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Translation from Bulgarian

OPINION

by Prof. Dr. Milena Shushulova-Pavlova, lecturer at the New Bulgarian University, Department of Music - professional field 8.3 Music and Dance,
scientific specialty Musicology and Music (05.08.02)
about the PhD thesis of Liburn Jupolli
PhD student at NBU, Music Department, with supervisor: Prof. Dr. Simo Lazarov
on:

New areas of exploration in 21st century instrument invention and its effects on musical composition

for awarding the educational and scientific degree of DOCTOR
in professional field 8.3 Music and Dance,

Biographical data for the candidate:

Liburn Jupolli is a composer, multi-instrumentalist, inventor, producer with more than 15 years of experience. He has released 25 music albums, presented at internationally known music festivals and academic forums, works as a lecturer, has invented two new instruments. He has written music for 60 different productions in the theatre, for movies, for animation, included in visual installations, for games. Liburn has a registered record for a marathon concert performance of 13 hours and 32 minutes. Liburn Jupolli became interested in composition at the age of 12, and at the age of 16 he already had his first job in a theatrical production, writing the soundtrack for the production of *ODA Theatre*. He has been working on various music projects in the Balkans, Europe and India for 15 years. While working in the entertainment industry, he actively wrote original music for various instrumentalists and ensembles in Europe and the United States. In addition to composition, he is interested in musical innovations, development of education and new technologies. In 2010 he invented the microtonal spatial instrument **Octo**, which is also presented in the Balkans and in Europe. He took his Master's Degree in Music and EdTech in Paris (France), with a focus on the development of musical instruments, in *CRI – Center de Recherche Interdisciplinaire - Paris Descartes.* Since 2018, he is a lecturer at UBT-University of Business and Technology, where he is the founder of the *Faculty of Modern Music* in Kosovo in 2019 and the *Centre for Contemporary Music Research*. In the interest of the development of higher education in Kosovo, he also established the *IL-IR* Foundation. He is also the founder of *MAGMUS* Publishing House. He is currently the director of *CMMDPM-CENTRE FOR MODERN MUSIC, DIGITAL PRODUCTION, AND MANAGEMENT* at *UBT University* in Pristina, Kosovo.

Content of the thesis

The PhD thesis comprises 160 pages and is structured into an introduction, 7 chapters, a conclusion, literature (87 titles) with 150 figures included.

Chapter One describes generalities and topics related to the creation of **Octo**: instruments, non-standard notation, microtonal structure, spatial music and spatial notation. This is an introduction to those topics that classify Osto as a tool with modifications and applications that also outline the need to create a new version.

Designed to serve as a means of expression for the creation of new music, **Octo** incorporates modern concepts and technologies. Chapter Two examines the idea and process of implementation of **Octo.** All elements of the instrument are described in detail as a physical structure, the ways of adjustment, the body fingerboard, the specialized 8 output adapters, the sound separation systems and all other smaller details that recreate the idea and its realization are discussed. Chapter Three deals with the new aspects related to the notation for **Octo**. The development of this notation, its application and method of use, the types of other notations are examined. The ability to imitate and reproduce the types of scales, frets and chords as well as the ability to reproduce sound with the new tonal capabilities of **Octo** have been proven. Chapter Four examines performance techniques that are new and innovative and that have a new meaning in **Octo.** The instrument imitation options are explained by giving examples of other instruments that can be imitated in **Octo**, the ways of imitation with **Octo** are presented. Chapter Five discusses the new aspects that **Octo** introduces in musical technologies, related to spatiality, musical effects, and amplification. Detailed descriptions of all the new features that **Octo** offers are presented by means of examples of use with 8 amplifiers and other settings, as well as the combinations with external music effects and different amplification. Chapter Six analyses the new aspects of composition that are possible with **Octo**. Examples are given of how composing can be done with **Octo**, combining all the elements mentioned in the previous chapters. Variants are given for the use of **Octo** as a solo and orchestral instrument, in a chamber ensemble. Examples include a specially written chamber opera in which **Octo** takes part. Chapter Seven discusses the various issues that are the topics of each chapter, possible changes that could be made in the future in the development of the instrument, and all other aspects in terms of the invention of the instrument. This is a study in the field of music research and is a summary of all topics.[1]

