

**CONTEMPORARY VIOLIN TECHNIQUES:  
THE TIMBRAL REVOLUTION**

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## **Introduction:**

The violin is arguably amongst the most important instruments to have ever graced the concert stage. The immense popularity of the violin owes a great deal to the early 17<sup>th</sup> century composers, who were first to utilize the violin's technical and emotional prowess in western European music. As composers in the 17<sup>th</sup> century were actively searching for an instrument which would be equally at home in both a solo and ensemble capacity, so too were professional concert violinists attempting to establish the violin as an acceptable alternative to florid vocal passages in instrumental music. Claudio Monteverdi (1567-1643) was the first noted composer to “dare introduce a violin in classical music”<sup>1</sup> with his *Orfeo* in 1607. Since then, countless composers have preferred the violin as a vehicle of choice to communicate their musical ideas to the world. When looking back into the famous relationship between composer and violinist, it is astonishing to see how they have kept up with each other.

The violin is unique in that it has an exceptional ability to produce extremely broad varieties of sound, which range from the hideous to the sublime. This is a possible clue as to how the violin has managed to remain the darling of almost every stylistic trend since its inception into the tradition of western music. This relationship has been paramount to music, whose composers have pushed the technical possibilities of the violin, and violinists who have ceaselessly interpreted the music with unparalleled artistic expression and virtuosity. Within the last fifty years, the world of classical music has been undergoing a timbral revolution, where a huge number of new and exciting sounds and timbres have been uncovered. These new possibilities have added to the sonic pallet of violin music to no end. This revolution has largely been the product of the noise orchestras of the early Dadaist movement in Italy and France during the early 20<sup>th</sup> century.

## **From the Renaissance to the Dadaists:**

The noise orchestras brought about by Dadaist composers sought to expand the pallet of orchestral timbre, by implementing non-musical objects such as typewriters (Erik Satie's [1866-1925] *Parade*) and airplane engines (George Antheil's [1900-1959] *Ballet Mechanique*). In an attempt to remove the timbral biases that accumulated throughout the history of music, the Dadaists considered “found objects” as fair game to feature in both orchestral and solo concert music. Shortly after the Dadaist movement, electronic and acoustic media began to merge. The presence of these new electroacoustic music modes created a climate for change, enabling composers and performers to seek out new ways to augment the sonic possibilities of the violin. No other period in music has seen such a development of new performance resources. Traditional eighteenth and nineteenth century performance techniques now represent only a small fraction of the instrument's sonic possibilities.

This paper will attempt to outline a small number of these exciting new techniques, and perhaps offer some insight as to how they might be used in a musical context. These

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<sup>1</sup> Zdenko Silvela, *A New History of Violin Playing* (USA: Universal Publishers, 2001), p. 26.

advances will include bowing techniques, right and left percussion developments, and new harmonic innovations.

## Bowing:

While working closely with the needs of the traveling 19<sup>th</sup> century violin composer/performers, (i.e. Giovanni Battista Viotti [1755-1824], Rodolphe Kreuzer [1766-1831], and Pierre Rode [1774-1830]), Francois Tourte (1747-1835) designed a new version of the violin bow which revolutionised violin technique. By 1820, Tourte established many features which contributed greatly to the development of contemporary violin technique. The optimal length of the modern violin bow was modified to a new standard length of 74-75 centimetres and a new concave stick curvature.<sup>2</sup> The move to the modern bow allowed for a grater control over the tonal qualities of the instrument. Violin Concertos and lyric sonatas which were once described as rich, warm, and lyrical, now included new adjectives such as rough, clangourous, silky, and transparent. Production of a “big, beautiful sound” with the bow was no longer the only preferred mode of expression. The bow presents many possibilities that have yet to be fully explored, and it is up to the performer and the composer to explore this potential.<sup>3</sup>

