String Technique

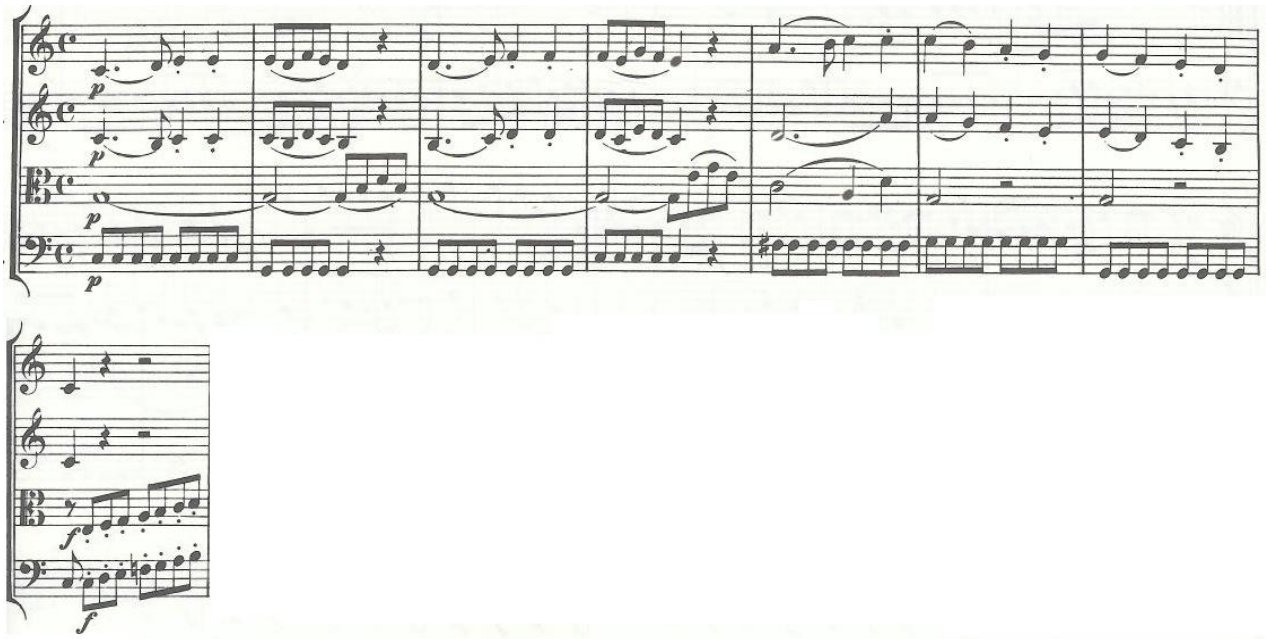
Introduction

Note: this document introduces string techniques and gives examples from String Quartets. There is a separate document with supplementary examples for orchestral writing below.

String instruments are played with a horsehair bow drawn across the strings by the right hand to make them vibrate. The left hand, meanwhile, 'stops' the strings in order to create different notes. This handout documents some of the effects that can be created on string instruments using a variety of techniques

As with any instrument, simply using a mixture of slurs and staccato can make a huge difference to the character of a melodic idea as in this example by Mozart:

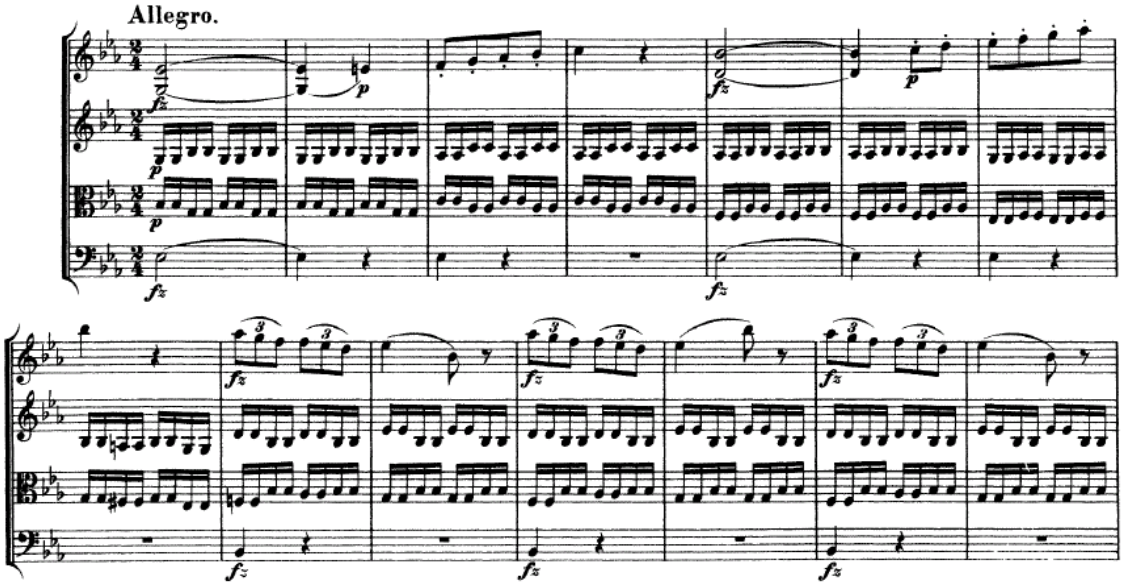
Example 1: Mozart String Quartet KV 157 I: bb. 1-8



In this example from a Schubert string quartet the choice of articulation and dynamics creates the character of the music:

- the ***fz*** markings add energy and emphasize the phrases the slurring in small groups of two and three in the second line create a more legato effect but create a more energetic delivery than longer slurs would
- the semiquavers in the inner parts have no articulation and therefore are quite neutral