Precisely formulated objectives and tasks of the PhD thesis

The **object** of the research are the principles of the invention of the hybrid spatial instrument Octo with predetermined characteristics and developed performance technique, factors that are a stimulus for creative invention. The **subject** of the research is the process of musical-creative development of the artists in the field of composition and knowledge of the modern microtonal instruments and electro-acoustic instruments with new microtonal and spatial properties. The **purpose** of the research is to provide an in-depth look at the technical aspects related to the perspective of building a new instrument, an instrument that embodies microtonal capabilities and spatial capabilities. In addition to the **Octo** invention and design aspects, the aim of the research is to show how these new aspects of **Octo** change and diversify the performance on

[1] **Introduction. Part One**: **1.1. Development of Instruments**. 1.1.1. First instruments. 1.1.2. Hybrid instruments. 1.1.3. Electric instruments. 1.1.4. Synthesizers. 1.1.5. Electroacoustic instruments. 1.1.6. Digital string instruments. 1.1.7. Music interfaces. 1.2. Microtonality and new microtonal instruments. 1.3. Spatial music. 1.3.1. Examples of spatial music. 1.3.2. "Physical spatiality". 1.3.3. electroacoustic spatiality – Acousmatics. 1.4. Spatial instruments. 1.4.1. Stragonaal. 1.5. XX century musical notation. 1.5.1. Microtonal notation. 1.5.2. Polychromatic notation. 1.5.3. Electroacoustic notation. 1.5.4. Aleatoric notation. 1.5.5. Graphic notation. 1.5.6. Spatial notation. 1.6. Contributions. **Part Two: 2.1. Development of a Hybrid Microtonal Instrument**. 2.1.1. Genesis and idea. 2.1.2. Preliminary questions. 2.1.3. Implementation. 2.2. Setting system. 2.2.1. **Octo** adapter. 2.3. Design. 2.4. Fretboard – a reverse fretboard concept. 2.4.1. Fretboard. 2.4.2. System. 2.4.3. Lower fretboard system. 2.5. Marker points – полутонов визуален помощен инструмент. 2.5.1. Marker points for a guitar. 2.5.2. octo marker points. 2.6. **Octo** body. 2.6.1. Design. 2.7. Contributions. **Part Three: 3. Octo Notation.** 3.1. Authorial microtonal notation. 3.2. Scaling with the authorial microtonal notation. 3.3. Scaling imitation in **Octo.** 3.3.1. Imitation of Maqam. 3.3.2. Imitation of equal temperature scales. 3.3.3. Imitation of the South-India modes of Melakarta. 3.3.4. **Octo** scale**.** 3.3.5. Spatial notation for **Octo.** 3.4. Contributions. **Part Four: 4. Octo performance technique.** 4.1. **Octo** and other instruments – a comparative analysis. 4.6. **Octo** poly-knob system. 4.6.1. Loudness and tone potentiometers. 4.7. Technical preparation. 4.8. Contributions. **Part Five: 5. Spatial and timbre control**. 5.1. Spatial performance. 5.2. Amplifier setting. 5.2.1. Speakers setting – surround sound. 5.2.2. Stereo setting of speakers. 5.3. Timbre control. 5.3.1 Analogue effect pedal use techniques. 5.3.2 Solo and combined effects. 5.3.3. Lags. 5.3.4. Synthesiser settings. 5.3.5. Computer settings. 5.3.6. Pre-recorded settings. 5.3.7. Combined effect systems. 5.3.8. Effector. 5.3.9. Effect location setting. 5.4. Contributions. **Part Six: 6. Realisation in Octo.** 6.1. New composing instruments. 6.1.1. New opportunities for spatial writing. 6.2. Solo. 6.2.1. **Octo** performer designation and structure **Octo.** 6.3. Chamber Formations. 6.4. Opera Gof – using Octo in an ensemble. 6.5. Contributions. **Conclusions. Literature. Attachments. Addendums**

string instruments, what is the effect on notation and composition in general. The **main tasks** of the research are: 1. To make a review of the invention of the instrument, the XX c musical notation, microtonality and the new microtonal instruments, spatial music, spatial instruments – all of which are important topics built on the basis of the hybrid concept of the new **Octo** instrument. 2. To prepare a methodological analysis on the problems studied. 3. To clarify the performance specifics and to develop a practical training method. The **hypothesis** of the research consists in developing and analysing theoretically and practically effective ways and methods for musical-creative development of the inventors of new instruments. The paper targets aspiring performers with innovative thinking and is of a creative, applied science nature.

