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Postprint

This is the accepted version of a paper presented at *International Conference on Analytical Approaches to World Music (AAWM)*.

Citation for the original published paper:

Holzapfel, A. (2018)

A case study of ethnography and computational analysis as complementary tools for analyzing dance tunes

In:

N.B. When citing this work, cite the original published paper.

Permanent link to this version:

<http://urn.kb.se/resolve?urn=urn:nbn:se:kth:diva-233854>

A case study of ethnography and computational analysis as complementary tools for analyzing dance tunes

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Introduction: corpus analysis and ethnography

This paper presents a case study, in which ethnography and music corpus studies iterate and mutually inform each other. Corpus studies may provide macro-level information about traits of the music contained in a corpus, approaching music as an acoustic object (Molino (1990)). On the other hand, ethnography enables close-reading that provides the complementary aspects of music performance and reception, and embeds the acoustic object in its sociocultural context.

Background and motivation

In the beginning of my research on Cretan music, the driving motivation was to identify similarities and differences between Cretan dance tunes using computational approaches. In the course of my experiments, I obtained a larger set of corpus-analytic results that were at that point hard for me to interpret.

Throughout the following years, I conducted field work in concert events and music seminars in Crete. This way, I was able to gain insight into the context, in which the artefacts in the corpus are embedded within festivities and other social events in Crete. It became clear to me that certain contrasts in the melodic repertoire are related to specific phases within the dances. Additionally, differences between apparently similar dance tunes are related to differences in the steps of the dances and the larger aesthetic concepts as expressed by the musicians.

Cretan music, established as a term only throughout the 20th century, was often analyzed with focus on identity (Herzfeld, 1985; Dawe, 1996; Magrini, 2000). Whereas its formal aspects were analyzed, for instance, by Theodosopoulou (2004), a systematic consideration of relation between the social processes in dance and the formal aspects of musical style remains yet to be approached.

In this paper, I will present corpus analytic results from recordings of a specific Cretan dance tune family, the *Pidichtos* (Leaping dance) of eastern and central Crete. The local dances within this dance tune family coincide in the period of their dance steps, but differ regarding their directional patterns in the dance movement. The Maleviziotis is arguably the most wide-spread member of this tune family, as the local variant of the central Cretan area of Heraklion. However, especially in festivities in the east of Crete, the local variant of the area of Siteia - the Stiakos - is frequently encountered. Musically, most musicians emphasize their close relations, and in this paper I will conduct a corpus-analytic approach to emphasize their differences in terms of their melodic material. Subsequently, I will present the perspectives of the Cretan musicians on these tunes, and on the interactions with dancers that occur while they are performing. The outcomes of these interviews will provide a deeper interpretation of the context of formal melodic aspects that were provided in the corpus analysis.

Corpus Analysis

A combination of pitch analysis and pattern matching methods (Şentürk et al., 2014) enabled me to determine frequent melodic patterns in a corpus of recordings. The corpus was compiled from the recordings of the Thalitas and Crinnos projects¹, which aimed at the documentation of the lyra and violin traditions in Crete, respectively. In this corpus, dance tunes are labeled using the name given to the tune by the performer, and using this information 25 recordings of the Stiakos and 27 recordings of the Maleviziotis were identified. I applied computational pitch analysis methods to the recordings of the Maleviziotis and Stiakos. Using this pitch analysis, I computed pitch contours of four measure segments, which would typically either include one phrase or two renditions of a shorter melodic phrase. The corpus can then be searched for re-occurrences of pitch contours as an estimation of the re-occurrence of played melodic phrases. It is worth emphasizing that this method was checked for its accuracy using the available manual analyses for another dance (Sousta), which resulted in consistent results between computational and manual analysis.

The analysis was conducted aiming at two insights: first, the amount to which melodic phrases are shared between the recordings of the Maleviziotis and the Stiakos, and, second, which are the characteristic phrases that are widely used in the Stiakos, but not in the Maleviziotis. The results indicate that the largest parts of the durations of the recordings phrases are used that are shared between the two dances. Regarding the second aim, the emerging contrasting melodic patterns revealed striking differences between two dance tunes, which solely from a corpus-analytic perspective stood in contrast with statements of many musicians and dancers about these tunes being strongly related.² During my presentation, I will present these corpus analytic results in greater detail, which will otherwise also be published in the context of my upcoming dissertation.

Musicians' perspective

In the course of the years following my first corpus analytic attempts on Cretan music, I conducted field work in concert events and music seminars in Crete. In the context of this paper, the main strategy to shed light on the differences and commonalities within the Pidichtos dance tunes was to collaboratively analyze performance recordings with Cretan musicians. In specific, four renowned players were asked to comment on their own performances, using high quality audiovisual recordings. In addition, a larger series of semi-structured interviews with these and other musicians and dancers was conducted, and these interviews revealed their views on aspects such as the interaction between musicians and dancers, musical form in the Pidichtos, as well as gender and historical aspects of Cretan dance. The combination of collaborative performance analysis and interview analysis revealed emic interpretations of the initially observed differences between the melodic patterns of the two Pidichtos forms.

From the point of view of my consultants, the specific repertoire of the Cretan Pidichtos dance reflects the formation of contrasts between eastern and western Crete, and between old and new style. Musicians and dancers assign this contrast to the ethos of the Cretans in the specific areas and periods, and see their music as immediately related to these contrasts. By relating results of ethnography and computational analysis, I will give an example of how the concepts of local style find expression in specific patterns in the acoustic object, using the melodic patterns obtained from computational analysis as a starting point. The observed differences relate to the new style of the Pidichtos being focused on the *ortses*, *i.e.* the ecstatic phases of the dance. This focus led to a

1 The recordings for the analysis stem from the Thalitas (<http://thalitas.ims.forth.gr/>) and Crinnos (<http://crinnos.ims.forth.gr/>) projects, which represent an outstanding past effort to document Cretan music.

2 A few examples of 4-bar melodic patterns of this completely automatic analysis is provided in the supporting files 1 and 2, respectively. It is important to note that the pattern analysis takes only the frequency of the main instrument into account, and ignores rhythmic and timbral aspects.

change of dance style, away from an older form that incorporated two different phases of dance steps. This reduction in variety regarding dance expression correlates with the observed focus of repetitive staccato phrases in the newer dance tunes, whereas the older forms of the dance tunes - reflected in the Stiakos recordings - utilize longer melodic phrases (see Figure 1), and their extended elaborations.

Conclusion



Figure 1: Three phrases of the Stiakos that emerged as central, both from collaborative performance analyses, and from computational analysis.

In the next iteration between corpus analysis and close-reading, I intend to discover musical phrases in the available recordings that occur exclusively within specific small local groups of musicians. The reasons why these phrases were forgotten or neglected in wider geographical contexts will be discussed with consultants in the next research excursion to Crete. Regarding future field work, I intend further interviews with dancers that will aim to investigate how they verbalize their experiences while dancing.

It is important to point out that the more detailed results presented at the conference will also be included in my dissertation that I aim to conclude in 2018, and that will be available online.

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