Example 2: Schubert Op. 125/1 Allegro

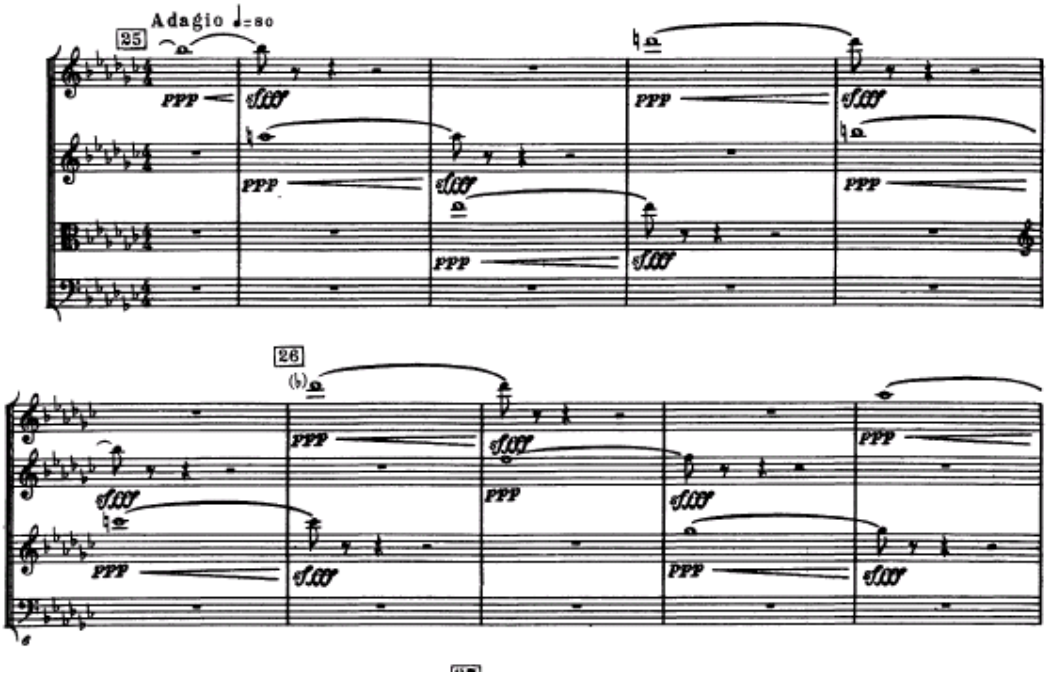


In music before the twentieth century, dynamics were most often used either to determine the general character of melodies or shape them. You will find lots of these type of dynamic markings in the examples of string quartets elsewhere on Moodle.

In this handout, the focus is mostly on special playing techniques, but even dynamics and ordinary articulations alone can create quite striking effects when used creatively.

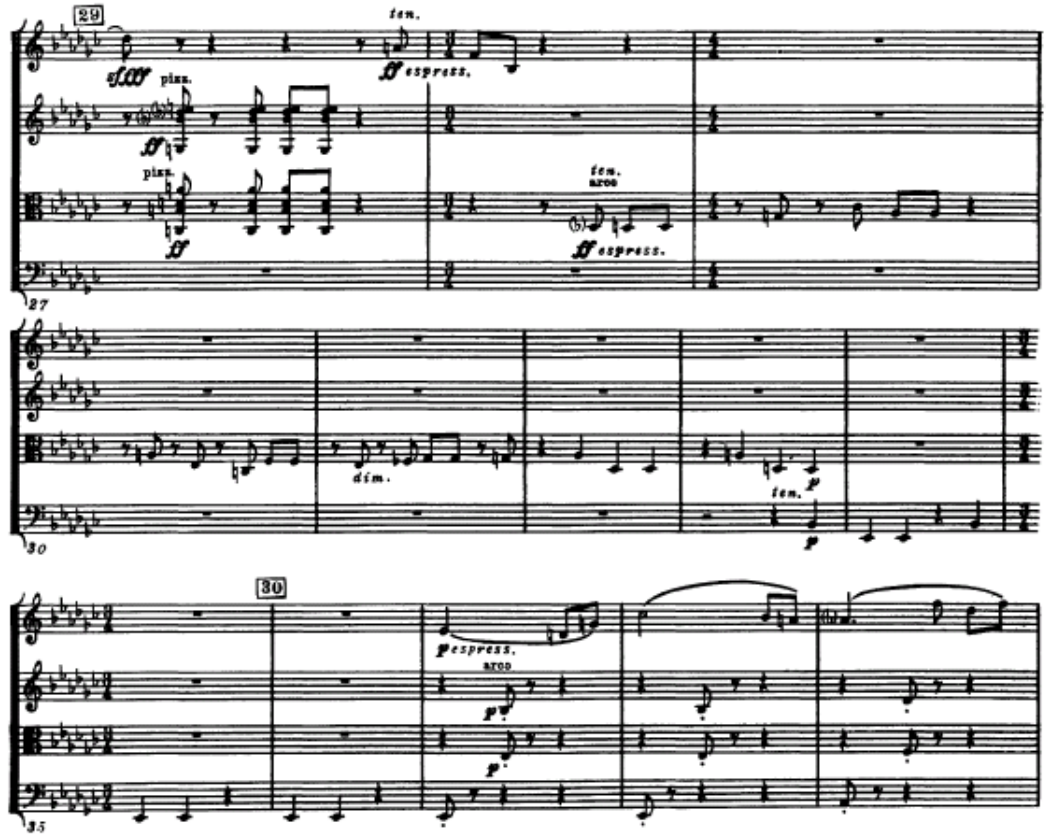
In this Shostakovich quartet note the way in which the composer overlaps the entries so that the next note has already started underneath the accent.

Example 3 Shostakovich Quartet op. 144 no. 15, second movement opening



In the same quartet Shostakovich also uses striking contrasts of articulation, with pizzicato, held (tenuto) but separate notes at the beginning of the extract, a fully legato line accompanied by staccato stabs towards the end of the extract:

Example 4: Shostakovich 4tet op. 144 no. 15, second movement fig. 29

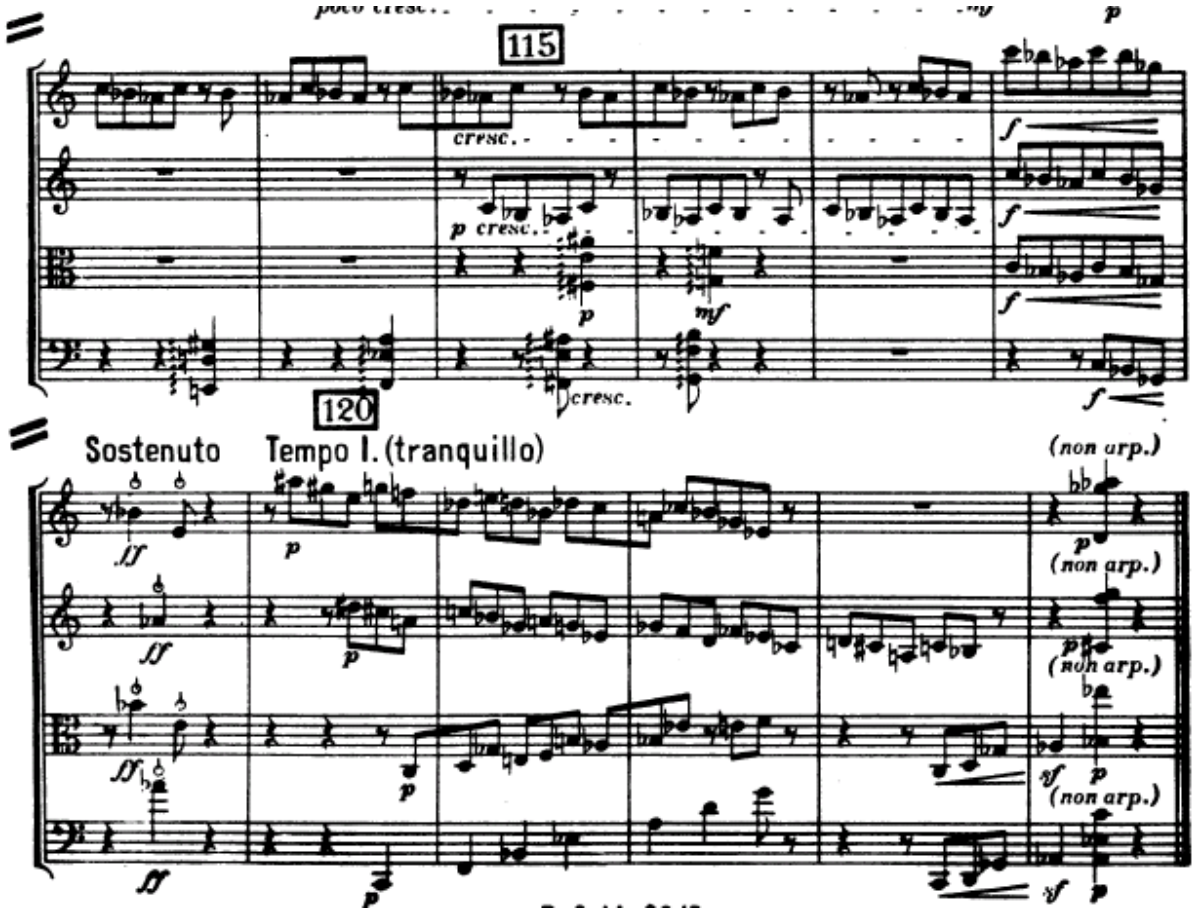


Pizzicato

Pizzicato is the technique of plucking the string with a finger rather than drawing the bow across the string. As with many techniques the twentieth century saw much greater variety. In this example from a Bartok string quartet the following techniques can be heard:

- spread chords (opening)
- non-spread chords –achieved by plucking with several fingers at the same time (end)
- ordinary pizzicato but with wider range of dynamics than in earlier music
- 'Bartok' or slap pizz. where the string is pulled so it slaps back on the fingerboard (beginning of second line)

Example 6: Bartok Quartet no. 4, IV end

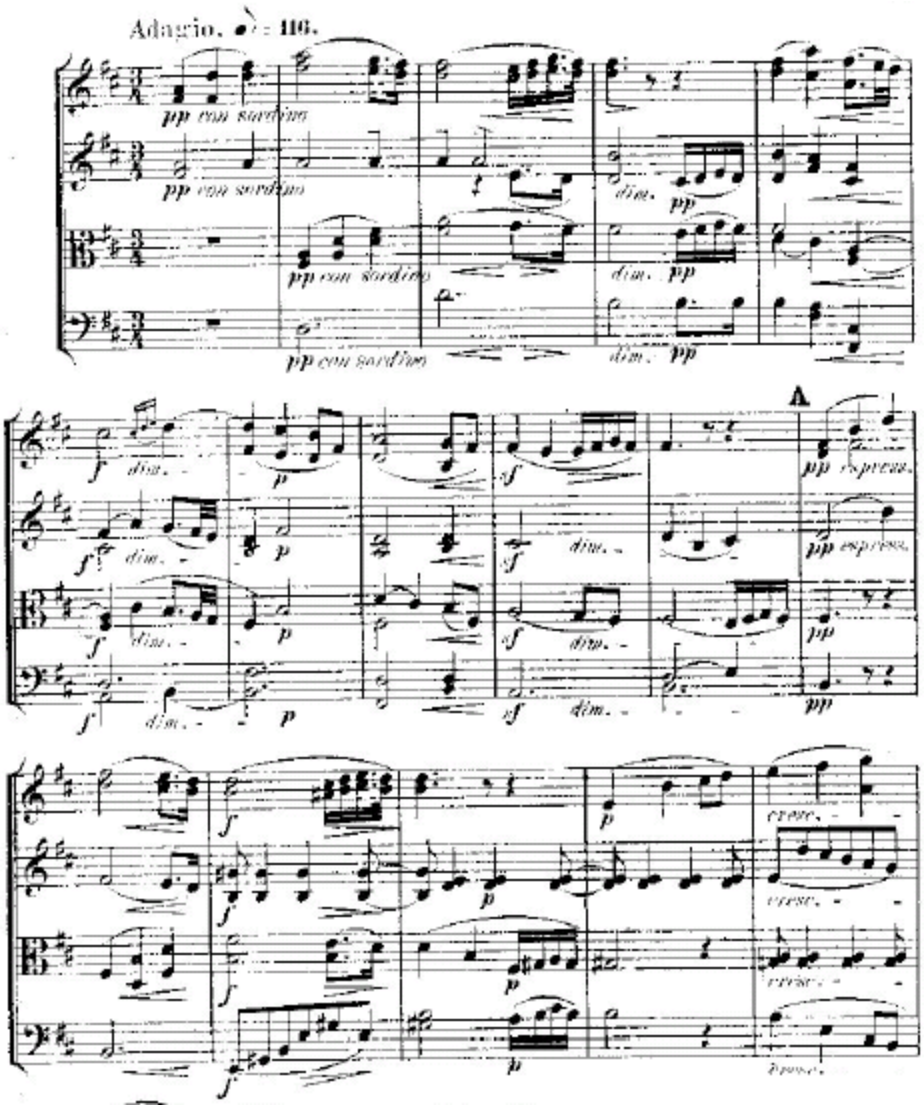


Double, triple and quadruple stopping

String players can play several notes at the same time and composers often require them to in order to create richer textures. This is much more common in solo and chamber music than it is in orchestral music, in which the same effect can often be achieved using multiple players.

Double stopping (two notes at the same time) can be played in quite a sustained way as in the Dvorak example below, but it is quite technically challenging and you should not ask for passages that are too fast or leaping. In addition The intervals should not exceed an octave as a general rule. Some double stops are very difficult to effect one after another – generally, changing the interval frequently makes it harder. It is worth checking with a string player if you are unsure how practical a passage may be.

