

PERFORMANCE TECHNIQUE ON BRASS INSTRUMENTS DURING THE SEVENTEENTH CENTURY

Arnold Fromme

Little primary evidence exists concerning techniques of performance on brass instruments before the nineteenth century. Very few original instruments have survived, and most of the extant instruments have been tampered with to such an extent that they are no longer in their original playing condition. Not only are there almost no treatises on brass methods from this era, but the guilds and other professional organizations of the day maintained policies of jealous secrecy regarding playing techniques.¹ The brass were the instruments of the professionals. There did not exist a large body of amateur and dilettante brass players, as there did players of the viols, lutes, and recorders, who forced a wider dispersal of publications and information concerning those instruments.

To make matters worse, there have been definite breaks in continuity in most of the schools and areas of brass performance, as well as revolutionary changes and developments. In fact, contemporary brass instruments and today's playing technique can be quite misleading if treated as evidence, or even as vestiges, of pre-eighteenth-century techniques and performance concepts.

This study is an attempt to collate existing primary evidence

¹ Johann Ernst Altenburg, *Versuch an einer Anleitung der Trompeter und Pauken-Kunst* (Halle, 1795), English partial reprint, *Brass Quarterly*, Vol. 1 (1958), p. 94; Caldwell Titcomb, "Baroque Court and Military Trumpets and Kettledrums; Technique and Music," *Galpin Society Journal*, Vol. 9 (1956), (excerpt from *The Kettledrums in Western Europe: Their History Outside the Orchestra* (Cambridge, Massachusetts: Harvard University Press, 1952); Philip Bate, *The Trumpet and Trombone* (London: Ernest Benne, 1966), pp. 225-227; Manfred F. Bukofzer, *Music in the Baroque Era* (New York: 1947), pp. 405-406.

together with secondary and inferential evidence. This research was reinforced by much experimentation on actual historical instruments and their replicas, under performance conditions as close as possible to those of the sixteenth and seventeenth centuries. Also considered here are articles and writings expressing the opinions of some of today's more qualified investigators. Only Western European art instruments will be considered here, limiting the scope of this study to trumpets, trombones, and cornetts (this last includes the serpent). Although the horn actually does not belong to the period of this study, it will be mentioned briefly.

General Considerations

There are three general differences between seventeenth-century brass technique and the technique of the nineteenth and early twentieth centuries, that are more or less applicable to all the brass. Seventeenth-century brass technique included greater vocalization of tone production, the use of a large variety of relatively complex multiple tonguings, and the concept of strength and toughness of lips and rigidity of embouchure, in contrast to a recent twentieth-century emphasis on responsiveness and flexibility that implies even a certain relaxation of the lips.

The concepts are basic and need elaboration. The most important of the three is the vocalization of tone production. The clearest way to describe this would be to consider first its converse, the more mechanical nineteenth-century concept of tone production, prevalent through World War II, caused mainly by the massive volume needed in the contemporary symphony orchestra and exacerbated by the lack of extended melodic playing on the part of nineteenth-century orchestral brass.

Till recently, most brass players have been taught to form their lips into the correct embouchure, then produce a tone by blowing air through and vibrating the lips, using a tongue stroke enunciating a rather explosive "t" to articulate the note, and end the tone with a very rapid diminuendo called a taper. All this is done in a relatively mechanical way.

The early method books, however, such as Fantini's and Altenburg's, advocated the use of a variety of syllables for tone production, varying the vowels as well as the consonants.² This would imply a conscious use of the cranial cavities in a vocal manner—singing into the instrument, so to speak. One more obvious modern example of this approach is the playing of such early jazz cornetists as Louis Armstrong, Bunny Berigan, Mugsy Spanier, and others who, unschooled in the European tradition, imitated blues singers with their instruments. Similarly, all the early wind tutors admonished the player to emulate the human voice as the ideal model for all wind instruments. The result of such pseudovocal production would have been a smaller tone with less pronounced

² Girolamo Fantini, *Modo per imparare a sonare di tromba* (Frankfort, 1638); Altenburg, p. 96.

articulations, but with more connection between notes and a greater sense of line and phrasing. Notes would be thought of in groups rather than as individual entities. The tone itself would have a more singing quality, though possibly be less rich in overtones.

