Trumpet Pedal Tones:

Their History and Pedagogical Uses

by

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ABSTRACT

The normal playing range of a brass instrument includes a definitive stopping note in the instrument's low register. However, players have the ability to manipulate their lips to extend the low range beyond this point; notes sounding below an instrument's normal playing range are called pedal tones.

The history of pedal tones in trumpet performance and pedagogy has long been a source of confusion and misinformation. Consequently, this paper also discusses the educational value of using pedal tones, includes a brief history of players and teachers who have formulated pedal tone exercise methods, and examines their use within the six most influential method books that promote the use of pedal tones. The six books are *Original Louis Maggio System for Brass* by Carlton MacBeth, *Double High C in 37 Weeks* by Roger Spaulding, *Systematic Approach to Daily Practice* by Claude Gordon, *Trumpet Yoga* by Jerome Callet, *James Stamp Warm-Ups +Studies* by Thomas Stevens, and *The Balanced Embouchure* by Jeff Smiley.

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INTRODUCTION

Brass instruments have a long and varied history. They have had many changes in design, repertory, and pedagogy. While all musical instrument teachers stress certain standard musical fundamentals such as scales, rhythm, and pitch, there are specific techniques that are important to each instrument. Brass instruments, classified as a "closed-tube" type, have a definitive low note in their normal range. However, players have the ability to manipulate their lips to extend the low range beyond this point. The notes in this range are called pedal tones.

Because playing beyond the normal low range of a trumpet is possible with pedal tones, many players have experimented with this register in order to play repertoire that exceeds the normal limitations of modern valve instruments. This practice is especially true of modern players who wish to perform Romantic (nineteenth-century) orchestral works by Wagner, Richard Strauss, Sibelius, Verdi, and others who wrote for alto trumpets in F, E, E-flat, and D. Other players have utilized pedal tones as a useful device to develop deeper breathing, embouchure strengthening, and increased lip vibrations. This paper offers a brief history of pedal tones and the players and teachers who have formulated pedal tone exercise methods, and it provides an overview of the practical and musical uses of pedal tones.

CHAPTER 1

EXPLANATION OF PEDAL TONES

Definition of Pedal Tones

There are three main entries for the term "pedal tone" or "pedal note" in musical dictionaries and encyclopedias. The first definition of a pedal tone concerns the organ. The keyboard an organist plays with the feet is called a pedal organ. The sounds produced on this keyboard are the lowest, or some of the lowest, available to the organ.[1]

The second definition of pedal tones involves music theory:

> A long, sustained note held through many bars while movement continues in other parts of the piece. The expression is derived from organ playing, where the technique exploits the organist's ability to hold down a low pedal note indefinitely while playing above it with the hands. "Pedal point" generally refers to a low bass note, but it may also be applied to a long-held note elsewhere in the texture.[2]

The third definition, the most common use of the term "pedal tone"[3] amongst brass players, describes a phenomenon unique to brass instruments. The notes below the normal playable range are called pedal tones because of the association with the deep sounds of an organ's pedals.[4] Trumpets are built in many keys, but the pedal tone range of each trumpet starts at the written F below the treble staff (F^3), and extends downward. Fingerings for pedal tones are not defined since they do not have a natural resonance on the trumpet. When playing pedal tones, many players use the fingerings for notes an

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[1] Peter Williams and Nicholas Thistlethwaite. "Pedal organ." *Grove Music Online*. *Oxford Music Online*. Oxford University Press. http://www.oxfordmusiconline.com (accessed February 25, 2013).
[2] Paul M. Walker. "Pedal point." *Grove Music Online*. *Oxford Music Online*. Oxford University Press, http://www.oxfordmusiconline.com (accessed February 25, 2013).
[3] Frank Campos, *Trumpet Technique* (New York: Oxford University Press, 2005), 68.
[4] Arnold Meyers. "Pedal notes." *Grove Music Online. Oxford Music Online*. Oxford University Press. http://www.oxfordmusiconline.com (accessed February 25, 2013).

octave higher. It is also common to finger the pedal note a half step lower than the same note an octave above.

Players have the ability to create several octaves of pedal tones. Single pedal tones range from F^3 to F-sharp^2. Double pedal tones are an octave below the single pedal tones, and triple pedal tones are an octave below the double pedal tones. The human ear can hear pitches as low as sixteen hertz, so it is theoretically possible to play a quadruple pedal C, although it is difficult to produce using standard equipment.[5]

The fundamental note of a brass instrument is also sometimes called a pedal tone. This note is not easy to produce and is also called the "fictitious" fundamental. The proportion of the bore size to the length of the instrument determines the degree of difficulty in producing pedal tones. The wider the bore, the easier the low range is to facilitate. Conversely, a narrower bore makes the higher range easier. [6] According to musicologist Philip Bate, "With a rather wider bore the fundamental becomes possible but may still be too uncertain or too rough in quality to be musically acceptable." [7]

[5] John Backus, *The Acoustical Foundations of Music*, 2nd ed. (New York: W. W. Norton and Company, 1977), 154.
[6] Philip Bate, *The Trumpet and Trombone: An Outline of their History, Development and Construction*, 2nd ed. (London: Ernest Benn, 1978), 6.
[7] Ibid.,7.

Production of Pedal Tones

Pedal tones are unique to brass instruments. They are a result of the many factors required to produce a note on a brass instrument, including the physics of producing a sound, the resonance of a closed tube, the mouthpiece and bell effect, and the way brass instruments are designed.

Wind instruments are highly complex systems made up of two components—generator and resonator. On a brass instrument, the generator is the (double) lip reed, which produces and maintains the sound. The resonator is the body-tube of the instrument.[8] Elasticity and inertia are needed for the lip reed to vibrate.[9] The tube becomes a resonator when air columns are enclosed because "(1) the air possesses mass and compliance and (2) the sound is reflected at the tube ends, regardless if closed or open."[10] The sound produced from the lip reed and tube alone does not create a characteristic brass tone, however. Adding the mouthpiece and bell to the sound generator (lip reed and tube) completes the foundation of a basic brass instrument.

The tube of a brass instrument plays a prominent role in shaping the sound and playability of the instrument. There are two basic shapes of tubes—conical and cylindrical. Making a sound from a purely conical or cylindrical tube presents flaws that are rectified by using a mix of conical and cylindrical tubing. Modern brass instruments are made this way.[11] Trumpets and trombones are more cylindrical whereas cornets, horns, euphoniums, and tubas are more conical in shape.

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[8] Bate, 3.
[9] David M. Howard and James Angus, *Acoustics and Psychoacoustics* (Boston: Focal Press, 1996), 4.
[10] Johan Sundberg, *The Science of Musical Sounds* (New York: Academic Press, 1991), 109.
[11] Arnold Myers, "How brass instruments work," in *The Cambridge Companion to Brass Instruments*, ed. Trevor Herbert and John Wallace (Cambridge: Cambridge University Press, 1997), 20.

There are three types of brass instrument bores: open, closed, and open-closed. The tubes are either open at both ends, closed at both ends, or open at one and closed at the other. On their own, brass instruments are open tubes, but, when played, the lips act as "a complex elastic system subject to aerodynamic forces,"[12] essentially closing one end. Therefore, when played, brass instruments are open-closed tubes.[13]

Vibration and air pressure inside a tube create nodes and antinodes. The vibration of the air column inside a tube is similar to a vibrating string. A vibrating string "vibrates in an elliptical loop with no motion at the fixed ends but a maximum displacement at the middle."[14] The area of the vibrating air column with the least displacement of air particles is the node, while the area with maximum displacement is the antinode.[15] In a tube, pressure nodes are equivalent to the fixed ends of the vibrating string, and antinodes are in the center of the vibrating string where the pressure is lowest. As Joe Wolfe describes it, the nodes are determined by atmospheric pressure:

> At the far end, the pipe is open to the air, so the pressure there must be close to atmospheric at all times: in other words, the varying part of the pressure (what we call the acoustic pressure) is near zero. We call this a node in acoustic pressure. At the other end, the pipe is sealed from the atmosphere by the player's lips, and the pressure can vary maximally as the lips open and close: indeed, it is the large variation of pressure in the mouthpiece that (usually) forces the lips to vibrate at a resonance of the bore. So at this end we have a pressure antinode.[16]

[12] Arthur Benade, *Horns, Strings, and Harmony* (Garden City, New York: Anchor Books Doubleday and Company, 1960), 184.
[13] Ibid.
[14] Bate, 4.
[15] Ibid., 5.
[16] Joe Wolfe, "Brass instrument (lip reed) acoustics: an introduction," University of New South Wales Music Acoustics, http://www.phys.unsw.edu.au/jw/brassacoustics.html (accessed March 10, 2013).

