated Fine. In order to avoid ambiguities which would impair computational processes, e.g., the function repeat.expander in music21 [8], partial instructions should be completed.

4. Incomplete measures are typically associated in the presented repertoire to repeat expressions. To prevent duration discrepancies [9], these should be corrected in the transcription, by indicating repeat brackets if needed. For divisi (voices written in different layers of a staff) and redundant information, such as duplicated rests, should be hidden instead of omitted.

5. Mid-note dynamics, i.e., dynamics that start at the middle of a long note, are also typical editorial choices [10]. To avoid that mid-note dynamics are automatically associated to the consecutive note in **kern, these should be linked to the note's attack and then manually shifted in the engraving software. Although this does not codify the mid-note dynamic in its exact position, guarantees that it is not connected to the wrong note.

6. Mixed dynamics, i.e., dynamics made up of by the combination between standard letters (e.g., pp) and text expressions (e.g., poco), contrary to what expected, should not be introduced in the engraving software as new dynamic marks. In order to prevent information loss, each element (letter and text) should be individually associated to the same note.

7. Similar to unclosed ties [9], the confusion between ties and slurs is also an unexpected behaviour that would lead to ambiguous interpretation; this engraving mistake should be carefully prevented.

MEI and HUMDRUM conversion and rendering issues

1. The Segno ( ), i.e., the symbol used as a ‘navigation marker’ after an Al Segno is found, is lost in the conversion from musicXML to MEI and **kern. Similarly, the repeat expressions Al Segno and Da Capo are also lost in **kern.

2. Repeat brackets, i.e., numbered brackets to indicate a different ending for the first play and its repetition, are lost in the conversion from musicXML to **kern. Furthermore, the use of the repeat option ‘go to measure’ in the engraving software introduces, in both MEI and **kern, ‘artefacts’, since interpreted as a textual indication.

3. In MEI, dynamics’ positions are expressively defined by the attribute time stamp (tstamp), which gives the specific horizontal alignment between the expression and the measure; this enables the codification of mid-note dynamics. Differently, in **kern, dynamics are automatically linked to the attack of the note to which they belong to; this impairs the assignment of mid-note dynamics, which to be correctly displayed should be indicated later on in the **dynam spine (cf. Figure 1).
4. Splitting mixed dynamics prevents their loss during conversion; cf. (iv) in the section ‘Transcription Protocol’. Yet, to enable a correct rendering, the individual elements should be reassembled again after conversion. Although this guarantees a correct rendering in MEI, mixed dynamics in **kern (e.g., molto f or pf ) might not be engraved.

5. In the translation to **kern, despite no conversion failure, tremolos are totally lost.

Conclusion

Through these guidelines we aim to minimise incompatibilities between Musicology and MIR, linked to transcription methods typical of music editions. Furthermore, to encourage Musicology–MIR collaborative approaches, we also pointed out encoding limitations that could be addressed in future. Although some elements were lost during conversion, MEI and **kern syntax present also advantages w.r.t. musicXML, as, e.g., the possibility to codify mixed dynamics as unique instances.

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Works Cited