The second difference, the use of the large variety of multiple tonguings recommended by the early tutors, gives evidence that this lost art was a very valuable one. Whereas contemporary tonguing consists of articulating with the syllables ta, da, tu-ku, and ti-ti-ka, early tutors also recommended ta-ra, di-dl, ri-ti-ri, ki-ta-ka, le-re, and others. In addition, the softer consonant often preceded the sharper attack. This reverse tonguing was a very rare practice in nineteenth-century schooling. Curiously, it is again the jazz field that, although most likely unaware of the ancient practices, is pioneering in the reintroduction of similar techniques today. This is best exemplified by the work of such leading jazz trombonists as Urbie Green, J. J. Johnson, and Kai Winding.

As a result of experimentation with these forms, especially on early instruments, one could conjecture several possible implications for seventeenth-century techniques, among them a florid and flexible virtuosity that found its outlet in improvisation, divisions, and ornamentation; a highly developed legato technique; a custom of performing series of eighth notes with unequal durations, similar to the custom in American dance music today;³ and additional evidence of a vocal approach to performance technique.

Experiments by this writer on historic instruments have led him to conclude that these instruments were more responsive than modern instruments to the articulations of that day. Having a much smaller bore and bell, and not needing today's volume level, a seventeenth-century brass instrument required a smaller amount of air and abdominal support, permitting a clear and audible application of these multiple tonguings with very little difficulty.

As to the seventeenth-century attitude toward embouchure, there is much evidence for its being quite similar to a popular nineteenth-century approach. The possible exception would concern the cornett, which is discussed later. Only in the twentieth century has this concept begun to change. There are now nonpressure systems of playing and a general emphasis on puckering rather than stretching the lips. Lip strength is considered an erroneous concept today; there are no lip muscles, only facial muscles. Emphasis now is on the correctness of lip formation, rapid and accurate changing of lip position, and the use of support from the abdominal muscles. Responsive, soft lips are prized today rather than calloused, tough, strong lips. Yet less than fifty years

³ Jacques Hotteterre, *Principles of the Flute, Recorder, and Oboe*, David Lasocki, trans. and ed. (New York: Frederick A. Praeger Publishers, 1958), pp. 16-23; Robert Donington, "A Problem of Inequality," *Musical Quarterly*, Vol. 53 (October 1967), pp. 503-517; Arnold Dolmetsch, *The Interpretation of the Music of the Seventeenth & Eighteenth Centuries*, revised edition (London: Boosey & Hawkes, 1946), pp. 53-87.

ago, players were soaking their lips in whiskey, building up callouses, and using lip strengthening salves such as Altenburg recommended in his treatise. Both Mersenne and Altenburg spoke of painful swollen lips, violent thrusts of air, tight lips, spitting strokes of the tongue to force vibration, and the mouthpiece pressing strongly on the lips. Prints by Durer, Aldegraves, de Gheyn, Lastman, and others—all of whose artistic technique included realistic and accurate detail—show trumpeters with puffed cheeks. Mersenne's and Altenburg's admonitions against puffed cheeks would imply that this practice was generally held undesirable. The existence of puffed cheeks in those times, despite general knowledge of resulting negative effects, is evidence of the use of considerable force for tone production. This also would have contributed to a lack of flexibility in trumpet and trombone playing.

Another general consideration to be mentioned, though inconclusively, concerns the use of vibrato. Many have taken the nineteenth-century ideal of vibratoless tone production to be a vestige of the past, rooted in an ideal they would imagine was held in the sixteenth and seventeenth centuries; and there are those who maintain that vibrato was altogether unknown at those times. Actually, there is no evidence in this matter. There exist no admonitions against the use of vibrato, and its existence certainly was known, since it actually was notated in Gregorian chant and was written in as ornamentation for lute, string, and vocal music during the seventeenth century.⁴ It often has been argued that the vibrato, which is found in most folk and art music in many diverse cultures, is fairly natural to the voice and to most aerophones dependent on human air supply. In most of these cases, it is actually more difficult to eliminate than to cultivate the vibrato. It therefore cannot be said conclusively whether sixteenth- and seventeenth-century brass players used vibrato at all, or to what extent they used it if they did. On the basis of ten years of performing early music on replicas of historical instruments, this writer would guess that some natural vibrato did occur in performance.

One last general fact affecting all brass performance of the time was that the decibel level was much lower and resonance was much less than they are today, as has been verified by experiments on authentic historical instruments.

The Horn

Although the horn came into use as an art instrument at the end of the 1600s, it is properly an instrument of the eighteenth century, for its greatest use and development took place at that time. Hunting horns of various types had existed in Europe at least since the time of

⁴ Willi Apel, "Ornamentation" and "Vibrato" in *Harvard Dictionary of Music* (Cambridge, Massachusetts: Harvard University Press, 1946), pp. 544, 791; also *Groves' Dictionary of Music and Musicians* (New York: St. Martin's Press, 1955).

