AN ANALYSIS OF GERMAN AND FRENCH CLARİNET SYSTEMS IN TERMS OF THE DIFFERENCES IN TONE AND PLAYING TECHNIQUES

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Abstract:

People who had significant contributions to the present state of clarinet were inventor of the instrument German producer Johann Christoph Denner, Ivan Müller, Antoine Joseph Adolphe Sax, Oskar Oehler, Louis Auguste Buffet and Hyacinthe Eleonore Klose' who maintained this tradition. These producers looked for the ways of solutions for the technical problems of clarinet during the development process of clarinet and tried different methods related to the subject. By means of the contributions of these producers, two different clarinet systems emerged. Today these two systems are used. One of these is French system called Boehm and the other is the German system called Oehler. These two systems have some technical and musical differences and due to these differences one of them is preferred by music cults in different countries particularly Germany and France. Additionally, clarinetists choose to use one of these two systems in accordance with their musical and technical preferences.The aim of the study is to search for the differences in tone and playing techniques of German and French systems by analyzing them. Afterwards, these two systems are going to be analyzed in terms of playing techniques, mechanism and the accessories used.

Key words: *Clarinet, Oscar Oehler, Oehler System, Thebald Boehm, Boehm System.*

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INTRODUCTION

German producer Johann Christoph Denner (1655-1707) had developed the ancestor of blowpipe notably and created the first clarinet. Later, producers such as Ivan Müller (1786-1854), Theobald Boehm (1784-1881), Louis Auguste Buffet (1789-1864), Hyacinthe Eleonore Klose (1808-1880), Antoine Joseph Adolphe Sax (1814-1894), Carl Baermann (1810-1885), Georg Ottensteiner (ca. 1860-1879), Robert Stark (1847-1922), Anton Osterried (1879-1895) contributed to the improvement of clarinet significantly; thanks to them the number of pitches increased gradually and important changes were applied on its structure (Akkoca, 2004: p. 10-19).

One of the producers who provided the most important improvements to the clarinet mechanism is I. Müller produced 13-pitched clarinet in 1809 by adding 7 more pitches to the 6-

pitched clarinet of that time. Especially his thirteen-pitched instrument became a model for his successor German and Australian clarinet producers even in 20th century (Rice, 2003: p. 70). Berliner producer O. Oehler applied significant innovations to the instrument developed by I. Müller. He perfected this developed clarinet by changing the shapes and positions of all the pitches and "Oehler Clarinet" which constitutes the German cult today occurred (Akkoca, 2004: p. 17).

Later, flute virtuoso and producer born in Bavaria in 1794 Theobald Boehm (1794-1881) presented his invention Boehm Flute which shattered the world of music. In the beginning of 19th century Theobald Boehm improved the places of finger holes and pitch mechanism by developing a new finger system. T. Boehm had applied this system on flute first and getting inspired from him, some clarinetists and producers thought that this system of Boehm could be used for clarinet, as well. People who adapted Boehm's system to the clarinet in 1844 were H.E. Klose and L.A. Buffet. These two producers adapted the ring pitches and the details of some finger positions of "Boehm Flute" to clarinet, whose acoustic is totally different, in 1844 and in this way "Boehm Clarinet" which is also known as French cult today occurred (Akkoca, 2004: p. 15-16).

PARTS OF MODERN CLARINET

Since Denner, many instrument makers experimented on the construction of the clarinet. Although some of these experiments were unsuccessful, some others led to first examples of the parts and materials being used today. Modern clarinet has five main parts: mouthpiece, barrel, upper joint, lower joint, and bell (see figure 1). Other than these parts, there are smaller pieces and accessories such as reed, pads, corks, screws, and strings (Terlikol, 2006: p. 73).

Figure 1: Parts of the Clarinet

GERMAN CLARINET AND FRENCH CLARINET

The Oehler and Boehm clarinets show many differences in mechanical and musical aspects. The mechanical differences (such as measurement of different parts, placement of the keys, etc.) can be observed by examining the two instruments piece by piece:

Mouthpiece, Reed, and Ligature

Mouthpiece is one of the most important parts of the clarinet (see fig. 2) It affects many aspects of playing such as tone production, articulation, dynamics, register, and endurance. It is vital for a clarinet player to find a mouthpiece that they are comfortable playing with and works well with their instrument.