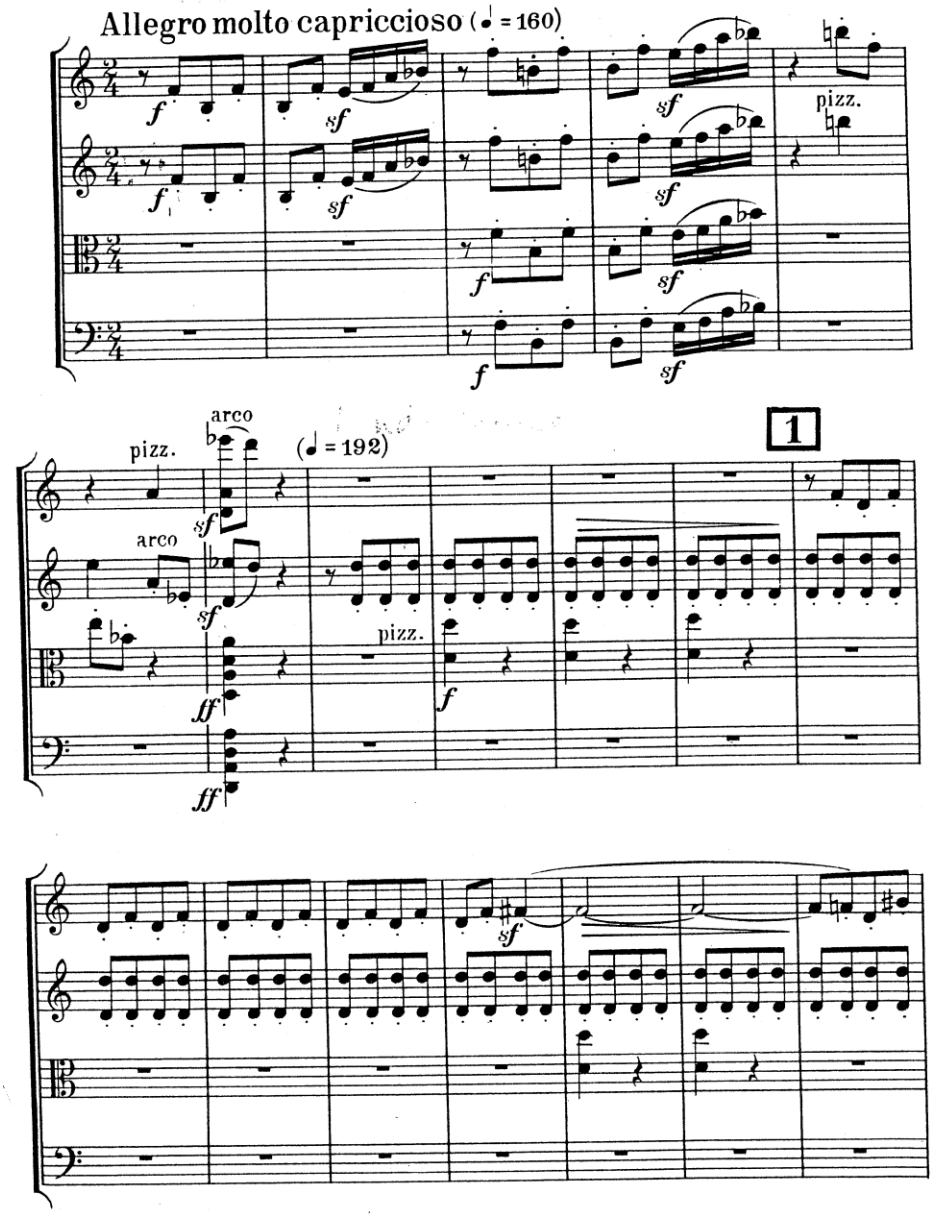
Example 7: Dvorak Quartet Op. 34 in D minor (No. 9), third movement



A very different effect is achieved in this Bartok example, in which the double stops are all octaves, adding weight and intensity rather than richness to the aggressive texture. The viola and cello play **quadruple stops** (four notes at the same time).

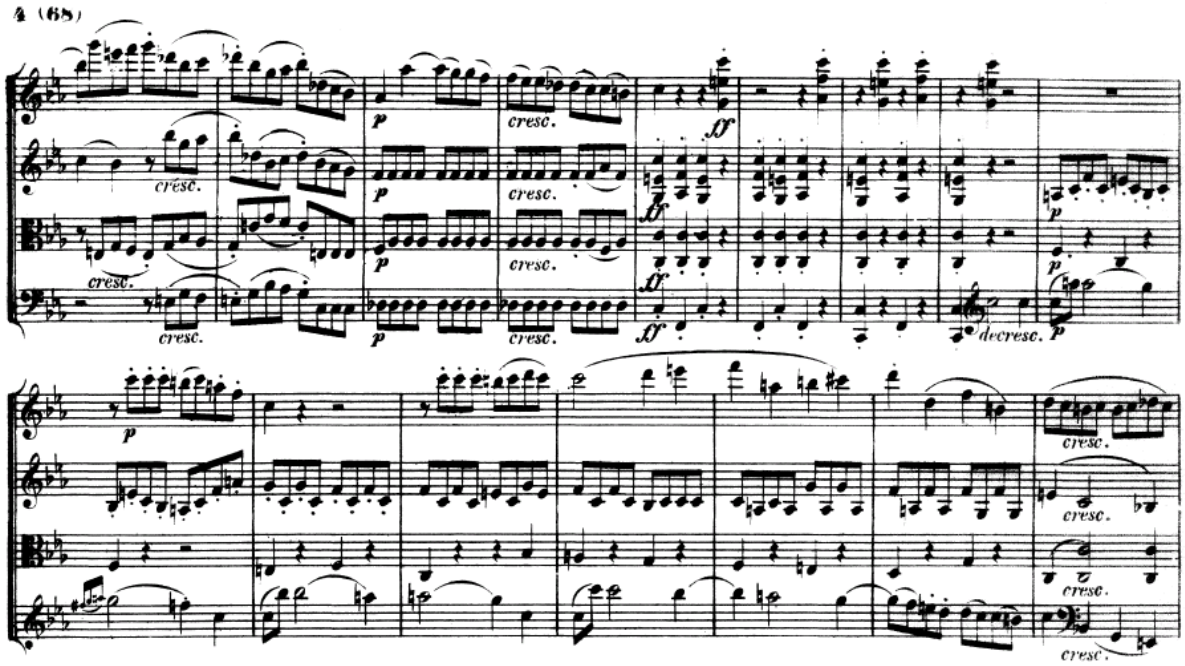
Notice that three and four-note chords cannot be played melodically like double stops as they need either to be spread or struck with considerable force to make all the notes sound.

Example 8: Bartok Quartet No. 2, second movement



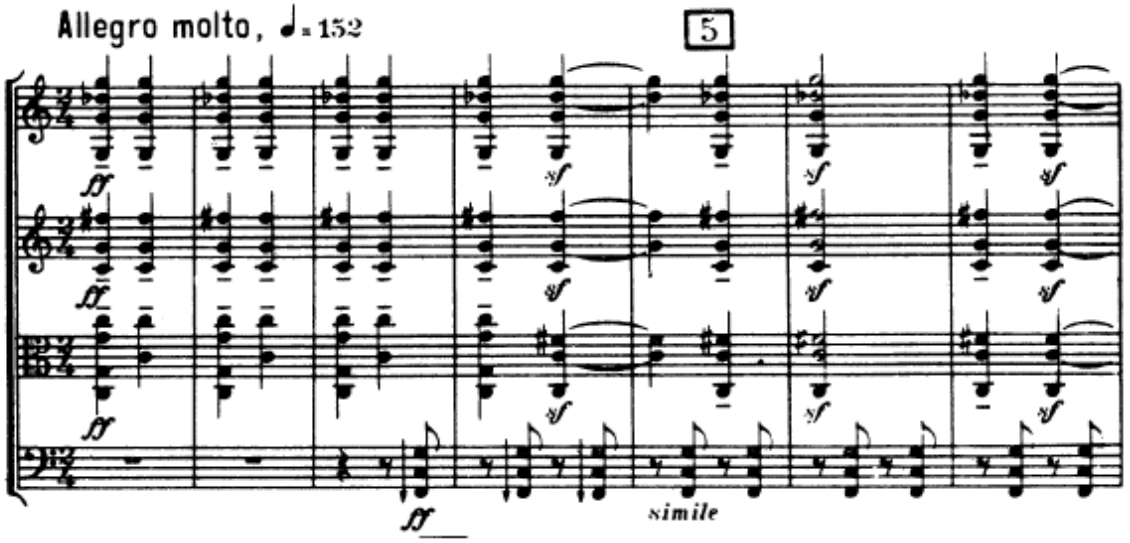
The triple stops in this Beethoven quartet are more-or-less at the limit of what is practical for consecutive different triple stops – see the second violin part. You will hear that the triple stops in the violins are slightly spread:

Example 9: Beethoven String Quartet Op. 18 No. 4, first movement



In this example from Bartok, the violins are asked NOT to spread the chords but strike the notes together, which can only be done very loudly. The cello, on the other hand, is asked to start the chords at the top and arpeggiated downwards:

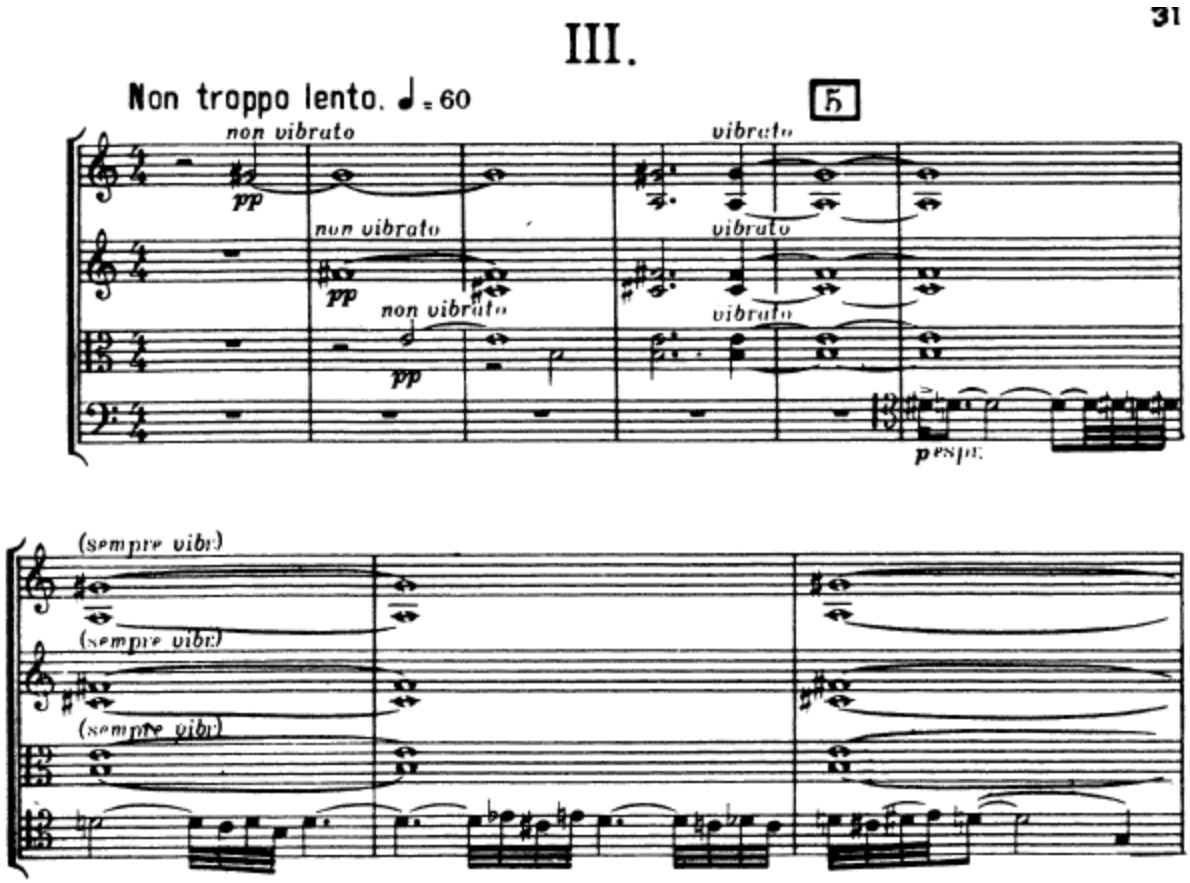
Example 10: Bartok String Quartet No. 4, fifth movement



Vibrato

Vibrato is a slight by steady fluctuation in pitch which is added by pivoting on the relevant finger of the left hand, causing the note to bend above and below the main note. String players will usually make the decision themselves how much vibrato to add to a given note but some composers have exploited the contrast between vibrato and 'non vibrato' or 'senza vibrato' as in this example from Bartok. Listen to the relative coldness of the non vibrato at the beginning compared the warmer vibrato chord at the end of the bar 3.

