

University of Pécs
Faculty of Music and Visual Arts
Doctoral School

Zoltán Arnóth

The Sound of the Clarinet in the Orchestra

Statements of DLA Thesis

Consultant: Prof. doc. Béla Drahos
habilitated professor

2017

The Focus of the Research

The present dissertation examines the sonoric capabilities of the clarinet and the variability of its usage in an orchestral environment. This subject has a lot of different possible approaches (e.g. the sonoric capabilities and variability of usage of the different German and French clarinets; the sound of the clarinet in popular genres etc.); yet my research focuses on the context of symphonic orchestras.

Methodology

I found it necessary to discuss the historical development of the clarinet in the context of the symphonic orchestra from its beginnings until today in an extensive preliminary chapter. This chapter deals with the interactions and interferences between the development of the instrument itself and that of the orchestra, composing, the instrument industry and education. In the following chapters the methodology of my research is shaped by two characteristic aspects of the clarinet. Firstly, I examine the characteristics of the different registers of the clarinet; and secondly, I discuss the characteristics of the sound of differently pitched clarinets. Besides the literature specified in the Bibliography, I also used the sheet music of the relevant orchestral material. (All musical quotes in the present dissertation are edited by the author.)

Conclusions and Results of the Research

The history of orchestral clarinet playing

Single-reed instruments found their way to the European art music three centuries ago. Among these the clarinet had the same phases of development as all new instruments: while composers tried to find and make use of the versatility of the clarinet, several different schools treated the theoretical and practical side of clarinet playing, remarkable artists with huge importance and influence also appeared, thus the editing and the publishing of the works for clarinet started. The development of the instrument by the musical instrument industry still goes on today.

According to the views of Bence Szabolcsi the choir was used as a model in the developing process of the symphonic orchestra. Due to this, the three kinds of woodwind instruments used in a Baroque orchestra (flute, oboe, bassoon) needed to be completed with a fourth one to reach the sonoric perfection of the classic four-part choir.

Alongside with their common properties, chalumeaus and clarinets vary the most in sounding and playing style. Both of these instruments were in use until the middle of the 18th century. By this time, due to its sonoric and technical limits, the chalumeau gradually started to lose its importance in art music and returned to its original function as a folk music instrument.

The main reason of the popularity of the chalumeau as an orchestral instrument was its variability of tones and that its sound is similar to the human voice. Chalumeaus were used mostly in richly instrumented oratoric works and in operas; they appear in the most intimate arias in masses and oratorios and they are present as accompanying instruments in the pastoral scenes of operatic works.

Similarly to the chalumeau, the clarinet was a single-reed instrument, but its body ended in its lower part in a flared bell. In the beginning the clarinet parts in orchestral works were composed in a manner that they could be substituted by trumpets. Later on the trumpet was not used as a melodic instrument for clarino playing anymore and its role was restricted to give emphasis and strength to the orchestral sound. This opened new perspectives for the clarinet: the orchestral taste of the age found it more appropriate to use lower pitched instruments instead of the sharp sounding, high D and C clarinets. From this time on, A and B \flat clarinets are considered to have the most proper sound.

In the court orchestra of Mannheim the clarinet was not used anymore as a substitute of the trumpet but as a lyrical, singing instrument, often an alternative to oboe. Clarinets as singing instruments were used in pairs, and meanwhile the virtuoso parts became less common in the composing practice, and the tones of the lower register were used even more often as a sufficient accompaniment on its own, playing broken chords.

This new way of the orchestral usage of clarinets found in the mid-18th century was propagated/advocated by the Classical Triad of Vienna, Haydn, Mozart and Beethoven, and this definitely determined the role of the clarinet in the symphonic orchestra. Wolfgang Amadeus Mozart was the first to use the clarinet as a solo instrument in a symphonic orchestra.

In the Romantic period, as orchestras became enormous in size and volume and as technical requirements became more complex in order to develop the possibilities of timbre, it became necessary to make innovations regarding to clarinets as well. The objective was to make a clarinet that in dynamics can compete even the whole orchestra, that sounds perfectly clear in

all its registers and that is agile enough to overcome all technical difficulties. Regarding the mechanics, intonation and the development of sound quality, the Riga-born Ivan Müller, who constructed a 13-key clarinet, has the greatest merits,.

From the 1850s the significance of the clarinet in symphonic orchestras increased even more. As composers started to apply a bigger clarinet section, they became able to use the widest range of dynamics from the most subtle piano to the most pervasive fortissimo. In the meantime, the variously pitched clarinets could express a vast diversity of tones. After Mozart's death the basset horn took its place again next to the E \flat and bass clarinets in the orchestra.

In 20th century music started the tendency of the rise of the number of percussion instruments and of the rearranging of the earlier orchestral structure as a whole. This rearrangement made some parts of the orchestra stronger, while some other parts dropped off. In order to reach vigorous sonic effects, sometimes the inner proportions of the clarinet section were changed so that the extraordinary types of clarinets could take more important roles. The common sound of the clarinet could not satisfy more the composers of the 20th century, therefore they started to search for the possibilities of making new sounds with the instrument.