The interaction of the vibrating air column and periodic pressure with the harmonic components of the sound forms a co-operative regime.[17] Arnold Myers explains that the harmonic components are derived from the fundamental frequency of the instrument:

> The series of fundamental frequencies of the notes which can be sounded by a player form only an approximation to a harmonic series, though they are sometimes loosely called "the harmonics". If the frequencies of the modes [partials] of the vibration of the air column formed a harmonic series, then the "note center frequencies" available to the player would also form a harmonic series.[18]

The frequencies sounded when playing a tube form an out-of-tune harmonic series. The type of tube determines which modes of the harmonic series are sounded. A conical tube allows for all modes of the harmonic series; however, an open-closed cylindrical resonator can sound only the odd modes.[19] A mouthpiece and bell are used to create the missing, even-numbered modes of the harmonic series in a closed-tube resonator.

Adding a mouthpiece does not affect the lower frequencies of the tube, but it does lower the higher frequencies.[20] The addition of a bell has a similar effect. The bell does not affect the higher harmonic modes, but it raises the lower modes. The lowest mode is raised the most. Besides helping to project the sound, the bell serves another very important purpose, as Thomas Moore explains:

> The trumpet bell is shaped such that it appears to be longer for higher notes and shorter for lower notes. If you will forgive the anthropomorphization, the best way to explain it is that the bell is shaped in just the right way so that each of the harmonics thinks that the trumpet

[17] Arnold Myers, "How brass instruments work," *The Cambridge Companion to Brass Instruments, 21.*
[18] Ibid., 20-21.
[19] Howard and Angus, 185.
[20] Backus, 263-264.

> is the correct length. This is an interesting physical phenomenon, and one that is still being actively investigated by physicists. The physics of the trumpet bell have some interesting parallels in quantum mechanics, and there have been scientific papers published in top-tier scientific journals discussing what makes the shape of the bell so special.[21]

The trumpet is a mostly cylindrical tube with a mouthpiece and a bell. Its fundamental frequencies are the notes of the harmonic series. The lowest open note on a modern trumpet is C^4, with G^4 as the next open partial. These notes are a fifth apart; however, the harmonic series begins with pitches that are an octave apart, so one can deduce that the fundamental note of the open harmonic series on the trumpet should be C^3. Since this note is difficult to play it is not unanimously labeled as the fundamental. A small faction of trumpet players and researchers claim that C^2 is the fundamental note, arguing that the fundamental of an eight-foot tube is C^2. [22] Another claim is that B-flat^2 is the fundamental pitch of the trumpet instead of C^3. C^3 is harder to play than B-flat^2, and so B-flat^2 is viewed as an isolated fundamental.[23]

Most trumpet players do label C^3 as the fundamental or pedal note.[24] Labeling C^3 as the fundamental seems correct because "it refers to the lowest member of a true harmonic series, and also to the frequency of the lowest mode."[25] Because the resonance of this pitch does not occur naturally on the trumpet it is called the "fictitious" fundamental[26] and it is played as a "privileged note."[27] The lower modes of the harmonic

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[21] Thomas Moore, "The Lowly Pedal Tone," *International Trumpet Guild Journal* vol. 32, No. 2 (January 2008), 64.
[22] Clint McLaughlin, *The No Nonsense Trumpet From A-Z* (TX; self-published, 1999), 11.
[23] R. Dale Olson, "Trumpet Pedal Register Unveiled," *The Instrumentalist* (September 1964) in *Brass Anthology: A Compendium of Brass Articles from* The Instrumentalist (Evanston, Ill.: Instrumentalist Company, 1984), 360.
[24] Benade, 172.
[25] Ibid., 174.
[26] Bate, 17.
[27] Benade, 195.

series are raised because of the bell effect, but the lowest resonance, the fundamental, remains more than a fourth flat.[28]

The wavelength for the pedal note causes it not to have a resonance. Backus describes how to find the wavelength:

> The distance between a node and the adjacent antinode is one-quarter of the wavelength of the traveling waves. This gives the wavelength $\lambda_1 = 4L$, so the fundamental frequency f_1 is $f_1 = C/4L$, which is half as large as that for the open tube.[29]

Moore explains how the wavelength presents a problem for the trumpet:

> In theory the pedal tone should be the lowest resonance that the air column will support. It is the lowest possible note that can be played, and the wavelength of the pedal tone is four times the length of the trumpet. The problem is that the shape of the bell that makes the trumpet have the appropriate length for all of the harmonics doesn't work for the lowest resonance… The trumpet appears to be too long for the wavelength of the pedal tone to fit inside and therefore the lowest resonance is always out of tune.[30]

Players are able to play the frequency of the fundamental, even though there is not a true resonance on the trumpet. This is possible because of the cooperative regime of the vibrating air column and harmonic components in the sound.[31] Backus explains how a player can sound pedal notes using mode locking or heterodyning, a characteristic of nonlinear oscillators:[32]

> The so-called *pedal tone* in the trumpet—the octave below the first used mode, and hence the fictitious fundamental—does not exist as a resonance, but is produced by buzzing the lips at the right frequency. The production of the pedal tone is aided by the fact that its harmonics very nearly coincide with the existing higher modes in the instrument, even though the fundamental itself is nowhere near a resonance mode. In other

[28] Bate, 17.
[29] Backus, 66-67.
[30] Moore, 64.
[31] Meyers, "How brass instruments work," 20.
[32] Wolfe.

> words, the presence of harmonics 2, 3, 4, and so on in the tone will cause the air column vibration (and hence the pressure in the mouthpiece) to repeat at the fundamental frequency. This will help the lips to vibrate at this frequency even if the fundamental itself is not present.[33]

A modern trumpet is comprised of a natural trumpet with three valves. Engaging the valves lowers the fundamental pitch of the trumpet. The first valve lowers the pitch a whole step, the second valve by a half step, and the third valve by three half steps. Eight different combinations (open, first, first and second, first and third, second, second and third, third, all three valves) yield seven different fundamental pitches (using the first and second valve lowers the pitch by three half steps which is equivalent to using the third valve), each with its own harmonic series of notes.

[33] Backus, 265.

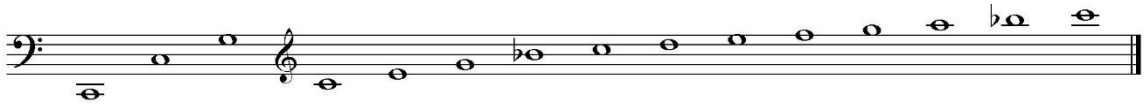
CHAPTER 2

HISTORY OF PEDAL TONES

Before 1930

War has been a major influence in the history of the trumpet. The trumpet had an important role as it played calls and signals for the military. Edward Tarr states that, prior to the seventeenth-century, "Fighting wars seems to have been one of the favorite pastimes of rulers of that day, and trumpeters were indispensable for giving signals."[34] The seventeenth century saw an extremely important development that allowed the trumpet to venture beyond the battlefield—acceptance into art music.[35]

The trumpet of the seventeenth century was a natural trumpet. Without valves or keys, the natural trumpet is limited to notes that are in the harmonic series of the fundamental note of the instrument, specifically:



In a harmonic series, the size of the interval between each note decreases as the series progresses upward. Therefore, to play scalar passages a player had to develop the upper register of the instrument.

Natural trumpets were pitched in several different keys. F was the most common during the early Baroque period, and later C, D, and E-flat became prevalent in the time of Bach, Handel, Telemann, and Hertel. The range is relevant to the instrument's overall

[34] Edward Tarr, *The Trumpet*, 3rd English ed., trans. S. E. Plank and Edward Tarr (Chandler, AZ: Hickman Music Editions, 2008), 33.
[35] Ibid., 60.

length. The fundamental pitch on the natural trumpet is a written C^2; however, this note is difficult to produce. Writings from the Baroque era and the mid-twentieth century (when a revival of period instruments began) concur about the difficulty of producing the fundamental (pedal) note:

> The low, or great *C*, however, is generally excluded, because it [has] a rather fluttering sound and is difficult to produce.[36]

> It must also be noted that the tone which is ordinarily called the first or lowest on the trumpet, is not that which is generally used and which I have named UT, for it descends a whole octave below this, though some trumpeters do not believe this because they cannot do it or because they have never tried.[37]

The lack of an easy, playable fundamental note presents a problem when method books and theorists communicate about the number of partials for the natural trumpet. In Menke's book, *History of the Trumpet of Bach and Handel*, he compares statements from theorist Pére Mersenne, 1585-1648, and trumpet player-historian Hermann Eichborn, 1847-1918, who disagree about how high and low the trumpet can play. Mersenne states:

> As to the compass of the trumpet, it is marvelously great if one takes all its tones from the gravest to the highest, for it supplies a thirty-second; so that it surpasses all the keyboards of spinets and of organs. But since there are few persons who make it descend to the last sounds, which are marked below C sol, ut, fa… it is sufficient to give it the compass of a twenty-ninth, that is to say of the four octaves which form the compass of keyboards.[38]

Eichborn disagrees, asserting:

> Mersenne here forgets the true fundamental note, since (1) he is only incompletely acquainted with the acoustic laws of overtones, and (2) this

[36] Johann Ernst Altenburg, *Essay on an Introduction to the Heroic and Musical Trumpeters' and Kettledrummers' Art,* 1st pub. 1795, trans. Edward H. Tarr (Nashville: The Brass Press, 1974), 70.
[37] Werner Menke, *History of the Trumpet of Bach and Handel*, trans. Gerald Abraham (Nashville: The Brass Press, 1972), 30.
[38] Ibid., 29

> sound can only be obtained with extreme difficulty on the instrument in question and was probably quite unknown to most players at that time.[39]

Trumpet guilds were military groups of trumpet and kettledrum players, given special privileges by royal courts. Several factors helped create and maintain the trumpet guilds. For one, guilds were very protective of their members and trade secrets.[40] Therefore, this question has repeatedly arisen: "Could the practice of pedal tones have been among the closely guarded secrets of the Baroque clarinist-trumpeter?"[41] To seek an answer to this question, the earliest method books need to be examined.