Charlemagne. Their first use in art music occurred during the last half of the seventeenth century, when Cavalli, Cesti, and Lully used the instrument in operas. Bach, of course, and to a lesser extent, Handel, made frequent use of the horn during the eighteenth century. According to Terry, the early orchestral horn was actually two different instruments.⁵ The first was a tightly coiled *jagdhorn* with a small bell, known second and later version a wide hooped horn with a large bell, known as the *waldhorn* or *parforcehorn*. Until well into the eighteenth century, the horn was played by trumpeters and trombonists as a secondary instrument. The mouthpiece of the horn was shallower, more cup-shaped, and had a broader rim than its modern counterpart.⁶ The horn also was held differently: the player did not place his hand in the bell.⁷ As to performance practices, the trumpeter's clarino technique was applied directly to playing the high and brilliant horn parts of the day.⁸ Any information on seventeenth-century horn technique, therefore, will be found in an investigation of the trumpet technique of this period.

The Trumpet

All general aspects of seventeenth-century brass playing apply very directly to what is known of the trumpet technique of that era. To understand the details of this technique, one must examine the equipment of the seventeenth-century trumpeter. The valveless instrument of this period, mechanically similar to today's military bugle, essentially was capable of sounding only the notes of the natural harmonic series. It had a four-octave range, though very few players could sound the single note of the bottom octave. The overall length of the tubing was up to twice as great as that of today's instrument, or almost as long as the trombone. A trumpet of the most common length, about six and one half feet, sounded a fundamental of D. Slightly less common was the E-flat instrument; a six-foot F trumpet was preferred in France. The shortest trumpets used at the time were G trumpets; the longest were the eight-foot low C and the nine-foot B-flat trumpets. All these instruments could be lowered by a half to two tones through the use of additional lengthening tubes called bits or crooks.

Although the instruments of that day were longer than modern ones, the bore of the cylindrical part of the tubing (which excludes the bell section) averaged one tenth of an inch smaller in diameter than the modern bore—a detail very significant in regard both to performance technique and acoustics. The bells of the old instruments also were smaller, with a less acute angle of final flair and a slightly different degree

⁵ Charles Sanford Terry, *Bach's Orchestra* (London: Oxford, 1958), p. 42.

⁶ Horace Fitzpatrick, "Some Historical Notes on the Horn in Germany and Austria," *Galpin Society Journal*, Vol. 16 (1963).

⁷ Terry, p. 42.

⁸ Terry, p. 42; James Murray Barbour, *Trumpets, Horns and Music* (East Lansing, Michigan: Michigan State University Press, 1964), p. 52.

of taper than are used today. There also was a slightly larger proportion of cylindrical to conical tubing. All these features made for a response and tone quality substantially different from those of today's trumpet.

The mouthpiece was also quite different. Apart from the external shape, which has no acoustical significance, most of the dimensions—such as those of the cup, depth, diameter, and bore—averaged substantially larger than those of today's mouthpiece, notwithstanding the myth that the shallow mouthpiece was the secret of the baroque mastery of the high register. The details of the shape of the mouthpiece also were significantly different.⁹ The rim was flat and broader, and the cup shape more nearly hemispherical. In addition, the inner edge of the rim and the edge of the throat, where the cup meets the backbore, were un-bevelled and sharp. Today these edges are bevelled, especially that of the throat. The rims are usually slightly rounded, and the hemispherical cup shape usually modified. Today's changes favor flexibility over high register surety.

The most interesting and widely discussed aspect of baroque trumpet technique is, of course, the clarino or high register performance. The real secret here was simply talent, specialization, and practice, although the smaller bore did help. Talent and practice are commonly understood; it remains only to discuss specialization. In those days, specialization was extreme and often controlled by guild regulations. As the specialization was one of register, some players specialized in only one note. The clarino player was restricted to the highest register of the trumpet. He practiced only in this register, completely ignoring the low notes and developing an embouchure suited only to the upper ones. The clarino technique of that day has a parallel in today's solo horn technique in that they both play essentially in the upper partials of a long instrument where the playable notes (ignoring the valves of today's horn) lie close together. Until very recently, horn players were divided into low horn and high horn specialists. During the Baroque, facility in the high fourth octave of the trumpet was not an unusual feat, but was the nature of a clarino player's profession and instrument. Geographically and over the years, the classifications of the various register specializations varied slightly and overlapped; but in general, they were called, in order of descending range, clarino I, clarino II, principal, and tocquet (in early years divided into vulgan and basso).

