

Anastasiia Mazurenko*¹

*Petro Tchaikovsky National Music Academy, Kyiv, Ukraine

¹vasyafokina@gmail.com

Pitch and Rhythmical Realization of Traditional Song Music and their Presentation in Research Interpretation

ABSTRACT

The basic methods of analysis of Traditional music in Ukraine are rhythm typology and melody geography. They aim to classify Folk song music examples by genres and rhythmical types with further displaying the data on a map. The use of this method demands the reduction of song versions to scheme. Also they focus on rhythm more and exclude other components of musical language. However, the scale doesn't have such precise classification. The issue of scale variant realization in Tradition is extremely significant today. The reduction of regularities of micro-interval deviations from the scale scheme to one system is the actual aim of ethnomusicology. The article attempted to find methods which can allow defining the parameters for such a classification. Thus, we used acoustic analysis methods, as well as comparative and statistical approaches. The music material for the research consists of representative performances of ritual songs (calendar and wedding). There are the songs of two regions of Ukraine — *Podillya* and *Naddniprovyanshina*, the central parts of the country on both banks of Dnipro river. The article provides examples of both monophonic and polyphonic performance. We also raise the issue of transcribing musical texts as a 'matrix' for comparison with the sounding material. As a result of research we have been able to trace the patterns of pitch and rhythmical realizations of songs. This enables us to complete our understanding of musical thinking in the Tradition.

1. INTRODUCTION

In Ukraine, as in the whole world, the era of rural music is coming to an end. Nevertheless, Ukrainian researchers still have the opportunity to collect material in the fields, from the native singers of 70–80 years old, and sometimes even younger.

As for the ethnomusicological process, we can distinguish the following trends. Research methods such as rhythmical typology and melodic geography prevail in the works of Ukrainian — and, more broadly, post-Soviet — researchers. This branch of ethnomusicology was born in the 1920s in the scientific work of a well-known researcher Klyment Kvitka (Kvitka 1973). The researcher is famous for the fact that in 1928 he proposed the term 'ethnomusicology'. We can read it in his French publications (Lukanyuk 2006).

Method of typology of Kvitka consists of the establishment of typical syllabical-rhythmic models based on hundreds and even thousands of folk melodies. This method relates in general to the music of ritual tradition. The number of rhythmic types is not infinite, but is not possible to precisely calculate. Conditionally, we can talk about almost a hundred rhythmic types of ritual songs in Ukraine. This system works not only in Ukraine, but also in Belarus, Poland and Lithuania.

For example, we can show the existence of wedding songs with a verse form 5 + 5 + 7 on the Slavic-Baltic territory, covering the four named ethnic groups (Figure 1).



Fig. 1 Scheme of rhythmic type 5 + 5 + 7.

The rhythmic type depends on the verse underlying the song and forms the rhythmic basis of the strophe. Established by the analysis, morphological models are applied to maps, by analogy with linguistic methods.

The next stage of the analysis is to determine melic or scale variants for each rhythmic model. The sphere of scale and mode analysis is more complex. But in this area we also have a methodology. Scales of song folklore are classified according to the *ambitus* (volume of scale), incline of the mode (major, minor), the number of stages. The scale is noted in the ascending direction. For convenience, the note is transposed into the system *sol* (Figure 2).



Fig. 2 Illustration of scale.

So we can see that scale types, like rhythmic types, can also be classified by the schematics of musical language elements, and also by mapping.

Methods of typological analysis have received significant development in the works of such ethnomusicologists as V. Goshovsky, B. Lukanyuk, I. Klymenko, O. Tereshchenko and others.

In addition, the topics of variability, timbre, dynamics, tempo, manner of performance, etc. have become more relevant for Ukrainian ethnomusicology in recent years.

2. ELECTRONIC ACOUSTICAL METHODS

One of the most modern methods in ethnomusicology studies is the electronic acoustic analysis of traditional music. The relevance of this method consists in the fact that it does not contradict the basic methods, but complements them. Experiments in this area have begun since the end of the nineteenth century. We can meet them in works as European researchers (E. Hornbostel and O. Abraham, O. Yeltshek), as well as in domestic studies (P. Baranovsky and

E. Yutsevich (Baranovsky and Yutsevich 1947), O. Lisopadov (Zemtsovsky 2002), N. Hazbuzov (1951). At present, researchers are engaged in the study for systematic methods in this area.

An application of electronic acoustic analysis in ethnic music is not accidental. The musical language of ethnic songs goes beyond the usual European academic system. And the methods of the academic system are not suitable for its analysis. That is why ethnical music often became ‘laboratory material’ in the first experiments on musical acoustics — although researchers from acoustics didn’t have a direct relation to ethnomusicology.

