

The sound color palette of the double bass: history and modernity

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Abstract: *This article is dedicated to the study of the modern sonic possibilities of the double bass. The author identifies the historical, aesthetic and acoustic reasons for asserting the role of the stamp in the development of the art of double bass. The original techniques and methods of sound output on the instrument are taken into account. The sound characteristics of double bass ensembles and orchestras are revealed. The experimental orientation of the work of contemporary double bass players and composers is associated with research for new timbre images and artistic meanings.*

Key-words: *double bass, acoustics, sound, timbre, ensemble.*

1. Introduction

In the modern era, the double bass is the largest in size, has the deepest sound for string instruments, and occupies an important position in the art of instrumental interpretation. Its unusually rich sound capacity is revealed in solo performances of double bass virtuosos, in ensemble and orchestral music, in different styles and genres: from classical to jazz. The image of a “rough” and “clumsy” instrument, as it was presented to listeners in the past, has changed. The performance of the double bass players demonstrates today that on this instrument you can get the most unexpected sound effects, which were previously in conceivable: playing between the bridge and tail piece, the effect of pizzicato with the string simultaneously on the finger board, hitting the deck, the finger board, but also other ways which allow sound reproductions, glissando, clusters, noises, etc. The modern sound color palette is extremely diverse and demonstrates the latest trends in the field of acoustic capabilities of this instrument.

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It should be noted that an extensive study of the art of double bass appeared only at the beginning of the twentieth century. For many years the only fundamental work was the book of the German double bassist Friedrich Warnecke: *“The double bass. Its history and future. Problems and solutions. The evolution of the interpretive art of the double bass”* (1909) (Warneke 1909). In the second half of the twentieth century, with the visible progress of the double bass performing art, interest in the history of the instrument increased significantly. Thanks to the research of Paul Brun, Miloslav Gaidos, Thomas Martin, Adolf Mayer, Alfred Planyavsky, Klaus Trumpf, Raymond Elgar and others, the picture of the historical development of the double bass has been clarified and expanded considerably. Of particular note from this point of view are such important works as *“The History of the Double Bass”* by A. Planyavsky (Planyavski 1970) and *“The History of the String Double Bass”* by P. Brune (Brun 1982). An important contribution to the study of problems in the art of double bass was the appearance, in the second half of the twentieth century, of foreign periodicals dedicated to this instrument, such as the journals of the International Double Bass Society (USA), the British International Forum of Double Bassists (England), *“Double Bassist”* (England), *“Orchestra”* (Germany) and others.

Scientific innovation has required authors to do a lot of research, translation and literary work on the source material, due to which these articles from the publications listed above go far beyond the scope of purely educational books. For the first time, the richest experience of many musicians was generalized, being provided an extensive factual material, highlighting the main stages of the development of the art of double bass from its beginnings to the present. Undoubtedly, in order to open new perspectives in the art of playing the double bass, it is necessary to continue the deep and in-depth study of historical heritage, an active discussion of the pressing issues of theory and interpretive practice.

2. The sound potential of the double bass

The study of the sound possibilities of the double bass has a special relevance for several reasons. Today, on a concert stage, you can hear double bass players inventing their own techniques and methods of sound production, as well as special acoustic effects. They reflect the general trends of modern music, with its characteristic experiments in the field of timbre of the sound of traditional instruments. The extraordinary leap in the development of the art of double bass, which is now being observed, primarily reflects a new aesthetic of sound, a new

state of sound dimension (Tarakanov 1986, 17) as a sound reality created by man. It is known that radio and television productions, audio and video, synthesizers and electronic equipment have radically changed the priorities of auditory perception, so that they have formed a suitable acoustic environment that initiates the search for new means of musical expression and timbre properties. Therefore, since the second half of the twentieth century, and especially at the beginning of the twenty-first century, there has been a significant expansion of the palette of sound qualities, not only for stringed instruments, but also for other types of instruments: keyboard, wind instruments, or percussion. With the help of various methods of preparation, the connection of sound amplification installations, specific methods of sound production, unusual sound colors, noise or spatial effects is sought. On the one hand, nowadays, with the help of synthesizers and sound engineering equipment, it is possible to reproduce hundreds of timbres of different colors, but the well-known "artificiality" of such a sound is captured by the human ear very quickly. Experiments in the field of sound actually reproduced by a performer on an acoustic instrument prove to be much more attractive and interesting. Not coincidentally, following the composer's experiments in composing new sound structures, such a concept as the timbre structure of the musical fabric has entered the modern scientific lexicon, which occupies a privileged place among the basic categories of music such as melody, rhythm, harmony, etc. The French composer P. Boulez wrote: "Perhaps the linguistic integration of the timbre and the musical object is the greatest problem of modernity" (Boulez 2019, 357-402).

