

## METHODS OF PLAYING WIND INSTRUMENTS (USING THE FLUTE AS AN EXAMPLE)

<sup>a</sup>OLESYA NESTEROVA, <sup>b</sup>VITALIY SHAPILOV,  
<sup>c</sup>AIZHAN BEKENOVA, <sup>d</sup>AIZHAN JULMUKHAMEDOVA,  
<sup>e</sup>ZHANAT YERMANOV

<sup>a-e</sup>*Kurmangazy Kazakh National Conservatory, 050000, 86  
 Abylai-Khan Ave., Almaty, Kazakhstan  
 email: <sup>a-e</sup>olesyaflute@mail.ru,*

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**Abstract:** In the second half of the XX century, the use of the latest performing techniques for playing woodwind instruments was the results of searching for unusual timbres and non-traditional sounding. Rethinking and interpreting traditional methods of sound producing, searching for a new sounding "color" and non-traditional ways of notation led to tremendous changes in musicians' performing techniques, and broadened the horizons of ideas about the possibilities of wind instruments. However, professional musical education in a number of countries does not pay due attention to the study of contemporary performing techniques characteristic for the music of the XX and XXI centuries composers. This situation does not cope with present challenges, as the performance of the music of the XX and XXI centuries composers is an obligatory component of the programs of most international competitions, participation in which is impossible without the relevant knowledge and possession of contemporary performing techniques. Possession of contemporary performing techniques is necessary for every professional musician. Nevertheless, unfortunately, the study of the latest techniques and their application is episodic and depending on individual expressive means of each composition. The article makes an attempt to determine the typology of contemporary performing techniques for the flute in terms of musical and performance characteristics. The author gives recommendations on the study of techniques, the mastering of which contributes to the improvement of professional performing skills. The purpose of the study is to present the typology of contemporary methods of playing the flute, classifying them on the basis of the properties of musical expressiveness. The empirical and theoretical approaches to the study were used as the research method. The use of the comparative typological method in the analysis of musical expressive and performing properties made it possible to determine the typological features of contemporary methods of playing the flute. This resulted in: - the determination of the typology of contemporary performing techniques for the flute; - giving the characteristics of these techniques; - more fully revealing their performance characteristics. The results of the study make it possible to identify the features of contemporary methods of playing the instrument and open the prospect of applying the results obtained in the notation and performing the music of the XX and XXI centuries composers.

**Keywords:** Contemporary methods of playing the flute, Flute, Music of the XX and XXI centuries, Typology of contemporary techniques, Performing art.

### 1 Introduction

When analyzing the state of the contemporary musical art, we can observe the process of active search in the field of forms, compositional structures, harmonies, melodic lines and rhythm that led to the accumulation of new linguistic and compositional elements at the turn of the 20th and 21st centuries. The unusual interpretation of the sound of instruments has become one of the important ways in this area. It concerned also the field of flute music performance. At the same time, composers concentrated on complicating traditional methods of playing the flute and introducing fundamentally new methods of sound producing. The solo genre for the flute, which is in demand among composers, is the consequence of the active development of the instrument. There is a different degree of intensity of these processes in different national composer schools. All the more important is the study of the integral picture of experimental flute music.

It should be noted that domestic musicians often do not possess the volume of information that is necessary for professional contact with the field of contemporary flute music performance. The quantity of so-called "new music" for the flute, not to mention the rest of the instruments, is so great that it requires constant study and reflection. At the same time, the study of the current state of the problem is impossible without comprehending the logic of the emergence and development of flute art.

Undoubtedly, attention to the history of the development of the instrument will give the composer and performer a deeper understanding of the nature and capabilities of the instrument, to which their interest is addressed. Knowledge of the origins of the instrument will make possible a more complete vision of the processes that are taking place nowadays. This is especially true when singers use new methods of playing the flute, since understanding and using the flute's capabilities is inextricably linked with the understanding of its structure.

The expressive possibilities of musical instruments are characterized by a certain historical perspective. The path to improvement and transformation of the instrument, which began in the XVII century and gave rise to a lot of controversies, continues to this day and is naturally associated with the appearance of compositions for the flute in different genres. In the twentieth century, the flute, unlike in previous times, when it was often regarded as an instrument imitating the singing of birds, significantly expands its expressive potential. As a result, the flute becomes a means of translating almost any composer's idea. The performance capabilities also increased significantly due to the increase in varieties of this instrument represented by piccolo, alto and bass flute. Earlier these instruments were used only occasionally and to a greater extent as a special orchestral color but in the twentieth century, the alto flute and the piccolo flute often act as solo instruments participating on an equal footing with the Western concert flute in international competitions and festivals<sup>1</sup>.