Except for military fanfares, there exists no record of solo trumpet music before 1580.[42] From 1580 until the decline of the guilds only "a handful of documents before 1800 address the pedagogical aspects of trumpet playing."[43] The first printed method book was *Method for Learning to Play the Trumpet in a Warlike Way as well as Musically* [translated title] by Girolamo Fantini in 1685. Cesare Bendinelli is credited with writing the first full method, *The Entire Art of Trumpet Playing* [translated title], in 1614. Hiller's research raises the possibility that other trumpet players could have produced books even earlier:

> The trumpet method books of the German court trumpeters Hendrich Lübeck and Magnus Thomsen (written around 1600) belong to the oldest

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[39] Ibid., 29-30.
[40] Daniel King, "An Analysis and Comparison of the Brass Methods by James Stamp, Donald Reinhardt, Carmine Caruso, and Claude Gordon" (DMA diss., Ohio State University, 2007), 6.
[41] Mario F. Oneglia, "Some Thoughts on Trumpet Pedal Tones," *The Instrumentalist* (September 1972) in *Brass Anthology: A Compendium of Brass Articles from* The Instrumentalist (Evanston, Ill.: The Instrumentalist Company, 1984), 617.
[42] Albert Hiller, *Music for Trumpets from Three Centuries (c. 1600- after 1900)*, trans. Richard A. Lister (Germany: Wolfgang G. Haas-Musikverlag Köln, 1993), 1.
[43] Ralph Dudgeon, *The Keyed Bugle*, 2nd ed. (Lanham, Maryland: The Scarecrow Press, 2004), 137.

> so far known and reliable sources.[44] [There is not a unanimous view that these are actual methods, but rather notebooks containing exercises.]
>
> The pieces in [Bendinelli's] method which are dated originate already from the 1580s; so it is conceivable that the main part of the contents comes from this time and is therefore older than the material of Lübeck and Thomsen.[45]

Almost a century separates the Fantini method from Johann Ernst Altenburg's treatise on trumpet playing and guilds. Altenburg's treatise is valuable because of its revelation of several guild "secrets" concerning the training of trumpeters at the time. These three main texts (Bendinelli, Fantini, Altenburg) offer valuable information concerning the technical limitations of the instrument and the approach to the upper and lower registers. There are, however, differences among the three books, as stated in an article in *The Cambridge Companion to Brass Instruments*:

> Bendinelli's manuscript of 1614, "Tutta l'arte della trombetta," is the earliest trumpet tutor and documents the trumpet ensemble tradition of the Renaissance. Girolamo Fantini's *Modo per imparare a sonare di tromba* (1685), the earliest printed method for trumpet, documents the new sonatas of the Baroque era. In comparing the two works, it could be said that Bendinelli represents a summary of the use of the trumpet in the Renaissance, while Fantini demonstrates the potential the trumpet would realize in the Baroque. Only in 1795 did Johann Ernst Altenburg feel free enough of guild restrictions to issue his important treatise *Trumpeters' and Kettledrummers' Art.*[46] [It should be noted that Altenburg began writing his treatise in 1775, but it was not published until 1795.]

As the article suggests, the guilds were in severe decline when Altenburg wrote his treatise. While he writes about guild secrets, he makes no mention of practicing in the pedal tone range, and neither do the other method books. Due to the limited writings and

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[44] Hiller, 1.
[45] Ibid., 5.
[46] Ralph T. Dudgeon et al., "Playing, learning and teaching brass," in *The Cambridge Companion to* Brass, ed. Trevor Herbert and John Wallace (Cambridge: Cambridge University Press, 1997), 193-194.

secrecy of the guilds it may never be determined if pedal tones were used and protected as part of a noble and knightly art, or if playing in the pedal range was known but was difficult and not of any musical or pedagogical value.

The development of the trumpet was altered during the late eighteenth and early nineteenth centuries with the addition of keys or valves, which made it semi- or fully-chromatic. In addition to exploring the new pitches, players also explored the upper and lower ranges of their instruments. Nonetheless, even though pedal tones have been cultivated since Berlioz's era,[47] their references in musical treatises usually concern the trombone, euphonium, or horn,[48] rather than the trumpet.

One of the earliest chromatic instruments was the short-lived keyed trumpet. This was the instrument for which Haydn and Hummel wrote their trumpet concertos with Anton Weidinger (inventor of the keyed trumpet) as the soloist. Reine Dahlqvist gives one possible reason for the lack of written low and pedal tones associated with this instrument:

> Perhaps the lower pitches on Weidinger's instrument were of poor quality and difficult to play in tune. Since Weidinger was primarily a high trumpeter, it could also be that it was difficult for him to play well in the low register.[49]

The keyed bugle was another chromatic instrument, and, like the keyed trumpet, it was used for less than a century. Keyed bugles normally had five to seven keys, but were sometimes augmented to as many as twelve keys. The conical design of the keyed bugle

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[47] Jeffrey Dean, "pedal note," *The Oxford Companion to Music, Oxford Music Online,* Oxford University Press, http://www.oxfordmusiconline.com (accessed February 25, 2013).
[48] Bernard Fitzgerald, "Pedal Tones on the Trumpet and Cornet," *The Instrumentalist* (March-April 1948) in *Brass Anthology: A Compendium of Brass Articles from* The Instrumentalist (Evanston, IL.: The Instrumentalist Company, 1984), 27.
[49] Reine Dahlqvist, *The Keyed Trumpet and Its Greatest Virtuoso, Anton Weidinger* (Nashville: The Brass Press, 1975), 11.

allows for relatively easy pedal tones, but their use seems to have been limited. Like the natural trumpet, the keyed bugle has a small number of written methods. The following quotes illustrate the problems that arise in understanding the practices of pedal tones on the keyed bugle:

> … there remain certain areas where the source material is tantalizingly vague. For example, Asté's (Halary) fingering chart for his ten-keyed bugle and my experience indicate that a serviceable pedal register can be produced by a keyed bugle that has ten keys. As useful as this may appear, the pedal register is employed only in a few cases in the actual literature. It would seem that based on currently available evidence, pedal tones were possible, but seldom used.[50]

> Harper is the only author who includes B-natural and C (in the bass clef) as notes of the keyed bugle's scale. As a natural trumpeter, Harper must have been aware of the full capabilities of most trumpet-like instruments. Perhaps he experimented with the pedal register. My practice on a seven-key English keyed bugle has shown that with the exception of a and g (below the treble clef), the pedal register is much easier to produce than on the cornet or the trumpet. The addition of other keys improved the production of tones in the pedal register as well as in the upper register where they appear in later fingering charts.[51]

The invention of valves, circa 1815, changed the trumpet drastically, and many different valve systems were created. Two designs, rotary and piston, were preferred by trumpet makers and performers alike. As instrument makers experimented with various designs, trumpet players were anxious to test new technical capabilities.

Cornet players of the late nineteenth century exhibited technical virtuosity never before heard from trumpet players. Many players also expanded the range of the instrument. One cornet player, Bohumir Kryl (1875-1961), was noted for extending his playable range into the pedal tone register. While his range was impressive, it was often viewed as a gimmick:

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[50] Dudgeon, 215.
[51] Ibid., 149-150.

