M I C H AE L E D W A R D E D G E R T O N

adjusting to beams falling

for flute and violoncello

Written for and dedicated to:

Lisa Cella and Frank Cox

Performance Notes

adjusting to beams falling uses a multidimensional network of elements as follows:

FLUTE

Air direction – either ingressive or egressive airflow
Airflow – amount of air sent through the lips
Sub-lip pressure – pressure accumulation behind the lips
Embouchure – bilabial shape and position
Lip pressure – bilabial pressure, directly on aperture
Rotation – rotation of flute from 45* below ord, to ord, (90*) to hole rotated directly on lips (180*), up to 315*
Horizontal angle – movement of flute on a horizontal plane, keeping the axis of movement focused on the lip to mouthpiece junction
Jaw movement – jaw movement from side to side and/or front to back
Finger depression – amount that keys will be depressed
Fingerings – self-explanatory
Flute pitch and rhythm - ditto
Voice and/or oral cavity articulation - ditto

VIOLONCELLO

Rotation – refers to bow rotation
Portion – refers to amount and portion of bow used
Angle – refers to angle of bow relative to the strings on a horizontal plane to strings
Pressure – bow pressure against strings
Speed – bow speed in absolute terms, independent of tempo
Placement – bow placement along the strings, from below bridge to above nut
On/off – onset and/or offset of bow – used separately from left hand at times
Violoncello pitch and rhythm – self-explanatory
Effleuré – amount of left-hand depression

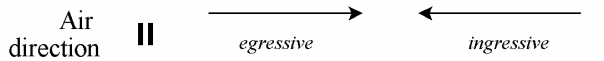
This is a piece about not accepting lies; about looking deeper into and beyond the propaganda distributed by the powers in charge; and mostly about asking the question "why?" Dissent and resistance are outlawed, arrested, charged in courts of law, judged NOT by our peers and labeled insurgents for resisting the onslaught. A people's history wishes to resist campaigns of disinformation, to avoid unknowingly providing consent to crimes by states and crimes against humanity. On the very day that Harold Pinter was awarded the 2005 Nobel Prize for literature, the BBC (the propaganda engine of the British establishment) who should be singing the praises of one of their own sons, said he was unworthy of the prize because of his political stance, and that he was chosen, only because the Nobel committee wanted to make a political statement through the outspoken Mr. Pinter. Well, no matter that his prose and plays are well-known and loved throughout the world. My, my, my, what a scandal, that an artist will have broad-reaching socio-political views. Since the Hutton Report, which found the BBC guilty of not supporting the lead-up to the invasion of Iraq, the change of leadership at the BBC has engaged in the shameful manufacture of public opinion against common sense and international law, to consent to allowing the US and British Governments to commit war crimes that have resulted in over 100,000 dead in Iraq and over 1,000 American soldiers. So I guess the BBC has now become the Backing Bush Constantly (corporation). But to get back to the question why – on September 11, 2001, I heard only one voice in the corporate-controlled media ask the question "why?". Seemed an obvious reaction to me – but perhaps the Bush Cabal knew already…
One other small point, the recent report titled NIST Response to the World Trade Center Disaster, Federal Building and Fire Safety Investigation of the World Trade Center Disaster, Media and Public Briefing on April 5, 2005 Dr. S. Shyam Sunder, Acting Deputy Director and Lead Investigator of the Building and Fire Research Laboratory of the National Institute of Standards and Technology in the U.S. Department of Commerce could not definitively determine why the twin towers collapsed. In their report, the investigators found that:
•The two WTC towers withstood the initial impact of virtually identical aircraft (Boeing 767-200ER) during the terrorist attacks of September11, 2001.
•Calculations of demand to capacity ratios due to aircraft impact damage showed that for the floors affected by the aircraft impacts, the majority of the core and perimeter columns in both towers continued to carry their loads after the impact. The loads from damaged and severed columns were redistributed to nearby undamaged columns.
•The above finding supports the fact that the WTC towers withstood the initial aircraft impact and the finding that they would have continued to remain standing indefinitely but for another significant event such as the subsequent fires.
•Fires played a major role in further reducing the structural capacity of the buildings, initiating collapse. While aircraft impact damage did not, by itself, initiate building collapse, it contributed greatly to the subsequent fires and the thermal response of the structures.
•The jet fuel, which ignited the fires, was mostly consumed within the first few minutes after impact. The fires that burned for almost the entire time that the buildings remained standing were due mainly to burning building contents and, to a lesser extent, aircraft contents, not jet fuel.
•As a result of the above factors, the buildings would likely not have collapsed under the combined effects of aircraft impact and the subsequent jet-fuel ignited multi-floor fires … The existing condition of the fireproofing prior to aircraft impact and the fireproofing thickness on the WTC floor system did not play a significant role in initiating collapse on September 11, 2001.
So many questions about September 11 – who, how, why? But now to the music….