The use of advanced performing techniques in contemporary flute music becomes an urgent necessity. Since the middle of the twentieth century, new techniques have been a significant creative and methodical component of many practicing musicians, composers, and educators.

Contemporary means of musical expressiveness of the flute are aimed at using the whole sound richness and all the capabilities of this instrument. When searching for a new sound, composers of the twentieth century used non-musical sounds (noise, screaming, laughter), which did not have artistic expressiveness up to that point. In addition, through new techniques, composers introduced sound-imitative effects in order to imitate the sounds of nature (flutter-tonguing, pizzicato) and empowered the flute with the ability to function as and/or to mimic the sound of other instruments: multi-voiced ones (multiphonics, double buzz), unpitched percussion ones (beatboxing) and vocals (double buzz). As a result, the artistic capabilities of the flute as a concert solo instrument are significantly increased.

In the scientific literature, N. Rimsky-Korsakov, N. Zryakovsky, Y. Usov, D. Rogal-Levitsky, and V. Berezin devoted special chapters on the development of the structural features of the flute and on its expressive capabilities. In these chapters, as a rule, a brief description of the development of the instrument is given, while the authors do not pay special attention to the study of all innovative solutions in the design of the flute and indicate only the crucial moments in its evolution. The problems of instrument construction, including those from a historical perspective, have been discussed in more detail in the works of such researchers as H. Berlioz, N. Toff, J. Hotteterre, A. Carse, L. Granom, H. Wisham, T. Boehm, P. Guiraud. One of the reasons for this study was the desire to compensate for the apparent imbalance in the ratio of Russian and foreign sources. At the same time, the panorama of the evolution of the flute and of its expressive capabilities from the point of view that the flute is a solo and concert instrument is presented in a multifaceted manner.

When studying the musical art of the XX century, a modern researcher has the opportunity to rely on a whole body of works devoted to various aspects of such a study. Without setting a global task to cover in the review of literature all the works

<sup>1</sup> For example, in 2016 in Munich (Germany) the thirtieth competition of performers playing western concert flute and alto flute was held.

devoted to the music of the 20th century, we will designate only the most significant ones, as well as those who found themselves in an area directly adjacent to the problems of flute art.

## 2 Materials and Methods

The basic monographs and collections of articles on 20th-century foreign music, on the theory of contemporary composition, on the harmony in 20th-century music, on music in the postmodern era, and on the musical culture of the United States of the 20th century, as well as the monographs of M. Druskin, C. Kohoutek and G. Schneerson are among the basic works concerning the definition of the methodology of music research of the XX century. A remarkable monograph by V. Kholopova and Y. Kholopov about A. Webern contains significant generalizations regarding the aesthetic foundations of the new art. L. Akopyan's articles on E. Varèse, A. Maklygin's articles on textured forms of sonorous music, T. Zolozova's articles on the phase structures of A. Jolivet's First Symphony, O. Puzko's dissertation on the Darmstadt International Summer Courses for New Music are valuable in terms of the methodology of the analysis.

Much fewer research works are devoted to the flute art of the twentieth century. The dissertation of V. Davydova entitled "Music for the flute of the Russian composers of the second half of XX century (using the concert and sonata genres as an example)" is among the most exemplary research works on this subject.

Special attention should be paid to studies devoted to the current state of flute performance. These are, first of all, the articles of

John Heiss, where for the first time the variants of multi-sound complexes for the flute are presented, as well as Bruno Bartolozzi's book "New Sounds for Woodwinds." These authors, for the first time, touch upon the question of the new expressive capabilities of the flute, whereas Robert Dick' coverage of the problem is more consistent and detailed. In his work "The other flute", he presented (and, if necessary, corrected) the examples given by Heiss and Bartolozzi, and developed the ideas formulated by his predecessors.

We would like to conclude the literature review concerning the problems of contemporary flute performance by mentioning Harvey Sollberger's book "New flute" and the work of the German flutist Carin Levine "Contemporary techniques of flute playing". It is also necessary to mention the dissertation of I.V. Viskova "Ways to expand the expressive capabilities of woodwind instruments in the music of the second half of the XX century."

In her paper, a general criterion for the typology of contemporary techniques for flute playing is such properties of their musical expressiveness as dynamics, pitch, and timbre, the characteristics of which largely determine performance technique.

## 3 Typology of Contemporary Techniques for Playing the Flute

Contemporary techniques of playing the flute form a typology consisting of three main groups: dynamic, pitch and timbre ones.