Today, methods of electronic acoustic analysis take a huge development in the work of modern researchers. Thus, in particular, these methods are actively developed by Lithuanian and Polish scholars R. Ambrasevičius, R. Budris, I. Vishnevskaya (Ambrasevičius 2015) and others. Such disposition to get more precise data may also be explained by the global trends of today — the development of computer capabilities, which leads to the digitization of the Humanities. And this, in turn, makes it possible to obtain statistical data more precisely, to obtain more objective results.

2.1. The Issue of Terms

An electronic acoustic analysis is a very wide term, which broadly means any method of music analysis, which involves electronic devices for measuring acoustic data. Obtaining data is only the first stage of analysis, but the goal of the study may be different. Depending on the target, further actions of acoustic data will be determined. But, as a rule, after the stage of measurement, the stage of calculation follows, then — the obtaining of statistical data, putting them in graphs and diagrams. Work with acoustic data is more often focused on the analysis of the pitch of songs. But also we can work with rhythm. The local goal of work with the sound-data is to determine the exact pitch of the scale. The need for a more precise definition of pitch is due to the absence of tempered scale in ethnic songs. When the researcher transcribes the text, the musical system becomes temporal ‘matrix’, which compares the actual sound of the stages — diacritical signs are used near or over the notes (Figure 3).



Fig. 3 Schematic illustration of diacritical signs.

This process makes the real sound tempered, and therefore — very schematic. It also influences perception and further research interpretation. On the one hand, schematic data makes the process of systematization easier — which was discussed in the beginning. On the other hand, it avoids the possibility of talking about the peculiarities of non-tempered fluctuations of scales. The dependence of our academic musical perception can be verified experimentally. This experiment was presented at the international conference ‘Slavic Melogeography’ in Kyiv by R. Ambrasevichius. He proposed to the audience of the conference to select one of the scales that most closely matched the sound of some record. That was an ascending scale, which was generated with a sine. The answers from the audience was totally different. Somebody told that he heard the scale with minor inclination, somebody heard an enlarged scale, some-

body answered that it was a pentatonic etc. And in fact, none of the answers didn’t not reflect the real sound because those intervals were absolutely equal, they’re sound between noticed intervals (Figure 4).

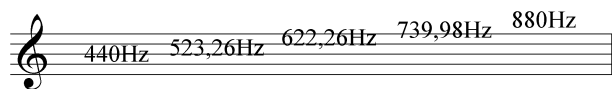


Fig. 4. Example of experimental sound.

Such an experiment proves that the researcher’s ear, which was educated on the tempered musical text, always compares any sound with a 12-equal scale — it is coordinates system of our hearing. And this, in turn, speaks of the possibility of re-interpretation of scale in the research process.

2.2. Issues of Measurement

For a more precise definition of the pitch of the scale in ethnic songs, we can use methods of acoustic analysis, for example, the method of R. Ambrasevichius. It is presented in his book ‘Scales in Lithuania Traditional Music: Acoustics, Cognition, and Context’ (Ambrasevičius 2015).

The proposed method is based on the principle of comparing all the sounds of a song with a sound of 440 Hertz. Through this analysis, we get the value of each song stage as intervals in cents. After we got an intonogram, we can follow the regularities of the realization of one or another stage of the song, that is, the tendency of their deviation from the tempered system in the volume of the song. So, using this method, we can analyze enough for the statistics — not less than 100 — the number of songs and follow the trends of the stages realization in certain genres, in the regions and fill these data in the maps of song traditions.

Another method of acoustic analysis is a method of comparing proportions and ratios. This method has not been used before. In work with pitch we use the difference between the transcribed and actually sound interval ratio of the steps (Figure 5, in cents).



Fig. 5. Interval ratio of the steps.

And for the rhythm we use percentage difference between actual and transcribed sound duration (Figure 6, available for the tempo with quarter is 60 beats).

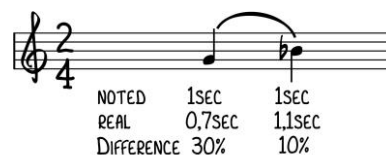


Fig. 6. Percentage difference in rhythm.

In the first case, we say, for example, that the horizontal interval has a narrow small third, which is narrower than 23 cents — in a polyphonic version vertical intervals between the voices will also be included. In the second case, the duration of the first sound is 30 percent shorter than the

transcribed quarter, the duration of the second is 10 percent longer.