adjusting the beams falling (the phrase from the chapter "G in the Air" from the book The Maltese Falcon) is a continuation of a series of compositions designed to elevate the structural importance of those musical elements that are normally seen as appendages to pitch and rhythm, by scaling the multidimensional phase spaces of instruments and voices. As early as 1911, Schönberg suggested that "If it is possible to create structures out of Klangfarben that are differentiated according to tone height (pitch) .., then it must be possible to make such progressions out of the Klangfarben of the other dimension out of that which we call Klangfarbe." Although it is ambiguous as to precisely what Schönberg meant by Klangfarbenmelodie, here we have a clear indication that he was indeed thinking of dimensions outside of pitch and rhythm. Since then, other composers have explored such elements, with many working in the realm of the extended technique that was so popular between the 1960s and mid 1980s. However, current approaches look to a greater sophistication and structural relevance to the non pitch/rhythmic axis. So, to that end, I have been developing a theory of this work in the continuum (or multidimensional phase space), that will encompass not only my work, but implicate, in general, work by composers such as Julio Estrada, Frank Cox and Salvatore Sciarrino, as well as ethnically diverse world musical traditions.

Specifically, this piece is not an attempt to represent an abstract theoretical complexity. Rather, this piece attempts to utilize compositional methods of redundancy/novelty, tension/release, fission/fusion, consonance/dissonance across multiple dimensions. This is accomplished by 1) selecting robust elements involved in the production of sound, 2) scaling each parameter between minimal and maximal values, in order to 3) compose across multiple dimensions utilizing methods of similarity, contrast, development and variation as found within the pitch/rhythm domain; this leads potentially to 4) an increase of procedural redundancy/novelty, which is a prime concern of composition; this may be achieved either within a single or across multiple dimensions via 5) modulation within the same dimension, or via transference of procedural contour from one dimension to another; such procedures add to 6) notions of relatedness, similar conceptually to tonal music, but here implies that transposition/modulation within a single dimension will carry a closer correspondence to its original than when transferred to another dimension; all of this movement may 7) heighten the inherent nonlinearity of a system by shifting a value into a certain robust range, or by decoupling the elements from one another into certain ratios; the result of such procedures often 8) produce a) nonlinear phenomena, b) changes of timbre, or c) nonharmonic source/resonant multiplicities.

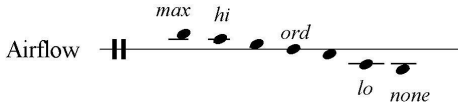
FLUTE

Air direction - the air may flow either inward (ingressive) or outward (egressive), and is often combined with flute rotation.

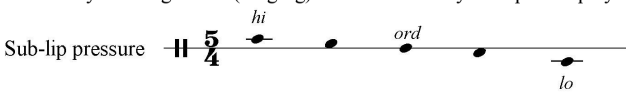


Airflow – max airflow should be conventionally "unmusical" and terribly aggressive; a low airflow should be next to nothing and should border on the unstable. When air is forced through a small opening or slit, the fast-moving airstream moves through slower air. It's edges meet resistance from that slower air and tend to peel back and form vortices. These vortices interact with the stream, exerting a sideways influence on it and causing it to move in an undulating path. This undulation can actually produce a substantial amount of sound, as when you whistle. An even greater amount of sound can be produced by coupling the slit to an edge.

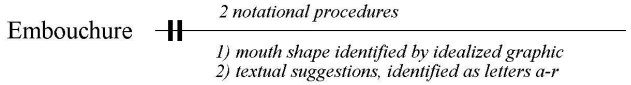
The undulations in the stream move along the stream at something less than one half the speed of the air in the stream (about 0.4 V according to Backus). Then the faster the airstream speed, the faster the oscillations of the stream when it hits an edge.