### 3.1 Dynamic group of performing techniques

Table 1. Dynamic group of performing techniques

Dynamic		
Vibrato	Smorzato	Shake

This group of techniques is characterized by dynamic changes in sound, the ancestor of which is the vibrato, which has become a traditional means since the second half of the XIX century. Unlike the vibrato for the string-bow instruments, the same technique for the flute, as well as for other wind instruments, is formed due to the greater intensity of dynamic, rather than pitch changes. The vibrato technique is the most traditional performing means which served as the basis for the formation of a number of contemporary techniques that differ in the range of

the amplitude of air vibration such as smorzato (less intensive), shake (more intensive) etc.

The smorzato acts as an intermediate technique between the vibrato and non-vibrato. This technique without changing the strength of the air jet or pressure is achieved by moving the jaw. The rate of such oscillations can be periodic, be in a certain rhythm or be rhythmically free. In notes, a composer often gives instructions concerning the frequency of performing a technique according to a certain tempo:



Figure 1. Designation variants for the smorzato

An artificial, slight and intermittent sound jitter created by the diaphragm muscles is the distinctive feature of the shake technique.

Leading wind instrument players consider the vibrato technique as an important factor of expressiveness of sound, noting its similarity with the same means of string-bow instruments. "The vibrato is the language of the soul, the language of feelings," A. Nicolet said, "each musician has his own individual vibrato. But you need to be able to control it, as the leading violinists of the world do." (1)

A characteristic feature of this group of techniques is the change in the amplitude of air vibration, which was interpreted very diversely in the works of the twentieth century. Such examples include the works of such composers as Robert Dick, Toshio Hosokawa, Klaus Huber and others (2-4).

### 3.2 Pitch Group of Performing Techniques

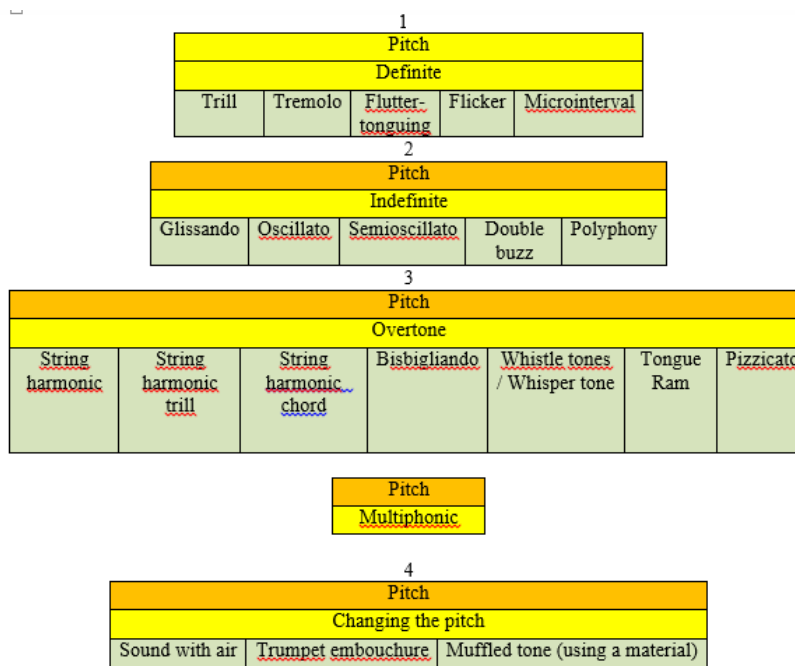


Figure 2. Pitch Group of Performing Techniques

The entire pitch group of contemporary techniques for playing the flute can be divided into four subgroups, each of which is characterized by a change in any component of the sound.

The first subgroup is characterized by definite pitch, which is the base for the formation of trill, tremolo, flicker, and microintervals.

The second subgroup, on the contrary, is represented by methods with indefinite pitch such as glissando, oscillato, semioscillato, double buzz, and hidden polyphony. A common feature of these methods is the permanent change in the fundamental tone in the form of glissanding, which is complicated in the last two methods by the addition of a second tone or hidden polyphony.

The third subgroup includes techniques that are formed on the basis of overtones, the participation of which determines the stratification of the pitch parameter of sound. As in other subgroups, string harmonics, which are the ancestor of this subgroup, are a more traditional technique. Nevertheless, unlike the vibrato or the trill, string harmonics for wind instruments is the feature of the music of the 20th century, because of borrowing similar techniques from stringed instruments. This most traditional method in this subgroup subsequently becomes more complicated in the form of string harmonic trills, chords and bisbigliando (an artificial string harmonic that allows creating the illusion of simultaneous sounding of two or more sounds). Multiphonics (multi-voiced combinations of sounds achieved by using a new fingering and a special state of embouchure) are a variety and complication of the string harmonic subgroup.

