

ACOUSTIC ASPECTS OF HUMAN SPEECH

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Abstract

The article attempts to comprehend the originality of sound as an artistic phenomenon of the twentieth century. The choral works of modern composers demonstrate the desire to strengthen the phonetic principle of verbal text. Turning to the trace elements of sound, the authors of the article look for new forms of expression with the help of official elements of the word, sound-visual and even "meaningless" syllables, in which the conceptual nature of the text is weakened, giving way to phonism.

All this leads to the fact that the musical beginning dominates such a synthesis, crowding out words. Particular attention is paid to the independence of musical components, which become only a means of creating a whole vocalization of the text, in which the choir of singing musicians, freed from the "oppression" of the word, turns into a musical "instrument".

Keywords: speech, person, society, religion, state.

I. INTRODUCTION

The essence of sound - the basis of music - has long been known to man. Since ancient times, in various civilizations of the world, ideas about sound have changed significantly, and today they make up a complex and often contradictory picture of knowledge about the main component of music.

An attempt to understand the originality of sound as an artistic phenomenon was made in the 20th century, which from the very beginning declared itself a period of bold discoveries that preserve this quality throughout the entire century.

Extraordinary creative discoveries were also marked by changes in society. An important role in the process

of intensifying these searches was played by the information leap, thanks to which in the 20th century the philosophical teachings of antiquity, including Eastern teachings, were open to domestic thinkers. All this "open" knowledge, found on the fertile ground of cardinal transformations in the purely musical sphere, taking place since the beginning of the century, has determined a new attitude of musicians and researchers to the sound of choral music with their own internal laws.

II. METHODOLOGY

In the article, a large role is given to nonlinear analysis of experimental data. The interest in such an approach in solving problems of speech acoustics is of ever increasing importance. In this paper, the question is posed of the possibility of determining emotions by nonlinear dynamics methods. The world around us is full of non-linear phenomena and processes, the correct idea of which is unthinkable without an understanding of the possibility of chaos, as well as the fundamental restrictions on the predictability of the behavior of complex systems.

One of the areas of application of nonlinear dynamics methods is associated with the problem of signal processing. In recent years, techniques have been proposed to find out whether the signal is produced by a dynamic system or if information is given on the properties and characteristics of this system. Thus, the apparatus of nonlinear dynamics is a research tool that allows us to draw a conclusion or an assumption about the structure of an object, construct its dynamic model, etc. The development of signal analysis methods and algorithms can be considered an important area of nonlinear dynamics.

III. DISCUSSION

The study of speech signals was conducted by many researchers and organizations. The greatest contribution to the theory was made by Fant G., Witt N.V., Vilyunas V.K., Sorokin V.N., Simonov P.V., Ustinov Yu.F., Volkov N.M., Degtev D.N. et al. Experimental studies were performed by Frolov MV, Taubkin VL, Reikovsky Y. and others.

Many techniques have been developed for speech analysis, for example, the analytical technique of emotional speech, which allows you to determine the intensity of speech utterances. At the Voronezh State Technical University at the Department of Construction Equipment and Engineering Mechanics named after Professor N. A. Ulyanova conducts research to identify the possibility of analyzing the psychophysiological state of a human operator using his speech. Research results are included in this article.

IV. RESULTS

The problem of the formation of sound speech is one of the most important and at the same time the most complex problems of modern science. Her decision has always been and remains a "litmus test" regarding the fundamental foundations of any more or less serious general psychological theory. Mental and vital activity, training and development, biological and social, innate and acquired in a person are just some of the many fundamental questions, the attitude to which is directly reflected in the solution of this problem. The practical significance of the developments associated with the formation of various types and forms of speech activity hardly needs proof: its quality has become the main economic factor of our century. The need to ensure the formation of high-quality speech activity while improving the education and upbringing of the younger generation, the need for effective methods of managing speech activity is progressively increasing.

Human psychology deals with the activities of individuals, taking place either in an open collective environment - among the people around them, together with them and in interaction with them, or face to face with the surrounding objective world, for example, in front of the pottery wheel. However, no matter in what conditions and forms human activity is carried out, whatever structure it takes, it cannot be considered divorced from social relations, from the life of society.

The development of a single indivisible process of activity is based on the initial dialectical contradiction between what is of objective importance for human life and is reflected by it as subjectively significant in reality. Reflecting in the corresponding experience, this contradiction forms a field of motivation that defines and directs multifaceted activity, ensuring the process of its movement.

It is the difference between the two sides of a single process of development of activity that determines the special nature of this process of movement, which is carried out through the emergence and resolution of multifaceted contradictions, which are eliminated by changing the type of activity, having a decisive influence on the development of the psyche, personality formation.

V. CONCLUSION

Our study of the personality's speech activity showed that the productivity of speech activity is a socially determined process that is determined not only by general laws, but also by specific conditions in which the person's speech activity is carried out. The most important factor determining the entire course of the formation of speech actions of an individual, as well as its result, is the social environment.

