Great Oboes of the Twentieth Century

The Collaboration of W. Hans Moennig and Marcel Tabuteau

By Shelly Sublett and Alvin Swiney

[Editor's Note:

***Alvin Swiney** is the owner of Affordable Music Company located in Virginia Beach, VA. As an apprentice, he worked extensively with the renowned woodwind technician, W. Hans Moennig. Mr. Swiney specializes in tuning, customized repairs, and sales of oboes, English horns, and bassoons. He has an extensive list of clients associated with major orchestras, and serves as a consultant to numerous American and European instrument makers. E-mail address: sfdr@aol.com*

***Shelly Sublett** is the owner of Sublett Woodwind Repair located in Memphis, TN. She apprenticed with Alvin Swiney and James Keyes, formerly of the Woodwind Clinic. Ms. Sublett has been English horn and assistant principal oboe with the Memphis Symphony Orchestra since 1985, and is currently instructor of oboe at the University of Central Arkansas. E-mail address: shellysublett@ibm.net]*

PREFACE

In 1978, Alvin Swiney was accepted as the last apprentice of the world renowned repairman, William Hans Moennig. Unlike many repair students who were primarily interested in learning how to change pads and doing basic adjustments, he was more interested in learning some of the acoustical secrets that Mr. Moennig had developed in conjunction with some of the great wind players of our time. Specifically, the Lorée oboe with Marcel Tabuteau, the Buffet clarinet with Ralph McLane, the Heckel bassoon with Walter Guetter, and the Powell flute with William Kincaid.

HISTORY

William Hans Moennig was born in 1903 in Markneukirchen, Germany. He continued his family's tradition of instrument making. In 1923, he immigrated to Providence, Rhode Island to accept employment with the Pruefer Company. Later he moved to Boston, Massachusetts to work as a flute maker with the Cundy-Bettony Company, and subsequently with the William S. Haynes Flute Company.

His first cousin, Walter Guetter, was principal bassoon of the Chicago Symphony at the age of 15. When the great conductor, Leopold Stokowski, heard his playing, he offered him a position as principal bassoon with the Philadelphia Orchestra with a substantial raise. Because Maestro Stokowski had a history of firing bassoonists due to flawed entrances caused by gurgling tone holes, Mr. Guetter was fearful that he might lose his job as well. He enlisted the help of Mr. Moennig. Mr. Guetter explained the problem to Mr. Moennig and asked if he could invent a tone hole liner that would extend into the bore and prevent water from running into the finger holes of the bassoon. Using sterling silver piccolo tubing from the flute factory, Mr. Moennig and Mr. Guetter developed the first water tubes through trial and error.

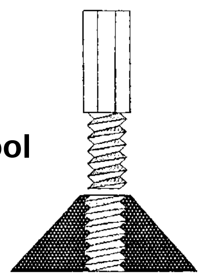
After hearing of the project's big success, the principal woodwind players of the Philadelphia Orchestra guaranteed Mr. Moennig an annual salary if he would leave Boston and establish a repair shop in Philadelphia. He opened his establishment in 1926.

At this point, he began collaborating with the great oboist, Marcel Tabuteau. Initially, the greatest problem Mr. Tabuteau had was getting his oboe to seal. Because the French makers were using bladder skin pads at that time on the top joint, the oboe would not remain in adjustment. The felt in the pads would expand and contract with climate variations causing the oboe to leak. Mr. Moennig suggested that Mr. Tabuteau use cork pads on the top joint. Mr. Tabuteau thought it was an absurd idea and would not hear of it. After traveling to New York with the orchestra and once again fighting with the weather and leaking pads, Mr. Tabuteau finally gave in and had Mr. Moennig install all cork pads on his oboe. After trying the newly installed cork pads Mr.Tabuteau exclaimed in his heavy French accent, "First time in my life the oboe has ever sealed!" This event marked the beginning of a relationship between two great men that would change the world of oboe playing.

