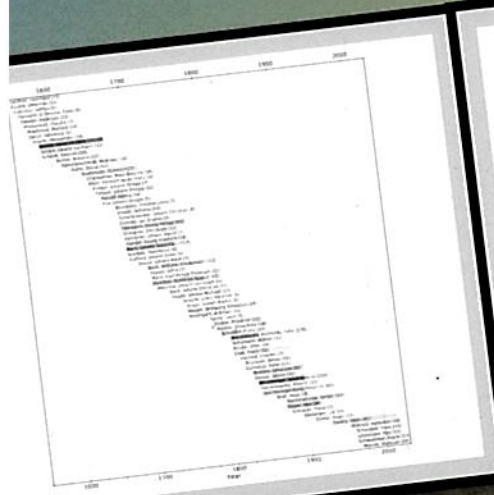


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Christof Weiß and Meinard Müller



Studying Tonal Evolution of Western Choral Music: A Corpus-Based Strategy

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Abstract
The availability of large digital music archives combined with significant advances in computational analysis methods have enabled novel strategies for musicological corpus studies. This includes approaches based on audio recordings, which are available in large quantities for studying the tonal complexity and styles. In this paper, we take up such an audio-based approach for studying the tonal evolution of Western music and its evolution over centuries. In particular, we examine the tonal evolution of Western choral and sacred music exploiting a novel audio corpus (573 tracks) with a rich set of annotations. The data stems from one of the world's leading music publishers for choral music, the Carus Verlag. Based on this corpus, we present a heuristic strategy that exploits composer life dates to which is specialized on scholarly critical sheet music editions of this repertoire and optimizes its record label. Based on this corpus, we present a heuristic strategy that exploits composer life dates to approximate work count curves over the years, validate this approximation strategy, and optimize its parameters using the reference composition years annotated in the Carus dataset. We then apply this strategy to derive evolution curves from the full Carus dataset. We compare the results to a study-based complexity measure across three hypotheses on tonal evolution, namely that (1) global complexity increases faster than local complexity, that (2) major keys are tonally more complex than minor keys, and that (3) instrumental music is more complex than vocal music. The results provide interesting insights into the choral music repertoire and suggest that well-curated publisher data constitutes a valuable resource for the computational humanities.

Keywords
Computational Musicology, Corpus Analysis, Musical Style Evolution, Tonal Analysis

1 Introduction

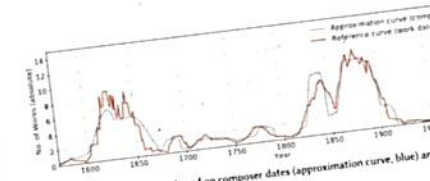


Figure 4: Work count curves based on composer dates (approximation curve, blue) and dates (reference curve, red), respectively.

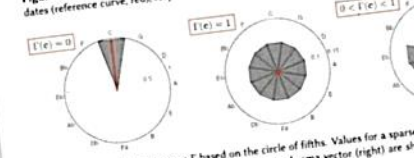


Figure 5: Complexity measure I based on the circle of fifths. Values for a sparse flat chroma vector (middle), and a more realistic chroma vector (right) are also denoted the resultant vectors (figure from [22]).

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