Example 19: Bartok String Quartet No. 4, third movement

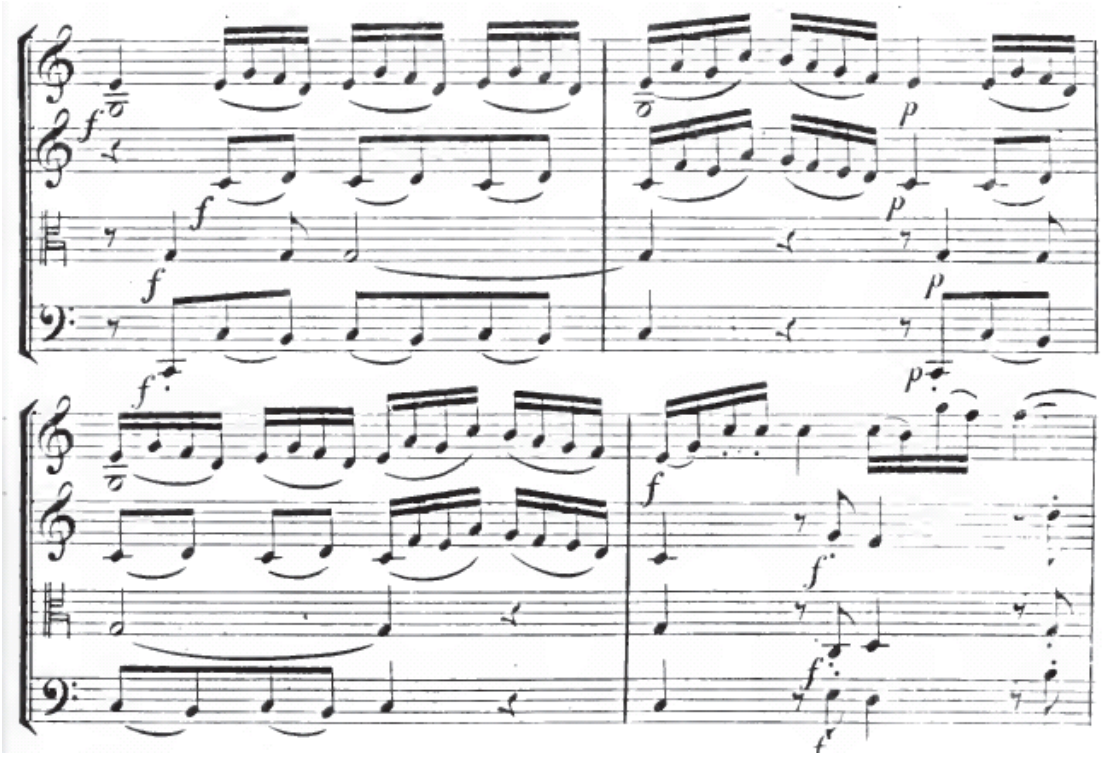


Open strings

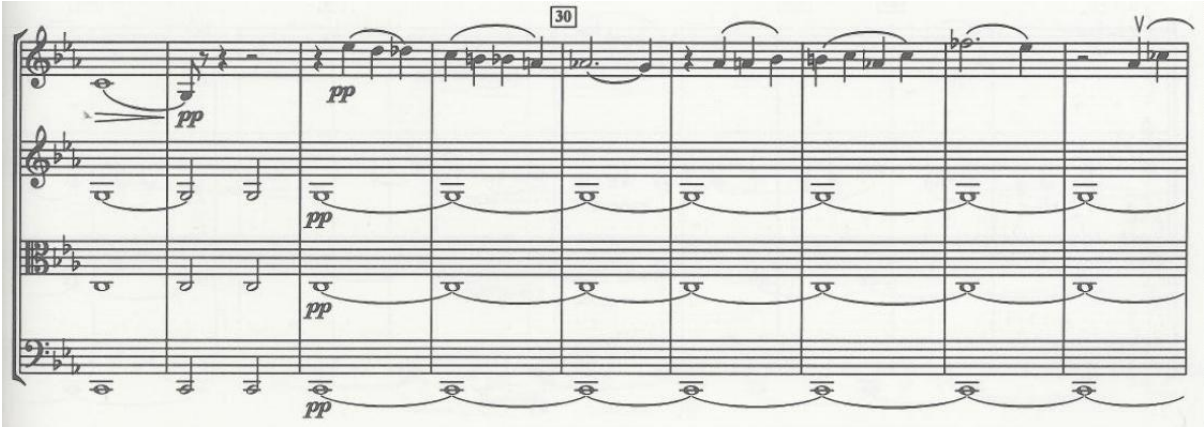
Modern string players tend to avoid playing the open strings of their instruments where practical by using different fingerings. However, open strings create a more resonant sound and composers quite often exploit this in their writing. The open strings of the violin are G, D, A and E, whilst the viola and cello are C, G, D and A.

In the Haydn example below, the G string on the first violin is the lowest note so must be played open as are the bottom Cs on the cello. All the drones in the Shostakovich example are also the lowest strings. As well as being more resonant, open strings tend to sound a bit plainer as vibrato cannot be added:

Example 11: Haydn Quartet Op. 9 No. 1, first movement



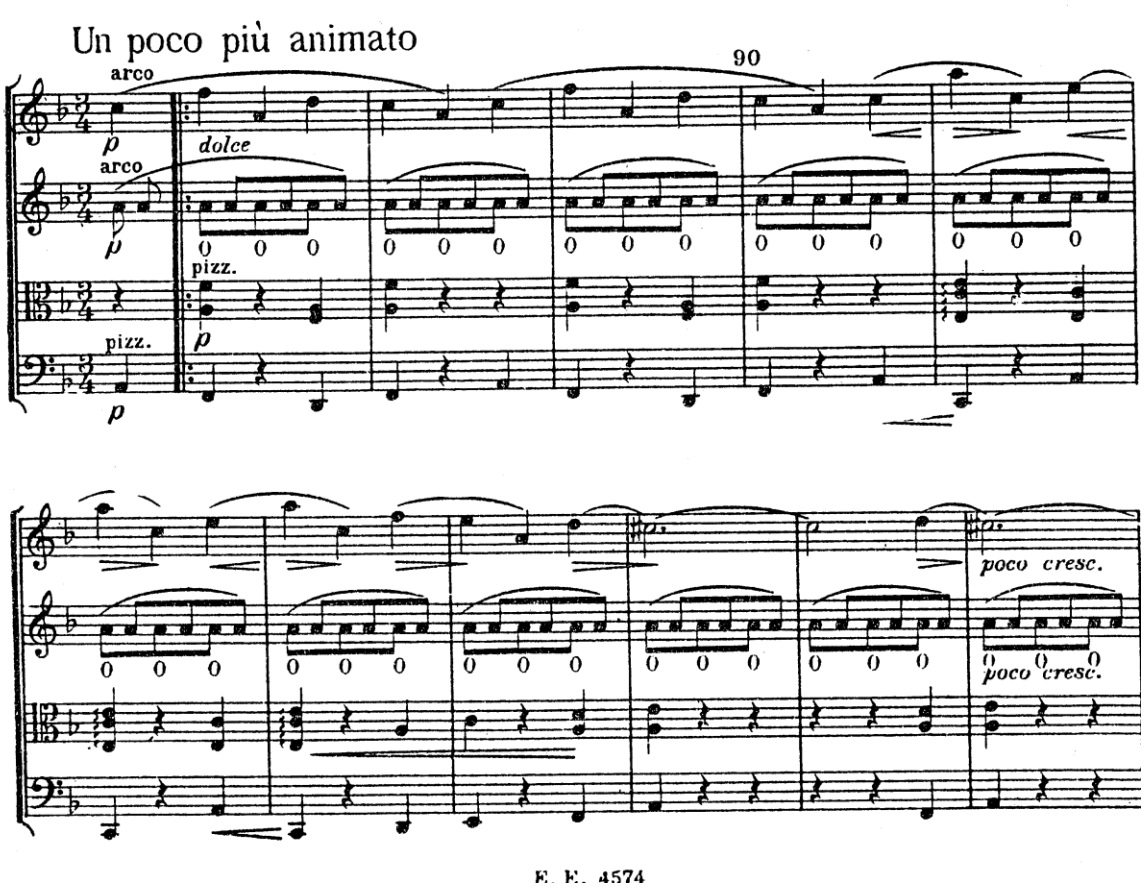
Example 12: Shostakovich String Quartet No. 8, first movement



Bariolage

An more unusual technique involving open strings is bariolage where an open string is alternated with the same note stopped on a lower string, creating a wah-wah effect that was used by Haydn as well as Brahms in the example below:

