Encoding the Troubadours

The surviving musical repertoire of the troubadours comprises 341 melodies primarily concentrated in four manuscripts made from the mid-thirteenth to early-fourteenth centuries. The melodies are written in chant notation: primarily quadratic notation, with a few examples using earlier neumatic forms. Previous encodings of the corpus have focused on analysis of particular aspects of the repertoire rather than creating versions that can be searched or representation as musical notation.[1] In 2016, I encoded the extant melodies and created a database to make them accessible, searchable, and available for analysis. Following existing models of chant databases,[2] I encoded the extant repertoire in Volpiano, a font that displays alphanumeric strings as stemless note heads on a five-line staff. Volpiano was designed by David Hiley and Fabian Weber of the Institut für Musikwissenschaft of Regensburg University and has been used most often to visually represent and to search melodies, often within relational databases. Despite the simplicity of the encoding method, it can represent not only a melody's pitches, but also the number of pitches in each neume (a shape representing a note or group of notes in the original notation), the melody's layout in the physical source, and its phrasing.

As of today, the encoding is completed. On the companion site to my dissertation I have made available both the melodies themselves and some tools to explore this repertory further. In this poster, I would like to explain, apart from my encoding procedures, what it is possible to achieve through Volpiano encoding, and I am seeking for feedback from the Music Encoding Community about my plans for the future. For this project, the Volpiano-encoded troubadour melodies were analyzed to classify the main characteristics of the corpus based on the pitch and

[1] See David Halperin's study of intervallic structures in the songs in his master's thesis. David Halperin, "A Structural Analysis of Troubadour Music" (MA Thesis, Tel-Aviv University, 1978). Another, more recent, project involved encoding the edition by Hendrik van der Werf in Kern format for analysis in Humdrum by Eamonn Bell and Russell O'Rourke, supervised by musicologist Susan Boynton at Columbia University in 2015.
[2] Global Chant Database (www.globalchant.org) and "CANTUS Index" (http://cantusindex.org/).

intervallic content of the repertoire. The availability of encoded melodies thus permitted computational analysis of the corpus in addition to search capabilities.

The fact that melodies encoded in Volpiano are represented as alphanumeric strings allows them to be analyzed by existing text mining and analysis software programs such as AntConc or R that easily generate concordances, 'word' lists of the different pitches and pitch groups, and identify both sequential and non-sequential patterns in the melodies. These tools allow quick comparison of features of the corpus; for example, AntConc easily generates a list of all end-formulas found in the repertoire, based on the set of characteristics generated from the encoded melodies, along with their rate of frequency. Latent Semantic Analysis (LSA) was also applied to the encoded melodies, permitting statistical analysis of the degree of similarity between melodies, which is particularly useful when comparing melodies that exist in multiple versions in the surviving manuscripts.

Computational methods thus allows the examination and contextualization of stylistic features of individual melodies by troubadours as well as of the repertoire overall. This helps to establish which features are common-place and which are exceptional, either within the entire repertoire, within a particular genre, or particular composer's output. By encoding the troubadour melodies in Volpiano, it thus became possible to not only search them, but also to extract important features of the repertoire, allowing a greater command of the repertoire to be established through digital tools. While Volpiano was able to facilitate the majority of the goals of this project, it is not able to represent editorial emendations or the specific characteristics of the notation. It also does not allow the encoding of the text as underlay. For these reasons, I look forward to being able to convert the melodies into MEI at a later date to be able to encode further details about the melodies, their representation in sources, and proposed editorial alterations.