Other technical devices at the early trumpeter's command included sharp tonguing (especially by nonclarino players, and on repeated notes); slurring—called huffing—of two or three neighboring notes; and lip trills, performed with the help of lip and jaw motion and sometimes sustained for quite long periods.¹⁰

⁹ Eric Halfpenny, "Early British Trumpet Mouthpieces," *Galpin Society Journal*, Vol. 20 (1967); "William Bull and the English Baroque Trumpet," *Galpin Society Journal*, Vol. 15 (1962); Bate, pp. 65-71.

¹⁰ Mersenne; Altenburg, pp. 92, 116-117, 121-122; Daniel Speer, "Instruction in the Musical Art," (Ulm, Germany, 1687) in Menke, *History of the Trumpet of Bach and Handel* (London, 1934), p. 46.

Clarino players sometimes used a soft-tongued legato in the upper register. They were often able to play quite softly and lyrically, even with a quality that has been described as flute-like.¹¹ The vocalization of tone production was an important factor here, as well as the greater resistance to the breath of the instruments of those times. Trumpeters also used ornamentation and "false notes" in their performance. Melodic ornamentation was used, as well as other varieties of ornamentation more idiomatic to the instrument, such as mordent-like slurs and lip trills. False notes were those not in the natural harmonic series that could be played by means of "lipping" the natural notes, or forcing them out of pitch by means of lip and breath manipulation. Out-of-tune partials also could be tuned by this technique. Notes thus performed could not be sustained for long, and could not be played loudly or with the best tone quality. The technique was used principally for rapid passages, therefore, or for passing tones on weak beats.

The acoustical construction of the early trumpet made this lipping technique considerably easier than it would be on a modern instrument.¹² This explains some heretofore mysterious notes written for trumpet in some early works, for example those of Purcell and Lully.

Other techniques of procuring additional notes have been described or conjectured, but there is no conclusive evidence as to the general prevalence of these methods. One such technique is hand stopping, supposedly advocated by Fantini, the seventeenth-century Tuscan court trumpeter, who published the only trumpet method of that century. It is possible that the coiled *Jaegertrumpete* and the curved so-called half-moon trumpets probably were used to make possible this technique, so highly developed on the French horn during the eighteenth century. An even more questionable method of procuring additional notes is the use of the hole at the node point of the trumpet's tube, which raised the pitch a fifth. An eighteenth-century English trumpet with this device has been discovered only recently. Although this device may have existed earlier, the evidence for it is scant and inconclusive. At any rate, it did not add appreciably to the instrument's range. Wooden mutes with pierced ends were used by trumpeters at this time, and were considered part of trumpet technique. The mutes were not used for coloristic purposes as they are today, however, but to soften the instrument. They also were used to raise the trumpet's pitch one step.

One last aspect of trumpet technique is a negative one—the instrument's lack of technical flexibility. The instrument was unable to shift registers rapidly or to play wide skips or leaps, either tongued or slurred. Furthermore, no single player could cover a very wide range. All the existing etudes, treatises, and actual trumpet music of those

¹¹ Bate, pp. 122, 124, 181; Menke, pp. 55-56.

¹² Maurice Peress, "A Baroque Trumpet Discovered in Greenwich Village," *Brass Quarterly*, Vol. 4 (fall 1961, pp. 121-128; Joseph Wheeler, review of J. Murray Barbour's *Trumpets, Horns & Music*, Galpin Society Journal, Vol. 18 (1965), pp. 138-139.

times testify to these shortcomings. The cause was probably not so much the diatonic character and narrow range of the seventeenth-century polyphony, but more the structure of the instrument and its mouthpiece, as well as the rigid embouchure of the times.

A discussion of seventeenth-century trumpet technique would not be complete without some mention of the rather enigmatic slide trumpet. It was one of the earliest and most long-lived attempts to extend the chromatic ability of the natural trumpet. Unfortunately, very little is known about this instrument. It was in existence during the 1400s and survived until Bach's time, and therefore must have been at least partially successful. Yet, it not only failed to replace the natural trumpet, but remained well in the background, hardly ever being mentioned in any of the musical chronicles of the times, and presenting a rather shadowy image to history. This instrument remains largely a mystery, and most of the information about it consists of iconographical evidence and the parts composed for it by Bach.