The multilateral artistic use of the double bass, in today's musical practice, shows how far the technique of mastering sound on this instrument has advanced. However, there is still no work dedicated to the evolution of the sound qualities of the double bass. The problem is that today the phenomenon of sound and its properties as a whole are rediscovered in musicology. The latest scientific literature clearly recognizes that the notion of "sound" today is more ambiguous than ever. This fact is corrected by a new terminology, reflecting the essence of new phenomena: object, sound object, acoustic object, acoustic material, event, sonority, sound, samples, and others" (Belkin 2018, 68). Hence the complexity of the study of sound phenomena. Moreover, there is a serious gap between real acoustic knowledge about sound (in physics, physiology, psychology, etc.) and musical sensations. For instrumentalists, sounds are not just acoustic material with the appropriate parameters of pitch, duration, volume and timbre, it is "a whole world, which they themselves create, through real acoustic phenomena, making connections between sounds full of artistic significance" (Buican 1958, 24-26). The origin of this "world" is associated not only with the creative intuition of the

musician, but also with the constant exploration of the limits of the possibilities of his instrument, of its sonic advantages. A distinctive feature of the modern double bass compared to other stringed instruments is that, despite its long history of existence, it has not yet acquired a clear form and general principles of interpretation. This applies not only to the appearance of the double bass (there are shapes of the instrument in the form of a “viola” or a “violin”, but also a difference in the structure of the body elements), but also to the materials from which the instrument or its components are made. The double basses differ in size (the total height varies from 185 to 190 cm), the number of strings can be 4 or 5, but also their tuning (“orchestral” or “solo” tuning). There are two types of bows (high or low grip), different notation methods and fingering patterns. It is this “diversity” of the instrument that allows it to easily adapt to various tasks, styles and ways of interpreting. Modern double bass luthiers rely primarily on extraordinary specimens of instruments created by masters of the past such as Gasparo da Salo, Amati, Galliano, Guarneri, Magini, Rossi, Testore, or others, just as famous.

The sonic potential of the double bass is great. The ambiguity of the most common four-string double bass in musical practice extends from the E of the counter octave to the G of the second octave (including harmonics). Moreover, from a sound point of view, the double bass continues to develop intensely even today, due to the introduction of special innovations, such as a special mechanism that allows the E string, the lowest, to constantly descend in semitones to the sound of C (instruments found in orchestras in the US and England), or an optional neck extension, also designed to lower the E string.

It should be noted that the appearance of metal strings (in the middle of the twentieth century) had a great influence on significantly improving the sound quality of the double bass. Unlike the first strings, made of animal intestines, which were very thick and gave a small, unclear sound, or the same strings with metal winding, metal strings contributed to a real rise not only in terms of the technical virtuosity, but also of the mastery of the timbre offer of the double bass players. Well-known foreign companies, such as Thomastik, Pirastro, Savarez-Corelli, have begun to create metal strings specially designed for orchestral or solo performance, using state-of-the-art original technologies. The musicians boldly experimented with the new type of strings, looking for and finding new colors, thus contributing to the imposition of the double bass among the revolutionary acoustic instruments.

The evolution of the sound possibilities of the double bass has a long history, in which the master luthiers, virtuoso double bass players, composers and conductors were directly involved. Throughout its existence, the characteristic

quality of the double bass was its mobility: the variety of shapes, sizes, tunings and timbre properties that invariably reflected those sound preferences that were inherent in the audience of each era. By changing the shape and, consequently, the sound of the double bass, this instrument was adapted to the expectations of music lovers. In this sense, perhaps no other instrument could compete with it.

The exact moment and place of the appearance of the first instruments is uncertain in terms of the fact that the double bass appears under different names, in various historical documents, treatises or musical manuscripts. Therefore, since the Middle Ages (from the twelfth century) the existence of an instrument called in German Trumscheit is known, which had a wedge-shaped wooden body up to two meters long, extending to the bottom. As with the modern double bass, that instrument was played standing up. Its only one string striking the body of the instrument, creating a distinctive trumpet-like effect. During the Renaissance (from the end of the 15th century), due to the new aesthetic line of the instruments, the viola family appeared in the foreground with their more graceful shapes and a more expressive sonority.