> Some of the renowned cornet soloists have achieved notable success in developing the pedal tone register. Bohumir Kryl acquired a phenomenal control of this register and employed pedal tones in a spectacular manner in performing solos and cadenzas. At present, this register is rarely required for solo performance and the ability to play pedal tones is generally considered as a novel achievement of comparatively little musical value.[52]

> The use of pedal tones was considered to be, by many, a form of sensational "stunt playing" – one that could thrill audiences with the soloist's ability to leap from a trombone-like tone to the flute-like altissimo register.[53]

The history of pedal tones before the 1930s has little documentation. Early trumpet playing was confined to signal calls for the military and did not use pedal tones. In seventeenth- and eighteenth-century art music, pedal tones were not required, and their practice may have been a closely guarded secret by the guilds.

After the invention of keys and valves, trumpet players started to explore the pedal register; however, pedal tones were considered a stunt with little musical or pedagogical use and were scarcely mentioned in methods and literature. It was only during the twentieth century that the musical and pedagogical uses of pedal tones were realized.

[52] Fitzgerald, 28.
[53] Oneglia, "Some Thoughts on Trumpet Pedal Tones," 617.

After 1930

An accident has the potential of being disastrous, but it also has the potential of yielding positive results. After the 1930s, several events, including accidents that almost destroyed careers, experimentation by a disgruntled trumpet player, and globalization began to change trumpet players' and teachers' perceptions of pedal tones. That pedal tones have emerged as an almost universal tool went against predictions made about pedal tones, as an article from 1948 illustrates:

> From the viewpoint of practical performance, little will be gained by the development of pedal tone register of the Trumpet or Cornet, since present trends in trumpet performance would indicate that any extension of the range of the instrument will probably be directed to the high rather than the low register.[54]

Rafael Méndez (1906-1981) was a trumpet player known for his extremely fast technique and lyricism. He was playing at the Fox Theater in Detroit when a tardy bass player ran into the pit. The pit orchestra door hit Mendez's trumpet while he was playing, which caused his upper lip to split. Amazingly, he finished out the show.[55] His lip became infected and surgery was needed to cure it. After his lip healed, he could not play because of the large amount of scar tissue. He took lessons from several leading teachers of the time—Max Schlossberg, Walter M. Smith, Joseph Gustat, and Herbert L. Clarke—and they all agreed that it was doubtful he would play again.[56] Méndez followed his mother's advice and began to take lessons from his father, who was his original teacher.[57] His father, Maximino, recommended playing only from G^3 to the low range, including

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[54] Fitzgerald, 28.
[55] Jane Hickman and Delon Lyren, *Magnificent Méndez* (Tempe: Summit Records/Books, 1994), 39.
[56] David Hickman, Michel Laplace, Edward Tarr, *Trumpet Greats: A Biographical Dictionary* (Chandler, AZ: Hickman Music Editions, 2013), 529
[57] Hickman and Lyren, 40.

the pedal tone register of the instrument. Eventually, he regained his previous level of playing ability. Against his father's wishes, he left to resume work in the United States, but his playing began to deteriorate quickly. He sought the help of his old colleague and famous teacher, Louis Maggio (1881-1957). Maggio was baffled at Méndez's playing and suggested he go back to study with his father in Mexico.[58] There, finally listening to his father's teaching advice, Méndez fully recovered from the accident and had a very successful career.

Louis Maggio also had a similar accident, which Carlton MacBeth describes in detail:

> He was appearing with the St. Paul Symphony when disaster struck in 1919. In subzero weather, while running to catch a streetcar, Louie slipped on the icy pavement and fell, striking his mouth on a safety zone button. The force of the blow literally shredded his lips and knocked out several front teeth.[59]

One major detail is wrong with MacBeth's statement: the accident occurred in 1937 instead of 1919.[60] Like Méndez, Maggio could not play for a long period after the accident. Remembering Méndez's accident and playing problems, Maggio sought the tutelage of Méndez in Los Angeles. Méndez taught Maggio to practice as his father had taught him, which included using pedal tones.[61] After recovering from the injury, Maggio decided to stay in Los Angeles, where he became a very famous brass instructor.

H. W. Lewis interviewed Méndez, and in this excerpt Méndez explains who taught whom:

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[58] Hickman and Lyren, 41.
[59] Carlton MacBeth, *Original Louis Maggio System for Brass* (Hollywood: Maggio Music, 1975), 3.
[60] Hickman, Lapace, and Tarr, 492.
[61] Ibid.

Lewis: You said you studied with Schlossberg and Clarke and Maggio.
Méndez: No, Maggio. I didn't study with Maggio. …Maggio's style… see, I gave Maggio, a long time ago in Detroit, Michigan when I was over there, a job. And he studied my playing and watched me when I was warming up with those pedal tones, and developed that way of teaching his system. From me, not me from him. It was my father's style.
Lewis: That's fantastic. I did not realize that at all.
Méndez: As a matter of fact, when Mr. Maggio died, he left me all his material. I really didn't need it because he got that from my way of playing.
Lewis: He got it from you to begin with.
Méndez: That's right.[62]

Confusion about who taught whom has led to Maggio's being credited incorrectly with making pedal tones a valuable part of daily practice. Maggio was twenty-five years older than Méndez, and it could have been easily assumed that he taught the younger man. Méndez's twin sons also took lessons from Maggio, adding to this confusion.

The following quotation by John Haynie is one example of the misunderstanding about the Méndez-Maggio relationship:

> I first heard of the pedal tone system when I learned how it saved the career of Rafael Méndez. … and I am told he sought help from Louis Maggio. Maggio never published his studies because he handled his students in different ways.[63]

Haynie was a famous teacher with many students, and his false information was given to many people. Another reason for the persistence of the misattribution is that inaccurate information is sometimes printed, and modern researchers sometimes quote misinformed sources. The following quotes are from a dissertation by Daniel King, written in 2004:

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[62] Lewis, H. M., "Rafael Mendez: Trumpeter Extraordinaire," *International Trumpet Guild Journal* vol. 4, (October 1979), 16.
[63] John Haynie and Anne Hardin, *Inside John Haynie's Studio: A Master Teacher's Lessons on Trumpet and Life* (Denton: University of North Texas Press, 2007), 18.

> Another pioneer in this area is Louis Maggio (1878 [1881]-1957). He began his playing career in Minnesota playing trumpet in theater orchestras and shows. After what seemed to be a career-ending accident, damaging his lips and resulting in the loss of several teeth, Maggio was determined to play again. His resolve to come back from the accident led him to a totally new concept of brass playing and embouchure development. To the amazement of his colleagues, Maggio was able to return to his professional playing career, actually playing better than he had before. Word of his teaching accomplishments gradually spread through the music world. Maggio quickly gained the reputation of being able to help brass players recovering from similar playing problems. He soon moved to Los Angeles and became the mentor to some of the most famous brass players from around the world.[64]
>
> In the late 1930s, after Maggio's well-documented lip injury, Rafael Méndez sought Maggio's expertise in rebuilding his embouchure. Maggio dictated extensive use of pedal tones and articulation studies from Arban's *Complete Conservatory Method for the Cornet*.[65]

Herbert L. Clarke (1867-1945), noted cornet soloist and teacher, apparently used pedal tones in his own playing and teaching; however, aside from a fingering chart descending into the pedal tone range, he makes no mention of pedal tones in his autobiography or method books.[66] Clarke must not have been aware of the possible benefits of pedal tones in helping to loosen the scar tissue in Méndez's lip, for in the lesson given to Méndez, no mention of pedal tone practice was made. Méndez had to have learned this technique from his father, an orchestra leader whose main instrument was the mandolin.

Aside from accidents, there was another event leading to the use of pedal tones. In his first book, *Trumpet Yoga*, Jerome Callet (b. 1930) explains that he worked on a new embouchure in his "lip laboratory" for ten years before being able to perform loud C^7s.[67]

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[64] King, 18-19.
[65] Ibid., 19.
[66] Olson, 360.
[67] Jerome Callet, *Trumpet Yoga* (New York: Charles Colin, 1973), 3.

The new embouchure he created, which is explained in chapter four of this paper, led to the use of pedal tones strictly for high range development. The idea of this new embouchure stemmed from combining the two German horn-player embouchures known as *einsetzen* (setting the mouthpiece inside the lower lip) and *ansetzen* (setting the mouthpiece against the lower lip).[68] According to Callet, his method is identical to the one described in Jules Levy's *Cornet Instruction Book*, which Callet discovered thirty years after creating his "new" embouchure.[69] Levy's embouchure is not universally accepted as being the same as Callet's embouchure setting, as Callet claimed.[70] However, there are several cornet methods from the time of Levy that describe an embouchure similar to Callet's, such as those by Henry Prentiss and Walter Eby.[71]

The widespread use of pedal tones in the music world was the result of several factors. Méndez was an international soloist and a noted clinician who taught this technique around the world. Maggio lived in Los Angeles and taught his method to many influential trumpet players. Because Maggio tailored his pedal exercises to each individual student, he did not write a method book per se, but once he passed away, several of his students published method books that were strongly influenced by his teachings. One student, Carlton MacBeth, wrote a book demonstrating Maggio's exercises. He became known for teaching pedal tones, and, according to Haynie, "Carlton

[68] "Interview with Jerome Callet," O. J.'s Trumpet Page, http://abel.hive.no/trompet/interview/callet/ (accessed October 20, 2013).
[69] Ibid.
[70] Trumpetherald.com and trumpetmaster.com
[71] John McCann, "A History of Trumpet and Cornet Pedagogy in the United States 1840-1942" (DM diss., Northwestern University, 1989), 38 and 60-61.