One of the many significant innovations in bowing technique is **Sul Ponticello**, which literary translates to ‘on the bridge’. Thorough research has shown that this technique was known to violinists and composers in the 16th century, though was generally frowned upon. It was first suggested by Sylvestro di Ganassi (1492-mid 16<sup>th</sup> century) in his ‘*Regola Rubertina*’ (a two-part thesis written in 1542), in which he states that to achieve a stronger and harsher sound, one should play near the bridge.<sup>4</sup> The extents of most tone colour variation in the 18th and 19th centuries were simple alterations of strong powerful bow strokes. Nevertheless, composers such as Luigi Boccherini (1743-1805) and Joseph Haydn (1732-1809) employed sul ponticello effects in their music to imitate other instruments. For example, Haydn used it to imitate the Jew’s harp in the second movement of his *Symphony no. 97 in C major*.<sup>5</sup>

Ex. 1 Joseph Haydn, *Symphony no. 97 in C major*

Accompaniment: imitate the Jew's harp by playing lightly close to the bridge.

normal sounds Jew's harp use an up bow for the ist

<sup>2</sup> 'François Xavier Tourte', *Grove Music Online* ed. L. Macy (Accessed 21 November 2003), <<http://www.grovemusic.com>>

<sup>3</sup> Patricia Strange and Allen Strange, *The Contemporary Violin: Extended Performance Technique* (USA: University of California Press, 2001), p. 1.

<sup>4</sup> David D. Boyden, *The History of Violin Playing from its Origins to 1761 and its Relationship to the Violin and Violin Music* (London: Oxford University Press, 1965), p. 76.

<sup>5</sup> Robin Stowell, *Violin Technique and Performance Practice in the Late Eighteenth and Early Nineteenth Centuries* (London: Cambridge University Press, 1990), p. 222.

The effect of Sul Ponticello is based upon the placement of the bow in relation to the bridge. The closer the bow is to the bridge, the more extreme the effect will sound. Krzysztof Penderecki (b. 1933) uses sul ponticello to introduce the violin in his *Miniatures for Violin and Piano* (1959).

Ex. 2 Krzysztof Penderecki, *Miniatures*



In ‘Projections I’, *William Sydean* (b. 1928) notates a chord to be played over or on the bridge, resulting in the loss of the exact pitches. The pitches are lost because of “Young’s Law” which states that sul ponticello is created when the fundamental tone is eliminated leaving the first overtone acting as the new fundamental.<sup>6</sup> This is what gives the sound a thin, brittle and/or metallic quality.

**Col Legno** which means “with the wood,” is a colouristic device which is usually used in many different percussive and melodic contexts. It is an extremely prominent bowing technique which is becoming hugely popular with almost every new music composer and performer. The technique is sometimes frowned upon by violinists, due to the completely understandable reluctance to bounce a \$10,000 piece of wood against the strings of a \$40,000 instrument! Luckily, most contemporary string players carry a less expensive bow just for this purpose.<sup>7</sup>

There are two basic ways the bow stick can generate sound from the violin. The first is to strike the instrument (col legno Battuto) and the second is to use a legato stroke, keeping the stick in contact with the strings throughout the stroke (col legno tratto). Since Col Legno Battuto is really a percussive technique, please refer to the ‘percussion’ section of the paper for further detail.

The **Col legno tratto** technique does not produce a clear sound, since the surface of the stick is smooth and covered with varnish. Some examples of this technique in recent music are as follows:

Ex. 3 Arnold Schoenberg (1874- 1951) *Die Gluckliche Hand*

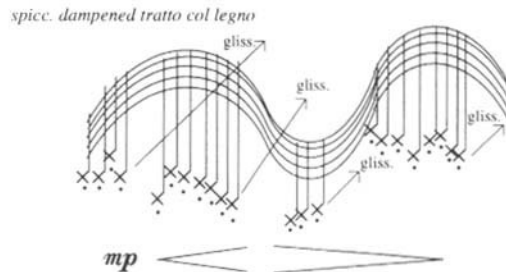


<sup>6</sup> Strange, *The Contemporary Violin*, (USA: University of California Press, 2001), p. 3.

<sup>7</sup> *Ibid.*, p. 35.

In *The Shadow Nos* for solo violin, Daniel Wyman uses col legno tratto in conjunction with very fast spicato strokes (a bowing style where the bow bounces off the string), and a quick glissandi with damped pitches.