“A common feature for all types of violas was a shape similar to a small double bass with obtuse angles, sloping shoulders, a flat back with a bevel at the top, a wide neck with frills. The tuning was structured in fourths with a third in the middle” (Woodfield 1999, 86). From the whole viola family, the bass viola, distinguished by its size was known under several names: “*viola da gamba*”, “*basso da gamba*”, “*violone*” and others. During the evolution of the violas, other instruments appeared such as the viola-bastarda or viola contrabas, known as “*archiviola*”, “*contrabasse de viole*”, “*gros bass*”. The terminological difference between the bass viola significantly complicates the problem of studying the immediate predecessors of the modern double bass. The difficulties in deciphering the name of old instruments are caused by their linguistic peculiarities in different countries. In Italy, this is Violono, Contrabasso da gamba; in Germany - Gross Contra-bas-geig, Grosse bassgeig, Violone grosso; in France - Violin Basses, etc.” (Rakov 2004, 19). The size of the large bass viola was something intermediate between a cello and a double bass. The character of the sound was distinguished by softness, singing, and small sound amplitude (smaller than that of a modern double bass). The instrument’s range covers more than two octaves (from counter-octave to small octave inclusive). The scordatura was used to raise or lower the ambitus - another temporary tuning of the strings. The special attraction of the great bass viola was their excellent bass timbre and resonant effect, which lasted longer than the sound of the harpsichord or other stringed instruments.

With the appearance of the opera genre, composers needed a stronger orchestra, capable of filling a concert hall or a theater with its sound. And the double basses, in this sense, proved to be extremely requested: gradually they gained the fundamental role of the symphonic sonority. The characteristic double bass timbre was requested for playing different special sound images. Thus, C. Monteverdi in the musical drama *Orpheus* (1607) introduced in the orchestra two bass violas, which not only fulfilled an important function of accompanying vocal recitatives, but also represented infernal images of hell and the underground. For a long time, this role of the double bass was the most common. According to the German musicologist Johannes Matteson, the double bass of that time “served mainly to describe storms and underground noise” (Woodfield 1999, 37). In order to obtain a deeper sonority and to make an even greater impression on the public, the craftsmen made such gigantic instruments, which were twice as large as the modern ones. But all these instruments proved to be unviable and then found their place in museums and private collections.

The importance of the role of the double bass in orchestras gradually increased. They were increasingly entrusted with solo excerpts associated not only with moments of rendering important dramaturgical images, but also with the rendering of different emotional states. Romantic composers especially used the timbre of the double bass on a large scale and in a variety of ways. Superb lyrical moments from F. Schubert’s *Forellen Quintet* or the tragic feelings from Tchaikovsky’s Sixth Symphony, and also from the symphonic poem *Manfred* by the same composer, the refinement of Rimsky-Korsakov’s ornamental song from the *Sheherazada*, and many other emotional states printed in the creation of that period, significantly expanded the figurative sphere of the use of the double bass. Opera and symphonic music in which the double bass players faced an increasingly complex technique, while tasked with an increasing depth in musical interpretation, also contributed significantly to the emergence of new techniques and methods in the interpretation on double bass.

3. Double-bass virtuosos

The history of the art of the double bass has kept the names of many remarkable virtuoso musicians and teachers who have raised the performing arts to a remarkable level. Among them we mention: G. Bottesini, V. Gauze, I. Grabier, I. Gertovich, A. Dal’Okka, D. Dragonetti, V. Zinovich, J. Kempfer, S. Kusevitsky, G. Laska, E. Madensky, A. Milushkin, E. Nanni, F. Pichelberger, J. Prunner, F. Simandl,

V. Hauze, V. Khomenko, I. Sperger. In the process of perfecting the double bass technique, the greatest jazz double bass players of the 20th century also played an important role: R. Brown, M. Hilton, R. Mitchell but also others, constantly looking for new forms of music interpretation, new solutions, texture, new singing techniques and special timbre nuances.

The assertion of the solo interpretive art of the double bass players became more and more important in the 19th century. The Italian double bassist Giovanni Bottesini (1821–1889) was rightly considered one of the greatest instrumentalists, whose legendary fame far exceeded both the period in which he lived and the geographical borders of his country. He was one of the greatest virtuoso musicians of the romantic era, with his own sphere of musical and expressive means, original style and interpretive methods. With his three-string double bass, he gave concerts almost all over Europe, in South and North America, Africa, and even in Russia. After one of his recitals in the famous German resort of Baden-Baden, the German musician Schluffer confessed that, “the fame that Bottesini enjoyed was certainly no less than that known to the great virtuoso Paganini” (Rakov 2004, 84).