Sound is created in the mouthpiece where the reed it attached with the help of a ligature. The air blown into the mouthpiece puts the reed into vibration and produces the sound. Mouthpieces can be made of different materials such as glass, porcelain, ivory, and metal (Terlikol, 2006: p.75). However, today most of the clarinet players prefer ebony mouthpieces.

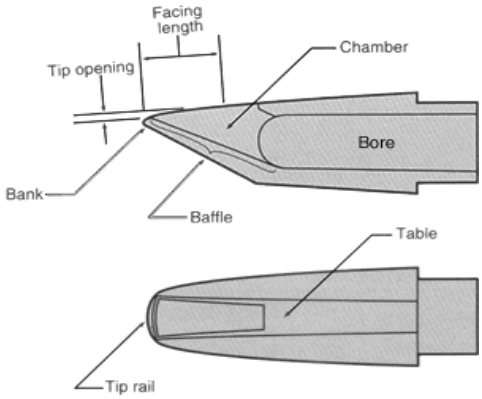

Figure 2: Clarinet Mouthpiece

Both the mouthpiece and reed of the German and French clarinets show some subtle differences. The mouthpiece of German clarinet is slightly longer and the exterior circumference at the bottom is a bit larger than the French. Generally, it also has a more concave baffle and a longer table (Feller, 1984: 25).

French players usually prefer to attach the reed to the mouthpiece with metal ligature (see fig. 3) which creates lighter pressure on the reed and produces greater resiliency. German players, on the other hand, prefer wrapping a string or twine around the reed (see fig. 4); they claim that this procedure allows a more even pressure on the reed and maximizes its resonating qualities (Feller, 1984: p. 26). The mouthpieces made exclusively for German string ligature have a shoulder and a row of notches on the conical outside of the lower half of the mouthpiece. These features make it easier to start the string winding process (Wendl, 2000).

Figure 3: Mouthpiece with Metal Ligature

Figure 4: Mouthpiece with String Ligature

Barrel

Barrel is the part of the clarinet that connects the mouthpiece and the upper joint (see fig. 5). The tuning of the instrument is done by opening or closing the gap between the barrel and the upper joint. Also for tuning, instrument makers produce barrels in different lengths. The barrels that come with the instruments are made of the same material as the instrument; however, instrument makers also produce barrels of different materials such as hard rubber or plastic.

The sizes of German and French barrels mainly differ in length. The French barrels are generally between 62mm and 68mm in length (Hoeprich, 2008: p.3); on the other hand, the German barrels are usually between 54mm and 56mm long, but they can be up to 60mm. Since the exterior circumference at the bottom of the German mouthpiece is a bit larger than the French, consequently, the German barrels have a slightly larger opening at the top (Feller, 1984: 25).

Figure 5: Clarinet Barrels

Upper Joint

The main body of the clarinet has two parts: upper and lower joints. There are three tone holes that are used with the left hand fingers on the upper joint. There are four keys on the right hand side of the upper joint that are controlled with the right hand index finger. Register key, which is the key that allows the clarinet play a 12^{th} higher, is operated by the thumb of the left hand.

This part of the clarinet is also different in Oehler and Boehm instruments (see fig. 6, 7). On the upper joint, the German clarinet has a total of ten keys, while the French clarinet has nine (Sındır, 2011: p. 70). The register key on the German clarinet is located on the upper left hand

side; however, on the French clarinet it is located under side of the bore. The F/C tone hole in the German clarinet does not have a ring mechanism, and it is slightly closer to the register key than it is in the French clarinet. The third tone hole in the German clarinet has a ring mechanism and it is in line with the first and second holes; on the other hand, the same hole on the French clarinet is placed towards the left side of the player and it does not have a ring mechanism. Also, the distance between the first, second, and third tone holes on the German clarinet is larger than it is in the French clarinet, requiring a wider finger spread (Feller, 1984: p. 24).