Example 13: Brahms Quartet op. 51/1, second movement, trio



Tremolo

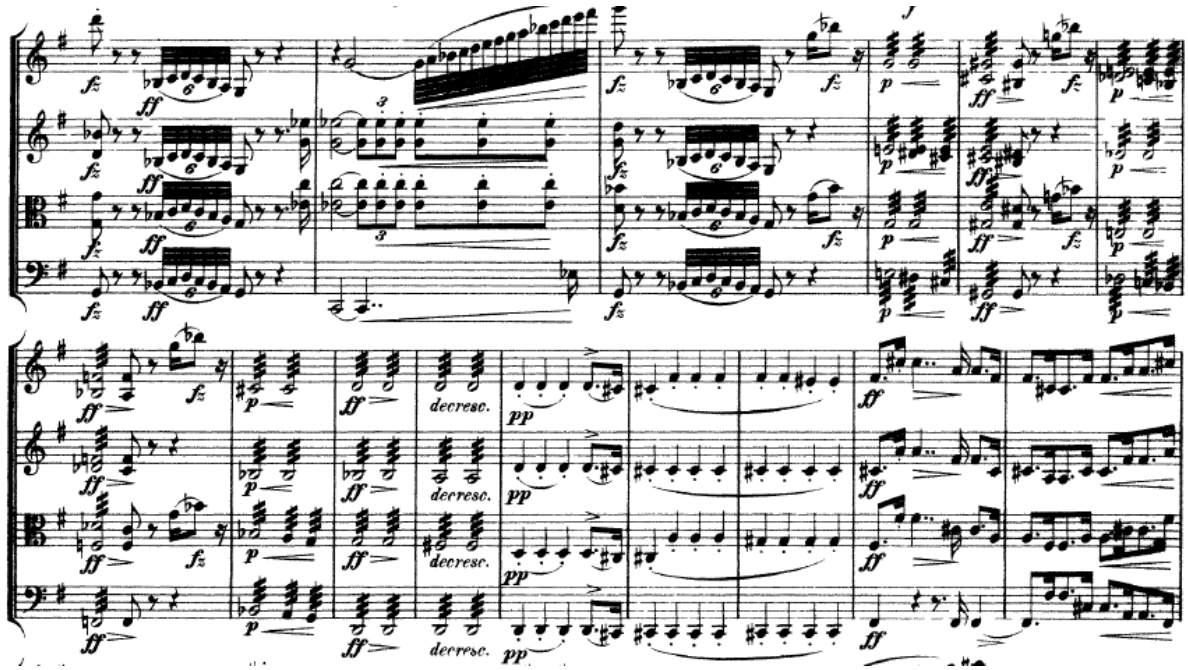
Introduction

The term tremolo refers to two quite distinct techniques. **Bowed tremolo** involves using the bow to repeat notes at a fast speed whereas **fingered tremolo** involves using the fingers to alternate rapidly between two notes. In both techniques the tremolo can either be **measured** (a specific note value such as semiquavers) or **unmeasured** (the notes are played as fast as possible). Depending on the speed, type and volume of a tremolo, the effect can add rhythmic energy or a non-rhythmic shimmer to the texture.

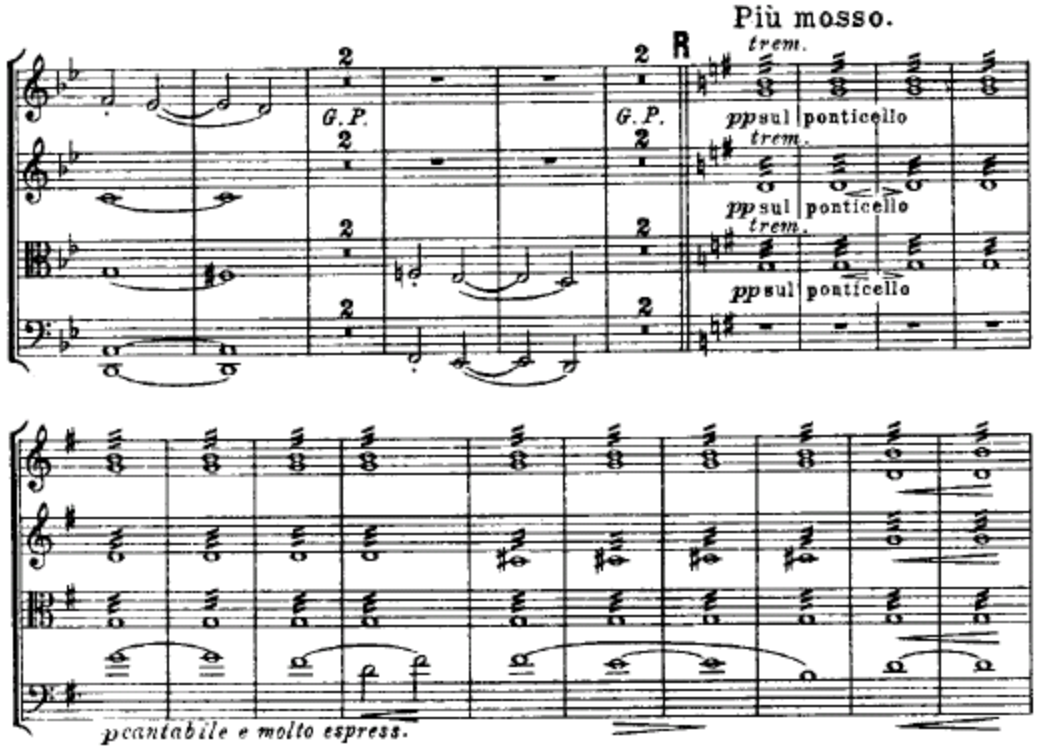
Bowed tremolo (unmeasured)

In the Schubert quartet below the use fast unmeasured tremolo as fast as possible with crescendi adds dramatic excitement, whereas in the following Grieg example the tremolo supplies an icy cold shimmer (enhanced by *sul ponticello* bowing – see later in handout) to a ghostly reprise of the theme from the beginning of the quartet. You can hear on the recording the much more energetic reprise that closes the movement.

Example 14: Schubert Quartet 15 (D 887), second movement



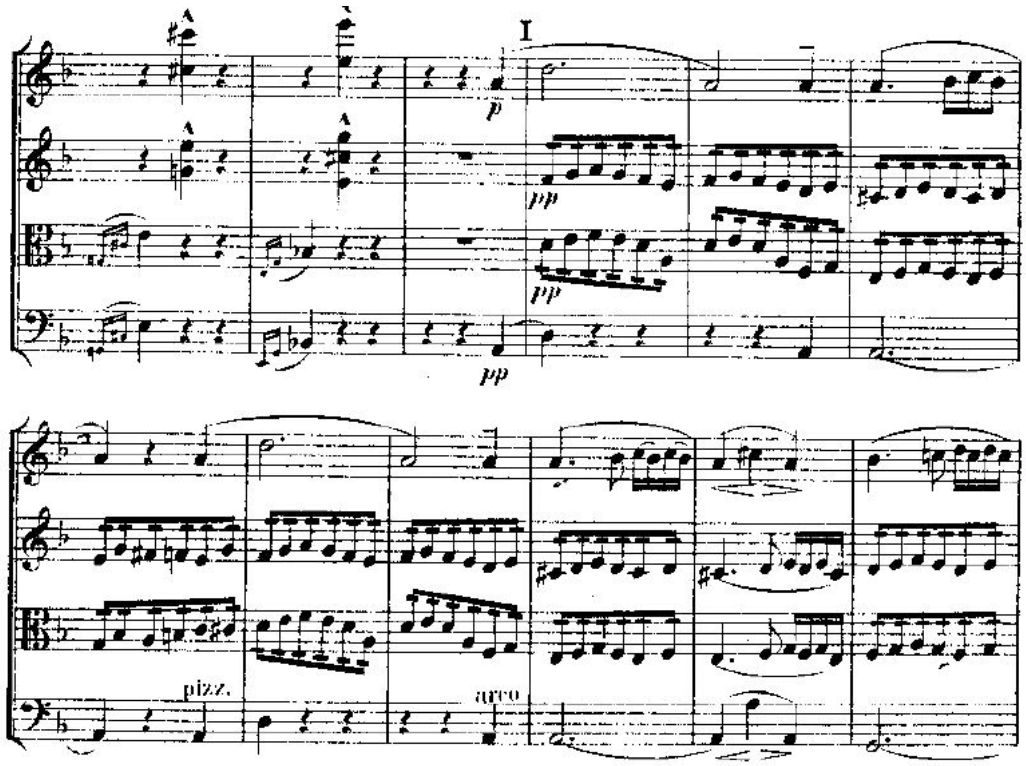
Example 15: Grieg String Quartet op. 27, first movement



