# The Densmore Collection of Native American Songs: A New Corpus for Studies of Effects of Geography and Social Function in Music

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# THE DENSMORE COLLECTION OF NATIVE AMERICAN SONGS: A NEW CORPUS FOR STUDIES OF EFFECTS OF GEOGRAPHY, LANGUAGE, AND SOCIAL FUNCTION ON FOLKSONG

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## ABSTRACT

The study of geographic effects on music can yield meaningful and important results related to the role of geography, language, and social functions on music. When examining possible such effects on music, however, there are a number of possible confounds presented by the datasets currently available. This paper examines these issues, and discusses the creation of a new dataset for studies of folk music, connections between music and language, and the possible effects of geography on musical style change.

## 1. BACKGROUND

Many studies examining the effects of both language and geography on music have employed the Essen Folksong Collection (Schaffrath, 1995), which contains roughly 6,000 European folksongs, and roughly 3,000 Chinese folksongs. For example, Aarden and Huron (2001) used the dataset, along with the encoded latitudinal and longitudinal information, to examine the differentiation in phrase types and mode usage throughout Europe. They concluded that Eastern European folksongs have more prototypical phrase endings (that is, they are more likely to end on the tonic), whereas Western European folksongs have more varied phrase endings. Additionally, they found a dominance of usage of major mode in Italy, and a dominance of minor in Eastern Europe. Interestingly, they found a greater use of the major mode that seemed to follow the Rhine River northward. They concluded that the influence of Italian music projected northward along the main river connection. This was consistent with the notion of the spreading influence of major-mode Italian practice into northern Europe along the Rhine.

The Essen dataset has also been used to examine linguistic effects of folksongs. Huron (1996) used the collection to demonstrate the prevalence of the "melodic arch" in folksongs, and Shanahan and Huron (2011) used the dataset to examine the possibility of intervallic "phrase compression" analogous to that present in speech.

### 1.1 The Limits of the Essen Folksong Collection

Unfortunately, there are a number of reasons why the Essen Folksong collection might not be an ideal dataset for such studies. First of all, it is collected from many different sources, including transcriptions from different periods, scholars, and locations. Secondly, the dataset is somewhat apocryphal: the specifics of each transcription (such as the date, the transcriber, the location, the specifics about the musicians) are not included. Often times very important facts are left out. For example, with the Chinese folksong dataset, it is unclear whether the transcriptions are of vocal or instrumental songs. The European folksongs are predominantly vocal, but it's likely (although not certain) that the Chinese folksongs are instrumental. Additionally, although, the Essen folksong collection provides a great deal of data, it is from a relatively small geographic region, all composed over the course of about 300 years.

### 1.2 What Would an Ideal Dataset Entail?

Ideally, a dataset that would be used to examine the effects of language and geography on music would fulfill a number of criteria. These include:

- Being transcribed before the advent of mass media, to minimize the effect of the consolidation of disparate cultures and languages by mass media.
- Being transcribed by a single individual, or a small group of individuals, in order to minimize transcription effects.
- Covering a relatively large geographic area
- Being collected over a relatively brief amount of time.

Although it seems like such a dataset might be difficult to find, one possible option might be found in the work of American ethnologist Frances Densmore (1867-1957).

## 2. THE DENSMORE COLLECTION

Densmore was employed by the Bureau for American Ethnology (BAE), beginning in 1907. Over the course of her career, she embarked on 79 field trips to 54 locations. She made around 3,500 recordings, transcribed more than 2,300 songs, and she published 16 books and hundreds of articles.

This project has consisted of the encoding of Densmore's transcriptions into searchable formats (such as **kern and MEI), and has focused on her books, which include the most information about the transcriptions, the context of

the recordings, and the function of each specific song.

## 2.1 A Brief History of the Densmore Encoding Project

Empirical musicologists have been interested in encoding Densmore's collection of transcriptions for more than a decade. The project has largely consisted of encoding the transcriptions from each book into the kern format, for use with the Humdrum Toolkit (Huron, 1995). Paul von Hippel encoded excerpts of the first book of Chippewa songs in 1998. David Huron encoded the *Pawnee* and *Mandan* books in 2000, and Craig Sapp encoded the *Teton Sioux* book in 2002. Over the past year, the authors of the present study have encoded all of the remaining books.