McBeth [sic], a Louis Maggio student, is probably the best-known advocate of the pedal tone system."[72]

James Stamp (1904-1985), a famous teacher of pedal tones in Los Angeles, and Thomas Stevens, former principal trumpet of the Los Angeles Philharmonic, together did a yearly clinic in Switzerland. Coaxed by their students, they produced a book, *James Stamp Warm-Ups +Studies*, published by Editions BIM, which helped further the use of pedal tones worldwide.

There were major changes in the way pedal tones were viewed after 1930. Méndez's accident led to the widespread use of pedal tones as part of embouchure development systems. In the case of Callet, pedal tones were the basis of his approach. Before this, pedal tones were used merely as a novel display of extreme technique, or to obtain low notes originally intended to be played on the alto trumpets of the nineteenth century.

[72] Haynie and Hardin, 17-18.

CHAPTER 3

USES IN PEDAGOGY AND PERFORMANCE

The use of pedal tones as a teaching tool varies from teacher to teacher. A study of top brass instructors in 1976 showed that pedal tone practice provided positive results for the majority of players:

> Our trumpet artist-teachers predominately feel that practicing pedal tones is important and helpful by [answering yes] to this question to the tune of 82%. This leaves 18% who do not feel that pedals have any merit, and 10% of our authorities who assume a "take-it-or-leave-it attitude."[73]

It is interesting to note that among horn, trombone, and tuba teachers, every teacher except one, a horn instructor, approved the use of pedal tones.[74] Thirty years later, a survey of trumpet studios yielded similar results, with pedal tones being taught in ninety-two percent of the studios.[75] In his dissertation, John McCann observed that approximately every twenty years during the period from 1840 to 1942, a new pedagogical method became the standard teaching method.[76] One interpretation of the surveys is that pedal tones are not a new technique of trumpet playing, but rather an increasingly popular pedagogical tool used to help the student.

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[73] Joseph Bellamah, *A Survey of Modern Brass Teaching Philosophies* (San Antonio: Southern Music Company, 1976), 21.
[74] Ibid.
[75] Amy Cherry, "Extended Techniques in Trumpet Performance and Pedagogy" (DMA diss., University of Cincinnati, 2009), 172.
[76] McCann.

Negative or Ambivalent Opinion

Despite the large majority of teachers who advocate the use of pedal tones, several disagree. Daniel King's summary of a conversation with Donald Reinhardt, a prominent brass embouchure pedagogue, expresses this view:

> Unlike other range and endurance methods, Reinhardt eschewed pedal tones for trumpet players and advised several students that if they wanted to destroy their embouchures with pedal tones, they should study with someone else.[77]

Another idea is that pedal tones develop the upper range; however, this is also not a unanimous view, as Clint McLaughlin expresses:

> I realize that there are some teachers and books that advocate the use of pedal tones to aid in range extension. I am not one of them.[78]

The following quotes by Keith Johnson and John Haynie, both professors at The University of North Texas, summarize the way to both endorse and discredit pedal tones:

> Pedal tones are, unfortunately, only exercises. Their musical value is virtually zero, and lacking any musical interest, they can quickly become boring and lead to thoughtless playing, always a dangerous situation.[79]

> They alone will not cure major problems.[80]

> There is strong evidence that the utilization of pedal tones can be effective and that overuse can be destructive.[81]

Another reason that some instructors do not advocate the use of pedal tones is that they themselves did not use them in their formative years:

> Pedal tones were never a part of my development, and I learned to play them only after becoming a seasoned player. Did pedal tones help me? I

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[77] Daniel King, 49.
[78] McLaughlin, 84.
[79] Keith Johnson, *The Art of Trumpet Playing* (Ames, Iowa: Iowa State University Press, 1981), 88.
[80] Ibid.
[81] Haynie and Hardin, 18.

> don't know if they did, but I have high regard for the use of pedal tones for my developing students.[82]

One misconception about pedal tones is that the player has to drastically alter the embouchure to play them correctly. There are methods in which the player alters the embouchure, but the goal of most of these methods is to teach the pupil a new embouchure. Not understanding that playing pedal tones with a normal embouchure is possible is another reason for the "take it or leave it" attitude. John Haynie explains this view:

> …many performers, if not most, alter the embouchure drastically to force the notes to respond. Some can maintain their basic embouchure without "setting in" the lower lip. It is admirable of those who can spend the time it takes to play the pedal notes with a proper embouchure; however, I wish to accomplish my goals going no lower than the F-sharp in search of the perfect embouchure for every note above.[83]

Positive Opinion

Pedal tones appear in a variety of contexts. They are a part of the literature for lower-pitched instruments. They are used for developing the embouchure, building a stronger upper register, and for relaxing body tension. They are also used in warm-ups and cool-downs, to rejuvenate the lips during practice, and as a compositional technique in twentieth-century and avant-garde music.

According to Cherry's research, sixty-eight percent of respondents found pedal tones extremely useful, nineteen percent said they were very useful, eight percent said they were somewhat useful, while one percent claimed they were not useful, and four

[82] Ibid., 17.
[83] Ibid., 19.

percent had no opinion.[84] Two quotes by Frank Campos and Arturo Sandoval are testaments to their benefits:

> Pedal tones are among the most beneficial exercise I know, and I credit them with extending my range and endurance.[85]

> I have always dedicated a great deal of attention to, and highly regard the benefits derived from, playing *pedal tones*.[86]

Many generalizations about how to use pedal tones have been made. Mario Oneglia wrote an article that summarizes nine of their uses:

1. The playing of pedal tones seems to enhance ease in playing all registers, but particularly the altissimo.
2. Any fingering for pedal tones will suffice as long as the lips are kept in vibration and a sound is produced.
3. Rest periods seem a requirement of all pedal systems. One suggests "playing every other day."
4. Powerful breath support is mandatory, a requirement common to both pedal and extreme upper registers.
5. One should not attempt to play pedal tones until the embouchure is formed. Then the pedal register should be performed with as close a setting to that embouchure as possible.
6. Playing pedal tones is extremely helpful in regaining sensation in the lips when tired. They force relaxation.
7. Advanced pedal tone techniques call for moving to and from the pedal register.
8. The use of syllables seems to enhance attainment of pedals.
9. The connection between extreme registers is probably the ability to keep the lips vibrating freely away from the teeth.[87]

Embouchure

While one is able to play a pedal tone by loosely flapping the lips and distorting the normal embouchure, they can be produced also with the normal embouchure and an

[84] Cherry, 176.
[85] Campos, 69.
[86] Arturo Sandoval, *Playing Techniques and Performance Studies for Trumpet, Volume Three* (Milwaukee: Hal Leonard, 1995), 8.
[87] Oneglia, "Some Thoughts on Trumpet Pedal Tones," 617.

extreme pucker embouchure. The extreme pucker technique was designed to improve playing in the extreme upper register. Most pedal tone advocates suggest using a normal playing embouchure. These advocates include four of the authors whose books are reviewed in chapter four, as well as Arturo Sandoval and Merrill Brown, whose opinions are summarized here:

> It is necessary to practice [pedal tones] with the same embouchure position used when playing in the "normal" trumpet range.[88]

> The pedal tones, to be of value, should be produced without a change in the mouthpiece placement.[89]

Tension

Tension reduction is another benefit of using pedal tones. As the quotes below illustrate, pedal tones address this facet of playing:

> There is little doubt that one of the most widespread physical problems of trumpet performance is the use of excessive muscular effort in sound production. … Pedal tone practice offers the player the chance to emphasize relaxation rather than tension, air flow rather than muscular strain.[90]

> For those students with endurance problems, pedal tones have proven to be a wonderful aid in relaxing the jaw, tongue, and lips.[91]

> Simply put, pedal tones strengthen portions of lip and facial muscles that otherwise never get a workout. Without pedal tones you are forcing a relatively small amount of lip muscle to do a great deal of work.[92]

> By practicing pedal tones you strengthen the larger muscles around the mouthpiece and make it less of a hardship on the small muscles.[93]

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[88] Sandoval, 8.
[89] Merrill Brown, *Teaching the Successful High School Brass Section* (West Nyack, New York: Parker Publishing, 1981), 99.
[90] Johnson, 89.
[91] Haynie and Hardin, 17.
[92] Martin Berinbaum, "Trumpet Pedal Tones: The Key to an Expanded Range," *The Instrumentalist* (March 1979) in *Brass Anthology: A Compendium of Brass Articles from* The Instrumentalist (Evanston, Il.: The Instrumentalist Company, 1984), 817.