In addition to sealing the oboe, Mr. Tabuteau was also meticulous about adjustments, great intonation, and maximum resonance. He had several oboes dating before 1900. Some of the oboes had been used by his former teacher, Georges Gillet. There were certain characteristics about these oboes that Mr. Tabuteau favored. Those characteristics included a dark covered sound, enhanced resonance, a responsive low register, and a lyrical upper register. Mr. Moennig began to measure the tone hole, bore, and bell perturbations (geometric variations). Because some of the contemporary oboes did not match the older prototypes that Mr. Tabuteau possessed, he asked Mr. Moennig to superimpose the tone hole dimensions from these older oboes to those being manufactured in the 1920s. Mr. Moennig designed tone hole reamers and shapers (Figure 1) that would replicate Mr. Tabuteau's preferred prototypes.

Figure 1.

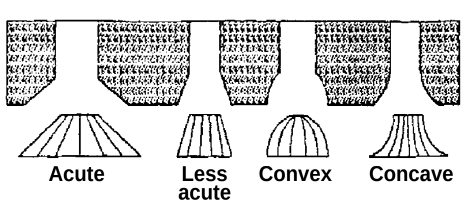
Undercutting Tool



With the introduction of the 1906 Loree plateau model oboe (covered keys instead of open rings), the tone hole heights, diameters, and shapes were changed. These alterations created new problems in the tuning of the oboe. Mr. Tabuteau and Mr. Moennig worked together closely to resolve these intonation problems. Mr. Tabuteau was Mr. Moennig's most critical oboe tester. As Mr. Moennig would enlarge or reduce tone hole dimensions Mr. Tabuteau would test the work continuously until they discovered the optimum dimensions. There was still a considerable variance in the playing characteristics from one oboe to the next. To further explore the intricate internal design of the oboe, Mr. Moennig made impressions of the tone holes using dental wax. This allowed him to see the subtle variations in the internal construction of the oboe. These impressions introduced a new perspective and understanding of the oboe. (Figure 2)

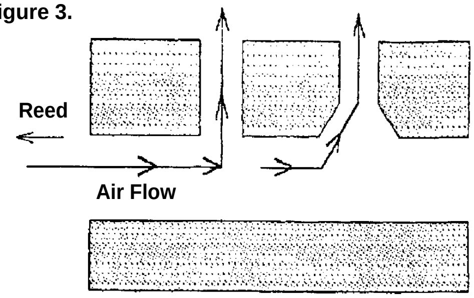
Figure 2.

Cutter Shapes



According to Mr. Moennig, each tone hole has its own acoustical design profile. The function of each tone hole must be defined to establish its structural profile. The biggest revelation that the impressions disclosed was the use of undercutting or frazing in the tone hole. Undercutting is a beveling or chamfering of the tone hole at the section of the instrument wall closest to the bore. Depending on the shape, size, angle, and amount, undercutting serves multiple purposes. (Figure 3-figures for angulation and penetration levels)

Figure 3.



Effects of Undercutting

The use of these factors will vary in different tone holes based on the achievement of resonance, timbre, intonation, and response. Specifically, the oboe is divided into three sections: the conduit

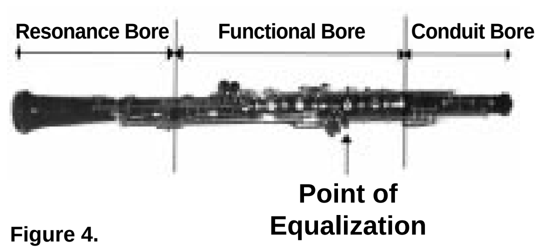


Figure 4.

bore, the functional bore, and the resonance bore. (Figure 4-illustration of the acoustical segments of the oboe) The conduit bore carries the sound from the reed to the functional bore. The functional bore starts right above the half hole and extends down to the low D tone hole. The resonance bore starts at the low D tone hole and continues to the end of the bell. The functional bore will greatly affect the pitch of the adjacent tone holes. The resonance bore is used to enhance the resonance, to filter destructive overtones, and to amplify the volume of the oboe.