Ex. 3 Daniel Wyman, in *The Shadow Nos*



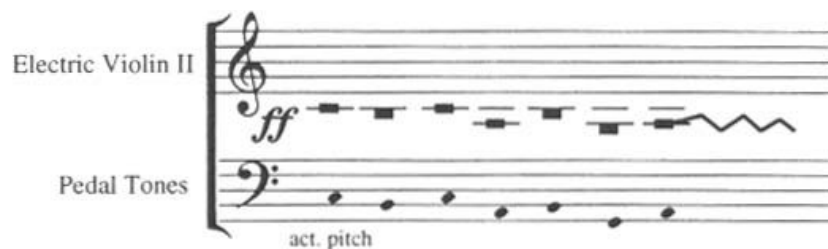
Perhaps the newest bowing technique that has been increasingly appearing is **Subharmonics and ALF's**. These techniques utilize the use of extreme pressure to the bow stroke and careful placement across the string(s), which creates a variety of pitches sounding below the fundamental of an open string. For example, by bowing the G string precisely at the point where the octave is divided equally (midpoint of string) and applying overpressure to the bow stroke, the resulting sound will be a G one octave lower than the G string. If one bows the G string on a string divided at the 1/3 point, the result will produce a low D (a twelfth below the open G). This will be consistently produced at any harmonic node when overpressure is applied.

Ex. 4 Overtone and undertone series



The first literary examples of subharmonics are found in the string quartet *Black Angels* composed by American composer George Crumb (b. 1929). He calls them pedal tones in the score, and then proceeds to explain to the performer how to produce the subharmonic tones. The following example shows the sounding pitches on the bottom staff, and the played pitches above. Crumb does not elaborate on the exact placement of the bow, leaving this at the performer's discretion.

Ex. 5 Subharmonics in *Black Angels* by George Crumb



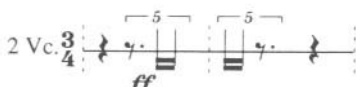
## Percussive Techniques:

“Excuse me! You want me to do what with my violin?” This is a common response when a string player is asked to bang on their \$600,000 Strad like it was a drum. Nevertheless, for a contemporary violinist, it is common-place to utilize parts of the violin that are capable of producing sounds. Interestingly enough there is no historical accounts of percussive techniques for the violin until their emergence in the early 20<sup>th</sup>. The most common method to produce percussive sounds on a violin is through using the hand as a mallet. The hand has four general areas that can produce percussive results: fingertips, fingernails, knuckles, and palm. Each produces a different timbral effect. There are also a number of established ways to produce each percussive sound, such as striking the instrument with the whole hand, tapping, slapping, rubbing, knocking, flicking, or using a tremolo with two fingers.

- **The Fingertips:**

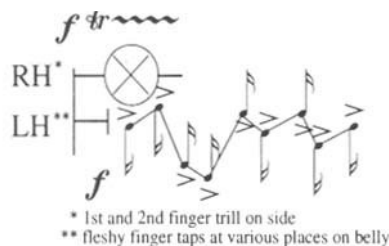
The first right hand action to be discussed is the use of the right hand fingers to strike the finger board. Composers must take into account whether a pitched or non-pitched sound is desired. The composer will either notate a dampened string or indicate to let the string(s) ring out. The composer will also indicate whether the performer is to strike all four strings or a select few. An example of this technique is found in *Anklasis* by Krzysztof Penderecki (b. 1933)

Ex. 6 Finger slaps in *Anaklasis* by Krzysztof Penderecki



Another possible example showing the use of fingertips pertains to rubbing the finger across the body of the violin. “A roll can be achieved by putting some rosin on the finger (to increase friction) and then pushing it across the wood.”<sup>8</sup> It sounds close to a fingered drum or tambourine roll.