> Although pedal tones are not usually of musical value, their usefulness lies in the way they relax the embouchure, help build general flexibility, and help in the development of the high register.[94]

Upper Range Development

Jerome Callet and Jeff Smiley created their methods principally for the development of the upper register. Playing pedal tones using either a pucker embouchure or a normal embouchure has been of benefit for development of the upper register. The following quotes emphasize this point:

> All the current methods of learning to play high notes seem to have at least one technique in common: using pedal tones.[95]

> The use of pedal tones are also considered valuable in developing the very high register.[96]

Warm-up and Cool-down

Pedal tone usage is most commonly applied to the warm-up. All six books reviewed in chapter four use pedal tones in the warm-up, and many other routines suggest the same. To understand how pedal tones are helpful in the warm-up, it is necessary to understand the purpose of a warm-up:

> To play at full strength, blood circulation in the embouchure must be optimal, and the facial nerves must be gradually sensitized to embouchure stress and normal mouthpiece pressure.[97]

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[93] Ibid.
[94] Brown, 99.
[95] Berinbaum, 817.
[96] Brown, 98.
[97] David Hickman, *Trumpet Pedagogy: A Compendium of Modern Teaching Techniques* (Chandler, AZ: Hickman Music Editions, 2006), 153.

Thus, pedal tones loosen the lip muscles, increase blood circulation, and help with the airflow, which are essential to a proper warm-up.

Most trumpet players utilize a warm-up routine; however, a cool-down after a practice session is not as universally practiced. When pedal tones are used in a cool-down routine, they can be highly effective:

> Pedal notes and scales are good exercises for a "cool-down," which is needed after practice or a performance. It gives the muscles a chance to come back to a relaxed and normal state.[98]

> The practice of using low register tones to relax the brass embouchure is not new, but it is amazing how many young brass musicians are unaware of the value of low register practice and cool-down exercises.[99]

> Pedal tones are included for those who find them helpful, but they are not necessary to the cool-down process.[100]

> Just as athletes use a cooling off period after physical exertion, so the trumpet player should have a relaxation routine after the practice period. Pedal tone studies can be very effective here.[101]

Playing the trumpet is physically taxing on the facial muscles. Because playing pedal tones helps with blood circulation, they can be used when the player's facial muscles are starting to feel tired. While this can help relax the face, some view it as a playing crutch. These quotes illustrate the two views of using them to rejuvenate the lips:

> [Pedal tones] loosen lip muscles and stimulate blood circulation in the embouchure more effectively than any other lip exercise. They rejuvenate lip tissue quickly for further playing. [102]

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[98] Sandoval, 8.
[99] James Van Develde, "Cool-Down Exercises for Brass Players," *The Instrumentalist* (December 1979) in *Brass Anthology: A Compendium of Brass Articles from* The Instrumentalist (Evanston, Ill.: The Instrumentalist Company, 1984), 860.
[100] Ibid.
[101] Mario F. Oneglia, "The Perfect Trumpet Lesson," *The Instrumentalist* (April 1974) in *Brass Anthology: A Compendium of Brass Articles from* The Instrumentalist (Evanston, Il.: The Instrumentalist Company, 1984), 684.
[102] Robert Winslow, *Trumpet Playing (or Cornet): A Musical Approach (Melodic and Harmonic) Volume II* (Hollywood: Highland Music Company, 1967), 50.

> The positive effect of pedal tones is an agreeable massage of the lips. This pleasant feeling encourages us to allow the air to flow. Since we would in any case not have a pleasant feeling on the lips in a critical situation, the purpose of pedal tones vanishes into thin air. What we must learn instead is to allow air to flow when we do not have that pleasant feeling on the lips.[103]

> By the way, the loose flapping of the lips, that all players do to help relax the embouchure, is in reality a low pedal tone.[104]

> The very slow rate of vibration in combination with the relaxed embouchure formation required for pedal tones tends to relax the muscles of the embouchure much in the manner of a massage, so that a few minutes spent in playing pedal tones after a strenuous practice session may often prove to be more beneficial to the embouchure than complete rest.[105]

Music Literature

Pedal tones are not only a pedagogical device, but are a part of the repertoire. Orchestral pieces written for the alto D, E-flat, and F trumpets and A cornet may require pedal tones if the performer uses a higher-pitched trumpet or cornet. Pedal tones are also incorporated in twentieth- and twenty-first-century music. Some believe these are the only reasons to play pedal tones:

> Except as a compositional technique, pedal tones were not really meant to be performed.[106]

> Practising pedal tones for any other purpose is fighting the wrong battle.[107]

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[103] Malte Burba, *Brass Masterclass: Method for Brass Players* (Mainz: Schott, 1997), 54.
[104] Berinbaum, 817.
[105] Fitzgerald, 29.
[106] Haynie and Hardin, 17.
[107] Burba, 54.

Georges Bizet	*Prelude de l'Opera Carmen*	measure 7
Richard Strauss	*Ein Heldenleben*	E-flat trumpets, last eight measures of the piece.

Figure 1. Two examples of orchestral pieces that have pedal tones if using a modern B-flat trumpet.

Two examples of pieces that require pedal tones are mentioned in Figure One above. Both pieces are written for cornet in A (Bizet) and trumpet in E-flat (Strauss), but modern performers use a B-flat cornet or trumpet in performance. There are a few different approaches to playing pedal tones in the orchestral setting. One is to pull out the main tuning slide and extend the three valve slides to make the instrument play in A instead of B-flat. This works well in situations like the Bizet, where the trumpet is now in the key of the piece, eliminating the need to transpose. However, because the instrument is built in B-flat, changing it to A will negatively affect the intonation, however. Option two is to extend the third valve slide for only the pedal notes. The third option is to extend the third slide for an entire section of the piece and transpose only the notes using the third valve up a half step. The latter two options are similar in approach, and deciding which to use rests with the player.

Robert Erickson	*Kryl*
Peter Gilbert	*Epigrams for Solo Trumpet*
Frank Campo	*Times*, Op. 39
Stanley Friedman	*Solus*
Karel Husa	*Concerto for Trumpet*

Figure 2. Examples of solo works that utilize pedal tones.

After 1930, Méndez and Maggio led the change of pedal tone usage from stunt playing to a serious technique. Modern composers noticed pedal tone usage among trumpet players and incorporated pedal tones into their works. The pieces listed in Figure Two above are solo pieces that have pedal tones written in the music. There are different reasons for using pedal tones. *Kryl* was written in honor of cornet player Bohumir Kryl (1875-1961). Erickson wrote this piece based on a technique that Kryl used: pedal tones. Pedal tones are not always the basis of the piece, however. Composers can use pedal tones as in melody or accompaniment, as an effect, or in any combination of ways. As more composers utilize pedal tones, the seventeen percent of performers who have yet to perform pedal tones will gradually join the eighty-three percent who have performed pieces with pedal tones in them.[108]

Uses in Pedagogy

Most teachers prefer to use a pedal tone method rather than literature from the existing repertoire to teach pedal tones.[109] The question of when to teach pedal tones also varies from teacher to teacher. According to Cherry, thirty-six percent of the participants were exposed to pedal tones in high school, thirty-four percent in college, and nineteen percent in graduate school.[110] However, the majority of teachers (sixty-eight percent) teach pedal tones to high school students instead of waiting until college.[111] The age at

[108] Cherry, 166.
[109] Cherry, 191.
[110] Ibid., 168.
[111] Ibid., 174.

which to introduce pedal tones seems to shift from generation to generation, so it is not surprising that teachers disagree on the appropriate age.

Overall, it is evident that most trumpet players and teachers use pedal tones. There is some disagreement about the best age and method with which to introduce them, but pedal tones have been found to aid in the development of the high register, serve as an effective warm-up, and/or help to rejuvenate the lips in a cool-down. To understand how pedal tones have been implemented into the vocabulary of trumpet players, it is necessary to examine the most commonly used pedagogical texts.

CHAPTER 4

REVIEW OF THE MOST COMMON PEDAGOGICAL TEXTS

Pedal tone usage increased exponentially during the second half of the twentieth century. Method books before 1930 did not use pedal tones, or only listed them as possible notes. Post-1930, two pedal-tone teaching styles rose to the forefront of trumpet pedagogy. Méndez and Maggio's accidents changed their playing, and they popularized a new attitude about pedal tones; however, they did not write method books. Once Maggio passed away, several of his students wrote method books that prominently featured pedal tones. Callet discovered his own pedal tone system and wrote his method accordingly. After the success of Callet's method, other trumpet teachers adopted his method and developed similar ones.