Another feature of the oboe is the point of equalization. It is usually located just above the G-sharp tone hole. The point of equalization is where the wall thickness and bore diameter are equal. If the bore is enlarged above the point of equalization, the pitch level of the adjacent notes will become sharper. If the bore size is decreased above the point of equalization, the pitch level of the adjacent notes will become flatter. Below the point of equalization, the rules are reversed. Enlarging the bore below the point of equalization will make the adjacent notes play flatter. Decreasing the bore below the point of equalization will make the notes play sharper.

In order to select a tone hole design profile, the pitch, timbre, and octave relationship must be analyzed as well as the overtone partials. If we have an oboe that is stuffy below the point of equalization, we can increase the undercutting by using an acute tool with a 40% penetration rate. (Figure 5) This will free up the given note without changing its pitch. If we have a note below the

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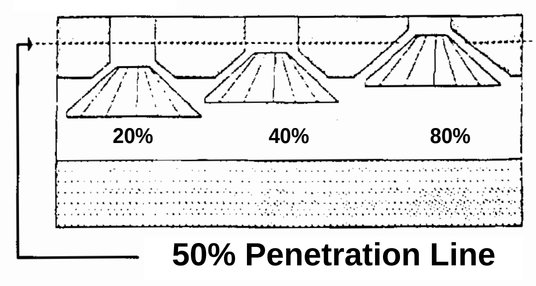

point of equalization that is flat, we can use the acute tool with more penetration. This will raise the pitch of the lower octave without changing the pitch of the upper octave. In the resonance bore, low C, B, and B-flat are used to extend the scale range of the oboe and are not overblown with the octave key. On those particular notes we can use the less acute tool with an 80% - 90% penetration rate to obtain maximum resonance.

On the upper joint, if a particular note is flat, we can use a spherical shaped tool with a 20% penetration rate to bring up the pitch of that given note. If the timbre is a problem, we can use an acute tool with a 30% penetration rate to correct the color of the lower octave without destroying the pitch of its octave. If a particular note is flat in both octaves, we can use the acute tool with a greater penetration rate to bring the pitch up in both octaves, and yet keep the interval true. All of these undercutting techniques were employed by Mr. Tabuteau and Mr. Moennig to perfect the inconsistent scale of the oboe. There are over one thousand variations that can be used to obtain the desired timbre and pitch level of a given note as it relates to its overtones at any given time. Variations can be configured by using different tool shapes, tone hole diameters, chimney heights, undercutting penetration, and tool angulation. In addition to changing tone hole sizes, Mr. Tabuteau had Mr. Moennig modify the octave vent lengths and diameters to enhance the resonance of the high register.

As oboes continued to evolve in the twentieth century, the need for consistency and stability became more important. For that reason, Mr. Tabuteau insisted that each new oboe be measured, analyzed, and set up according to the professional standards demanded by the great conductors of the twentieth century.

In addition to the tuning of the oboe, Mr. Tabuteau insisted on having an instrument that was hermetically sealed for maximum response. To check the air seal of the oboe, Mr. Moennig would hold the top joint in playing position. By wedging his right forefinger in the upper tenon socket and fingering G, he would place his lips on the reed well and pull an air vacuum. He would finger G-sharp and begin timing the suction by counting the number of seconds before the G-sharp pad key would spring open. Mr. Tabuteau insisted that the G-sharp pad key remain closed for a minimum of thirty seconds.

On the lower joint, while holding the instrument in playing position, Mr. Moennig would place the palm of his hand against the tenon and finger low C. He would tilt his head slightly to bypass the low B and B-flat finger keys and then place his lips against the upper socket. He depressed the low B pad key with his left forefinger and pulled an air vacuum. Mr. Tabuteau insisted that the low B pad key remained closed for fifteen to twenty seconds.

Many current oboe manufacturers only require a two to five second vacuum standard in order to save time and cut production costs. Unfortunately these production decisions are often made at the player's expense. By applying the proven techniques established by William Hans Moennig and Marcel Tabuteau in the 1930s, the performance of contemporary oboes can be improved further by refining the timbre, perfecting the pitch, enhancing the response, therefore maximizing playing efficiency. ❖