Sub-lip pressure – pressure may be throttled in the pharynx, as well as in the upper oral cavity. Here I'm asking that pressure be predominantly throttled in the upper oral cavity directly behind the lips and that also may be affected by the tongue and (bulging) cheeks. Naturally the lips will play a role in the pressure build-up, but should be secondary.



Embouchure – the idea is that embouchure change should affect the sound, some featuring small timbral change to others featuring large dynamical shifts, including movement amongst nonlinear attractors.

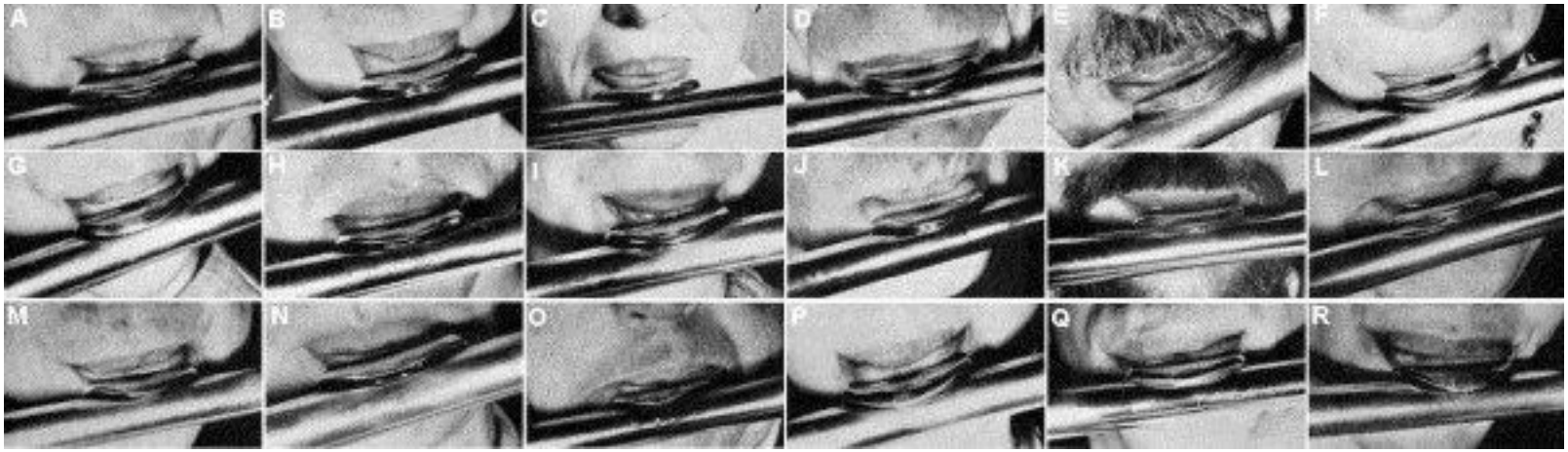


2 notational procedures utilized: 1) mouth shape, 2) textual suggestions, identified as letters A – R (the following material has been taken directly from (http://www.larrykrantz.com/))
the following embouchure positions were excerpted from the following by Mr. Krantz:

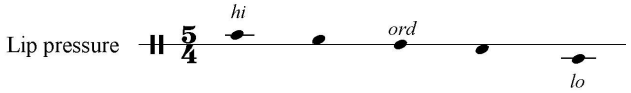
Artistic Flute Technique and Study
by Roger S. Stevens
Hollywood: Highland Music Company. (1967) pp.14-16
(currently out of print)

"The flutists whose embouchures are illustrated are highly accomplished musicians with better than professionally average tones. Most are professional or semi-professional career people, although one or two are strictly students with fine tones." The purpose of these illustrations is to suggest preliminary methods for altering embouchure, then the flutist is asked to go further with embouchure alterations, so that each change produces a perceptual difference.

