

# OPINION

By Assoc. Prof. Dr. Stefka Venkova

on the dissertation Ivan Kostadinov Yanakiev

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## **THE CONCERT SYSTEM $A^1 = 432$ HZ AND THE OPEN FIFTHS: AN ATTEMPT AT INTEGRAL ACOUSTIC, PSYCHOPHYSIOLOGICAL, COGNITIVE AND PRACTICAL RESEARCH**

for acquiring the educational and academic degree Doctor

Professional direction 8.3: Musicology and Music Art

The dissertation is dedicated to a subject that has been very little studied in Bulgarian musicology - the question of the pitch of the concert system and its influence on human perceptions. I find the topic very interesting and promising, and in this sense a good subject for a dissertation. Not only from the point of view of the fact that its development fills an existing gap, but also that it opens up a topic that considers music as a physio-acoustic phenomenon, with its impact, as well as perspectives for practical use, i.e. the musical system as an element of musical sound expression. The dissertation fits into the current wave of research on various structures in recent decades, as well as experiments and composers' research in this direction. It is presented in a balanced way in different fields of knowledge - physics, acoustics, mathematics, neurology, musicology. Rich empirical material was used - surveys, experiments and others. I could not comment on the presentations based on mathematical calculations, I accept them as an achievement of the doctoral student in an indisputably complex matter.

I would like to underline that the object of the study stated in the introduction: "reflection on the question of the relationship between the frequency of the concert system (...) and the connection that its change has with the perception of music" (p. 1) and the resulting goals, are considered comprehensively and thoroughly in the text. Stepping into the field of various branches of science achieves the aspiration set in the title for integrated research. In this sense, I would like to congratulate the doctoral student and his supervisor Prof. Dr. Assoc. Milena Bozhikova, as well as the scientific consultant Prof. Dr. Vasil Kolev, for so much and well done work. This dissertation has high academic qualities - logically structured text; clearly stated subject, goals and methods of the research; placing the issues under consideration in the context of music history; detailed analytical and comparative work with the

presented musical opuses; visualization of the text through graphs, diagrams and tables.

Here I would like to note that the musical research interests of I. Yanakiev are backed by a solid musical activity. The Chamber Orchestra 432, created and conducted by him, already has its place on the Bulgarian concert stage, as well as the fact that he has won the award "Musician of the Year 2015" in the "Debut" category. And now his conducting activity will continue as conductor of the Bulgarian Chamber Orchestra in Dobrich.

The work is well structurally organized, voluminous, with appendixes and it fulfills the task to defend and prove the main thesis. The text is structured in 314 pages, 9 chapters, 2 appendixes and references, which contain 18 titles in Cyrillic and 113 titles in Latin. I would suggest, in the subsequent publication of the paper, which I strongly recommend, that consideration be given to whether the introduction and conclusions should be included in the overall numbering as chapters or that they should rather be outside this numbering, where the number of chapters will be 7.

In Chapter II "The Concert La (A) - History of Standardization and the State of Modern Practice" the concept of *concert system* is defined as well as the historical layers and changes in it are discussed. The process of standardization and the present situation are considered. The perspective is set "to pay conscious attention to the issue of choosing a certain concert system in practice and stimulate musicians to make a conscious assessment of the role of the concert system in the interpretation after the musician has experienced the sound" (p. 19). Hence one of the main conclusions in the dissertation that "the concert system could be considered as a means of expression by which certain authors, performers, ensembles or orchestras would like to show specifics in their sound" (p. 20).

Chapter III "Temperament and Intonation" clarifies in terminological terms the distinction between the concepts of concert system, temperament and intonation. The questions and problems of different types of temperaments are considered in response to the question posed by Pythagoras - "how to arrange twelve consecutive pure fifths in one octave, since mathematically this is not possible" (p. 32). And the decision, as I. Yanakiev notes, is always a compromise. The modern interpretation of the question has different manifestations, with special attention being paid to the two variants of Maria Reynold's uneven temperament. As a contribution I appreciate the development proposed by I. Yanakiev for a methodology for calculating the values of an arbitrary temperament, on the basis of which he also proposes a methodology for the preparation of an arbitrary temperament from a sampled Steinway piano. The idea of synchronization is also considered here, understood as "a specific sensation that appears or disappears under certain conditions during computer execution, but is always present when a person plays" (p. 86).