The fourth subgroup includes techniques with a varying fundamental tone (like the second subgroup). However, their sound formation is characterized by special timbre effects, in which the following non-musical parameters are involved: sound with air noise, trumpet embouchure and muffled tone (using a material). These techniques have an unconventional timbre, which is common to contemporary music, and in contrast to the techniques of the timbral group, here the pitch is definite. At the same time, this subgroup is indicative of its intermediate position between pitch and timbral techniques.

Many performing techniques of the first subgroup are formed as a result of combining the means of expressiveness. An indicative demonstration of such a complication is the contemporary modification of the trill. According to the generally accepted definition, "trill is a quick change of two sounds"<sup>2</sup>, i.e. the alternation of two adjacent notes separated by a minor or major second. For many centuries, trill was the most common musical ornament. In the music of the 20th century, composers use a sophisticated version of trills, such as:

1. Ornamental microinterval trills (from  $\frac{1}{4}$  to  $\frac{3}{4}$  tone) that a performer can freely combine;
2. Double trills are more often used in microtonal music. They differ from simple ones by the fact that not only the fundamental note and the fundamental tone but also an additional string harmonic tone sounds. The alternation of sounds is carried out through different fingerings, and is performed at a rather rapid tempo;
3. Multiphonic (timbral) trills have different ways of notation. Due to the technical complexity of this method, the speed of its performance does not always correspond to the instructions of a composer, so the multiphonic trills have a limited duration of sounding (Figure 3);
4. String harmonic trills are a fairly complex technique in the flute playing since they require considerable strength and preparedness of the embouchure.

<sup>2</sup> V. Dal, Explanatory Dictionary of the Living Great Russian Language

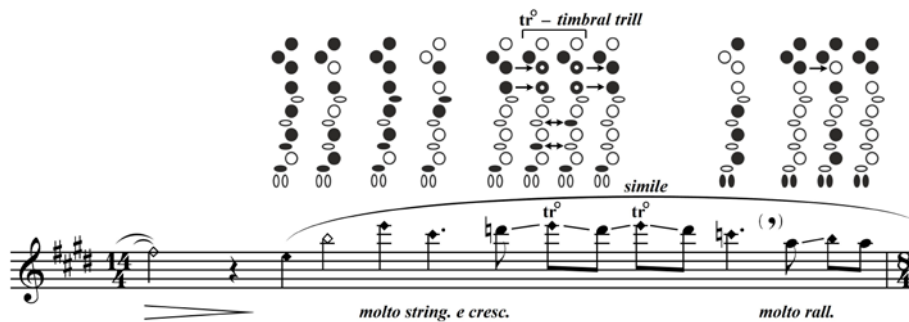


Figure 3. Clarke, I. Orange Dawn

The tremolo and "flicker" techniques show the genetic ratio of traditional and innovative features. Due to the peculiarities of the sound and its performance characteristics, these techniques are similar to the trill technique discussed above, with which they share uniform and rhythmic alternation of notes. Unlike trills,

the tremolo technique is an alternation of sounds at a distance of more than a second (Figure 4). The flicker technique can be described as almost silent, "phantom" tremolo, which gives reason to consider it as a complication of the traditional method of playing the flute.



Figure 4. Tremolo

Microintervals, as intermediate sounds between semitones, have also been defined in the first subgroup of the "pitch" group of techniques. Robert Dick, in his work "The Other Flute" (5), presents the fingering table, which describes in detail the principle of sound producing. For the composers of the XX and XXI centuries, the use of microinterval technique is very important, since it is connected with the expansion of the idea of the sound capabilities of the instrument.

intermediate tones in the performing techniques. The glissando, oscillato, and semioscillato are a clear example of this. By varying the position of the embouchure hole of the flute in relation to the performer and by rotating the instrument the flutist changes the section angle of the outgoing air jet with the edge of the embouchure hole, thus he achieves the performance of the glissando almost in the semitone range without changing the fingering (Figure 5).

A characteristic feature of the second subgroup is the change in the pitch of the fundamental tone and the presence of

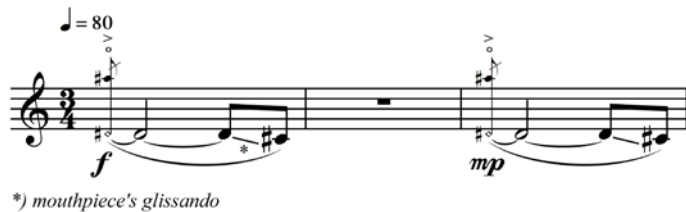


Figure 5. Moreno, F. Beat flute

The glissando is often used within a tone. However, there is a technique of finger glissando, with which it is possible to perform a passage (Figure 6).