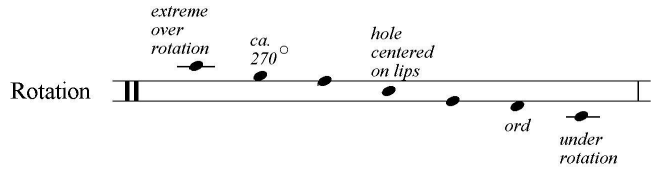
textual indications of the embouchure positions shown below:
A: A natural, almost perfectly symmetrical embouchure; B: Natural, symmetrical, making excellent use of the lower lip, and retaining optimum distance from the embouchure hole; C: Natural, symmetrical, inclined to be almost too far from the embouchure hole; D: Natural, slightly pulled to the left side; lower lip in position for maximum use; E: Natural, pulled slightly to the left; full upper lip retained high so that inner, more sensitive area of lip is used; F: Natural, symmetrical, flexible lower lip capabilities; slight "tear drop" in upper lip pulled flat rather than to one side; G: Nearly symmetrical but with upper lip irregular in contour and therefore rolled slightly out to use inner surface where irregularities are controllable. (Caution: upper lip must not move too close to embouchure hole.); H: Natural, pulled to the right, with only the playing surface of a full upper lip rolled outward; lower lip in excellent position to perform; I: Both lips full and both lips irregularly contoured; embouchure pulled to the right and located between the irregularities; both lips rolled slightly out to obtain use of more sensitive, inner surface; J: Symmetrical, upper lip almost straight across, thin lower lip rolled out to provide good playing surface; K: Extreme pull to the left to avoid heavy "tear drop"; air enters flute at an angle from the left. (Problematical.); L: Pulled to the right, heavy lips rolled out for sensitivity; no "tear drop"; M: Nearly symmetrical; large "tear drop" virtually eliminated by muscular pull in upper lip, lower lip in excellent position for use; N: "Tear drop", both lips irregular, aperture pulled to the left, lower lip in-advantageously located, danger of upper lip smothering embouchure hole; O: Very large "tear drop" avoided with aperture pulled to the right, lower lip rolled out for maximum sensitivity at point of aperture; P: "Tear drop" avoided by rolling upper lip up and out; relatively irregular lower lip, nevertheless in good position for optimum use; Q: Extremely large and heavy "tear drop" avoided by pulling only upper lip to the right; lower lip nearly symmetrical and in good, natural position for effective use; R: Both lips unusually heavy and irregular; aperture located to the left with flute moved to the left to coincide.

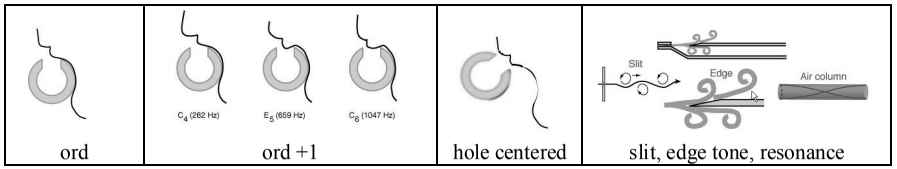


Lip pressure – as opposed to sub-lip pressure, here pressure is focused directly on the lips and the aperture between them

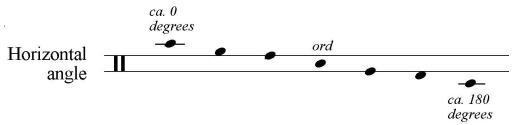


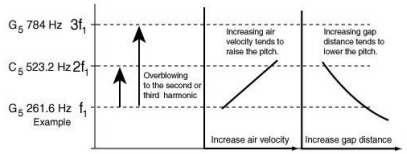
Rotation – mouthpiece is rotated in relationship to the lips - the player has direct control over the angle at which the air from the lips strikes the embouchure hole. Rolling in or out with the lips relative to the edge gives the player a greater range of volume and expression, and aids the process of overblowing to achieve the higher register. This direct access to the edge also permits the player to make small fine tuning adjustments. With the hole closed, flute and oral cavity articulations become pronounced, and effects such as the jet whistle become effective. Naturally we may continue to rotate the flute upwards – here I've identified three upper positions that will affect the production of the edge tone. The extreme alteration of lip-air-edge effects the undulating air source and its side eddies and thus affecting the vortex formation when it strikes the different edge regions. The edge tone is a source of oscillation in the air and helps initiate and sustain the tone produced by airflow over an isolated edge. The oscillation in the pipe is sometimes modeled as a "flow-controlled valve". The air column has natural resonant frequencies determined by its length and NORMALLY tends to take control and determine the frequency of the tone initiated by the air oscillation at the edge. However, when the airflow is too high or low the air column dominance becomes lessened so that the air vibrations in the instrument may not be able to force the air oscillation at the edge to match the natural frequency of the air column.