| Book | Number of Pieces | Year Published |
|---|---|---|
| *Acoma, Isleta, Cochiti, and Zuni Pueblos* | 82 | 1957 |
| *British Columbia* | 98 | 1943 |
| *Cheyenne and Arapaho* | 72 | 1936 |
| *Chippewa (I)* | 249 | Collected 1907-1909 |
| *Chippewa (II)* | 182 | 1913 |
| *Choctaw* | 71 | 1943 |
| *Maidu* | 53 | |
| *Mandan and Hidatsa* | 74 | 1923 |
| *Menominee* | 144 | 1932 |
| *Nootka and Quileute Music* | 132 | 1939 |
| *Northern Ute* | 116 | 1922 |
| *Papago* | 170 | 1929 |
| *Pawnee* | 100 | 1929 |
| *Seminole* | 247 | 1956 |
| *Teton Sioux* | 246 | 1918 |
| *Yuman and Yacqui* | 134 | 1932 |

**Table 1:** Frances Densmore's collections of transcriptions, and the number of pieces each contains.

Each encoding contains the information of each transcription, including the date of performance, the location, the social function (e.g. children's songs, hunting songs, etc.), whether the song was sung by a male or female, the linguistic group of the Native American tribe, whether or not it is typically considered a tone language, and the specific geographical location of the group. The corpus is now available in both **kern notation and MEI (Music Encoding Intiative) formats.

## 2.2 Some Issues with the Densmore Collection

Although this will hopefully prove to be a useful dataset for empirical musicologists, there are a number of issues that one must consider when using the Densmore corpus. Firstly, the corpus employs Western notation to depict music that does not necessarily conform to Western notational standards. As such, the transcriptions encoded might be viewed as approximations (as is all music notation). Secondly, one should consider the ethical implications of using such transcriptions. Densmore lacked formal training as an anthropologist, and her attitude toward her subjects in the early part of her career is often described as condescending and patronizing. Often times, the music being transcribed might not be meant to be performed or displayed outside of certain social situations by certain individuals. We as scholars must take such ethic considerations into account when employing such datasets. For more on such issues, see Huron's early description of the project, and the discussion of ethics (2002). The current project simply attempts to increase the accessibility of these transcriptions, in the hope of facilitating research pertaining to possible connections between music, geography and language.

# 3. EXAMINING nPVI BETWEEN GROUPS

One example of a study that might be done with such a dataset might be a comparison of the normalized pairwise variability (nPVI) between groups that employ tone languages and those that do not. The nPVI is a metric ranging from 0 to 200 that analyzes the degree of variation in duration from one element to the next. A low value means that there is little variation in duration, while a high value means that the variation is quite high. Languages differ significantly in the nPVI. For example, Grabe and Low (2002) and Ramus (2002) found that the nPVI of Dutch and English tend to be much higher than Spanish or French. Patel and Daniele (2003) analyzed the instrumental melodies of both French and British composers, and found that there was a significant difference in nPVI between French and English melodies, corresponding with the languages. French had far less variation than English, and their melodies exhibited a similar disparity.

With the Densmore collection, we can examine the nPVI of the melodies of groups that primarily employ a tone language, compared with those that do not. As can be seen in Figure 1, groups that employ tone languages exhibit a much smaller nPVI. This might suggest that, while tone languages require specific pitch associations to convey meaning, non-tone languages might

place more emphasis on rhythmic variability as a way of conveying meaning.

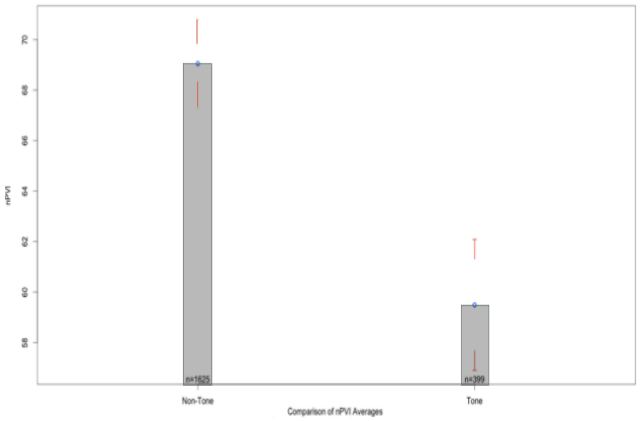


**Figure 1:** A comparison of normalized pairwise variability indices (nPVI) of melodies in groups that employ non-tone languages (on the left) and tone languages (on the right).

## 4. CONCLUSION

It is our hope that this corpus will provide a useful resource for scholars interested in music, language, geography, and social function. The dataset is available at www.github/humdrum-tools/densmore. Future work will employ the geographical tagging of each collection to look at the possibility of geographic effects on music.

## 5. ACKNOWLEDGMENTS

This work was made possible by the great work done by Paul von Hippel, David Huron, and Craig Sapp. Craig Sapp created the converter for MusicXML to kern, as well as kern to MEI, which has facilitated greater access of the dataset.

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