sentation, her dismissal from Radio Belgrade, the impact of censorship that she experienced at *Politika* in 1996 and stopped writing soon after. Engaging at a turbulent time in our cultural and political situation, willing to voice her concerns every day, and retaining clear criteria, the author has done her part. She was one of the few who were ready to risk their careers and expose themselves to the pressures of current production imposed by the contemporary cultural practice of music.

The book is flanked by a foreword written by Milan Vlajčić (Милан Влајчић), editor of *Politika*'s cultural section during the 1990s, subtitled "Ana Kotevska – kritičar u olujnim vremenima" (Ana Kotevska – A Critic in Turbulent Times), and an afterword by Danijela Kulezić Wilson, "Neizrecivo u rečima" (The Ineffable in Words), which provides a musicological take on the reviews.

Unlike the *cold* memory of scholarly histories, the critical texts of Ana Kotevska, thanks to the shadings and nuances with which she so strikingly and vividly conjures up that time, enable the reader to establish a *warm* memory of the immediate (musical) past.

PREDRAG I. KOVAČEVIĆ*

Ph.D. student
Faculty of Music in Belgrade
Department of Musicology

Dragan Latinčić, *Spektralna trigonometrija – zasnivanje univerzalne muzičko-metematičke analize,* **(***Spectral Trigonometry – Establishing a Universal Musical-Mathematical Analysis***),** **Beograd: Zadužbina Andrejević, 2017, 164 pages, ISBN 978-86-525-0299-8**

The book of Dragan Latinčić, *Spectral trigonometry – Establishing a Universal Musical-Mathematical Analysis*, opens new paths of musical thought, which according to mathematical projections of the trigonometry method, explain the frequent relations of harmonics, as well as relations which appear during the transposition of harmonics to rhythmic configurations. Thus, Latinčić introduces the reader into the world of spectrum and the systemic net of his compositions.

According to the previous opus of this composer, it could be said that his musical language has strived so far to emerge from the frame of the strict Western European tempered system and to come closer to the music of the Middle East, and even Balkan folklore provenance. Therefore, numerous

* Author contact information:
predrag.pedja.kovacevic@gmail.com

works that the composer has created[1] – and among which the following are particularly distinguished: *Vertigo* for the vocal-instrumental ensemble, *On the Path of the Lost Sound* for the harp and string section, *Fragments of blue* for the flute, violin, violoncello and piano*, The towers of San Gimignano* for wind quartet, percussion instruments and string trio, *Subito* for electric viola, piano and marimba and *Batal,* a prelude for string orchestra – confirm not only his authentic artistic credo, but the urge of a composer to become involved in the theoretical work, through which he created the platform, that is, the superstructure of specific theory that had been overlooked for centuries. This theory finds its origins in mathematical logic (The Pythagorean Theorem) and the physical laws (the temporal component of calculating the velocity of movement). Wishing to derive his theoretical thought from his artistic creation, Latinčić plants the seed for the appearance of the new theoretical platform precisely in the composition *Batal*.

The universal and complex character of his theoretical thought has been generated through a musical-theoretical diptych, with the first study, *Microintervals in Spectral Geometry* – which is the introduction and basis for understanding the projections of intervals and aliquot relations through spectral geometry, and the second study, *Spectral Trigonometry – Establishing a Universal Musical-Mathematical Analysis*, where the author introduces specific methods, thus developing in more detail the possibility of creating geometrical-musical

entities, presented by mathematical disciplines – goniometry (which deals with angles), trigonometry (which studies the phenomenon of the triangle) and other methods from the field of music theory.

However, the main problem, which the reader can face, is the integral interconnection between these two studies, and the fact that the second study is built up on the solutions set in the first, but now more meticulously analyzing the methods of geometry, which are trigonometrically functionalized at the level of angles, triangles, polyangles, and then at the level of musical scales. Thus, for example, the author elaborates the angles of triangles and polyangles in his first study, in order to bring them into a strict planimetric and trigonometric plane in the continuation of his diptych, and therefore, he came into the real problematic process of analyzing the relationship *space-time* in music.

