

- "*Foundations of Rhythm in Iranian Classical Music and Persian Language*", PhD dissertation, November 2009.

Abstract

The present research is a comparative study on rhythm in two domains: Iranian Classical Music and Persian Language, with rhythm defined as the timing of elements in any sequence of sounds in music or speech. The elements, each occurring at a moment in time, build a temporal structure, which can be remembered and recognized, and here we have referred to such temporal structures as rhythmic patterns.

Our main goal in this study was to assess the patterning in each domain, by which we mean that there are certain cell-like rhythmic patterns that can generate the whole body of rhythmic phrases in the hierarchical organization of musical pieces and utterances in the language. There seems to be a common foundation in both shaping of the patterns, and the way they are assembled to form phrases and pieces in the domains we studied.

Iranian Classical "*Radif* of 7 *Dastgah-s*" (by *Daryush Tala'ee*), and phonological words in Persian language were chosen as the corpus of this study. Rhythmic patterns of the two were extracted and compared with each other. Pattern extraction from "*Radif*" was carried out on a software system, designed and produced especially for this research. Along with the phonological extractions (based on segmentations), some phonetic observation was done on waves of the extracted patterns both solely and in combination, to observe the variability of the timing structures.

Considering the fact that usual rhythm transcription methods in phonology and music are not efficient for a comparative study like this, we have designed some graphic symbols that are able to exhibit the rhythmic structure in both: Persian words and *Radif* phrases. Such symbols are designed to communicate simply visually and with no training.

The results showed that:

In both domains, rhythm is duration-based, and not stress-based: the key distinction that shapes rhythmic patterns is duration and quantity, not stress (or accent).

Both domains are highly patterning. 20 rhythmic patterns in "*Radif*" and 4 types of foot in Persian words can generate the whole body of phrases rhythmically in the corpus.

Construction of both patterns and phrases is additive: sequences of sounds in a pattern and a phrase are shaped by simply adding up quantities, and by adding one or more quantities to a pattern (putting one element beside the existing group), other patterns are constructed.

The neighboring of patterns can define different degrees of periodicity that can range from free prose to fully disciplined poetry, and pieces of non-pulsatile free rhythm to periodic pulsatile pieces. Thus, free rhythm in pieces of "*Radif*" can compare to free poems in Persian.