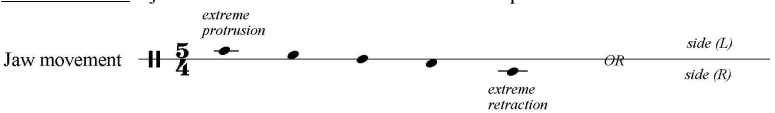


Horizontal angle – movement of the flute on the horizontal place relative to the lips, keeping axis focused on the lip to mouthpiece junction. Normally, increasing airstream velocity raises the edgetone frequency, while decreasing the slit-to-edge distance raises the edgetone frequency. With movement along the horizontal axis, the airstream velocity and slit-to-edge distance will be radicalized.

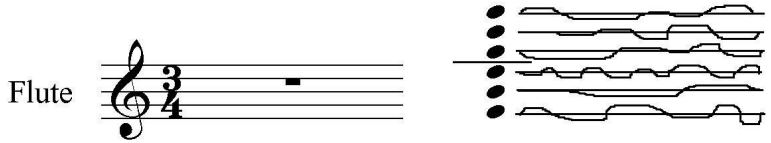




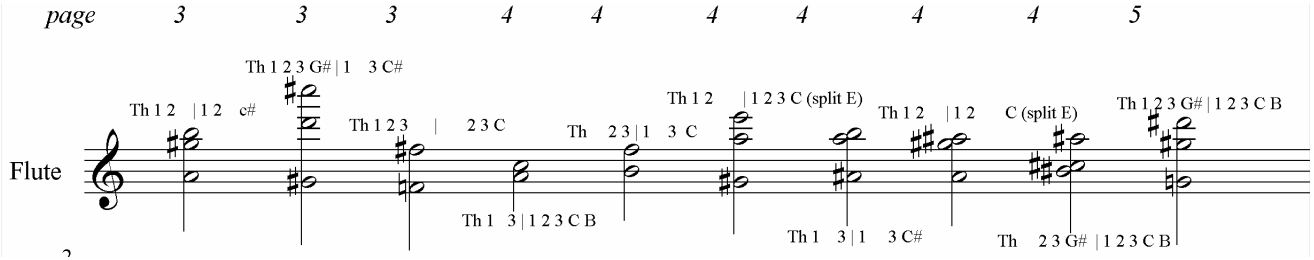
Jaw movement – jaw movement is identified from extreme protrusion to extreme retraction of the jaw, or from side to side.



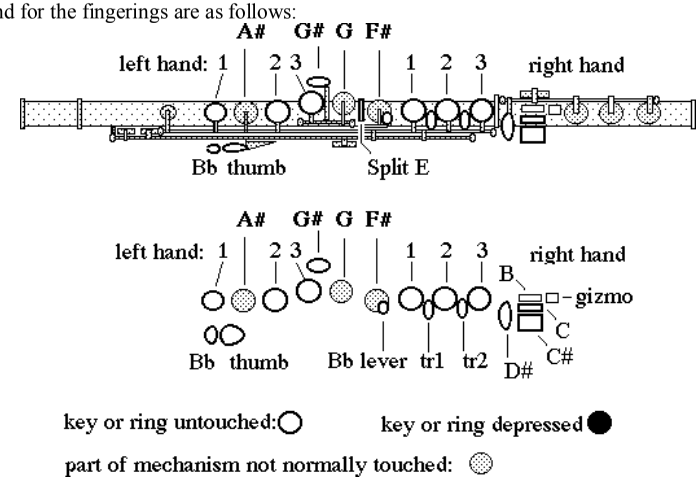
Finger depression – keys may be only partially depressed when producing sound – here such movement is represented graphically by squiggly lines. Below the line represents full depression, while the highest contour point may suggest nearly full release.



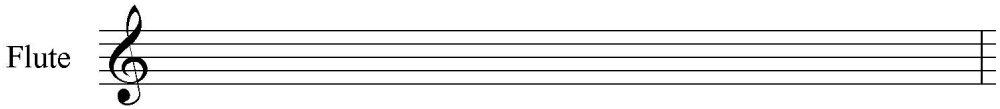
Fingerings - Sometimes the left/right hands are asked to perform different rhythms, either as a) specific fingerings, or b) only the rhythm, as the pitch content will be static. Multiphonic fingerings are identified below.