The basic technique of the slide trumpet was identical to that of the ordinary natural trumpet; the point of departure was the manipulation of the slide and a resulting need to hold the instrument differently. There were two different types of slide trumpet—the English type, first reported in the late 1600s; and a continental or German type that first appeared in paintings in the early fifteenth century. The latter was probably the instrument used by Bach, although no conclusive description exists of Bach's "Tromba da tirarsi," and after 1795, no further mention of this instrument can be found. During the early nineteenth century, the English type did develop into a more sophisticated instrument, including a spring mechanism that automatically returned the slide to its closed position. This instrument actually supplanted the natural trumpet and remained very popular in England until the end of the nineteenth century, when it was finally replaced by the valved trumpet.

The German slide trumpet consisted of a natural instrument with an additional tube about twenty inches long that received the mouthpiece and fitted into the body of the instrument. This device was capable of adding three or four positions to the instrument, lowering it four semitones. According to a substantial body of pictorial descriptions, two fingers of the left hand held the mouthpiece firmly to the lips, while the right hand moved the body of the instrument itself back and forth upon the slide. The weight of the instrument necessitated holding it with the bell pointing towards the floor during this procedure. The shifting of positions must have been cumbersome and even jarring to the embouchure, making the application of clarino technique difficult if not impossible, and accounting for the unpopularity of the slide trumpet.

The English version seems to have been more efficient. The earliest written reference to it dates from 1691, when it was called the flat trumpet because it was held in a flat or horizontal position.¹³ Purcell

¹³ Cynthia Adams Hoover, "The Slide Trumpet of the Nineteenth Century," *Brass Quarterly*, Vol. 6 (1963).

left a good deal of music for this instrument, and a description of it can be found in a late seventeenth-century manuscript by a Dr. James Talbot, dealing with musical instruments of his times.¹⁴ The telescoping slide was in the U bend nearest the player's head (beside the mouthpiece) and was drawn towards the player, as opposed to the forward extension of the trombone slide. Neither of these trumpet slides could be made long enough to chromaticize the trumpet completely in the low register. The slide most likely was regarded as a means of rapid crooking rather than as part of the basic technique.

Despite the limitations of the Baroque trumpet, this was a golden age in the history of the instrument. The eighteenth century brought a rapid decline in the use of the trumpet and a loss of the clarino technique. To recapture this technique, today's player most likely would have to give up his contemporary instrument and performances, procure a good historic instrument and mouthpiece or their replicas, and practice on exclusively Baroque music—a very impractical suggestion. On the other hand, by careful examination of this early trumpet technique and experimentation with it, much could be found that would enhance contemporary trumpet playing as well as contemporary performance of Baroque trumpet music.

The Trombone

Of all the instruments in this study, the trombone is least understood as to its seventeenth-century playing technique. There is not a single extant treatise from the period, nor even one piece of written information. Further, a paradox exists in that, although the trombone has seen hardly any mechanical change during the last four hundred years, its modern counterpart is tonally quite a different instrument—much more so than the modern trumpet compared to its Baroque counterpart. The evidence there is concerning seventeenth-century trombone technique is of a secondary and inferential character, but nevertheless quite informative. There are four sources of information, the first of which is the instruments themselves—many still exist in European museums. Secondly, there is the awareness on the part of modern scholars of how the trombone was used in the seventeenth century, including how it was associated with other instruments; thirdly, there is the knowledge on the part of scholars of seventeenth-century cornett and trumpet technique, some of which is applicable to the trombone. Finally, there are experiments made by scholars and professional performers on actual historical instruments or replicas, in association with other instruments of the period and with performance practices and conditions matching those of the period as closely as possible. From all these sources, a clear idea has been formed of seventeenth-century trombone technique, though of course it is not completely conclusive.

¹⁴ Anthony Baines, ed., "James Talbot's Manuscript (1690)," *Galpin Society Journal*, Vol. 1 (1948).

There is practically no difference of shape, pitch, range, or mechanics between the tenor trombone of the seventeenth century and that of today. The main differences are of tubing dimension, proportion, mouthpiece, and performance technique. The older instrument had a much smaller bore and bell and a slightly larger proportion of cylindrical tubing. The principal resulting difference, as far as performance is concerned, is the tone quality. It was still basically a brass trombone sound, but much softer and less resonant—almost a bit nasal, but clear and small. There was less flexibility on the old instrument, since rapid shifts of register required a more pronounced change of embouchure than is required on today's trombone. The mouthpiece most frequently used (there is some controversy about this) was large and funnel-shaped, similar to the type used in France till recently for the small-bored orchestral trombone. The diameters of the cup and throat, however, were smaller than those of today. This mouthpiece produced less edge and brassiness than a hemispherical or cup-shaped one, and emphasized the more lyrical and mellow side of the tone quality. It also established a tendency towards a softer attack.