Ex. 7 A combination tap and trills in *Shadow Nos* by Daniel Wyman



- **The Fingernails:**

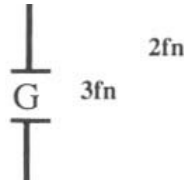
The use of fingernails expands the timbral possibilities yet again by providing an effective contrast to the sounds produced by the flesh of the fingertips. Fingernails produce a sharper

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<sup>8</sup> *Ibid.*, p. 99.

percussive sound due to the acoustic enhancement of the high partials, which are better enabled by the smooth hard surface of the nail. “Most of the same techniques that are used with the fingertips can be used with the fingernails, including tapping and tremolo.”<sup>9</sup> Here is an example of the use of fingernails in a percussive context:

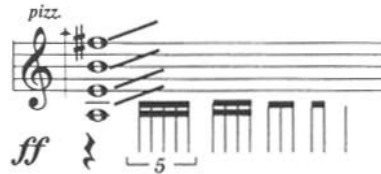
Ex. 8 Use of fingernails in *Antiphony VI, Cogito* by Kenneth Gaburo



- **The Knuckles:**

Perhaps the most obvious and natural use of the hand acting a mallet is the use of the knuckles. It is just as effective to knock on a door than it is to knock on a violin with the knuckles. A right hand knock is notated in David Cope’s (b 1941.) *Angels Camp II*

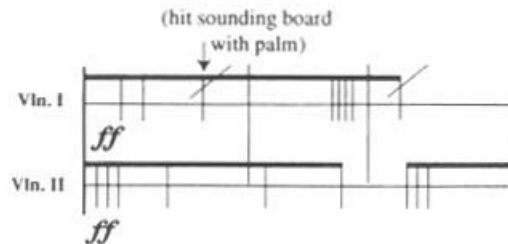
Ex. 9 Resonating strings in *Angel’s Camp II* by David Cope



- **The Palm:**

The loudest of all the “hand as mallet” techniques is the palm slap. It is effective because the composer can achieve a loud percussive sound while keeping the violinist from damaging the instrument since the energy of the palm is not directed to a small point, but more evenly distributed to a greater surface area. The next example shows how Penderecki uses a palm slap in a musical context:

Ex. 10 Palm slaps in *String Quartet No. 1* by Krzysztof Penderecki



- **The Bow:**

Besides using the hand to create percussive sounds on the violin, it is also common place to use the bow to hit the instrument. These techniques were a natural extension of Col Legno

<sup>9</sup> *Ibid.*, p. 100.



methods, but with the wood (**Col Legno Battuto**), which means to strike the instrument with the wood of the bow from above the string. Here it is used in the string quartet: *3 Ring Circus* by Michael Vincent (b. 1976)

Ex. 11 Col Legno Battuto texture in *3 Ring Circus, Ring I* by Michael Vincent

The image shows a musical score for four staves, likely representing a string quartet. Each staff contains musical notation with various note values and rests. Above the staves, the instruction "col legno battuto" is written in italics, followed by the instruction "Let bow bounce for full value of each note". There are also some numerical markings like "3" and "3<sup>rd</sup>" on the staves, possibly indicating triplets or specific string positions.

Another example of the bow producing percussive effects is found in *Cadenzas and Variations I & II* by Richard Wernick (b. 1934). The composer writes: “Touch G string lightly at 2<sup>nd</sup> partial node. Strike bow midway between node and bridge, and move toward bridge to achieve higher pitches. Sound should be completely dry, which may necessitate damping D string as well.”<sup>10</sup>

Ex. 12 Strike tones in *Cadenzas and Variations I & II* by Richard Wernick

The image shows a musical notation for a single staff, likely a G string. It starts with a treble clef and a single note on the G line. Above the staff, the instruction "col legno battuto" is written in italics. Below the staff, there is a series of notes that rise in pitch, with a tempo marking "fast" followed by a dashed line and "to slow". Below the notes, the dynamic marking "PPPP" is written in bold, italicized letters.

<sup>10</sup> Richard Wernick, *Cadenzas and Variations I & II* (New York: Composers Facsimile Edition, 1965), p. 3.

