

Review

from **Assoc. Prof. Dr. Rositsa Dimitrova
Becheva**, New Bulgarian University,

for the dissertation of **Teodor Todorov Popov**,

professional field 08.03 Music and Dance Art,
Ph.D. student at New Bulgarian University,

on the topic:

ELECTRONIC SOUND DESIGN AND ITS APPLICATIONS IN DJING

for the award of the educational and scientific degree
"Doctor",

Research supervisor: Prof. Dr. Simo Lazarov

Biographical data:

Teodor Popov was born in 1987 in Plovdiv. He graduated from primary and secondary school in his hometown. He obtained his Bachelor's degree in Computer Technology with a specialization in Computer Music and Master's degree in Sound Engineering at New Bulgarian University in Sofia. He is a Ph.D. student at New Bulgarian University, Sofia.

I will focus on some of the more significant moments in Teodor Popov's creative biography:

He works as a sound engineer at Bulgarian National Radio – Regional radio station Plovdiv, where he actively participates in numerous concerts, studio performances, and broadcasts. He has taken part in national and international forums including the International Forum-Festival "The Universe of Computer Music", the Eighth review of the achievements of sound engineering, NBU 2021; and has presented papers at scientific conferences such as "Acoustics – FEMA, Sofia 2019", Fifth Annual Doctoral Conference of NBU, 2021, Conference with international participation "Young Scientific Forum for Music and Dance" 2021.

Teodor Popov is a freelance musician and live performer (with over 15 years of experience as a DJ), who also composes his own music. He organizes and participates in numerous musical and social events, and has held top spots in DJ competitions.

Contents of the dissertation

The dissertation is 334 pages long and its structure comprises Introduction, five chapters, Conclusions, Contributions, Bibliography - 227 sources, of which 39 are book sources (Cyrillic sources - 33; Latin sources - 6) and 187 Internet-based sources, Appendices (Appendix I, Appendix II), List and location of figures (158), List and location of tables (13).

The dissertation deals with a highly topical subject.

Combining a scientific research perspective with a hands-on understanding of the problem, the Ph.D. student formulates the main purpose and objectives of the research: the dissertation aims to explore the relationship and dependencies between electronic sound design – with its means of creating rich soundscapes using electronic musical instrumentarium and computer technology – and the nature of DJing as a practical, creative and musical reality.

The *tasks* that the Ph.D. student sets are:

- to apply the methodology such as a study of the principles of cognition and the organization of human activity to uncover key features of the nature of DJing, electronic sound design and the ways in which they interact;
- to explore the achievements of the technical and technological revolution as a condition and factor for the development of electronic sound design and DJing;
- to reflect on temporal development in electronic sound design and DJing;
- to conduct a scientific and practical study of the evolution of electronic musical instruments and their implementation in the DJ instrumentarium;
- to explore contemporary techniques and technologies for DJing.

The *object of the research* is electronic sound design and its implementation through digital devices and electronic musical instrumentarium that create, reproduce, control and model sound in DJing.

The *subject of the study* is DJing as a musical practice with its essential characteristics and manifestations.

The *research hypothesis* suggests the existence of the relationship and interaction between the electronic sound design and DJing in the process of the scientific and technical revolution and their influence on the evolution of the creative musical activity of the DJ.

From the review of literature on the range of aspects under analysis, presented in the introduction, it becomes clear that the problems explored in the doctoral thesis are a new and understudied area for Bulgaria: "In our country, the relevant experience is too modest. In the process of the present research, no in-depth research projects and scholarly works have been discovered in the scientific literature that explore and investigate the relationship and dependencies between the newly emerged musical form of DJing and sound design."

Focusing attention on the international scientific literature on the problem, the author of the study refers to significant works in the field of electronic sound design and DJing by authors such as Tony Gibbs, Carl John Boland, Leigh Landy, Bill Brewster, Frank Broughton, Rob Chapman, Asa Briggs, etc. (in our country it is Prof. Dr. Simo Lazarov).

As the doctoral student points out, the *relevance* of the dissertation research stems from the rapid introduction of innovations in technical equipment, technology and musical art, the current state of the problem and the insufficient number of scientific studies in this field.

In **Chapter I**, "Methodological foundations of scientific and practical research into the electronic sound design and its applications in DJing," the focus of research attention is on the methods and tools of scientific inquiry, found in the process of work, and the criteria for their selection, the role of the researcher in the realization of the project and his ability to analyze and formulate the different stages of work in their methodological sequence. The doctoral candidate explains that the dissertation applies the principles established in contemporary science – of determinism, correspondence and complementarity – as the main

guiding principles in the process of scientific cognition. The methodology used is consistent with the specificity of the scientific problem under study and is multidimensional in nature.