In addition to the tenor in B-flat, the trombone was manufactured in four other sizes.¹⁵ The alto and bass, usually in F, were made also in E-flat, and the bass could be lowered as much as a whole tone by a tuning slide located in the rear of the bell section and manipulated by an attached rod. Since the slide took so long to use, however, it could be considered only as a form of rapid crooking, and not as part of playing technique. Another crook, lengthy and convoluted, could be added to both the tenor and bass trombones to lower them a fourth. There were also the infrequently used double bass trombone in low B-flat and the descant or soprano in high B-flat. The double bass had a double slide of four tubes that, like the slide of the bass, was manipulated by a long swiveled handle like the one used until recently on the English bass trombone in G.

The alto, tenor, and bass trombones eventually evolved into a standard trio (and eventually into the nineteenth-century orchestral section) that was used together with cornetts to accompany and double choral parts. A quintet of two cornetts and the three trombones became a consort very popular among the German *Stadtpeifers* and the English Waits.

The slides of these early trombones may not have been as efficient, fast, light, and frictionless as today's chrome-plated, perfectly machined models, but they were certainly not the slow, technique-limiting, and awkward things that some authorities have surmised. Praetorius, in his *Syntagma Musicum*, described a Phileno of Munich as playing "diminutions with rapid coloraturas and jumps as is done on the viola bastarda or the cornett." This describes a technical facility that would meet most of today's orchestral requirements, and could not have been inhibited by a faulty slide. Further evidence of this can be found in some of the

¹⁵ Michael Praetorius, *Syntagma Musicum* (Wolfenbittel, 1614), pp. 31-32, Vols. 1 and 2, H. Blumenfeld, trans. and ed. (New Haven, Connecticut: 1949).

dances and sonatas of Johann Pezel (1639-1694), a Leipzig *Stadtpfeifer* who left a large quantity of tower music specifically composed for cornetts and trombones. One intrada, for example, contains many sixteenth-note figures in the trombone part. According to Donington, Sachs, and Dolmetsch, this should be performed probably at about MM 80 to the quarter note.¹⁶

Another aspect of seventeenth-century trombone technique was range. Most of the music written specifically for trombone by Pezel, Schutz, Gabrieli, Monteverdi, and others encompasses about an octave and a fifth in the middle register. Toward the end of the century, a soloistic sonata for cornett, bassoon, violin, continuo, and alto trombone by Matthias Weckmann (1619-1674), a pupil of Schutz, had a range of two octaves and a third, and included a two-octave arpeggio—close to the limits of the instrument. Praetorius knew a tenor trombonist by the name of Erhardus Borussus, who had a range from pedal A to G above high C—very respectable. Undoubtedly, this was an exceptional man, but there must have been others. The instrumental music of the time, however, seems to indicate that the use of extremes of register in ensemble playing was not the rule.

A closer look at how trombones were used orchestrally gives further insight into technique at that time. There is a large amount of literary and iconographic evidence placing trombones with choruses.¹⁷ There are even specific works in existence. This implies two things: an ability to play softly and an ability to play legato. What is known now of slide technique would indicate that the legato was soft-tongued. This type of tonguing would have been more natural to the instrument of that time than would today's heavy and sharp attack. A modern orchestral articulation on an old instrument produces an ugly, splashy attack. The soft-tongued legato also was probably easier to acquire on the early instrument than it is on a modern one. This conjecture is further supported by the fact that Gabrieli, Monteverdi, Schutz, Lassus, and others frequently combined trombones with violins, whose legato was not nearly as pure as today's and would have matched a soft-tongued brass legato very well.¹⁸ Mersenne, in his *Harmonie universelle*, further confirms this belief when he says the trombone "should be blown by a skillful musician so that it may not imitate the sounds of the trumpet, but rather assimilate itself to the sounds of the human voice," implying a distinct difference between trumpet and trombone performance styles.

As to other general practices in early brass technique, certainly vocalization of tone production and multiple tonguings were applied

¹⁶ Donington, p. 330; Curt Sachs, *Rhythm and Tempo: A Study in Music History* (New York: W. W. Norton, 1953), pp. 316, 318; Dolmetsch, p. 51.

¹⁷ Gustave Reese, *Music in the Renaissance* (New York: W. W. Norton, 1954), pp. 545, 552, 566, 570.

¹⁸ David D. Boyden, *The History of Violin Playing from Its Origins to 1761* (London: Oxford, 1965); Donington, pp. 470-474.

to trombone practice. Though no evidence specific to the question of embouchure has been found, this writer conjectures that there was possibly more variation and flexibility in trombone embouchure than trumpet embouchure, due to the trombone's association with cornetts and the influence of cornett technique and practices, as well as to the amount of soft playing required when the trombone was used with voices and strings.

