# The MeloSol Corpus

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## Abstract

This paper introduces the *MeloSol* corpus, a collection of 783 Western, tonal monophonic melodies. We first begin by describing the overal structure of the corpus, then proceede to detail its contents as they would be helpful for researchers working in the field of computational musicology or music psychology. In order to contextualizs the MeloSol corpus, compare descriptive statistics generated using the FANTASTIC feature extraction toolkit with that of the Essen Folk Song Collection as well as The Densmore Collection of Native American Songs. We suggest posible uses of this corpus including extending research which investigates Western tonality, perceptual experiments neededing novel ecological stimuli, or work involving the musical generation of monophonic melodies in the style of Western tonal.


*Keywords:* corpus studies, FAIR data, kern

Word count: X

# The MeloSol Corpus

## Introdution

This data report introduces the *MeloSol* corpus, a collection of 783 monophonic melodies taken from *A New Approach to Sight Singing: Fifth Edition* (Berkowitz, Fontrier, Kraft, Goldstein, & Smaldone, 2011). The title *MeloSol* derives from a combination of the corpus' content– *Melo* dic data– and the first name of the original author of the collection, *Sol* Berkowitz.

The corpus is divided into two major sections: a collection of sight singing melodies composed specifically for pedagogical purposes (n = 629) taken from Chapter One and examples from Western Classical literature (n = 154) taken from Chapter Five. The original text also contains materials for practicing rhythm (Chapter Two), Singing Duets (Chapter Three), Sing and Plays that incoproate a melody and piano accompaniament (Chapter Four), and Supplementary Exercises that are not included here. Within each of the larger sections exists five further subdivisions. These five subdivisions are mapped in conjunction with the trajectory of many aural skills classrooms.

For example, the first section of both the sight singing melodies and the first section of literature align with melodies a first semester undergraduate student in a music degree program might be expected to learn during their first semester of university in an aural skills classroom. As the original book was designed as a pedaogical text, each section of the book and consequently each melody within each section is meant to increase in complexity as new topics are being introduced. The fifth and final section of both the sight singing melodies and examples from the literature contains melodies which break from Western tonal practice. These melodies contain either modal, atonal, or tonally ambigious melodies. A visual depitction of the breakdown of melodies from the two larger sections in terms of count data is presented in FIGURE ONE.

- FIGURE ONE HERE

In terms of analyzable data, the 783 melodies are encoded in `**kern` format (Huron, 1994), with each individual file containing metadata listing the unique identifier, chapter from which the melody originates, section within that chapter of the larger text, page number, as well as what mode the encoder labeled the melody as. Modes were only noted for a small subset of the corpus, the vast majority of these melodies are either major (ionian) or minor (aeolean). Other corpora should be consulted for questions pertaining to mode such as work by Albrecht and Huron (Albrecht & Huron, 2014).

Overall, the corpus consists of 49,730 tokens, a subset of which are 36,641 note heads. All melodies in the corpus were encoded by hand using the software MuseScore (Werner, Nicholas, & Bonte, 2019), initially saved as XML, then converted to `**kern` using the humdrum extras `xml2hum` tool (Sapp, 2008) with the current meta data added using the `name-of-script.R`. Further addition to the metadata can be added with modifications to `name-of-script` found in the `scripts` directory. We describe the corpus from a macro perspective in figure two. Figure two presents the combined tonal materials, sections one through four of Chapter One and Five; figure THREE presents the same information for section five of Chapter One and Five. Tonal and non-tonal materials were separated as not to distort key representations since non-tonal melodies are encoded with a no sharps, no flats key signature.

## Comparison

In order to further contextualize the *MeloSol* corpus with the context of other corpora found in the literature, we briefly compare descriptive statistics from the *MeloSol* corpus with both *The Densmore Collection of Native American Songs* (Neubarth, Shanahan, & Conklin, 2018; Shanahan & Shanahan, 2014) as well as the European and Chinese subset of the *Essen Folk Song Collection* (Schaffrath, 1995). We chose both the

*Densmore* as well as the *Essen* collection as both corpora represent corpora of melodies that have been used to study singing as well as investigations into computationally modeling the implicit understanding of patterns found in different musical cultures. Further, we compare the *MeloSol* with the *Essen* collection as the *Essen* collection has been used as a proxy for representing the implicit understanding of the structure of Western, tonal music in computational models that depend theoretically on the concept of implicit, statistical learning (Demorest & Morrison, 2016; Huron, 2006; Pearce, 2018). Comparisons of descriptive statistics were conducted using the FANTASTIC toolbox (Mullensiefen, 2009). The accompanying calculations for each melody are found in `corpus/melosol_fantastic_features.csv`.