Figure 6: Upper Joint in Oehler System

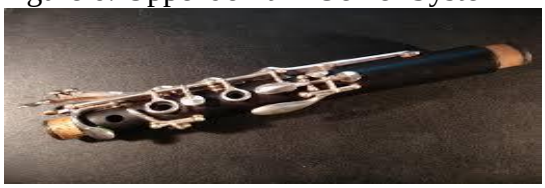

Figure 7: Upper Joint in Boehm System

Lower joint

Lower Joint in Boehm models (see fig. 8) consists of eight pitches and three rings. Four long pitches on the right hand side of the clarinet are controlled by right hand little finger. Two long pitches on the upper left hand side of the clarinet are controlled by left hand little finger. There is an additional G sharp pitch on this part on some Boehm models (Hoeprich, 2008: p. 3).

When Boehm model lower joint is compared to Oehler model (see fig. 9), there are two pitches and two rings on the right bottom part of Oehler model. Just like Boehm model, there are two pitches on the left hand side of Oehler model. However, two assisting pitches are added to these pitches on some models. Both Boehm and Oehler Clarinets have crutch on the back to carry the clarinet (Sındır, 2011: p.70).

Figure 8: Lower Joint in Boehm System

Figure 9: Lower Joint in Oehler System

Bell

This part of the clarinet is quite significant in terms of the performance. Bell is like a coni (see fig. 10) and functions to extend the instrument. It prevents metallic resonance of low pitch sounds of the clarinet. There is an additional pitch, developed by Oskar Oehler and controlled by thumb, to sharp the lowest pitched F and D notes on some German Clarinets (Hoeprich, 2008: p. 212). This part of the German clarinet is produced longer than the French clarinet.

Figure 10: Clarinet Bell

One of the most important characteristics that distinguish German Oehler system model from French Boehm system model is it has more pitches (see fig. 11). However, due to having more pitches, German system has a lot of sliding and fork finger using methods. Grabbing the pitches is easier in Boehm system and it has more finger using methods when compared to German system. Generally, right and left hand little fingers are used alternatively in Oehler system just like Boehm instruments (Barrett, 1999).

Since the place of the reed of Oehler system mouthpiece is more closed and narrower, reeds used on Boehm clarinets are lighter and larger than the reeds used on Oehler clarinets. When we compare the tone holes; the holes on the Boehm clarinet is smaller than the holes on Oehler clarinet (Akkoca, 2004: p.18). Additionally, Oehler system finger holes are placed more distantly than the finger holes on Boehm system.

Figure 11: Oehler Clarinet/Boehm Clarinet

CONCLUSION

There are two clarinet systems occurring as a result of the works of instrument makers as German and French used in present day. Ivan Müller's in German system and Louis Auguste Buffet and Hyacinte Elenore Klose's instruments in French system were accepted as the base. Boehm system, especially preferred by the professionals, has been a clarinet model performed in all over the world outside Germany and Australia due to the technical conveniences provided by clarinet mechanism and methods of finger using. When many of the resources are analyzed, it can be seen that Boehm mechanism can easily be understood by the player. Boehm mechanism enables the player to play a musical scale by moving his/her fingers in sequence. German Oehler system clarinet is a hard instrument to play because of its complicated pitch structure. Due to complicated pitch structure of this system, fork and sliding finger methods become hard to use. Despite all these difficulties Oehler system clarinet players has continued to use this system to protect their traditions. In today's classical music, only German Oehler and French Boehm models are used. However, Boehm French system is preferred almost all over the worlds due to its advantages. Both of the systems today are created in the same quality.

In this study, differences in the tone and playing techniques of German and French systems are mentioned and the mechanism, playing techniques and the accessories of these two systems were analyzed. It has been thought that this research is going to present a perspective for the musicians, especially the clarinetists of present day.

REFERENCE

Akkoca, İ. (2004). *Klarnet Ailesi ve Repertuvarı.* Anadolu Üniversitesi Sosyal Bilimler Enstitüsü, Yayınlanmamış Yüksek Lisans Tezi.