It is pointed out that "the structuring and narrative in the dissertation follow the logic of the technological process within rational human activity: Base Technical Equipment (Electronic Music Instrumentarium) → Technology (Activity with Sound) → Product (Electronic Sound Design) → Applications (Electronic and Computer Music → DJing)."

In **Chapter II** of the dissertation research, "Reflections on the temporal development of electronic sound design and DJing", from a historical perspective, the research focuses on: the technical and technological revolution as a condition for the development of electronic sound design and DJing – in its three stages: transition from analog to digital technology, information revolution, and multimedia revolution.

In this chapter, observations are made concerning the following issues under analysis: the creation and development of electronic musical instrumentarium and its evolution over the years, the technological features of electronic music systems (analog and digital synthesizers, samplers, drum machines, vocoders), various sound synthesis methods, and the reflections on electronic sound design.

The terms "electronic sound design", "DJing", "sound designer", "electronic and computer music" are clarified.

The subject of analysis in this chapter is the detailed study of DJing as a musical practice. In this regard, the correlation: technology - musical practice, types of DJing and DJ equipment (with sound reproduction technology of analog and digital type, the possibilities of computerized systems and DJ controllers) is analyzed. Aspects of the diachronic development of DJing, the conditions that precede and give rise to their emergence are outlined. The historical overview made reveals the dynamically changing situation pertaining to the specific use of individual devices over the years – in the context of a changing technological environment.

Findings and conclusions are presented in summary: "With its essential characteristics and manifestations, DJing is a new musical practice in which the various manifestations of electronic sound design find application. The musical instrument in DJing is the medium of musical practice as activity (DJing) and the product that results from it (electronic sound design) with the active participation of the DJ."

In **Chapter III**, "Scientific and practical research into electronic sound design and DJing", a theoretical study of the concepts reflecting the essence and specificity of electronic sound design and DJing and their boundaries as sound form, technology and activity is conducted. In this context, the essential characteristics of the concept of DJing, electronic sound design as a practical activity, as an organizational system, its logical and temporal structure, the logical dependencies between the two concepts, the resulting issues related to the dimensions of performance art in contemporary reality, the problems in the contemporary performance process associated with digitalization are traced and analyzed.

The Ph.D. student stresses that the study of DJing and the applications of electronic sound design in it, in terms of logical and instrumental rationality is an attempt to make sense of and add nuances to the scientific picture of the concepts of electronic sound design and DJing.

In **Chapter IV**, "Exploring the evolution of electronic musical instruments and technical devices in electronic sound design and DJing", which has a strong theoretical and practical orientation, the emergence and refinement of electronic musical instruments, the

development of musical instrumentarium applicable in DJing, the changes brought about by the technical and technological revolution are chronologically examined.

The correlation 'scientific-technical revolution - electronic musical instruments' is reviewed, the types of instruments are classified and their characteristics are described, a comparative analysis is made.

A very important emphasis is placed on the presentation of specific results – tabular and textual, the application of graphical material for the electronic musical instruments studied. The practical results of the research are shaped as conclusions and appendices: theoretical conclusions, practical lay-outs (created and formatted appendices to the scientific thesis on the development of electronic musical instruments of the first and second generation with the presentation of their architectural components, technical characteristics, creators and manufacturers.)

106 specimens of electronic musical instruments have been studied – from the origins of electronic music to the present day. All examples are illustrated. The results of the study are formalized as Appendix I and Appendix II entitled "Steps in the Development of Electronic Musical Instrumentarium" with analog and digital synthesis, respectively. Appendix I presents steps in the development of electronic musical instrumentarium with analog synthesis and includes 18 manufacturers as well as 70 specimens of electronic musical instruments (EMIs). Appendix II presents steps in the development of the electronic instrumentarium with digital synthesis, which brings together 17 creators with 45 specimens of EMIs developed by them.

Another important highlight of this chapter is the presented study of DJ equipment through a comparative analysis of two of the most common DJing set-ups: the Pioneer CDJ-100 CD player complete with mixer and the latest generation Denon MCX 8000 DJ controller. The empirical study illustrates the specificity of DJing as a practical activity.

Chapter V, "Modern techniques and technologies for DJing", in terms of its content draws attention to specific techniques for DJing (in the study more specifically are presented techniques for DJing using the controller DENON MCX 8000), technical innovations and technology of working with Engine, support of computer DJ software DENON MCX 8000, technical features of DENON MCX 8000.

