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Pitch and rhythmical realization of traditional song music and their presentation in research interpretation

ABSTRACT

Background

Today the Ukrainian vocal tradition are going to disappearing. Nevertheless, it is still possible to record the whole range of existing songs of the local tradition in some regions. Therefore, most of the ethnomusicologists forces are directed to maximally embrace regional traditions throughout the country. In addition, Ukrainian scientists are developing methods for analyzing the collected material. The methods of structural typology and melodic geography are prevalent in the Ukrainian scientific school. They seem to be universal for analyzing the structure of songs and their regional affiliation. The aim of these methods is to create a universal system of classification by genre and region, as well as the rhythmic constants of the verse. These criteria are basic for describing songs and regional traditions within the Ukrainian and, more broadly, post-Soviet school of ethnomusicology. And the results of such studies are the creation of genre rhythmic typological regional maps.

Such methods of analysis presuppose the unification of song criteria and the reduction of songs to selected types. This process is required for creating a classification. That is why ethnomusicologists pay much less attention to issues of variance and stylistic features. In addition, many criteria have not yet acquired the appearance of systemic or subsystem. For example, such a criterion as timbre is considered exclusively in the verbal associative description. And such an approach can't be objective. It is guided only by the subjective experience of the ethnomusicologist, which describes this criterion. Another example is pitch and rhythmic micro-fluctuations and their influence on the formation of strophe. These questions are worked out little more than questions of timbre. They are not limited to a just verbal description. Nevertheless, represented in the Ukrainian (and not only) school of ethnomusicology methods of analysis of micro-fluctuations are not enough to make these parameters systematic.

It should be noted that the issues of pitch and rhythmic micro-fluctuations are not the same as questions of scales and rhythms. The last of named above just received fundamental methods of analysis and became academic in Ukrainian ethnomusicology. In this case we are talking about those pitch and rhythmic changes that are caught by ear, but are fixed approximately and intuitively. Pitch and rhythmic micro-changes have the significance of regularities. In the course of our research, it is noted that they have their own regional characteristics and determine the style of the tradition in many ways. The question is that we do not yet have the criteria and methodologies for analyzing these micro-changes. And so we can't clearly trace them, classify them and create statistics.

Therefore, one of the tasks of the global study (this article is a small part of it) is the determination of the criteria and units of the estimations for statistical and comparative analysis in the problems of pitch and rhythmic micro-fluctuations.

The problem of pitch, rhythmic, and dynamic micro-fluctuations has not been developed to date. Such studies are realized due to precise acoustic measurements and further estimations. The results of such studies are statistical and comparative data on a particular criterion (depending on the goals of the study). The history of this kind of research is associated more with acoustic laboratories than with ethnomusicological institutes. Even at the beginning of the last century, acoustics turned to ethnic music as the most exotic material for acoustic musical experiments. First of all, they were interested in the non-tempered structure of the scales, as well as rhythmic deviations. These issues are still relevant, they are the main goal of acoustic research.

Today, the issue of acoustic research, including folk music, has gained some development in view of the appearance of new technological opportunities. Nevertheless, this issue remains marginal in the context of the analysis of ethnic music. Among the admirers of acoustic research can be named O. Abraham and E. Hornbostel, O. Elcshek, N. Garbuzov, O. Baranovsky and E. Yutsevych. Among contemporaries, Viennese, Slovak, Lithuanian, Estonian and many other ethnomusicological schools are actively develop in this issue. Acoustic analysis includes several stages. The very first and most obvious stage is the stage of estimating, data receiving. The researcher can measure the absolute pitch of each tone (Hz) through the special software. Modern programs of acoustic analysis allow to determine the pitch of each tone in both monophonic and polyphonic / heterophonic. This stage is possible due to the unfolding of the spectral range of one interval of time (equal to the duration of one tone or vertical interval). Obtaining the value of the fundamental tones of each tone of the polyphony is possible due to the definition of the peak values of the fundamental tones and their first overtones (through the octave).

The next stage of acoustic analysis consists of estimating of interval values in cents (Ct). In one case, we can equate the absolute pitch we obtained with a defined fixed value. For example, to the absolute pitch of sound a^1 (440 Hz). In this case, for example, if we measured the pitch and got the value 567 Hz, we can say that this sound is separated from a^1 (440 Hz) by 439 Ct, i.e. at 39 Ct above the sound of *cis*² or *des*². Having obtained such results, we can talk about some regularities of raising or lowering the pitch in the scale of the song.

The disadvantage of the described method is that it is tied to the absolute pitch of the tone even when we go on defining the intervals in cents. Another method allows you not to be tied to the absolute pitch of the tone. Its essence lies in the fact that we do not compare every single tone with a certain "reference" height, but compare the existing intervals of the scale with each other. Depending on the tasks assigned, we can compare the same tone in different strophes, determining the variability of the implementation of this tone in a specific place in the strophe. Another option is to compare the intervals of the scale in different parts of the strophe. For example, we can compare the rising interval $g^1 - a^1$ in different places in the strophe in one voice (horizontal interval) or between voices (vertical interval).

At the last stage of the analysis, we create a table or graph with the obtained data, in which we derive statistical data on the realizations of tones and intervals in the scale of the song. To obtain statistical data, we analyze by a similar method a significant number of samples (several dozen). Such research will show us what patterns of realization of tones are inherent in this or that regional tradition or genre.

Rhythmic realization of tones is carried out in a similar way, but with measurements of time intervals and estimation of the percentage of fixed and real tone duration.

In the final analysis, we can talk about the regularities of the pitch and rhythmic organization of the strophe in song genres. In addition, using this method, we can compare different interpretations of one song, the same genres in different regional traditions, different styles of performance, etc. In the long term, such a technique can lead us to the problem of the formation of a song strophe, as well as the genesis of rhythm and scale.

Aims and repertoire studied

Acoustical and statistical analysis of Ukrainian traditional songs..

Methods

Acoustical, comparative and statistical methods.

Implications

Pitch and rhythmic micro-fluctuations in the process of strophe forming

Keywords

Acoustical methods, microfluctuations, Ukrainian traditional songs, measurements.