One more factor affecting early trombone technique was its association with the shawms. This association dates back to the early fifteenth century, and is one of the earliest recorded uses of the trombone. Tinctoris described it in this way: "However for the lowest contratenor parts, . . . to the shawm players one adds brass players who play very harmoniously upon the kind of trumpet which is called . . . trompone [sic] in Italy and Saque Boute in France. When all these instruments are employed together it is called 'the loud music.'"¹⁹

There is a considerable amount of literary and iconographic evidence of this early dance band combination. It later evolved into the outdoor shawm band described by Anthony Baines.²⁰ Early English records of these organizations are very explicit as to instrumentation.²¹ Music for them, as well as a good deal of iconography, still exists today.

The shawms were the real loud-voiced instruments of the Renaissance. This implies that early trombone sound was on the loud and heavy side, if not a bit raucous. It is very possible that the equipment used was altered for this type of performance, and possibly trumpet-like hemispherical mouthpieces were employed together with loud playing and a more trumpet-like attack and tone production. The very fact that Mersenne found it necessary to make his admonition would testify to the existence of this style of playing. In summation it can be assumed with certainty that the seventeenth-century trombone was a very versatile and useful instrument.

The Cornett

The modern concept of orchestral instrument families or sections had not yet evolved in the sixteenth century. The beginnings of the concept, however, were apparent during the last part of the seventeenth century, though largely restricted to Italy and the opera. Otherwise, instruments were grouped according to loudness, performing technique, and possibly tunings, with instruments of the same range and volume level more or less interchangeable.

According to today's scientific manner of instrument classification, the cornett is listed as a lip-vibrated aerophone, colloquially a brass. During

¹⁹ Johannes Tinctoris, *De Inventione et Usu Musicae* (1487).

²⁰ Anthony Baines, *Woodwind Instruments and Their History* (London: Faber, 1957), pp. 268-272.

²¹ Edmund A. Bowles, "Tower Musicians in the Middle Ages," *Brass Quarterly*, Vol. 5 (1962), pp. 101-103.

the Renaissance, however, it was thought of more in terms of its fingering technique. It is interesting that in the Leipzig *Stadtppfeifer* organization of Bach's time, it was the oboist Gleditsch who played the cornett, while the trumpeter, Reiche, doubled on the horn.²² The role of the embouchure and its difficulty was recognized, however, as is evidenced by a famous quotation from the memoirs of Roger North: "Nothing comes so near or rather imitates so much an excellent voice as a cornett pipe; but the labour of the lips is too great and it is seldom well sounded."²³

All the intricacies of woodwind fingering (all woodwinds used essentially the same system as today's recorder) were used on the cornett, including half holes and cross (forked) fingerings. Combined with this shortening-hole woodwind system, cornett technique also included the overblowing system typical of the brass, whereby overtones of the fundamental are obtained by vibrating the lips at a higher frequency. The second octave of the instrument's range is procured by overblowing to the first overtone above the fundamental. The second overtone provides some alternate fingers. The third, fourth, or even fifth overtones were used by virtuosi both to extend the range as high as a fifth above the second octave and to procure additional alternate fingerings.

The cornett was quite versatile, having an unusually large range of dynamics for an instrument of that era. In addition, there was a very soft muted cornett. Besides its use in the cornett-trombone consort, the cornett is on record as having performed with the loud shawn bands and soft chamber ensembles alike. The latter included voices and such instruments as gambas and recorders. Performance with lute, violin, chorus, and organ also were commonplace.

There were at least eight different sizes and shapes of the cornett, all using the same technique. The most important was the soprano in A, having a two-octave to two-and-a-half octave range beginning with A below middle C. It usually was made of wood and covered with leather, though a few ivory, brass, and porcelain models are known. The outside of the tubing was octagonal rather than round. It was about two feet long, with a tapered external diameter going from approximately three-fourths of an inch to two inches. The cornett was slightly curved, similar to its ancient prototype, the animal horn, and had six or seven finger holes in front and a thumb hole in the rear. The mouthpiece, made of ivory, bone, or wood, was small, shallow, and extremely hemispherical with a diameter of about a half inch and a very sharp and narrow rim. The edges of the mouthpiece at the throat and inner rim were unbevelled and sharp. The backbore in the short shank was untapered and very narrow.

There also was a smaller version of this instrument in D, called the cornettino, as well as a Venetian variety, in serpentine shape and pitched

²² Terry, p. 21.