In FIGURE FOUR, we compare ... In FIGURE FIVE, we compare ...

- FIGURE FOUR
- FIGURE FIVE

## Useful

As the *MeloSol* corpus comprises Western, tonal music, this corpora might be utalized in order to continue research investigating empirical claims about about patterns intrinsic to Western, tonal music. For example claims made by Huron CITE regarding contour class– initially explored using this dataset by BAKER– could be further modeled using *MeloSol*. Additionally, as *MeloSol* strictly contains music associated with Western, tonal music, the corpus could be used in further work replacing the *Essen* collection as a dataset in which to train computational models of melodic expectation (Pearce, 2018). We finally note that as this corpus was initially developed in order to investigate how to make pedagogical improvements in aural skills classrooms, using *MeloSol* for this purpose would be a logical extension to this programme of research CITE ME.

## Acknowledgements

Ir would like to thank Adam Rosada, Elizabeth Monzingo, and Connor Davis in their help encoding some of the melodies for this corpus. Additionally, I would like to thank Daniel Shanahan and Craig Sapp for technical support while working with and always learning new things about humdrum.

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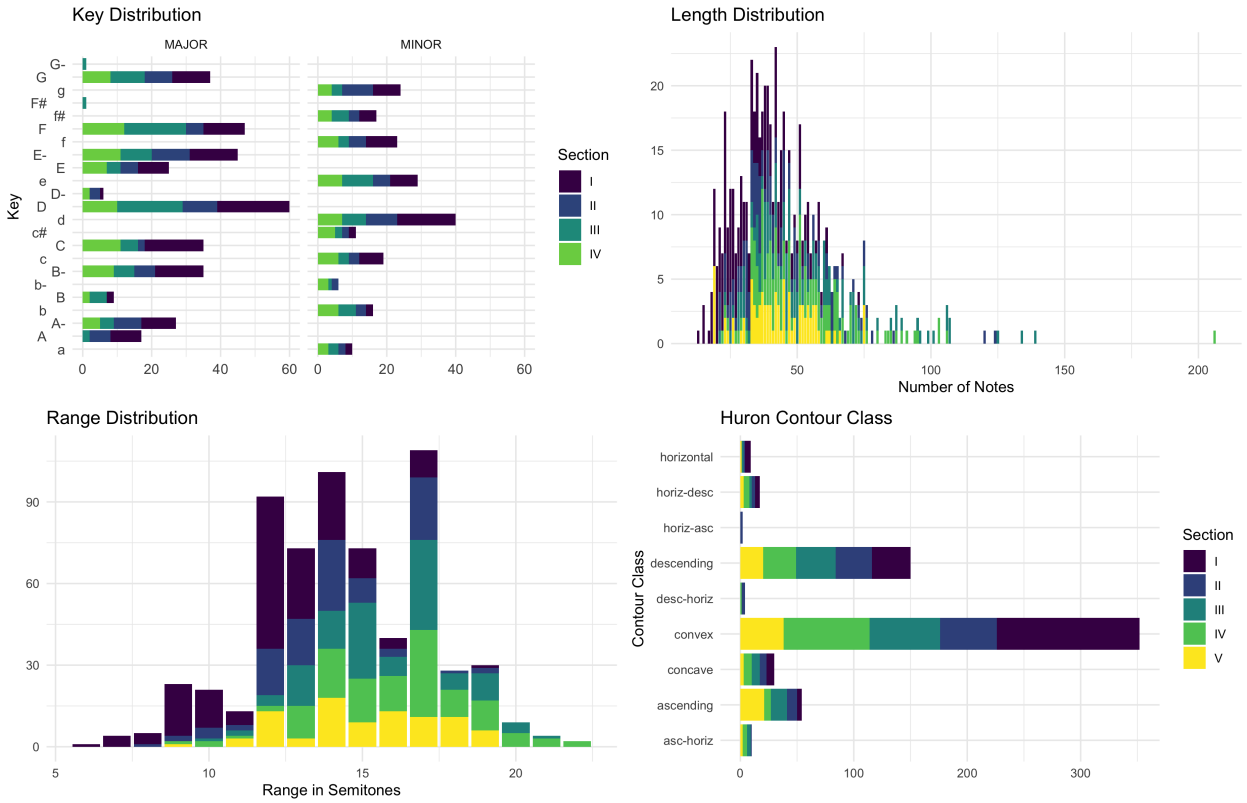