First, the social environment is the source and stimulus of speech activity, since it is the need for communication with others that is the trigger for the development of the child's speech and continues to determine the productivity of speech activity in the future. The contradiction between speech capabilities and communicative needs is a source of speech activity of a person throughout life.

Secondly, the social environment is a prerequisite for the productivity of speech activity, since only in the process of real communication are the linguistic, textual and communicative competencies of the individual formed by abstracting the invariant characteristics of the particular speech that surrounds the individual and is perceived by him. Moreover, the richer and more diverse the speech environment surrounding the child, the more favorable the conditions for his speech activity.

Thirdly, the social environment is a regulator of a person's speech activity, since it is the individual's speech assessments (direct or indirect) given by others, especially at the initial stages, that guide and regulate a person's speech activity. The internalization of these assessments and the formation of speech control on their basis serve as a mechanism at the beginning of the unconscious and then conscious self-regulation by the personality of the course of his speech activity.

VI. ACKNOWLEDGMENTS

The Organizing Committee thanks Bogdan Anatolyevich Ershov, Doctor of Historical Sciences, Professor of the Department of Philosophy, Sociology and History of Voronezh State Technical University for his help in publishing the manuscript.

REFERENCE LIST

- Agafonova M.Y. (2002) The Problem of Violence in Knowledge. 232 p.
- Anishchenko I.A. (1973) The structure of social consciousness. Pp. 186-188.
- Bergson A. (1998) Creative Evolution. 384 p.
- Bopdarenko I.G. (2004) The principle of determinism in the communicative theory of society. 248 p.
- Ershov B.A. (2013) Russian Orthodox Church in the structure of public administration in the XIX -early XX centuries: Monograph "Voronezh State Technical University. 245 p.
- Ershov B.A. (2010) The system of spiritual education in Voronezh province in the 19th century. *Education and Society*. № 5 (64). Pp. 105-108.
- Ershov B.A. (2012) The Russian Orthodox Church in the system of public relations in the XIX– early XX centuries. (on materials of Central-Black earth Provinces) dissertation for the degree of Doctor of Historical Sciences / Kursk State University. 412 p.
- Ershov B.A. (2012) Historiographical aspects of the relationship between the Russian Orthodox Church and state structures in the provinces of the Central Chernozem region in the XIX -early XX centuries. Bulletin of the Voronezh State Technical University. Series "Humanities". Pp. 188-192.
- Ershov B.A. (2012) State legal regulation of the activities of the Russian Orthodox Church in the provinces of the Central Chernozem region in the XIX -early XX centuries Historical, philosophical, political and legal sciences, culturology and arthistory. Questions of theory and practice. Pp. 75-78.
- Ershov B.A., Fursov V.N. (2018) [The Russian Church in the State Mechanism of Russia](#). *Bulletin Social-Economic and Humanitarian Research*. № 1. Pp. 32-37.
- Ershov B.A., Perevozchikova L.S., Romanova E.V. (2019) [Globalization and Intensification of Spiritual Values in Russia in the Philosophical Aspect](#). *6th International Conference on Education and Social Sciences Abstracts & Proceedings*. Pp. 208-212.

- Ershov B.A., Perevozchikova L.S., Romanova E.V., Ashmarov I.A. (2019) [The Concept of Spirituality in Social Philosophy. *Smart Innovation, Systems and Technologies*. T. 139. Pp. 688-694.](#)
- Gadzhiev K.S. (2002) Wahhabism: Features of its manifestation in the North Caucasus. 256 p.
- Gerasimov G.I. (2005) Transformation of education the socio-cultural potential of the development of Russian society. 311 p.
- Mapchenko A.P. (1999) Sociocultural specifics of modernization in modern Russia. 155 p.
- Nersesyants B.C. (2001) Russia's national idea in the worldwide historical progress of equality, freedom and justice. The manifesto of civilism. 64 p.
- Osipov G.V. (1997) Russia: a national idea. 208 p.
- Petrochenko N.F. (1988) Political ideology and its role in society. Publishing of Tomsk University. 152 p.
- Rybakovsky L.L. (2005) Russia's demographic future and migration processes Socis. № 3. Pp. 71-82.
- Shadrikov V.D. (1999) The Origin of Humanity. 200 p.
- Shalin V.V. (2000) Tolerance. 256 p.
- Shefel C.B. (2002) The personality of the post-industrial era as a phenomenon of sociocultural synthesis. 280 p.
- Tokarev S.A. (1986) Religion in the history of the peoples of the world. 576 p.
- Vdovina M.V. (2005) Intergenerational conflicts in the modern Russian family Socis. № 1. Pp. 102-105.
- Volkov Y.G. (2003) In search of a new ideological paradigm Socio-humanitarian knowledge. № 2. Pp. 80-101.
- Zinoviev A.A. (2003) Party ideology of the future. 240 p.