The Sound of the Clarinet

As we know from physics, the tone of a sound is determined by the presence and intensity of the different overtones. Besides the number and the intensity of the overtones, the sound character of the clarinet is affected by its cylindrical bore, the single-reed vibration and the technical skills of the individual player. The range of the clarinet can be divided into registers in several ways, and each register has its specific sound qualities, making different effects in every possible orchestral setting. The sound character of the clarinet is substantially influenced by the tuning. Each peculiar tone of the different low, standard and high pitch clarinets enrich and color the sound of an orchestra in its own way. The acoustical structure of the differently pitched clarinet types is essentially the same; the differences regarding the proportion of the overtones are caused by the different scale lengths. The variability of the tone of the clarinet in an orchestral environment was and is utilized even today by composers on the basis of the qualities of the different registers and different pitches.

The Low or Chalumeau Register

The low register of the clarinet is called chalumeau register after its ancestor. It covers three quarters of the basic scale of the clarinet, from E₃ till F₄. The tone of this register – especially that of the lowest fifth – is rich and dark; even darker than the tone of the bassoon in the same range. Regarding dynamics, this register has a variability that no other wind instrument can approximate: it can bring out the widest range of softness, even starting „from nothing” or fading out „to nothing”. In this piano range the tone is especially tender, soft and warm. In the louder ranges its tone tends to be hard and sharp.

The possibilities of the chalumeau register in sound and in articulation as well as its capabilities of portrayal and to depict situations were used in various ways by the composers of the symphonic literature.

The Middle Register

The middle register of the clarinet covers the higher notes of its basic scale from F₄[#] till A₄[#] (from G₄^b till B₄^b). These pitches sound the worst on a clarinet: the tone is neutral, weak and poor, while these pitches require advanced skills in intonation and finger technique. The limits of this register are caused by the low number of overtones present in the sound compared to the same pitches of other woodwind instruments. In a way we are already over the threshold of the basic scale as these pitches can be played using so-called extra keys (introduced to extend the range of the basic scale) that are unable to produce an overtone-rich sound. Despite these unfavorable factors these pitches are widely used in the orchestral literature even in solo or inner parts or as important notes in chords.

The High Register

The high register is also called the clarino register due to its role in the music of the Baroque and Romantic era. It covers the range between H₄ and G₆. This register is the richest and the most balanced range of the clarinet. Even if (regarding the acoustic structure of the instrument) it consists of the first and second degree overtones of the basic scale, its full and bright sound makes the impression that these are fundamentals. Thus these abilities were utilized so widely by composers during the orchestral career of the clarinet: the most influential, interesting and beautiful clarinet parts of the last three centuries were written for this register. Because of its range, the pitches of the high register are mostly used in the parts of the first clarinet. Of course they are present in second and third clarinet parts as well, but considerably less.

The Top Register

The pitches of the top register are rarely used in the classical orchestral repertoire. This register covers the range from G \sharp_6 till C $_7$, and it is used only occasionally for making special effects.

Alternating Instruments

The group of alternating instruments consists of the low and high pitched instruments of the clarinet family. Comparing to the other woodwind instruments of the orchestra, clarinets have the most variations. High A \flat and F clarinets are rare, but D and E \flat clarinets are widely used in classical music. Regarding the low pitched versions, the usage of the basset horn can be linked only to some composers, while the bass clarinet is widely used from the beginning of the Romantic period by most. Contrabass clarinets are rarely used. The concept of alternating instruments refers to the fact that in an orchestra mostly one player (sometimes more) of the standard pitched clarinet alternates its original instrument to a lower or higher pitched one. Today the standard practice is that the second clarinetists alter.

The High D and E \flat Clarinets

Compared to standard pitched ones, the intensity of the high range of D and E \flat clarinets is significantly higher: the difference is 25 dB at 1000 Hz. In the meanwhile, the intensity of the even and odd harmonics in the low and the middle register is lower, making a nasal sound. In the high register the tone of high pitched clarinets is very bright, sometimes even unpleasantly so. The possibilities of dynamic expression are wider comparing to standard pitched clarinets. Players have a more secure control on the piano range, and the tone of the loud range – especially in the high register – can be so hard and sharp that is clearly audible through a big symphonic orchestra as well. The technical construction of high pitched clarinets are exactly the same as that of the standard pitched ones, and the acoustic system of making sound also works accordingly.

The Bass Clarinet

Regarding acoustics and mechanics, the technical construction of the bass clarinet is similar to the standard pitched instruments. From the available A and B \flat variations the latter one became common. The basic scale of both types of the bass clarinet is one octave lower than those of the standard ones. Generally speaking, the tone of bass clarinets is very similar to the standard ones, but the fact that the one octave lower pitch causes a significant difference of

sound comparing especially the same pitches playable on both instruments also have to be taken into consideration.