The extensive experience of the author of the dissertation in the field of DJing is reflected in the ideas, solutions, and ways of working presented in this chapter, which has a strong practical orientation.

In this part of the dissertation, the experience of applying radio DJing technologies at Bulgarian National Radio is shared in two interviews. The views and opinions of some of the first participants in the activities of radio DJing in Bulgaria are presented: an interview with Minko Krastev – the Chief Engineer at Bulgarian National Radio – Radio Plovdiv on the topic "Elements and technologies of radio DJing in Bulgaria" and the development of radio DJing through the eyes of Toma Sprostranov. The interviews conducted in connection with the applied research in the dissertation, reflect personal opinions and views on the various ways of working and applied technologies for radio DJing at Bulgarian National Radio.

The **conclusions** summarize the most significant findings based on the different parts of the dissertation, recommendations, and contributions. The key fundamental points of the paper are offered, which according to the Ph.D. student are of particular importance in contemporary DJing, electronic sound design, the correlation: 'equipment – technology – musical instrumentarium – DJing', such as, for example:

- Over the years, the DJing technology has been enriched and refined. A "new genre of musical expression" has been created;
- In the present, the characteristic of the DJ's work is the electronic sound design created by electronic devices based on digital programs, processed and broadcast by technical equipment;
- The transition of musical practice in DJing from reproduction to creative endeavor represents the evolution of DJing as an activity.

Significance of the research problem in scientific and applied terms

- personal experience of the author is shared - in theoretical and practical terms;
- a theoretical study of the conceptual apparatus and terminology in DJing and electronic sound design is conducted.

Degree of awareness of the state of the problem and consistency of the cited literature

The Ph.D. student uses sufficient sources of information (scientific literature: dissertations, books, articles, internet-based sources), the references to which are correct.

Contributions of the dissertation

I accept the contributions outlined in the thesis, among which:

- Implementation of a specific methodological system for the study of electronic sound design and its applications in DJing with the means of logical and practical rationality;
- The developed systematic procedure for revealing the nature and tracing the development of DJing as a creative musical activity and sound art with an integral character enriches the scientific understanding of the applications of electronic sound design in DJing.

In this dissertation a large amount of information has been collected, systematized and analyzed. The author methodologically analyzes and investigates the issues under scrutiny, applying theoretical and practical methods of scientific research, grouped as methods-operations and methods-actions, methods of studying and summarizing experience, results of activity, observation, measurement, empirical method, and comparative analysis.

The methodically systematized narrative of the dissertation, the precise consistency of the content, showing the personal view and attitude of the doctoral candidate, and the serious knowledge of the subject are truly impressive.

The analysis of the research results confirms the working hypothesis and shows that the purpose of the research, namely to investigate the relationship and dependencies between electronic sound design and the nature of DJing as a practical, creative and musical reality, has been achieved and the set tasks have been fulfilled.

The present research makes scientific-theoretical and practical-applied contributions. The results of the study can serve as a basis for further research in the field of computer music making and DJing.

The foregoing determines the contributory nature of the dissertation.

Assessment of the correspondence of the abstract with the main points and contributions of the thesis

The abstract, in 38 pages, corresponds to the thesis and conveys the character of the doctoral work.

Publications on the dissertation topic

The doctoral candidate has a sufficient number of publications on the subject of the doctoral dissertation.

PUBLICATIONS ON THE SUBJECT OF THE DOCTORAL DISSERTATION

1. "Technical innovations in the hardware of the standalone DJ player and controller Denon MCX8000"; journal *FEMacoustics* 7;
2. "Electronic sound design as an object of creative activity"; journal *Language and Publicity* 2021;
3. "Electronic sound design in DJing as a creative activity"; journal *FEMacoustics* 2021;
4. "DJing – the integrity of technology and music"; journal *FEMacoustics*, 2022.

Opinions, recommendations and comments

I would recommend Teodor Popov to make it possible to publish this work in order to make it available to a wider audience.

In conclusion:

I give my positive evaluation of the dissertation work of Teodor Popov: "ELECTRONIC SOUND DESIGN AND ITS APPLICATIONS IN DJING", resulting from the relevant contributions bearing scientific and applied qualities. I consider that the doctoral candidate's dissertation fully meets the requirements for obtaining the educational and scientific degree of "Doctor" in the professional field 8.3 "Music and Dance Art" under the Law for development of the academic staff in the Republic of Bulgaria and I propose to the distinguished scientific jury to award it to him.

17.08.2022,
Sofia

Assoc. Prof. Dr. Rositsa Becheva