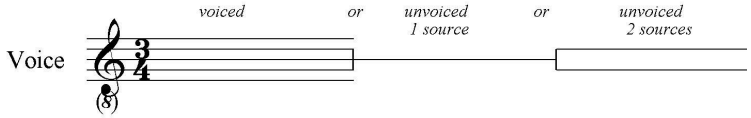
the legend for the fingerings are as follows:

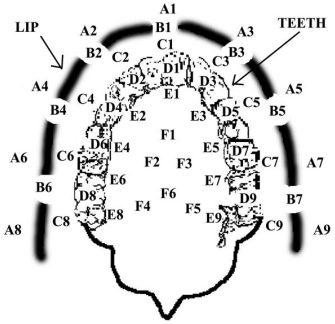


Flute pitch and rhythm – self-explanatory

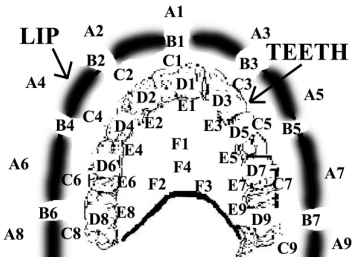


Voice and/or oral cavity articulation - voice and/or oral cavity articulations are used alone, with each other and with flute tones. Both voiced and unvoiced behaviors are used. At times the vocal articulation uses the Edgerton model of vocal articulation (see the 21st Century Voice, Scarecrow Press, 2005). An explanation of the notation is shown below.





Points on upper palate



Points on lower palate

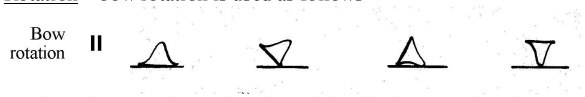
Vowels: /e/ as in “pay”; /i/ as in “beet”; /u/ as in “boot”; /s/ as in sock; /S/ as in she (normal IPA notation); however, tongue/lips may feature other articulations that are identified according to the following points to which the tongue may touch or approximate. The symbol **o** above the place notation indicates use of the tongue tip; the symbol □ above the place notation indicates use of the tongue blade; the symbol above the place notation indicates use of the tongue on the lower palate. The behaviors are shown below (ie. Fric = fricative; tongue trill; whistle, etc.

Tongue ram/thrust: 3 types are identified: 1) HT – mouthpiece covered (or not) while tongue moves with high intensity against alveolar ridge (junction between teeth and upper palate); 2) TR – mouthpiece covered (or not) while tongue begins on teeth and strongly released; 3) HL – mouthpiece covered (or not) while tongue moves with great authority into embouchure aperture and even into hole.

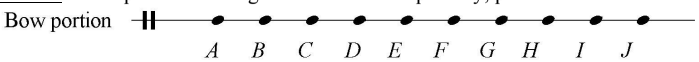
(Imitated-Tibetan) chant – often featuring subharmonics at 2:1 with the addition of reinforcing the 10th harmonic. Generally two ways of producing this chant: 1) using two separate oscillators consisting of the true vocal folds and some combination of disturbance by supraglottal oscillators, and; 2) by some form of vocal fold asymmetry. Probably it will be easiest to produce the type of asymmetrical vibration, such as when combining a normal sung tone low in range with a vocal fry.

VIOLONCELLO

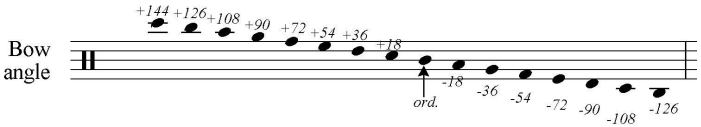
Rotation – bow rotation is used as follows



Portion – bow portion and angle are identified separately, please see chart under bow angle for details of bow portion



Angle – the bow uses angles on the plane parallel to the cello body. Degrees from +72 to -72 are graphically indicated below, please note that in this piece the cellist is asked to cross the center line and bow from the opposite side (still in the horizontal plane).