As the number of method books using pedal tones increased, some became standard teaching aids, while others are rarely used. A search of dissertations, pedagogical survey books, and trumpet forums revealed that six methods books are the most preferred among trumpet teachers. Reviewing the six widely used methods helps understand how pedal tones are taught. This review of the six books includes a description of the author or method creator, explains how the book uses pedal tones, and gives other important information that helps explain the methods.

Original Louis Maggio System for Brass[112]

Louis Maggio (1881-1957) was an Italian trumpet player who migrated to the United States in 1906. He was a successful performer who played with many orchestras and recording studios in Detroit and Minneapolis. MacBeth's states that Maggio had an accident in 1919. After the accident he spent time creating his new method in a boat in the middle of a lake where no one could hear him.[113] Private Méndez videos and interview articles show, however, that the accident occurred in 1937, after which Maggio went to study with Méndez in Los Angeles.[114] After taking lessons with Méndez, he started teaching there and became a famous pedagogue. Maggio taught his method to his students, and one of them, Carlton MacBeth, studied with him for years. During the latter part of Maggio's life, MacBeth assisted him in his teaching. After Maggio's death, MacBeth compiled his methods into a book.

MacBeth's book uses a method that evolved from both private and group lessons, and it works for either setting. The method is ten weeks long, divided into two five-week sections. The routine requires approximately one-and-a-half to two hours of practice per day. In the instructions, it urges players to complete at least the first five-week session, citing that the effects take time to be felt and heard.

The method strongly suggests taking four steps before playing:

1. Take a breath "like a drowning man going down for the third time."
2. Place mouthpiece directly under the nose.
3. Relax and move mouthpiece down until the bottom lip drops into place (which is 2/3 upper lip, 1/3 lower).
4. Pump air in and up "like rolling a tube of toothpaste from the bottom."

[112] Carlton MacBeth, *Original Louis Maggio System for Brass* (Hollywood: Maggio Music, 1975).
[113] Ibid., 1.
[114] Hickman, Laplace, Tarr, 492.

These four steps set the embouchure. Another set of four principles is called the "4 Cardinal Fundamentals of the Original Louis Maggio System for Brass." They are:

1. Airstream (good air)
2. Position of embouchure
3. Ability to relax
4. Use of syllables

The first part of the book uses the first pedal tone range, down to C^2, but the second half of the book descends into the double pedal range, C^1, and goes up to the extreme high register (C^7). Maggio emphasizes that the embouchure should be the same for all playing ranges. The method uses mainly arpeggios and scales that go in and out of the double pedal range, uninterrupted into the extreme high range of the instrument.

Double High C in 37 Weeks[115]

Roger Spaulding (1932-2003) was a trumpet player who recorded in the Los Angeles studios and played lead trumpet in several dance bands. He taught hundreds of students in the Los Angeles area.

Spaulding built his method upon the principles of the Charles Atlas bodybuilding regimen.[116] The Atlas regimen was based on a study in which scientists found that butchers have the best muscle development because they do heavy lifting one day and light preparation work the next. The study concluded that muscles need forty-eight hours to rebuild. Spaulding built his embouchure development system on this bodybuilding science, and the method follows strict guidelines. He instructs the student to play the exercises every-other day. Once a student completes day seventy-nine, the student then

[115] Roger Spaulding, *Double High C in 37 Weeks* (Hollywood: High Note Studios, 1963).
[116] Hickman, Laplace, Tarr, 764.

repeats the lessons, but without taking a day off in-between each lesson. After going through the book a second time, the student repeats it for a third time, playing every-other day, and a fourth time, playing every day. After completing the book a fourth time, the student moves on to the "finale." The finale is the "warm-up" for the student's "long and successful" playing career. Spaulding's method also requires the student to exercise the entire body directly before practicing, doing at least these five exercises: sit-ups, leg-ups, push-ups, chin-ups, and running.

The method uses simple scales and arpeggios that expand to both extremes of the range, from F-sharp^{0} to G^{7}. Spaulding recommends using the same embouchure throughout all the registers; however, he notes that when playing triple pedal tones (two or more octaves below the normal range of the trumpet) the lips may have an extreme pucker, meaning that the lips are exaggeratedly rolled out into the mouthpiece. Pedal tones are an important part of this method. The goal of this method is to play a C^{7}, and in order to play in the upper range of the instrument, mastery of the pedal range is essential. In addition, one must "anchor" the tongue when using this method, which means to place the tip of the tongue against the bottom teeth and articulate with the middle of the tongue.

Systematic Approach to Daily Practice[117]

Claude Gordon (1916-1996) was born in Montana and raised in a musical family. He played in local bands and orchestras before moving to Los Angeles. While in Los Angeles he studied under Dr. Herbert L. Clarke and Louis Maggio, and began to play in traveling orchestras, hotels, and theaters. He later played in motion picture studios and for

[117] Claude Gordon. *Systematic Approach to Daily Practice* (New York: Carl Fischer, 1965).

NBC and CBS radio. Eventually, he started his own orchestra, wrote method books, and became a noted pedagogue.

Gordon's method book is "a fifty-two week trumpet course designed to develop a register from the second C below low C to C above high C, along with the power, endurance, sound and control necessary to meet the demands required of the professional trumpet player."[118] Gordon indicates that his book is about how to practice and help define a routine. He states that there are seven components to playing the trumpet:

1. Wind Power
2. The Lips
3. The Control of Air
4. The Tongue
5. The Muscles of the Lips and Face
6. The Fingers of the Right Hand
7. The Left Hand

Gordon does not create a new embouchure, but rather helps explain the function of the lips. They are to vibrate, contracting towards the mouthpiece when ascending to the higher register, and relaxing when descending to the lower register. He does not advocate smiling or stretching backward. He supports the use of tongue arching when changing registers and encourages the use of alternate fingerings. When playing pedal tones, he recommends using the same fingering as an octave higher, while maintaining the same embouchure.

The method book is divided into fifty-two lessons, with a week spent on each. Each lesson has between two and six parts, and uses original material as well as material from six outside books. The outside sources are *Technical Studies for Cornet and Trumpet* and *Characteristic Studies for the Cornet* by Herbert L. Clarke, *Lip Flexibility*

[118] Ibid., 1.

on the Cornet or Trumpet by Walter M. Smith, *Grand Method for Trumpet or Cornet* by Louis-Antoine de Saint-Jacome, *Lip Flexibilities for Trumpet* by Charles Colin, and *Complete Conservatory Method for Cornet* [Trumpet] by Jean-Baptist Laurent Arban. Part one focuses on going from the middle or low register to the pedal register, then back up to the starting register. These exercises proceed chromatically downward, as low as possible, with the player resting for fifteen minutes after completion. Part two focuses on going from the pedal register to the higher register, then back to the pedal range. Most lessons indicate an hour rest between parts two and three; however, some people do part three before the hour of rest. Part three focuses on lip flexibility, while parts four through six focus on single and multiple tonguing articulations. Parts one and two are all original material by Gordon, part three is partly original and partly from the six supplemental books, and parts four through six are all from the six additional books.

Gordon's method book is an approach to practicing. It has a written range of C^1 to C^7 with the instructions to continue both as high and as low as possible. When three unsuccessful attempts are made at sounding the high or low notes, the player should stop playing that part and continue on to the next part.

Trumpet Yoga[119]

Jerome Callet is a trumpet and trombone teacher in the New York area. He is also a mouthpiece and instrument designer. He decided to create a new method because at age thirty he could not play a C^6. This caused him not to take "the simplest musical job."[120]

[119] Jerome Callet, *Trumpet Yoga* (New York: Charles Colin, 1973), 3.
[120] Jerome Callet, *Brass Power and Endurance* (Long Island, New York: Harold Branch Publishing, 1974) 73.

He worked in what he called his "lip laboratory" for eleven years, and after ten years he could play loud C^7s.[121] The method he developed is called *Trumpet Yoga* because Callet thought using unrolled lips in a fixed position was comparable to performing a yoga head or shoulder stand.

Trumpet Yoga's focus is on building a strong embouchure. To create this embouchure, the player places the mouthpiece mostly on the upper lip (7/8 upper to 1/8 lower) and begins to unroll the lips to their fullest extent while making sure to keep the lips against the teeth. This embouchure is used to play the double pedal notes for the beginning exercises. When ascending from the double pedal range, the player slides the mouthpiece down the lips to the normal playing embouchure, except that the top lip should remain unrolled. To help facilitate the mouthpiece slide, the lips should remain wet. Sliding (or tracking) the mouthpiece on the teeth is a normal part of playing a brass instrument, as described by Reinhardt.[122] To switch between the pedal register and the non-pedal tone register, Callet recommends sliding a great amount. The teeth should remain half an inch apart for the pedal register, and a quarter of an inch apart for middle and upper registers. Because the lips are unrolled, the aperture is smaller compared to the rolled-in lips. The facial muscles are more engaged, and as a result arm pressure is reduced, as it exists only to facilitate a seal between the lips and mouthpiece.