In this multidisciplinary theoretical system in which, although the methods are mutually interconnected by Mathematics, Physics and the theory of Music, the prevailing method belongs to the field of natural sciences, first of all, to the Pythagorean-Kepler trajectory on which musical phenomena get their logically projected mathematical models. In the study, *Spectral trigonometry,* the author strives to establish the exact relation between vocal entities (spectrum harmonics and rhythmical values) and geometrical entities (angles or distance between the apexes of circumference circled around the triangle) through mathematical parameters. According to such an approach, the original and complex theoretical thread has been formed, and mathematical methods found their constructive application in the following:

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[1] Some of the works of Dragan Latinčić are available on YouTube channel: https://www.youtube.com/channel/UCxPnblsdPLsJN1eq-4PedFw

1) explaining the specific rules of music grammar (through the theory of music), 2) placing the spatial points of spectral range in time (through the theory of time and theoretical method of Physics), and 3) the potential application in the composer's practice, that is, in the realization through music itself.

The structure of the second book moves from presenting the Pythagorean Theorem (chapter entitled *The application of the Pythagorean Theorem on temporality of rhythmical projections of individual spectrum harmonics*), where with the help of mathematical principles and rules of acoustics, interval, rhythm, and frequency are discussed, and later scale-wise trigonometry and transformation of spectral angles into scale-wise (scale-intonation) angles are explained in the chapter *Planar spectrum trigonometry*. In the chapter *Implementation of trigonometric functions to spectral and scale triangles* the author, relies on the sine, cosine and tangent theorem among others. The special virtue of this chapter relates to the part which includes spectral kinematics and the application of mathematical formula on the middle velocity (t = s / v) in the referent system of harmonics.

Specific and narrowly scientific multidisciplinary approach has its aim here, as the author says, to establish the universal music-mathematical analysis. The analysis of the musical segment is based on the theory of music, more precisely, on the aliquot sequence, dyads and triads, rhythm, the question of frequency, whereas mathematical principles and formulas from the field of Physics are used as a basic methodology for observing music in the last chapter of the book (*Implementation of trigonometric*

functions to spectral and scale triangles). Thus, triangles, their segments, and angles have become the basic figures of plane, whose rules Latinčić uses, with the help of some of the most famous mathematicians, to explain spectrum, length, that is, the duration of music, and spreading of music on the vertical and horizontal frequency axis, etc.

Looking for the most suitable methods, with which one could establish an analogy between geometrical and acoustic entities, the author relies on the theory of the German mathematician, astronomer and astrologist, Johannes Kepler, who, by comparing circles and strings, found out that consonant intervals originated from polygons, which could be drawn into the circle. In that way, by bending the string, the circle is formed, while the figure divides that circle into comparable segments, according to which intervals could be defined. Also, the triangle corresponds to the interval of a fifth because it divides the string in a way that it puts one segment in relation to two segments or one segment in relation to the whole string, which means in relations 2/3 and 1/3.[2] According to this theory, it follows that "harmonic relations come from the velocity in angles (the size of an angle, which the planets pass during a certain time and counted from the Sun)".[3]

The author merges the Pythagorean Theorem and the laws of acoustics, thus equalizing the metrical lengths of individual spectrum harmonics and metrical lengths of triangle legs with the help of

[2] Dragan Latinčić, *Spektralna trigonometrija – zasnivanje univerzalne muzičko-matematičke analize*, Beograd, Zadužbina Andrejević, 2017, 14.
[3] Ibid.

mathematical analysis. In this way, the hypothesis about the appearance of the geometrical figure of the musical triangle has been formed, where its apexes became the isolated frequencies of individual spectrum harmonics, while at the same time, metrical projections, in precisely determined sections, form angles. Therefore, beside triangle sides, the functionalizing of triangle angles has been separately introduced into the study, where the angles have been brought into connection with the intervals of the spectrum through the length of the circle drawn around the triangle apexes. Thus, for example, the angle of a fifth (60^0) corresponds to one third of the circumference length drawn around the triangle, which is the length of 120^0, that is one third of the semi circumference (60^0) etc. With such a method, through angles which are made obtuse or acute, the author explains the procedure of identifying all angle values with spectral intervals, which have been trigonometrically functionalized. However, with such an approach, Latinčić did not only attribute function to all angles, but enabled the spectral interval to be functionalized even in two-way motion, so that the exact triangle angles could be determined.