²³ Roger North, "Memoirs," in *Roger North on Music: Being a Selection from His Essays Written During the Years c. 1695-1728*, John Wilson, ed. (London, 1959).

in G; an S-shaped alto in F, and a large S-shaped tenor in D. These last two models had from one to three metal keys similar to those on the larger recorders and shawms. The tenor was sometimes called the *cornone*, *cornetto torto*, or *cornetto basso*. There also was a real bass in C, a ninth lower than the tenor, and quite large in bore and length, with a very convoluted shape giving it its name, the serpent. It had a foot-long metal crook to receive the mouthpiece, which was about the size of today's trombone mouthpiece. It had only six holes in front, though later models added several keys as well.

The soprano in A also came in an uncurved version without the leather covering or octagonal shape. Known as the straight cornett, this version was very popular in Germany. This in turn had a version with thicker walls, a smaller bore, and a mouthpiece carved directly into the top of the body of the instrument. This instrument, with much less volume, was the one known as the muted cornett mentioned previously.

The leather-covered soprano cornett in A was the most popular of the family, and one of the most important virtuoso wind instruments of the day. Its unique tone quality was particularly suitable for solos in larger ensembles or for instrumental accompaniment to choral works. It blended unusually well with the human voice, especially the soprano voice. Benvenuto Cellini boasts in his autobiography of charming the pope himself with his cornett playing. The tone quality of the cornett is a cross between those of a small trumpet and a clarinet, with a definite woody sound. Its dynamic range is from a flute-like piano to a nonbrassy but clarion-like forte still well below the decibel and resonance level of the trumpet. It is capable of edge, richness, and purity at the same time, and has an irreplaceable tone color. Mersenne's description of the cornett as "a ray of sun striking midst the shadows" is as accurate as it is poetic. The articulation ranges from trumpet-like to the most pure, lyrical, and tongueless legato.

The vocalization of tone production and the use of a great variety of multiple tonguings apply par excellence to the cornett. In addition, many examples and variations for cornett attest to its having been one of the most facile of the wind instruments. Experiments have shown that the variety of soft "l" and "r" tonguings, very difficult to apply on modern brass, work extremely well and naturally on the cornett. This is probably due to the more relaxed embouchure and the smaller and more supple volume of air used at the time.

A pure legato was possible and well may have been used, especially with voices. It is most likely, however, that a very soft tonguing was used, since this would assure immediate pitch accuracy, avoid occasional glissandi between some of the notes, and better match the trombone legato and the constant bow changing of the violins of that time. It also was an aid in delineating rhythm and phrasing within legato.

General practices applied to the horn, trombone, and trumpet embouchure do not seem to apply at all to the cornett. There is much

evidence, mainly iconographic, to the effect that the cornett usually was played on the side of the mouth. The small size and sharp rim of the mouthpiece would make this logical, since the center of the lip usually would be too thick and tender for so sharp and small an opening. In Russia, a cornett-like folk instrument called the *rozhok*, still in use, is played on the side. If this held true in the Baroque, any rigidity of embouchure definitely is precluded.

Other aspects of cornett technique tend to reinforce the concept of a relaxed embouchure. Unlike the trumpet, which was completely dependent on the lips for the changing of notes, the cornett had finger holes. The changes of embouchure within a given octave, or at least within the notes of the same harmonic partial, is negligible. Moreover, the pitches do not always lock into place, as they do on a trumpet or trombone, but have to be lipped into proper pitch. It also is known that the bottom range of the instrument was extended by at least two semitones by means of lipping the bottom note downward.²⁴ All of this would imply a relaxed and supple embouchure with more puckering and less stretching or setting of the lips.²⁵

As to fingering technique, most likely present-day recorder technique is directly applicable to the cornett. It is possible, however, that the fingers may have been bent a bit more and the holes covered by the balls of the fingers closer to their tips. This conjecture has some support from iconographic evidence as well as experimentation. It was caused by the necessity of using the hands not only to support the instrument while fingering, but also to exert some pressure of the mouthpiece upon the lips. This is completely unnecessary on the recorder, and the latter instrument's flat finger position has far less grip than slightly bent fingers would have.

Of all the instruments discussed here, the cornett alone has had a complete break with the present that lasted approximately two hundred fifty years. This greatly increases the difficulties involved in discovering the secrets of its technique. This is unfortunate, since the cornett is an instrument deserving more extensive revival.

■ Westfield, New Jersey

²⁴ Groves, "Cornett," p. 447.

²⁵ Eric Halfpenny, "Musicians at James II's Coronation," *Music & Letters*, Vol. 32 (London, 1951), p. 112.