Figure 6. Glissando passages

In addition, it is possible to raise or lower the sound by varying degrees of lip pressure. When weakening lip muscles, the sound gets lower. When straining lip muscles, the sound rises. This, in combination with changing the section angle of the air jet by rotating the flute, makes the technique more effective.

The oscillato and semioscillato, as types of glissando, are a glissanding movement towards one direction from the fundamental tone with a subsequent return (Figure 7).



Figure 7. Jenev, Z. Solliquium No. 1 for solo flute (1967)

The flute glissando differs from that of bowed string instruments, the performing principle of which consists in the fact that a slight gliding of the finger over the string along the neck reproduces the transition between sounds. Among the wind instruments, the glissando is easier to perform with the trombone where such a sound is achieved by the movement of the slide.

The third subgroup is united by the string harmonic technique, which makes it possible to control the overtone scale and to reveal the sound potential of the flute. This technique was the base for a group of similar techniques united by overtones. In the above table, each subsequent contemporary technique of this

subgroup is formed by complicating the previous one or by increasing the number of simultaneously produced sounds.

A string harmonic (an overtone) is achieved by overblowing the fundamental tone. It is thanks to the overtone that we can judge the quality of the sound and its coloration. Pierre-Yves Artaud (6) constructed a scheme of the overtone scale, which makes it possible to demonstrate clearly the number of produced overtones. The flute has up to 9 string harmonics formed on the basis of the fundamental tone, the role of which most sounds can play. However, some sounds such as Si, Do, Do diesis, Re and Re diesis of the 2-line octave have only two overtones (Figure 8):

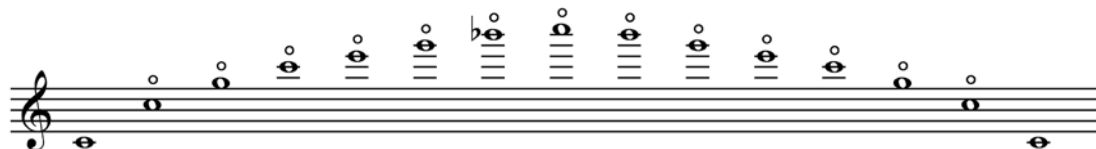


Figure 8. Natural String Harmonics of the Western Concert Flute Beginning From Do of the 1-line Octave

Composers often use string harmonics to achieve the echo effect or as an opposition to the fundamental tone.

It is possible to perform both the string harmonic scale and string harmonic trills but this is a rather complicated technique, which is extremely rare since it requires a serious amount of power from the embouchure. Also, it is possible to perform an overtone (string harmonic) chord, which is built by gradually blowing the overtone scale from the fundamental tone. There is the simultaneous sounding of two (or three) different overtones, and it must be taken into account that the lower sounds of these consonances are very weak.

The daily performance of the string harmonic playing technique, as skill practice, leads to the improvement of the sound of the

instrument, due to the fact that the specific air supply requires constant control over the respiratory apparatus.

The most fascinating technique of playing the flute is the multiphonic one, which is a variation of the string harmonic technique of playing the flute. The multiphonic is a combination of two or more (up to 4) simultaneously sounding notes. As a rule, the flute is considered as a monophonic instrument, the capabilities of which allow only one sound to be reproduced but with the multiphonic technique, the sounding of several sounds at the same time is possible. To obtain the polyphony, you need to control the airflow by manipulating the vibration inside the tube and to reach the producing of two or more sounds at once. The scheme (Figure 9) shows it in the form of two different waves existing inside the same tube: (7)

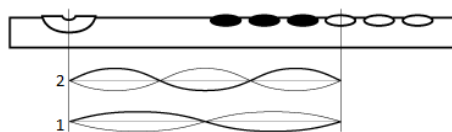


Figure 9. Multiphonic Technique

Contemporary methods of multiphonic playing are described in detail in the textbooks of R. Dick and W. Offermans with the attached fingering table. However, not all multiphonic combinations can be performed on all dynamic levels. Some intervals can sound only at a very soft (pianissimo) dynamic level or, on the contrary, at a very loud dynamic level. Robert Dick's work "Performance Manual of Contemporary Techniques" (5) describes in detail the errors that flutists commit when they start to study multiphonics. For better sounding of

this flute playing technique, a performer must imagine in advance these sounds separately and together, in order to form an air jet before it is produced.

In the works of contemporary composers, a multiphonic is used not only as intervals and chords but also as trills and tremolos. However, these techniques are rather difficult to perform and are used less often. It should be noted that not all multi-voice combinations of notes are performed with the flute, so composers need to consult with a performer (Figure 10).