Chapter IV "Experiments" shows in detail the experiments conducted by the doctoral student. In the first case, with the amateur singers from the "Rodina" Choir, I. Yanakiev found that "over 90% of the respondents recognize that there is a difference between the sound of the concert system at  $a^1 = 432$  Hz and at  $a^1 = 440$  Hz... and that different sounds evoke different sensations" (p. 101). In the second case, with professional musicians, "there is a clear tendency to distinguish the 432 Hz concert system from the 440 Hz concert system. This is accomplished by many indicators, but most of the respondents believe that the difference is in the internal state that the two concert groups carry." (p. 133). The conclusion of the online survey is that "the change of temperament from uniform to good uneven is not a determining factor for the degree of liking, but on the contrary - the temperament with open fifths is accepted equally by respondents compared to uniform temperament" (p. 177). The way of processing the surveys and the prepared tables and diagrams is impressive. I would recommend at the end of the chapter to make summary conclusions based on the three types of experiments.

"Diana Deutsch's theory of the relationship between speech intonation and music" (Chapter V) draws attention to "the idea of common syntactic processing or shared resources for syntactic processing between language and music" (p. 178). Based on the research of Kölsch and Patel, the connection between speech intonation and the concert system is deduced. I. Yanakiev formulated his, as he calls it, *basic hypothesis*, namely that "the tone  $a^1 = 432$  Hz is related to the speech intonation of the Bulgarian language" (p. 184). Numerous results from experiments in non-concert environments are presented. I have a question - have similar studies been done in other countries and (assuming that different languages have their own specific pitch) would this affect the performance and perception of music by people of different nationalities?

In Chapter VI "An Attempt at Creating a Hypothesis for the Neurophysiological Correlation between Concert Frequencies and Temperaments, and the Conditions Described in the Surveys" I. Yanakiev has as a starting point the thesis that "the experiment shows how context determines the categorical perception of accuracy of reference values in the research of subjects with absolute hearing. This case can also be seen as an adaptation of categorical perception so as to serve in a new context." (P. 203). For me, this chapter is particularly relevant, as the proposed hypothesis, which is derived from the neurophysiological study of music, could find "correlations between the brain activity of certain subcortical areas and the type of auditory stimulus" (p. 210). This would allow the launch of a "larger series of specific neurophysiological experiments" (p. 211).

"Composer's Decisions" (Chapter VII) presents information related to existing composers' opuses in the field of concert experimentation. "In the compositional practice the issue of the concert system occupies a peripheral place. The presence of

playing pitch requirements is a relatively new phenomenon” (p. 212). Through the historical prism of Ligeti and Penderecki's experiments, the contemporary Canadian author Corinne Morsink is considered. She demands that her works be played in concert form  $a^1 = 432$  Hz, which, in her opinion, is "a conscious intention to make sacred the very act of making music" and thus recreate the unification of man with nature" (p. 219).

The "Results and Conclusions" formulated in Chapter VIII, as well as the stated contributions of the dissertation work in the abstract, determine the important achievements for the research both in terms of academic novelty and in terms of interpretation of already known information. The contributions of the thesis are many, and I mentioned some of them in my presentation. However, I would define the methodology created by the doctoral student for objective analysis of the subjective impressions from the comparison of human perceptions when listening to music as particularly contributing.

The bibliography is extensive and well structured. The abstract includes all the necessary elements, fully and adequately reflecting the content of the work. Quite impressive is the number and type of publications of I. Yanakiev on the topic of the dissertation, as well as the numerous participations in academic forums and research projects.

Based on the contributing nature of the dissertation, I give my positive assessment of it and propose to the esteemed academic jury to award Ivan Kostadinov Yanakiev the educational and scientific degree of Doctor in Professional Field 8.3 Musicology and Music.

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