## Harmonics

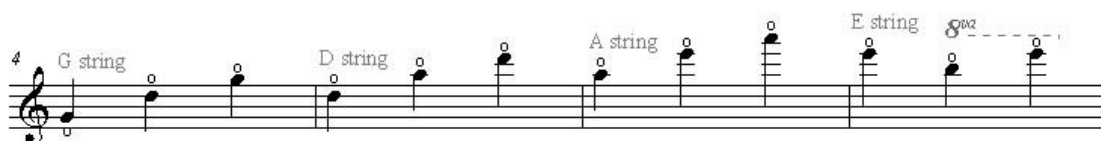
Although natural harmonics were exploited long before the beginning of the 20<sup>th</sup> century by such composers as Jean-Joseph Cassanéa de Mondonville (1711-1772), Charles de Lusse (b. ca. 1720), L'Abbé le fils (1727-1803) and Domenico Ferrari, (1722-1780),<sup>11</sup> their unanimous acceptance into the violinist's technical vocabulary was slow to materialise, due to what was thought as their "inferior tone equality."<sup>12</sup> The earliest sonata to employ artificial harmonics was by Carlo Ciabrano (b. ca 1700) in his *Six Solos for a Violin, with through-bass for harpsichord*, published in 1773. The omission of harmonic effects from many important violin tutors, notably those of Geminiani (1687-1792), Rode and Leopold Mozart (1719-1787), further underlines their mixed reception, Leopold Mozart expressing particular disapproval of any juxtaposition of harmonics and normally stopped notes within the same movement.<sup>13</sup>

Another account which demonstrates the view of harmonics before the 20<sup>th</sup> century was given by Louis Spohr (1784-1859) in a footnote on the use of harmonics in his book *Violinschule* published in 1832. "The harmonics cited above (octave, fifth of the octave and two octaves above each string), have always been used by all good violinists in combination with the natural notes, as they are not very different in sound from the latter. All others, however, especially the so-called artificial harmonics, must be rejected as unsuitable, because they differ considerably from the natural tone of the instrument. Whenever entire melodies are played in such childish, alien tones, it amounts to degradation of the noble instrument. I must strongly advise all young violinists not to waste time in such study to the neglect of more useful things. In support of this view I can also cite Pugnani, Tartini, Corelli, Vioti, Eck, Rode, Kreutzer, Baillot, Lafont and others.

Spohr would certainly be rolling in his grave if he knew just how common the use of artificial harmonics has become in the last century.

The following is a comparison of aesthetically acceptable harmonics from Spohr's day, and aesthetically acceptable harmonics used today:

### Ex. 13 Natural Harmonics



<sup>11</sup> Mondonville, *Les sons harmoniques, sonates à violon seul la basse continue...* (c. 1738); de Lusse, *Six sonatas pour la flute traversière avec une tablature des sons harmoniques...*(1751); L'Abbé le fils, 'Duo italien de Ferrari, VI Sonate a violino solo e basso...opera I'(c. 1756-1760).

<sup>12</sup> Stowell, *Violin Technique and Performance Practice* p. 212

<sup>13</sup> *Ibid.*, p. 212

Ex. 14 Microtonal natural harmonics

The score consists of four staves of music. The first staff shows frets 0-13 with various natural harmonic symbols and fingerings. The second staff shows frets 14-27. The third staff shows frets 28-41. The fourth staff shows frets 42-55. Labels 'Null' and 's. reale' are placed above and below the notes. Some notes have a circled 'o' symbol indicating a natural harmonic. Fingerings are indicated by numbers 1-4.