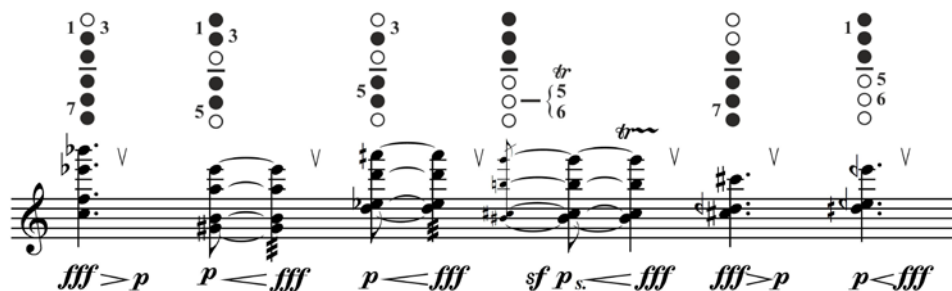


Figure 10. Fakhradov, Z. "Magum II"

A general characteristic of sound, which unites a group of pitch techniques, is a certain method of changing the pitch, which can be definite and indefinite, i.e. it can be broken down into the range of the fundamental tone and different kinds of additional sound specifically colored by noise characteristics. The above tables reflect the complication of the more traditional methods of

playing the flute, such as trill, glissando, and string harmonic, which are, like vibrato, in the dynamic group of techniques. They are the ancestors and one of the main factors in the formation of contemporary performing techniques.

3.3 Timbral Group of Performing Techniques

Articulation	
Pizzicato	Tongue Ram
	Slap-Tongue

Noise	
With voice	Without voice
Laughter	Aeolian sounds
Pronunciation of vowels, consonants, syllables	Sound with air noise (breath)
Sizzle	Sound with air noise (exhale)
Roar	Jet Whistle
Screech	

Figure 11. Timbral Group of Performing Techniques

The timbral techniques represent completely new sound capabilities of the instrument, thanks to which the repertoire of contemporary flutists has been expanded several times. Many flutists write compositions using new flute techniques and become composers and performers of their own works, as it was before the XIX century. It is quite justified that the conceptualization in working on "new" music is one of the mandatory requirements for a contemporary musician. The accuracy, correctness of reading the author's text and performing professionalism provide for listeners an understanding of the meaning of the work and contribute to the creation of emotional contact with music.

According to the principle of sound formation, a group of timbral techniques can be divided into two subgroups such as articulatory and noise ones.

In the first subgroup of the timbral group of techniques, a sound is produced in the flute with the help of special types of articulation. In this case, it is possible to draw a parallel with some performing techniques for bowed string instruments, where the sound is produced from the instrument with the help of striking the string with the stick of the bow (col legno); or to draw a parallel with some performing techniques for percussion instruments, where the sound is produced with a palm blow or with drumsticks.

The brightest performers of the contemporary flute music are the following musicians: Robert Dick who wrote a series of works based on new playing techniques; Robert Aitken who brilliantly performs both academic and avant-garde music; Ian Clarke who became one of the first flutists who composed commercial melodic music using contemporary techniques; Matthias Ziegler an educator and a famous contemporary flutist who combined academic and jazz music in his works. That is what Ziegler says about the flute, "Inside the flute, there is a whole orchestra that allows me to play solo-polyphonic music."

One of the techniques considered, borrowed from stringed instruments is pizzicato . The lips of the flutist are tightly compressed, and then they are opened by a strong air jet, then the syllable "pa" is pronounced without striking with the tongue, i.e. a sound shorter than staccatissimo is performed. In notes, it is designated as ▼:



Figure 12. Daldenbai, B. Illusion

The tongue-ram technique for the flute can be compared to the percussion sound of percussion instruments. This technique has its own feature: the flute is turned inward; the tongue is deep in the hole, an air jet is intensively blown into the instrument and

the syllable "dah" or "doo" is performed by sharply striking with the tongue. This technique is often performed in the lower register, and sounds lower by a seventh interval in relation to the fingering performed:



Figure 13. Kawashima, M. "Manic Psychosis"

The slap-tongue for the flute is performed by clearly and shortly striking with the tongue onto the edge of the embouchure hole. The tongue makes a sharp strike accompanied by a strong diaphragm impulse and the syllable "te" is pronounced but without blowing the air into the instrument.

subgroup occupies an intermediate position between pitch and noise techniques.

This subgroup of contemporary techniques is characterized by using non-traditional methods of articulation involving the lips and the tongue, which determine the specific timbre coloration of the sound, in which the pitch level is present but does not form the basis of expressiveness. Therefore, the articulatory

The general characteristic of the noise subgroup consists of the content and method of contemporary techniques. A characteristic feature of the second subgroup is the creation of a noise effect, additional colors that increase the range of the flute sound and expand the horizons of the concept of sound.