BOW ROTATION: full hair  slight hair  wood and hair  wood only 

BOW LENGTH (+ portion) AND BOW ANGLE:

Bow length and portion:
10 bow lengths are identified relative to a three-part division of the bow: tip, mid, frog;

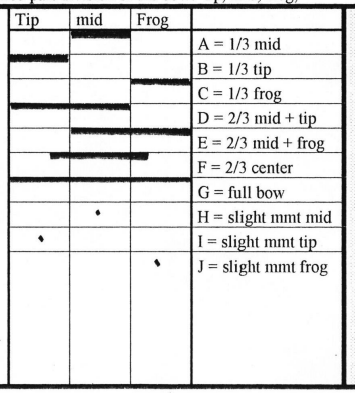
BOW ANGLE:
11 bow angles are identified, relative to fingerboard;

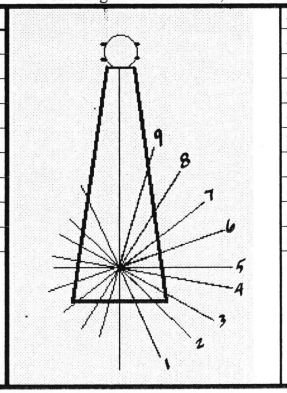
COMBINED:
length and angle

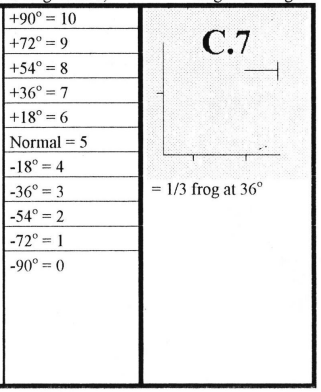
Within each field (or graph, shown at far right), two complementary elements are identified: bow length and bow angle. These are identified in two ways: 1. through a graphic notation that displays the approximate length/portion and angle to be used, and; 2. through the paired letter and number notation found at the top of each field.

Each letter represents a length and portion of the bow to be used and are identified to the right. All of the lengths and portions will feature slight variations in performance.

The following integer represents the angle of the bow relative to the fingerboard on the horizontal plane.

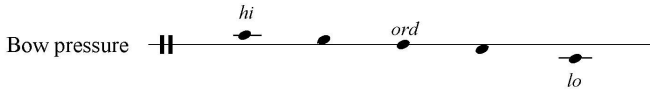




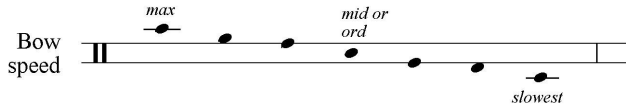


= 1/3 frog at 36°

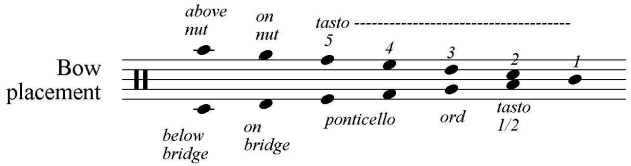
Pressure – in addition to loudness and intensity, bow pressure at horizontal angles will be particularly crucial



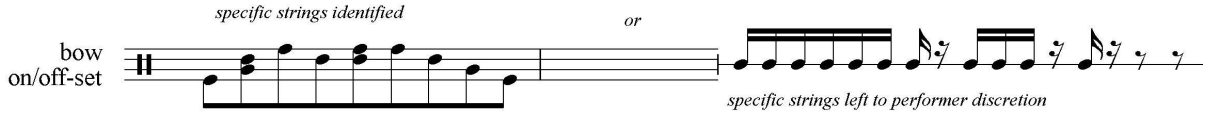
Speed – bow speed is used in absolute terms, in order to decouple from tempo; max bow speed should really be as fast as possible even if "unmusical" results occur



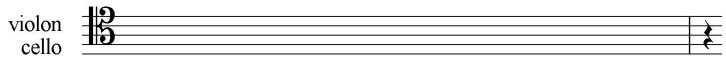
Placement – bow placement refers to more or less absolute regions, in which tasto regions 1-5 split the fingerboard into 5 parts, and this is where the string(s) will be bowed – this implies that at times the bow will be above the left-hand stop, or even between two widely separated stops.



On/off – onset and offset are sometimes used to separate right and left hands; either the specific strings are identified, or the exact string left to performer discretion. Up and down bows are sometimes identified – the traditional markings are used for up and down bow; however, the bow may enter or leave the string in the direction from the nut to bridge (↓) or the bridge to the nut (↑). With these last two articulations, the percept should involve a significant starting or ending transient or noise. Additionally, the marking () indicates that the onset and steady-state portion are *ord* as indicated, but whose offset should scrape upwards, strongly and quickly, towards nut.



Violoncello pitch and rhythm – self-explanatory



Effleuré – amount of left hand depression