Barrett, G. (1999). *Development of the Clarinet.* Available online at: http://www.niu.edu/gbarrett/resources/development.shtml (December 01, 2017).

Feller, D. (1984). *Conparison of the Oehler and Boemh clarinet fingering system.* Clarinet; Summer, Vol. 11 Issue 4, p24, Periodical Article. Available online at: http://connection.ebscohost.com/c/articles/59662890/comparison-oehler-boehm-clarinet-fingering-systems (April 12, 2017).

Hoeprich, E. (2008). *The Clarinet.* Birinci Basım. Norfolk: Yale University Press.

Rice, Albert. (2003). *Clarinet in the Classical Period. Birinci Basım.* Carry, NC: Oxford University Press

Sındır, E. (2011). *Alman ve Fransız Klarnet Sistemlerinin Gelişim Süreci.* Anadolu Üniversitesi Güzel Sanatlar Enstitüsü, Yayınlanmamış Yüksek Lisans Tezi.

Terlikol, G. (2006). *Klarnette Boehm mekanizmasının Bulunuşu ve İşleyiş Biçimi.* Çukurova Üniversitesi Sosyal Bilimler Enstitüsü Müzik Anasanat Dalı, Yayınlanmamış Yüksek Lisans Tezi.

Wendl, A. (2000). *The German String Ligature*. Available online at: http://www.woodwind.org/clarinet/Uploads/strnglig.html (December 01, 2017).

ILLUSTRATED REFERENCE

Clarinet. Available Online at: http://www.musicshowcaseonline.com/resources_instrumentCareWoodwind.asp (May 14, 2017).

Mouthpiece. Available Online at: http://www.mouthpieceexpress.com/specshub/anatomy_ww.html (April 27, 2017).

Mouthpiece. Available Online at: https://www.google.com.tr/search?q=clarinet++Mouthpieces&dcr=0&source=lnms&tbm=isch&sa=X&ved=0ahUKEwi_3rz59O7XAhVFWRoKHfvXCMoQ_AUIDCgD&biw=1064&bih=667#imgrc=z7tYIczkzl2UIM: (December 04, 2017).

Mouthpiece. Available Online at: https://www.google.com.tr/search?q=French+players+usually+prefer+to+attach+the+reed+to+the+mouthpiece+with+metal+ligature&dcr=0&source=lnms&tbm=isch&sa=X&ved=0ahUKEwjojZ6bruzXAhXQaVAKHX6gCnQQ_AUICigB&biw=1064&bih=667 (April 04, 2017).

Barrel. Available Online at: http://www.jurareeds.com/accessories.htm (April 27, 2017).

Upper Joint. Available Online at: http://www.sfoxclarinets.com/immediate.html (December 04, 2017).

Upper Joint. Available Online at: https://www.google.com.tr/search?dcr=0&tbm=isch&q=boehm+system+clarinet+upper+joint+lo

wer+joint&spell=1&sa=X&ved=0ahUKEwjBmoaY75nYAhWEh7QKHYdNCGAQBQgkKAA&biw=1064&bih=667&dpr=1#imgrc=bXOfdKxIW40EwM: (December 04, 2017).

Lower Joint. Available Online at: https://www.google.com.tr/search?dcr=0&tbm=isch&q=boehm+system+clarinet+upper+joint+lower+joint&spell=1&sa=X&ved=0ahUKEwjBmoaY75nYAhWEh7QKHYdNCGAQBQgkKAA&biw=1064&bih=667&dpr=1#imgrc=bXOfdKxIW40EwM: (December 04, 2017).

Lower Joint. Available Online at: http://www.sfoxclarinets.com/immediate.html (December 04, 2017).

Bell. Available Online at: https://www.google.com.tr/search?q=clarinet+bells&dcr=0&tbm=isch&tbo=u&source=univ&sa=X&ved=0ahUKEwjk0LvexfDXAhWOGuwKHX3PBl8QsAQIQA&biw=1064&bih=667#imgrc=AFhH4vUYspwBPM: (December 04, 2017).

Clarinets. Available online at: http://www.the-clarinets.net/english/clarinet-keys.html (April 27, 2017).