Table 2. Noise Subgroup

Noise	
With voice	Without voice
Laughter	Aeolian sounds
Pronunciation of vowels, consonants, syllables	Sound with air noise (breath)
Sizzle	Sound with air noise (exhale)
Roar	Jet Whistle
Screech	

This subgroup includes two types of techniques, i.e. those using the vocal tract and those not using it.

(Figure 13). At the performance, it is impossible to recognize a certain pitch; it is possible only to consider a "melodic" line moving up or down and to see a general trajectory of motion.

The first type includes such techniques of playing the flute as laughter, roar, screech, sizzle, whisper (Figures 14, 15), as well as techniques with the pronunciation of vowels and consonants

In musical notation, these techniques are designated in the form of words or comments indicating which syllable or sound effect is to be pronounced:



Figure 14. Polin, C. Solo (1981), "Mojiganga"



Figure 15. Willdberger, J. Retrospective II





Figure 16.

In the second type of techniques of the noise subgroup, the source of sound producing is a stream of air that forms special effects: aeolian sounds, sound with air noise (breath), sound with air noise (exhale), i.e. noise techniques that give a performer the opportunity to depict "whisper of the wind", "rote" and "raging blizzard". The principle of performance is to create an "air" sound without a certain level of pitch. A performer must blow the air into the flute with soft relaxed lips for the sound with air

noise (breath) or, on the contrary, pull the air into the lungs for the sound with air noise (exhale). The amount of noise is often indicated in the notes (for example, 1/2 of air noise – 1/2 of sound, 1/4 of noise – 3/4 of sound etc.). The embouchure should be as relaxed as possible, the flute should be located at a distance from the embouchure in order to avoid the appearance of high-pitched tones:



Figure 17.

Aeolian sounds are a technique in which only breathing is heard (with a relaxed embouchure) (Figure 18).

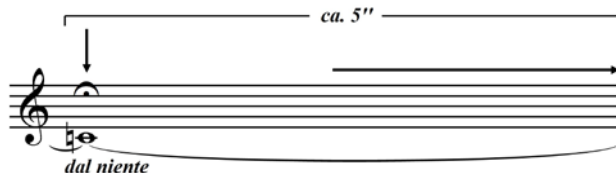


Figure 18. Holliger, H. "T(air)e"

The jet whistle is a vivid and dynamic technique. The embouchure hole is tightly closed with the lips and a sharp pulse of the diaphragm intensively produces a sound similar to a

"whistling shot". This technique is indicated with a large broken arrow above the note or with the letters J.W. (Figure 19, 20).

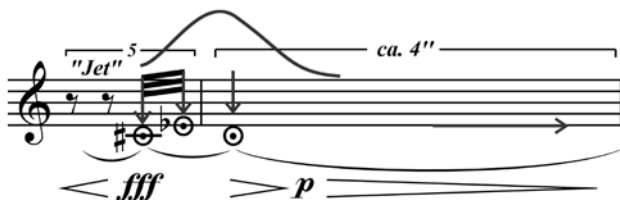


Figure 19. Holliger, H. "T(air)e"



Figure 20.

In the timbral group of techniques, we can also find more traditional means, which are the basis for the formation of new performing techniques. Thus, in the articulatory subgroup, the pizzicato appeared as a result of borrowing a similar method from bowed string instruments. However, on the other hand, the noise subgroup is characterized by techniques that do not have more traditional analogs. This subgroup of techniques reflects the intensive search for new forms of sound that are characteristic of avant-garde music, and also serve as a significant factor in the formation of new performing means.

As a result of the work, a typology of modern techniques for playing the flute was presented, i.e. their classification on the basis of the properties of musical expressiveness.

In the special literature, contemporary methods of playing the flute do not have single and stable criteria of characterization that could serve as the basis for their versatile scientific typology. For example, O. Tantsov (8) in his work "New techniques of playing the flute" divides the contemporary means of playing into two different groups: pitch and special effects, in



which there are techniques that differ significantly in musical characteristics, i.e. in pitch, timbral and performing features. The same very general criteria are used in the work of R. Dick "The Other Flute" (5), in which performing techniques differ in the features of monophony and polyphony. As a result, there is also a combination of the most diverse performing means. In "New sound for woodwind", B. Bartolozzi (9), like Robert Dick, divides the contemporary techniques of playing the flute according to the principle of the monophonic or polyphonic sounding of the instrument. In addition to similar works, which use the most generalized characteristic of the distinctive criteria of performing techniques, there is an opposite tendency in the special literature to describe in detail the techniques, with the definition of the set of individual groups that form a heterogeneous picture that does not have common typological qualities. Such works have the characteristics of an anthology describing the set of groups of particular techniques, as, for example, in the work of C. Levine and C. Mitropoulos-Bott "The Techniques of Flute Playing." (10) Great importance in the literature is attached to the development of methodological recommendations for the implementation of contemporary techniques for playing the flute, but in our opinion, the construction of a single and versatile typology can serve as a basis for a more complete and objective characterization of performance characteristics.