The following is a good example of the contemporary use of natural harmonics, the second variation of Larry Polanski's piece for solo violin entitled *Little Maggie*. The roman numerals and the sounding pitch are notated as a natural harmonic with the 'o' symbol. The third pitch, D, can be played as a third harmonic on the G string or as the fourth harmonic on the D string.<sup>14</sup>

Ex. 15 Natural harmonics in *Little Maggie* by Larry Polanski

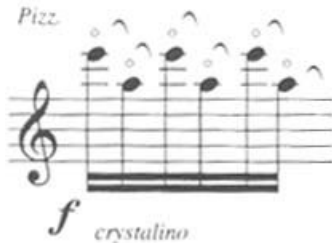
The score is for Variation II of 'Little Maggie'. It begins with the instruction 'very legato, flowing'. The music is written for violin and includes natural harmonics indicated by circled 'o' symbols. Roman numerals (I, II, III, IV) are placed below the notes to indicate fingerings. Interval ratios like 5:4, 3:2, 4:3, and 6:4 are shown above the notes. A double bar line is followed by '(l.v. sempre in variation)'. At the bottom left, there is a small diagram of a violin with the instruction 'IV ossia, sempre'.

<sup>14</sup> Strange, *The Contemporary Violin*, (USA: University of California Press, 2001), p. 118.

## Harmonic Variants

**Pizzicato Harmonics** are effectively harmonics struck from the flesh or nail of the finger. This is the same method used by plucked string instruments such as guitar and mandolin. This technique has two principal considerations: “If a more resonant sound is the object, the left-hand finger must be released from the string immediately. The second is the more difficult harmonic pizzicati, such as a stopped harmonic pizzicato, which will have a clearer pitch if they are plucked closer to the bridge”.<sup>15</sup>

Ex. 16 Harmonic pizzicato in *Eleven Echoes of Autumn* by George Crumb



**Harmonic Glissandi** are slides played either as open or stopped harmonics. In an open harmonic glissando all possible harmonics found along the string can be set into vibration. A common yet effective technique is to rapidly glide the finger up and down the length of the string, producing the overtone series on the string.

A stopped harmonic glissando is articulated in two possible ways: “The fundamental stopped pitch can be held by the first finger while the fourth finger slides between nodes a fifth above and as close as possible to the first finger... How close one can get to the stopped note with the fourth finger will determine the highest sounding harmonic.”<sup>16</sup>

Ex. 17 Stopped harmonic glissando



The following is an excellent musical example of a stopped harmonic used in context. Ligeti states in the score that it should be an “arm glissando” and that the “tone can disappear in the highest region, until only the noise of the bow remains.”<sup>17</sup>

<sup>15</sup> *Ibid.*, p. 126

<sup>16</sup> *Ibid.*, p. 127

<sup>17</sup> György Ligeti, *Ramifications* (Mainz: Schott Music Corp., 1970), p. 60.

Ex. 18 Stopped harmonic glissando in *Rammifications* by Ligeti



**Fawcetts** were first used by composer Mathias Spahlinger (b. 1944) in his *Adieu M'Amour* for violin and cello. The composer attributes the discovery to R. Fawcett.<sup>18</sup> The recipe to make a Fawcett harmonic is to lightly stop the G string with the third finger on note C. By bowing very lightly, it will produce either a pitch cluster or the third partial of the open G (G4). The performer then damps the G string very lightly with the first finger (placement not exact), still allowing a faint vibration. The purpose of the first finger is to subdue the partial node on C, thus disrupting the stability of the fundamental. The entire pitches from the C harmonic overtone series can be varied by altering the pressure, position and bow velocity. Also, the closer the bow is to the bridge, the higher the sounding harmonic. This can be applied to any artificial (stopped) harmonic.<sup>19</sup>

Ex. 19 Fawcett harmonic glissando in *Adieu M'Amour* by Mathias Spahlinger



**Conclusion:**

The unique relationship between violinist and composer has surely created some of the world's most important music. This fact has ultimately helped propel classical music to its epitome of musical achievement. The fact that it is practically unthinkable to imagine a world without the violin is perhaps the greatest account of just how important this instrument is to the world's musical traditions. As long as this tight relationship between composer and violinist remains intact, precedence has established, and there is little doubt it will continue to expand past the present timbral revolution and into future stages of musical expression. One thing is for sure; the next stages will transcend and include the lessons learned from this current timbral liberalism.

<sup>18</sup> Merkel Clemens, email to the Authors of *The Contemporary Violin*, 29 July 1999.

<sup>19</sup> Strange, *The Contemporary Violin*, (USA: University of California Press, 2001), pp. 134-135.

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