Scientific and applied science significance of the studied problem

The **scientific value** of the research lies in the experimental development of the microtonal instrument **Octo**, which can influence the notation of microtonal, spatial and timbre-tested methodology of the creative development of the composer's technique. The **theoretical significance** of the research lies in the process of involving artists in acquiring skills for playing newly created instruments as a means of higher creative productivity. The **practical significance** of the research is in the possibility to use the obtained results to develop and update future methodologies, curricula and tools related to the training in orchestration and arrangement.

Degree of knowledge of the state of the problem and relevance of the literature used

The doctoral student's many years of experience as a music arranger and his specific observations in this field, especially in communication with young performers and audiences showing interest, are an excellent basis for this theoretical research. **Octo** as a hybrid instrument, containing more than 10 instruments in one, with its spatial performance qualities, which are found mainly in electroacoustic music, also directs to penetration into other cultural areas in the field of music and musical instruments.

The methodological basis of the research is founded on psychomusical, philosophical, musicological and art literature on the studied problems, practical experience and experimental work.

Correct citation of a representative number of authors

The doctoral student is correct in his citations. Despite the modernity of his PhD thesis, he uses a rich bibliography on which he has built and proven his thesis.

Contributions of the PhD thesis

1. An innovative microtonal synthesis system has been developed. The effectiveness of this system and its theoretical and applied nature have been scientifically proven.
2. A special scheme for connecting the sound extraction adapter has been developed, through which it is possible to create microtones.
3. An authorial microtonal system, allowing for imitation of string instruments of different nationalities and cultures, has been created.
4. A new way of writing the microtonal scales when performing on **Octo** has been introduced.
5. An innovative way to control the parameters of the sound and its delays has been created.
6. An eight-channel Octo instrument with eight outputs (channels) has been invented, which make it possible to partition each string into a separate amplifier. Its efficiency has been scientifically proven.
7. The idea of a more extensive study of the timbre has been expanded through the use of separate effects for each individual string and a notation registration system has been created. A method for spatial notation has been developed for Octo.

8. Joint performance on the hybrid instrument **Octo** has been experimented.

Evaluation of the correspondence of the abstract to the main points and contributions of the PhD thesis.
The summary corresponds to the PhD thesis and correctly conveys the nature of the PhD thesis.

Personal qualities of the author (if the reviewer knows him)
Liburn made an excellent impression on me during his doctoral studies in NBU. He is ambitious and ingenious. Affable and industrious. I think that he will have a wonderful future as a lecturer and a composer.

Literature on the topic of the PhD thesis
The PhD student has sufficient (3) publications on the topic, published in **FEMA AKUSTIKA** (Physical, electro- and musical acoustics) at the Federation of the Scientific-Technical Unions in Bulgaria; ISSN 2367-7066**:**
https://www.yumpu.com/bg/document/view/63128596/-7

1. **JUPOLLI, L.** *Human-robot guitar duo – examples of enabling embedded musical scores through human robot interaction/ automatization*
2. **JUPOLLI, L., A. LEHTELA.** *Octo-creating a new hybrid musical instrument, housing micro-intervalic and spatial properties*
3. **WHITMARSH, ST., L. JUPOLLI, H. ANLLO.** *Catastrophe & heritage: an experiment in eeg-generated music composition*

Reservations, recommendations, remarks
I do not have any.

Finally, I will conclude this OPINION with the following evaluation:
The doctoral student meets the research chops for acquiring the educational and scientific degree of Doctor according to the Law for Development of the Academic Staff in the Republic of Bulgaria.
The PhD thesis of **Liburn Jupolli,** doctoral student in NBU, Music Department, with supervisor: Prof. Dr. Simo Lazarov, on **New areas of exploration in 21st century instrument invention and its effects on musical composition**, together with its contributions having scientific and applied qualities, as well as his publications are sufficient in my opinion for me to give a positive assessment (despite the serious omissions) and propose to the esteemed jury to award the educational and scientific degree of Doctor in professional field 8.3 Music and Art to **Liburn Jupolli**, in accordance with the requirements of the Law for Development of the Academic Staff in the Republic of Bulgaria.

20.09.2020, Sofia

Prof. Dr. Milena Shushulova-Pavlova

I, the undersigned Venceslava Mishlyakova hereby certify the truth of the translation made by me from Bulgarian language to English language of the enclosed document Opinion.
The translation consists of 4 pages.

Translator: ВМШ