#### 4 Conclusion

In conclusion, it should be said that the dynamic development of the instrument and the accumulation of flute literature give an extensive material for understanding the features of contemporary musical thinking and complex artistic processes occurring in the musical art. It is quite obvious that the problems identified in the article should become the subject of constant attention not only of theoretical researchers but also of practicing musicians.

Since the active introduction into the professional sphere, the flute has undergone a number of significant changes that have affected its design and materials for manufacture. The result of a long way to improve the instrument was a significant accumulated flute repertoire, a considerable part of which is the works of the twentieth century for solo flute. In line with the question posed, the work shows the most significant changes in the instrument, which led to the expansion of the technical and expressive capabilities of the instrument. The results of the research give a complete basis for asserting that the formation of the flute's design is closely related to the accumulation of flute literature that reflects all the transformations and improvements in the instrument. The obvious is that, despite the universality of the flute design made by Boehm, this process continues in our days; the illustration of which is the newest flutes created by request specifically for the performance of modern music of the XX and early XXI centuries.

The newest flutes created by order specifically for the performance of contemporary music of the XX and early XXI centuries is the example of this. The flute solo repertoire of this period is incomparably extensive and diverse in the background of the previous XIX century. The solo flute works analyzed in the article are chosen as the main indicator of the introduction of the latest performing techniques for the flute into the individual composers' styles using the leading composers' techniques of the 20th century such as serial technique, aleatory, sonorism, etc. These works are included in a number of the most performed plays at various concerts and international festivals of modern flute music. On the one hand, the analysis, which is limited to these plays, is based on curriculums of music education institutions of the United States, Canada, France, and Germany; on the other hand, these works are the most vivid example of the synthesis of the new composers' techniques of the XX century and the latest techniques of flute performance. In the course of the study, it became clear that the basic initial developments in this direction have already been made and an active process of their implementation is now in progress. The expanded interpretation of the instrument finds a new form and content in

the creative ideas of contemporary composers of the late XX and early XXI centuries.

The result of a comprehensive study of experimental pieces for solo flute by foreign authors of the second half of the 20th century is the indisputability of the fact that new performing techniques become an integral part of the new music and modern composition techniques. As a result of the theoretical analysis of works for solo flute, the author comes to the conclusion that in new flute music the timbral characteristics play the same important role as the other components of the composition such as rhythm, melody, and harmony, and become one of the formative elements. This is confirmed not only by their active introduction into the structure of musical material but also by the fact that they appear as the main component of experimental works, which are often written entirely on the basis of an extended interpretation of the instrument with using traditional techniques as an exception. It can be said that at the present time this process has reached a kind of climax and in the near future it does not indicate a decline.

This is logical since experimental music is a kind of a symbol of the epoch, which reflects the dynamics of the development of society and of art in general. The musical art of the late XX and early XXI century comes to a new level. It is included in the process of total renewal of artistic pursuits. All techniques are used by composers not simply as spectacular sonorities, but logically express the idea of the author. Every new work created in the course of the experiment seeks to outstrip a preceding one, which is a sign of the development of modern art. The letter of Varese, which was groundbreaking, has now been taken as a basis by our contemporaries, whose efforts are aimed at finding new techniques.

Since the second half of the twentieth century, music for wind instruments marked a noticeable tendency to renew the musical language. This is due to the emergence of new specific playing techniques and special playing effects. It is worth noting that, to a greater extent, it touched precisely the woodwind instruments, due to their acoustic characteristics and specificity of sound generation. Thanks to the new performing techniques, the timbre and intonational expressiveness of the wind instruments' sound has been greatly enriched.

Unconventional methods of playing served as the basis for creating musical notation and, as a consequence, a complicated performing technique requiring flexibility and mobility of embouchure, high level of motor motility, auditory orientation and emotional reaction of a performer. (11) The received results are relevant for writing compositions for wind instruments with the use of contemporary playing techniques. The work has practical value in the performing and pedagogical activity of a modern musician. Methodical recommendations for the implementation of modern techniques for playing the wind instruments, in particular, the flute, will help young performers to learn new material more easily.

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**Primary Paper Section: A**

**Secondary Paper Section: AJ, AL**