*Figure 1*. Descriptive Statistics of MeloSol

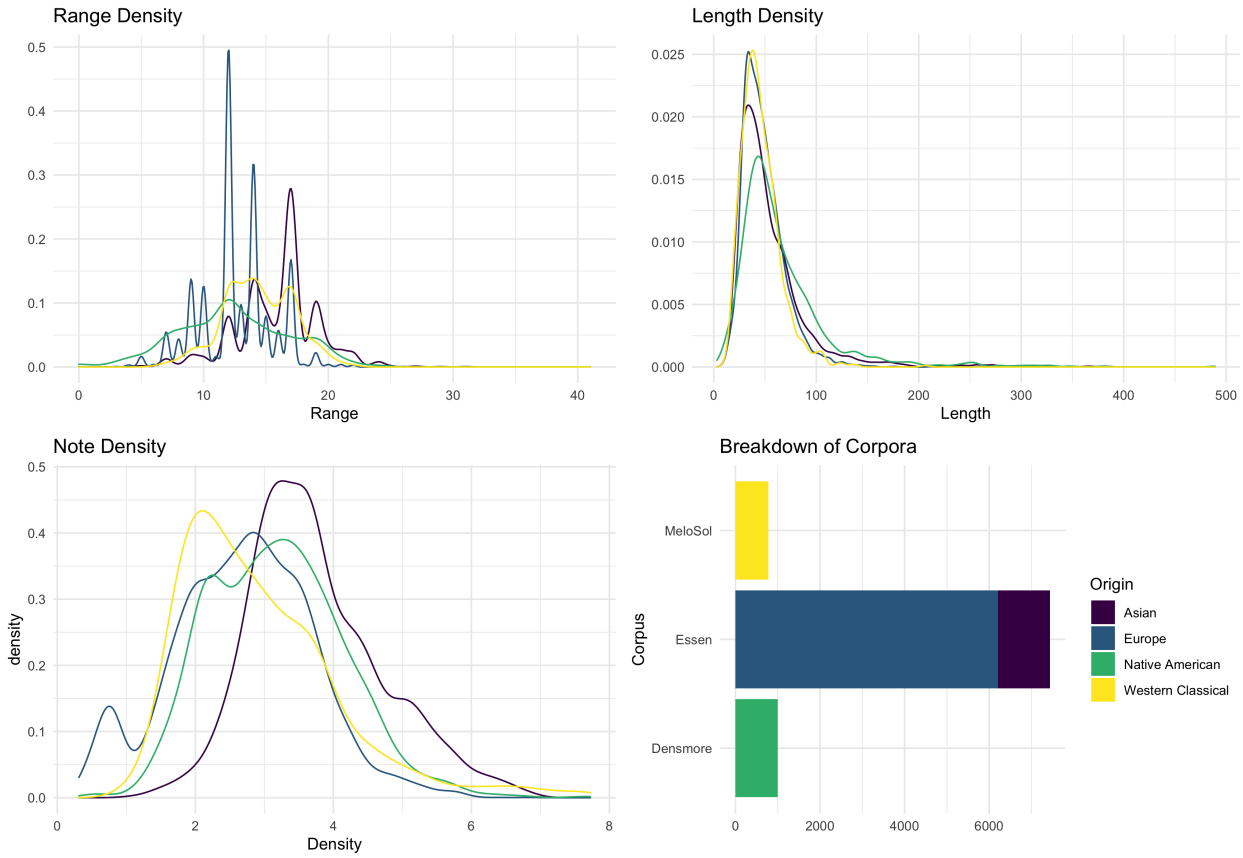


*Figure 2*. Descriptive Statistics of MeloSol

