FUNCTION OF THE SINGER'S ARTICULATION APPARATUS

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Summary. This article examines the phonetic, anatomical, and acoustic foundations of the singer's articulatory apparatus in vocal art and the speech process. Intonation, sound harmony, resonator cavities (pharyngeal and oral cavities), tongue movement, and the mechanism of vowel and consonant formation are analyzed. The significance of the formant, "dynamic formant," the "coarticulation" phenomenon, as well as the rules of verbal stress and reduction in vocal pedagogy and performance mastery, is substantiated.

Keywords: articulatory apparatus, vocal art, intonation, vowels, formant, dynamic formant, coarticulation, stress, reduction.

In vocal art and the speech process, a word or phrase consists of changing sounds that constantly alternate with each other. The average pronunciation time of one syllable during speech is approximately 0.2 seconds. The cessation of this continuous sound flow is related to the necessity of distinguishing specific words, phrases, and syntagms for breathing (breathing) or emotional-expressive purposes. The continuous and rapid change of these sounds transitions into a specific musical flow that participates in conveying the meaning of the words.

The meaning of words is directly related not only to the thought in that word but also to intonation, which is an integral element of speech sounds. The same words, spoken in different ways and tones, can have different meanings and connotations. Music makes words even more meaningful and impactful. The inner feelings expressed through words are manifested through the harmony of sounds, the change in tempo, rhythm, and timbre.

Speech is widely used by many composers as an intonational material in music. In particular, such remarkable Russian composers as A. Dargomyzhsky and M. Mussorgsky fully utilized this in their works. They have created unique examples of speech intonation in song performance, where musical intonation and the phonetic properties of speech are reflected in perfect synergy.

Speech sounds are divided into two main groups - vowels and consonants. They differ from each other in their formation mechanism and acoustic properties.

The formation of speech sounds is carried out by the articulation apparatus. Many muscular systems of the vocal tract participate in the articulation of speech sounds: the muscles of the lips, tongue, soft palate, pharynx, oral cavity, and lower jaw. In this case, the main articulatory organ is the tongue.

Muscles of the tongue, moving in different directions, can change the configuration (form) of the tongue in different ways. Its movements in the vocal tract change the volume of the pharynx and oral cavity. When the tongue is maximally pulled back, the pharyngeal cavity has a minimal volume, and the oral cavity has a maximum volume. Conversely, when the tongue rises upwards and forwards, the pharynx has maximum volume, while the oral cavity has minimal volume.

The root of the tongue is attached to the hyoid bone. Therefore, the upward or downward movement of the tongue affects this bone, and through it, the movements of the tongue are of great importance in explaining the mechanism of oral cavity and skeletal function. The tongue participates in the formation of all vowels and consonants; therefore, if its movement is restricted or damaged, fluent speech becomes impossible.

When voiced sounds are produced, unlike voiceless sounds, the airflow generated in the vocal tract passes freely through the vocal apparatus and encounters no obstacles. Depending on the shape and size of the pharyngeal and oral cavities, different vowel sounds are distinguished, possessing the property of a distinct sound amplification (resonatory). Through these specific changes in the pharynx and oral cavity, our hearing organs easily distinguish one vowel sound from another.

The formation zones (formants) of vowel sounds occupy strictly defined ranges. These frequencies can vary slightly depending on the volume of the vocal tract and the shape of the mouth opening. It should be noted that all voids in the vocal tract directly influence each other. For example, when the mouth is wide open or the lips are extended forward, all the formants descend slightly. When the oral cavity expands, all formants are elevated. However, these changes do not go beyond the open phonological boundaries and are perceived as timbral colors (nuances) within identical vowel sounds.

The pharyngeal and oral cavities determine the main acoustic properties of vowels in speech. However, these sounds are usually accompanied by other articulatory features. Essentially, each void and constriction specifically modifies the voice, giving it a specific acoustic color with a formant meaning.

To distinguish which vowel is being pronounced, some vowels require one formant in the spectrum (for example, for the sound "a"), while other voices require two or even three.

For the correct differentiation of vowel sounds, not only the acoustic properties being formatted are necessary, but also the formation process (dynamics) of each sound. Because each vowel sound has its own beginning phase, then it takes its full form and finally transitions to the next consonant or vowel sound. The timbre and sound intensity of a vowel change during the formation stage, as well as during the phases of full formation and separation. It has been determined that these changes give each vowel sound a different character and serve as a sound-differentiating indicator for our hearing organ. This characteristic is called the "dynamic form." Especially the initial attack of the voice is of great importance for the clarity of the voice and the clarity of diction in singing.

According to their articulatory characteristics, speech sounds have individual characteristics depending on the anatomical structure of the vocal apparatus organs and the state of the oral cavity. Nevertheless, the main articulatory position of the language, characteristic of each vowel sound, is preserved.

Consonants in a word significantly influence the pronunciation of vowels and the articulatory function of the tongue. It has been determined that speech sounds directly influence each other and change one another. When one sound is being played, the vocal apparatus has long been preparing for the next sound to be played. This phenomenon is called "articulatory pre-sensation" (coarticulation).

It is precisely these articulatory changes in vowels and syllables, as well as the interrelationship of sounds, that serve as the basis for the use of special syllables in vocal pedagogy for setting the vocal apparatus in the correct position and tuning vocal performance.

In the process of live speech, vowels acquire their full form only when the stress in the word falls on them or when the speaker gives this word a special emotional accent, turning it into the highest point of the phrase. The remaining unstressed vowels in a word are not fully pronounced, are reduced ("eaten") and shortened, which is a natural phonetic requirement of the language. Incorrect pronunciation of words or prolonging all sounds equally in violation of reduction rules is perceived as distorted and unnatural speech.

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Rezyume. Maqolada vokal san’ati va nutq jarayonida xonanda artikulyatsiya apparati faoliyatining fonetik, anatomik va akustik asoslari yoritilgan. Intonatsiya, tovushlar uyg‘unligi, rezonator bo‘shliqlari (halqum va og‘iz bo‘shlig‘i), tilning harakati hamda unli/undosh tovushlarning shakllanish mexanizmi tahlil qilingan. Shuningdek, vokal pedagogikasida keng qo‘llaniladigan formantalar, «dinamik formanta», «koartikulyatsiya» (artikulyatsiyani oldindan sezish) fenomenlari hamda so‘zdagi urg‘u va reduksiya qoidalarining ovoz ijrochiligidagi ahamiyati asoslab berilgan.

Резюме. В статье раскрываются фонетические, анатомические и акустические основы работы артикуляционного аппарата певца в вокальном искусстве и речевом процессе. Анализируются интонация, гармония звуков, резонаторные полости (глотка и полость рта), движение языка и механизм формирования гласных и согласных звуков. Обосновывается значение формант, «динамической форманты», феномена «коартикуляции», а также правил словесного ударения и редукции в вокальной педагогике и исполнительском мастерстве.

Kalit so‘zlar: artikulyatsiya apparati, vokal san’ati, intonatsiya, unli tovushlar, formanta, dinamik formanta, koartikulyatsiya, urg‘u, reduksiya.

Ключевые слова: артикуляционный аппарат, вокальное искусство, интонация, гласные звуки, форманта, динамическая форманта, коартикуляция, ударение, редукция.