His extraordinary melodic sense and the phenomenal ability to hear the color of the musical construction materialized not only in a special expressiveness of the double bass sound, but also in search of new techniques and timbre effects. The melody of the Italian operatic style *bel canto*, with its light singing and filigree was organically combined with complex articulations, chromatic passages, arpeggios, double stops, harmonics, trills and ornamentation. An eyewitness to his performance wrote: “He amazed us, singing the various songs like a flute, as if a hundred nightingales were locked in his double bass. It was amazing how he managed the passages with harmonics, how he managed to move his fingers on the fingerboard up and down like a swarm of bees, how he moved his bow with the speed of light” (Rakov 2004, 82). It is known that in obtaining a brilliance of virtuosity in singing, a softness of sound and to eliminate effervescent tones, he lubricated the venous strings of his instrument with lard. In his attempt to prove the competitiveness of the double bass, G. Bottesini extended to the maximum the use of the upper register of the instrument. By actually leaning over the entire instrument, he was able to obtain unusually high sounds on the double bass, which were played with flutes. The rivalry and competition with the sound of the violin are captured in several of Bottesini’s solo works, among which the most eloquent example being the “Grand Duo” for violin, double bass and orchestra in A major. This ensemble imposes the most difficult technical and intonation tasks for performers, with the help of which the variety of possibilities of these instruments is revealed (and the violin in this work

sometimes sounds lower than the double bass). In this tandem with the violin, G. Bottesini's double bass "achieves" full equality.

In the hands of G. Bottesini, the double bass gained the fame of a real concert instrument. The interpretative achievements of this virtuoso artist anticipated many phenomena in the further development of the sound capabilities of the double bass. Thus, the composers of the twentieth century, who know perfectly the orchestra and the nature of the sound of instruments, for example, R. Strauss, I. Stravinsky, B. Bartok, S. Prokofiev, D. Shostakovich, A. Schnittke and others, frequently used in their compositions the upper register of the double bass, although the same notes could be played by the cello, viola and even violin. We remember the interpretative art of G. Bottesini even in the context of new phenomena in the field of timbre structure, of modern ensemble music. "Under his bow, the double bass becomes an entire orchestra with a full range of timbres" (Rakov 2004, 83), this quote from the press of the time during the life of G. Bottesini can be transferred to our time and can become the emblem of the famous French ensemble, "L'orchestre de Contrebasses", whose artistic activity made a real revolution in the sound of the double bass and received international recognition. This ensemble, created in 1981 by the remarkable musician Christian Gente and which included five more virtuoso double bass players: Leonardo Teruggi, Xavier Luguët, Olivier Moret, Jean Philippe Vire and Etienne Roumanet, became the most original and unusual phenomenon in modern musical art. Each member of the group is both a performer and a composer at the same time.

3.1. Double bass - important element in almost all formulas

For the first time in the history of music, a chamber ensemble consisting of homogeneous instruments made a special orchestral sound palette. In terms of the variety of timbres and their sound combinations, the mosaic of lighting effects unusual by the nature of the theatrical performance, "L'orchestre de Contrebasses" managed to surpass all types of ensembles known before. Its experimental sound aesthetic is undoubtedly based on postmodern genres. During improvisation, musicians can hum, whistle, apply special "foot rhythms", thus creating the atmosphere of a city or a street. These instrumentalists mastered extraordinarily different styles: in the musical discourse of the compositions being easily recognizable quotes from classical music, ornate oriental songs, elements of African-American blues, jazz, swing, hip-hop, etc.

The sound speech includes the sound imitation of the timbre of various traditional and national instruments: cello, violin, trumpet, guitar, banjo, saxophone, timpani, exotic percussion instruments, etc. The musical development of the compositions "L'orchestre de Contrebasses" is often based on a certain dramaturgical line, which "dictates" the invention of certain timbre images and artistic dramaturgy.

4. Conclusion

It is known that the timbre of any instrument depends not only on the register, but also on the dynamics and the character of the articulation with which the sound is produced. For double bass players who possess great mastery when they perform a work or another, each of the types of joints are expressed in the smallest shades, thanks to which a large palette of timbre colors is made. The birth of certain timbre-dynamic nuances is done in close connection with the tactile sensations and subtle movements of the muscles, through their impeccable coordination.

Most double bass players have a huge potential for interpretation and a brilliant individuality, which is eloquently revealed precisely in the conditions of chamber music. They constantly hear distinct sounds of different instruments and therefore have the opportunity to accumulate rich auditory impressions. The overall performance of the double bass players becomes an important area of creative consolidation of musicians, based on common artistic interests, technical skills and artistic talent.

We can say that nowadays the richest palette of interpretation as a whole is largely obtained by mastering all the timbre capabilities of the instrument. In this sense, the art of double bass, which has gone through a long path of development, is of great interest for studying the sound priorities of the past and the peculiarities of modern auditory perception of the world.

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