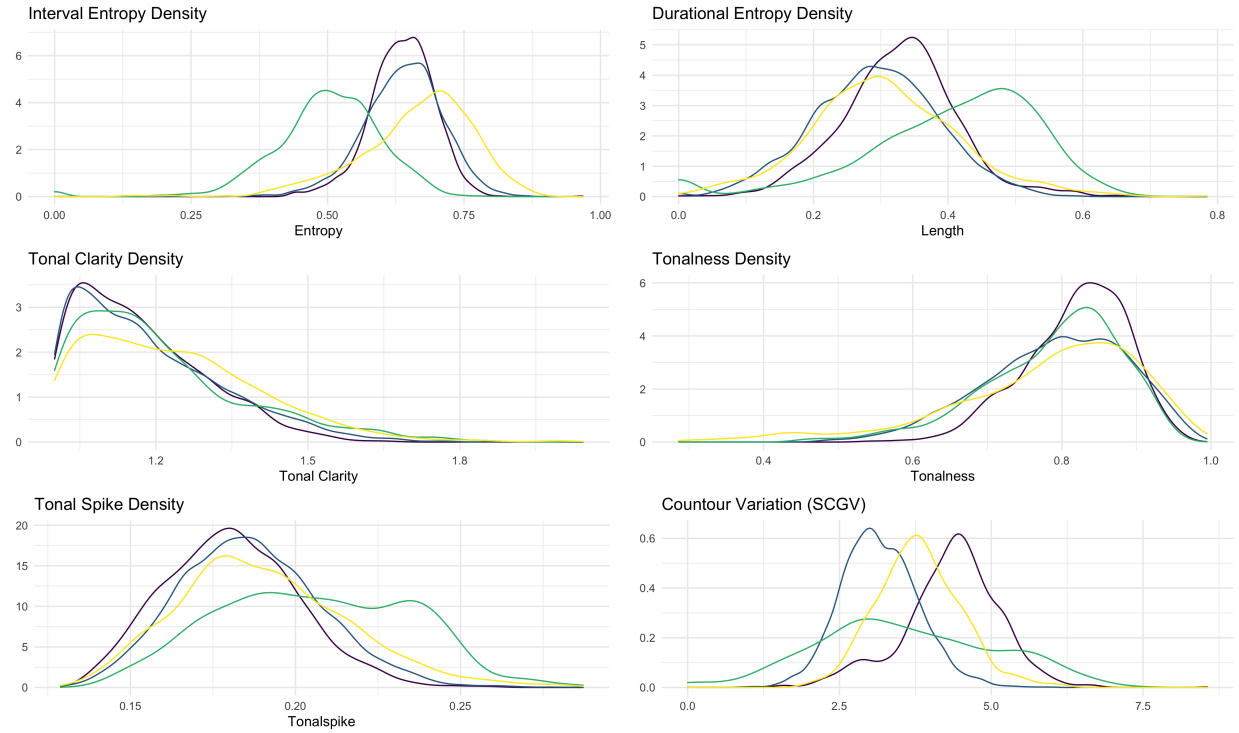


*Figure 3*. FANTASTIC Density Plots

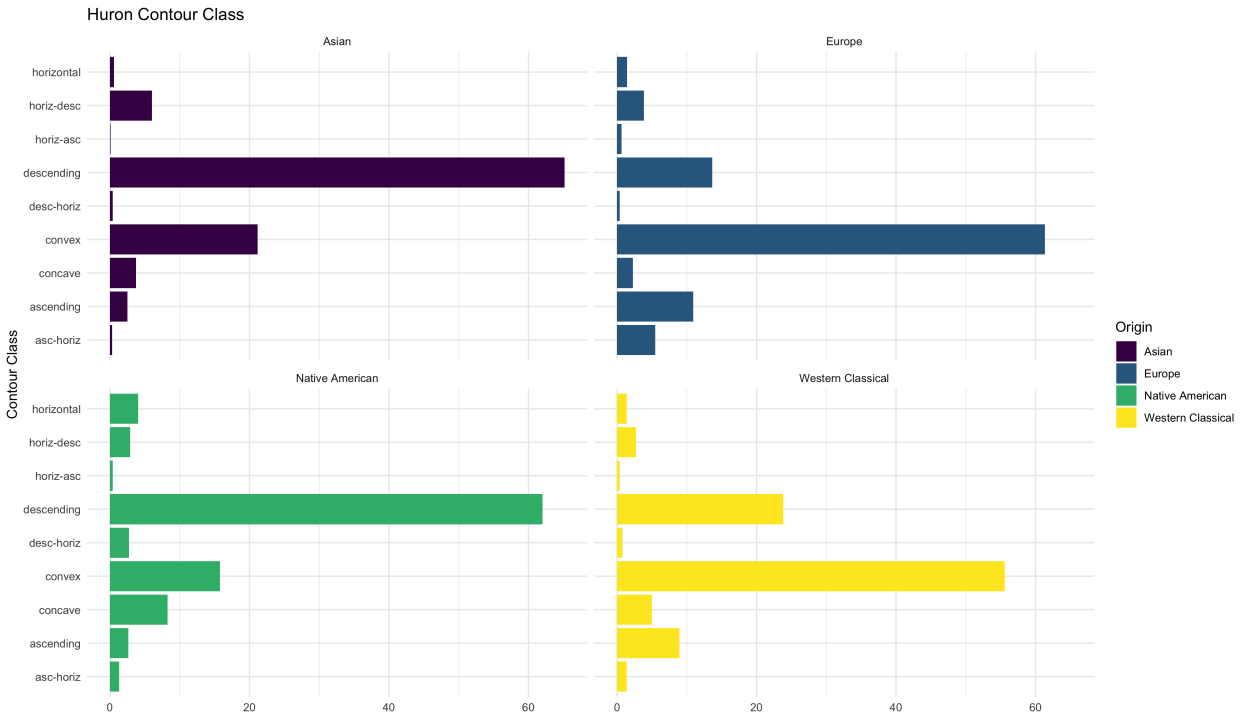


*Figure 4*. Huron Countour Class