According to the Pythagorean Theorem about the mathematical surface plane, Latinčić's interdisciplinary approach to musical theory is becoming more complex, because he confronts the mathematical spatial character with the musical temporal character in space; it means that formula such as $a^2 + b^2 = c^2$, which is directly connected to the spatial length of sides of the right-angled triangle, is connected not only with the spatial character in the field of music, such as the position of harmonics

on the string of a string instrument, but also with the rhythm in music, that is, duration (*the length of duration*) of notes. According to the author, spectral trigonometry relies on the assumption about the natural exponential progression. Therefore, the equal temperament has been annulled.[4] By applying the theory to the field of rhythm, one new system has been introduced into the musical theory, where the calculated exponential rhythm growth exists, and it can be identified by the even extension of time.

The analogy between triangle and triad, which has been explained in the chapter *Isometric transformations of spectral triangles*, is inventive and complex because it enters the field of the three-dimensionality of harmonics (that is subharmonics). Although Latinčić presents the spectral space with determinants up-down and left-right, that is, through perceptible and non-perceptible space (harmonics positioned up-on the left and up-on the right, that is down-on the left and down-on the right), in real space and time, these tones are spread further from the spatial plane of triangle, and therefore, three-dimensionally, while determinants such as *in front of* and *behind* could be introduced, which would additionally explore the notion of duration.

The book *Spectral Trigonometry – Establishing a Universal Musical-Mathematical Analysis* is the first of its kind in the Serbian musical-theoretical heritage, and therefore, it represents a very important read, which opens the door to the world of spectral music, and at the same time, reminds us of the importance of thought about music from the times before the tem-

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[4] Ibid, 19.

pered system. It should be emphasized that the second book of diptych is equipped with illustrative and schematic illustrations, such as, interval tables according to spectral, planimetric and trigonometric identity, synoptic reviews of intonation-temporal triangles with descriptions of trigonometric functions, additional formulas of angles together with descriptions of the sine, cosine and tangent theorem, which facilitate the reader to gain knowledge about the subject topic.

Also, one of the greatest values of this study lies in the applicability of trigonometric methods for the needs of musical analysis and interpretation, by relying on the laws of acoustics. Such an approach finds its application in the analysis of spectral music, whose roots are found in the Pythagorean way of tuning. However, it should be underlined that Latinčič deems his reader to be an erudite, that is, the reader who would carry the epithet of a *polymath* or *uomo universalis* in the Renaissance, because by 'having a showdown' with such a complex and specific subject one needs to know Mathematics, Physics and the theory of Music well.

It is quite possible, as Latinčić states, to apply the methods elaborated in this study to future musical achievements, which gives this book a new, visionary power to predict new composer's directions.

MARIJA GOLUBOVIĆ*

Ph.D. candidate
University of Belgrade
Faculty of Philosophy

***An Introduction to Serbian Performing Arts Education (Critical Insights). Collection of Summaries**, Evangelos Himonides and Vera Milanković (eds.), London: iMerc, 2017, 191 pages, ISBN 978-1-905351-32-9*

Music pedagogy is the necessary starting ground for any serious approach to the education of various types of professionals in the field of music and, in a wider sense, other performing arts. As a discipline pedagogy is continually developing in its search for better and more effective ways to impart knowledge and learn, and this goes for the field of music too. In the Serbian milieu there was a notable absence of a multidisciplinary approach to this problem; in 1998, at the initiative of Vera Milanković, the then chair of the Department of Solfège of the Faculty of Music in Belgrade, the Pedagogical Forum was launched with the very purpose of filling this void. As a multitalented music professional – composer, teacher and pianist, even then Professor Milanković recognized the need for an institution that would allow music pedagogues and performers to meet, share their

* Author contact information:
masa.dj.golubovic@gmail.com