To help keep the lips unrolled in the non-pedal tone register, the corners of the mouth must remain lifted up towards the cheeks and eyes. The lips are never to be pulled to a downward position. A crucial step is to keep the bottom lip over the top teeth at all

[121] Jerome Callet. *Trumpet Yoga. 3*.
[122] David Ray Turnbull, "An Analysis, Clarification, and Revaluation of Donald Reinhardt's Pivot System for Brass Instruments" (DMA diss., Arizona State University, 2001), 6.

times. Callet also encourages squinting with the eyes. He states that the cheeks and nose should look and feel as if something awful was smelled. With the face in this position, the lips will form a "U-shape."

To articulate notes, Callet's instructions are to touch the top lip with the tongue. He suggests tonguing through the teeth in all registers. He also says not to arch the tongue when playing. The air compression needed for this embouchure is greatly increased, and to compensate, the abdominal muscles need to be as firm as possible. To understand the necessary firmness, he suggests having the student lean back until he or she can almost look directly at the ceiling. While still leaning, ask the student play a note in the middle register.

After an explanation of the new embouchure and a wide array of pictures, the method book is divided into four sections. Section one has three exercises that the player can use when warming up, when he or she needs to refocus the embouchure, and when practicing after taking an extended break. Sections two through four are titled "Additional Warm Up and Conditioners," "Etudes and Drills," and "Extended Range." They are to be added when the player is ready to progress, and not every exercise is to be played each day.

Callet's method uses the double pedal range, while ignoring the single pedal range, and extends into the extreme upper register, moving from F-sharp^{0} to C^{7}. He states, "I do not play in the single pedal register (low F to C). You will benefit more in the double pedal register because of the unrolling of the lips."[123] The embouchure changes when shifting from the double pedals to the normal register.

[123] Jerome Callet, *Trumpet Yoga*. 4.

James Stamp Warm-Ups +Studies[124]

James Stamp was an orchestral player before he moved to Hollywood and became a studio musician. He suffered a heart attack in 1954 at the age of fifty. Doctors during the 1950s urged patients not to exercise after a heart attack, and Stamp did not like this lifestyle. As one of his students, Roy Poper, stated, "He said he would rather die than remain still."[125]

Because Stamp could not remain idle, he began a training program of walking one day, swimming the next, and running the following day. He built up his strength until he could do all three in one day.[126] The idea of cross training became the backbone of his method.

Stamp uses lip buzzing, which is buzzing the lips alone, mouthpiece buzzing, and playing on the instrument in his method. For the lip buzz, he uses the low range but his focus is on pitch and rhythm instead of the mechanics of producing a lip buzz. Mouthpiece buzzing extends to C^6, and as before, the focus is on pitch and rhythm, not on extending the range or the mechanics of producing a mouthpiece buzz. Extending the upper register is not the main focus, and he says that pushing the upper register defeats the purpose of mouthpiece buzzing. Stamp suggests keeping the center of the lips relaxed while mouthpiece buzzing, so that when the mouthpiece is off of the lips, the note should sound an octave lower.[127]

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[124] Thomas Stevens, *James Stamp Warm-Ups +Studies* (Switzerland: Editions BIM, 2005).
[125] Roy Popper, *Guide to the Brasswind Methods of James Stamp* (New York: Balquhidder Music, 1995), 4.
[126] Ibid.
[127] Ibid., 10.

The section of the method book played on the trumpet is divided into three main parts. The first uses arpeggios that descend into the pedal range (C^3) and ascend as high as it is possible. Stamp noticed that when doing arpeggios, students would incorrectly let the pitch rise or fall according to the direction of the next note. To correct this mistake, he added notes above or below the pitch so students would not let the intonation suffer. To help students avoid changing pitch, he would emphasize thinking about keeping the pitch down when playing ascending passages, and keeping the pitch up when playing descending passages.

Section two contains slow, octave leaps with chromatic notes added at the end of the leaps. The final section is scales. He emphasizes starting around G^3, depending on the key signature, and playing all types of scales, including; major, minor, diminished [octatonic], and whole-tone scales.

Stamp uses pedal tones to help the embouchure work in the most efficient manner, enhance the high range, and play with the best air support. He maintains that playing pedal tones should use the normal embouchure, and he uses only the single pedal range (C^3).

The Balanced Embouchure[128]

Jeff Smiley is a trumpet teacher in the Dallas/Fort Worth area. He has taught hundreds of students and decided to write his book because he wants everyone to understand that the upper range is not impossible. According to Smiley, "one of the most

[128] Jeff Smiley, *The Balanced Embouchure* (Garland, Texas, self-published, 2001).

fun and thrilling things to do on trumpet [is to]—play higher notes."[129] Smiley's concept applies to all trumpet players; he acknowledges, "Frankly, I no longer scheme for any of my students to become professional players, nor do many of them have that goal."[130]

The method advocates using the extreme ranges, upper and lower, to achieve the proper "Balanced Embouchure." For the low range, Smiley uses a "roll-out" embouchure. To achieve the proper embouchure he provides six steps:

1. Pucker the lips forward, rolled out, corners inward.
2. Place the mouthpiece almost entirely on the top lip, with the top lip rolled out and pointed deeply within the cup.
3. Roll out the bottom lip so that it protrudes under the bottom rim of the mouthpiece.
4. Tilt the horn up slightly so that the mouthpiece pressure feels somewhat equal on both lips.
5. Close the lips, feeling the soft inner lips touch.
6. Blow. Keep pressure to a minimum.

This embouchure produces notes around the double pedal range (C^2). Smiley believes that there are two basic double pedal embouchures: "Maggio" (who recommended maintaining a normal embouchure) and "Callet" (who utilizes more lip movement than Maggio, but not as much as Smiley).

The other main concept Smiley teaches is "roll-in" or "the mean old man look," which focuses on the high range. He instructs the player to roll in the lips so no red appears, and hold. The second part of this exercise is to blow air and make a squeak. He calls this the "lip-clamp-squeak." These two embouchures work together and help the student develop the full range of motion.

Smiley's book uses only the double pedal, "basic seven" notes, C^2 down to F-sharp[1], and avoids playing and discussing the single pedal range. The embouchure for the

[129] Ibid., 95.
[130] Ibid., 22.

pedal tones is greatly altered from the normal playing embouchure. The lack of notes in the single pedal tone range, and the embouchure change, are similar to Callet's method, which Smiley mentions as a source for his method. When playing double pedal tones, he suggests playing louder with the disclaimer that, no matter what he suggests, students naturally play pedal tones this way.

CONCLUSIONS

There are many different methods available to teach pedal tones; however, the six method books summarized here have become the standard for this technique. It appears that players using the Callet or Spaulding methods and the pucker embouchure usually gravitate toward the jazz and commercial style of playing. However, Robert Civiletti, who is a Callet student, is an international trumpet soloist focusing on the Baroque repertoire. Conversely, players using the MacBeth, Spaulding, Gordon, or Stevens methods gravitate toward the classical style of playing. The pros and cons of each method vary. Some players may view anchor-tonguing, which is used in the Spaulding, Callet, and Smiley methods, as a con, while others might view this as a pro. Each trumpet player has a different oral cavity, teeth structure, and body type, therefore, playing the trumpet is different for each player, and there cannot be set rules. This is why Maggio and Stamp did not want to write method books. The value of each pedal tone method is determined by the individual trumpet player.

Pedal tones are now more than a fad. As the percentage of players using and teaching them continues to increase, they will likely continue to appear with greater frequency in repertoire, and the methods for teaching pedal tones will likely continue to expand and evolve.

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BIOGRAPHICAL SKETCH

Malachy Rodriguez plays Soprano E-flat Cornet in the Salt River Brass and is a freelance musician in the Phoenix area. He received his Doctor of Musical Arts degree from Arizona State University in the spring of 2014, where he was a Graduate Teaching Assistant to Regents' Professor David Hickman. Before moving to Arizona, Rodriguez received a Master of Music degree from the Cleveland Institute of Music, having studied with Michael Sachs, Michael Miller, and Robert Sullivan, and a Bachelor of Music degree from Baldwin-Wallace College Conservatory of Music, where he studied with Jack Sutte and Jack Brndiar. While in Ohio, he played throughout the state with orchestras, jazz groups, salsa bands, and pit orchestras. He also attended the Pierre Monteux School for Conductors and Orchestral Musicians, won an International Trumpet Guild Conference Scholarship in 2006, and was a finalist in the Ellsworth Smith-International Trumpet Guild Competition in 2012. He currently lives in Gilbert, Arizona, with his wife, Megan, and their two cats, Mackenzie and Mahler.