When a researcher begins to analyze a song, one of the first stages of the analysis is the musical transcription of the text. After all, without a fixed visual text we will not be able to do further analysis. But there is also the other side of the coin: as soon as we have schematic text, we begin to ‘hear’ it and approximate the pitch and rhythmic realization of the sounds to the transcribed text — as in the case with the experiment with the same intervals. In culturological terminology, we overlay our own cultural code on the text that came from other cultural realities.

Such a process and its results we can see in the phenomenon of ‘secondary performance’ (another word is folklorization), when the non-tempered scale in the performance of the native singers differs from the scale of performers-ethnomusicologists. We can see the difference in a wedding song from the central region of Ukraine performed by the native singer and student ensemble (Figure 7).



Fig. 7 Transcription of the wedding song from Kirovograd region (the Center of Ukraine). The song was recorded by Olexandr and Natalia Tereschenko.

In the scheme, we can see the exact width of the realization of each stage (N. Harbuzov calls this phenomenon ‘pitch zone’, see Harbuzov 1951). So we notice that the pitch zones are very different in two performances (Figure 8).

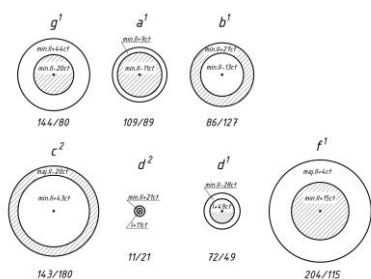


Fig. 8 The exact width of song stages.

Another example: it is noticeable how the subjective research interpretation affects the results of the analysis when the musical material is very ‘slippery’ and ‘elusive’ for the un-armed ears. For example, when the performer shows a type of song typical of a region, but performs it very unstable because of the loss of song skills, age, bad memory, etc. In this case, the song begins to sound completely different from its usual regional appearance.

We created an experiment that shows the differences in the perception of a single musical text by various researchers based on transcriptions — in the experiment, the teachers and graduate students of the Kyiv Conservatory participated (Figure 9).



Fig. 9 Transcriptions of one song by different authors.

In various transcriptions, we can see that in some places of the song we have radical differences in the notes. But if we compare each transcription with acoustic data, we will see how and where these differences occur. As well as in pitch, and in rhythm (Figures 10–12).

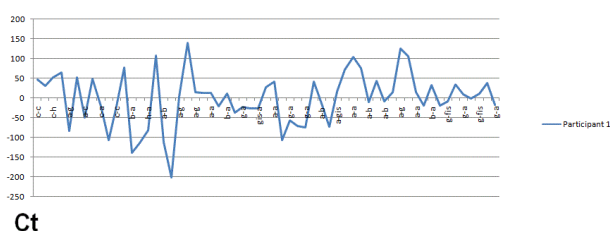


Fig. 10 Pitch differences between transcription of the first author and real sound.

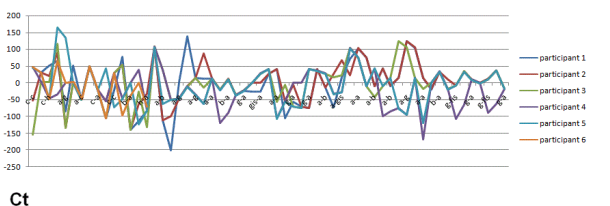


Fig. 11 Pitch differences between transcription of all authors and real sound.

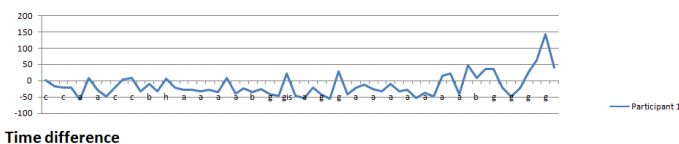


Fig. 12 Rhythm differences between transcription of the first author and real sound.

Such places I call ‘critical places’ of songs, otherwise mobile places. And the places in which researchers have no differences, I call them stable places. Such tendencies are followed in all samples — and this is the very best seen in this sample, because they are brought to the extreme here. So such a method helps us to make our transcriptions and further analysis more objective.

3. CONCLUSION

Through the proposed research method, we will be able to supplement our knowledge of the modes and rhythms of folk music of different genres and different regions. Also we will be able to talk about forming issues. In the long run, this method can be used in instrumental music, music from other countries,

professional music, etc. In the long run this method will help to make our research more objective and give us more information about the process of musical perception.

KEYWORDS

Folk Music, Acoustical Methods, Pitch Zone, Rhythmical Zone, Measurements, Statistic, Micro-Fluctuations, Ratios.

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