Bowed tremolo (measured)

Measured tremolo creates a more rhythmic effect. In this Dvorak excerpt, the second violin and viola chug along playing two semiquavers per quaver, creating gentle rhythmic momentum under the calm violin melody:

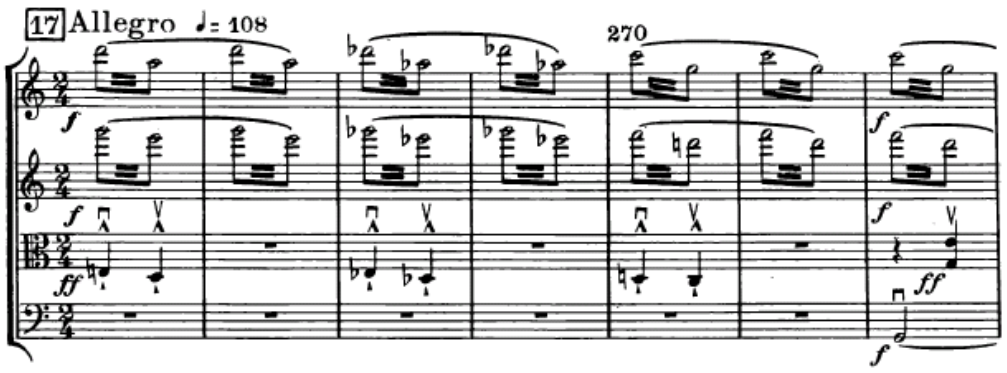
Example 16: Dvorak SQ Op. 34 in D minor (No. 9), first movement



Fingered tremolo (unmeasured)

Fingered unmeasured tremolo alternates rapidly between two notes, creating a slightly richer texture due to the impression of, in the example below, four notes playing almost simultaneously. In this Janacek extract, the tremolo is *forte* and quite vigorous but it works equally well when used more quietly. Fingered tremolo can also be measured.

Example 18: Janacek, Intimate Letters, first movement



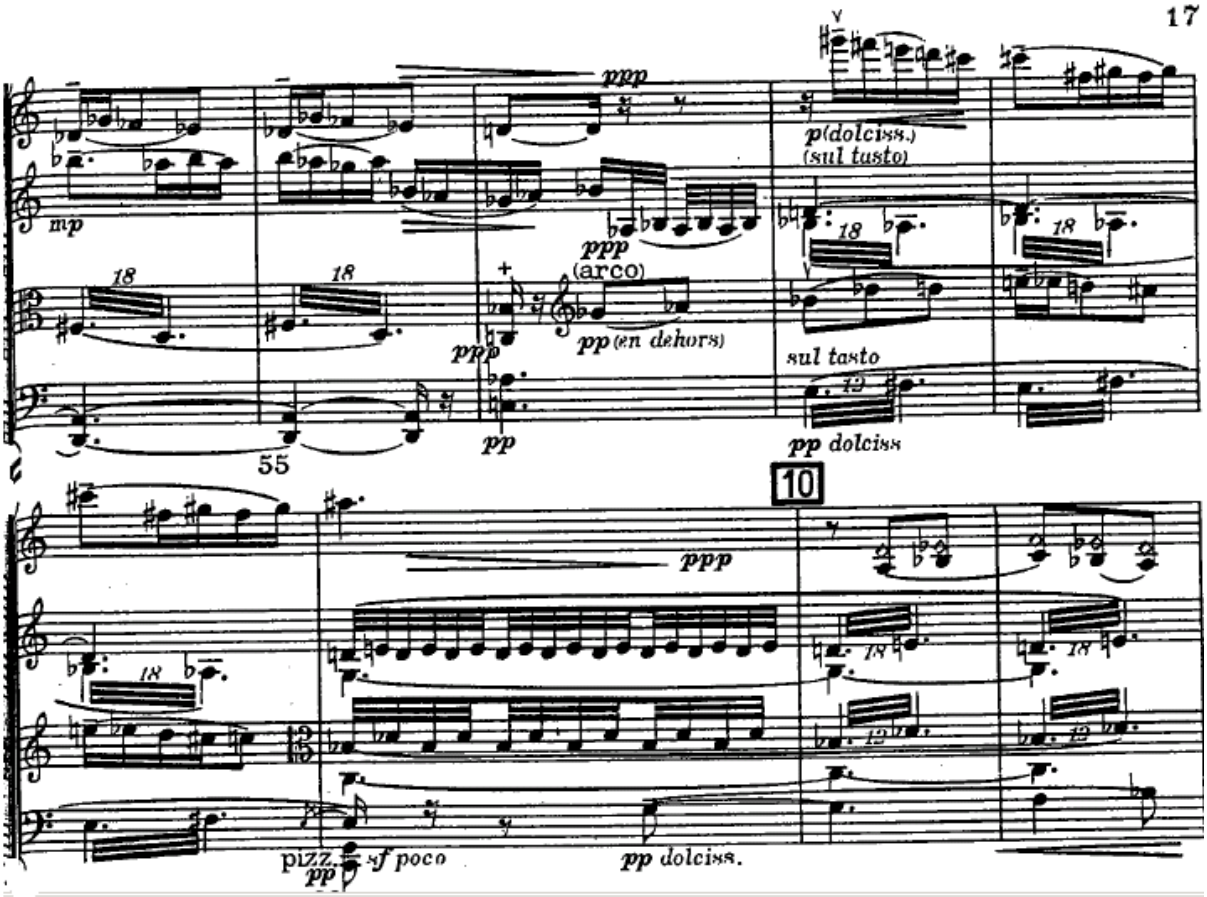
Bow placement

The bow can be drawn across the string at any point from just next to the bridge (ponticello) to up over the fingerboard (tasto). As with many of the techniques discussed here, players usually make their own decisions as to whether the more forceful and gritty tone achieved near the bridge or the more delicate sound created by moving towards the fingerboard is more appropriate. However, composers quite often specify the two extremes of as close to the bridge as possible (*sul ponticello*), which makes quite a harsh sound, or right over the fingerboard (*sul tasto*), which creates a whispery tone.

Sul tasto

The fingered tremolo in the second violin and cello parts from the fourth bar of this extract from a Szymanowski quartet are played right over the fingerboard and therefore come out as a barely audible haze through which the main ideas can be heard:

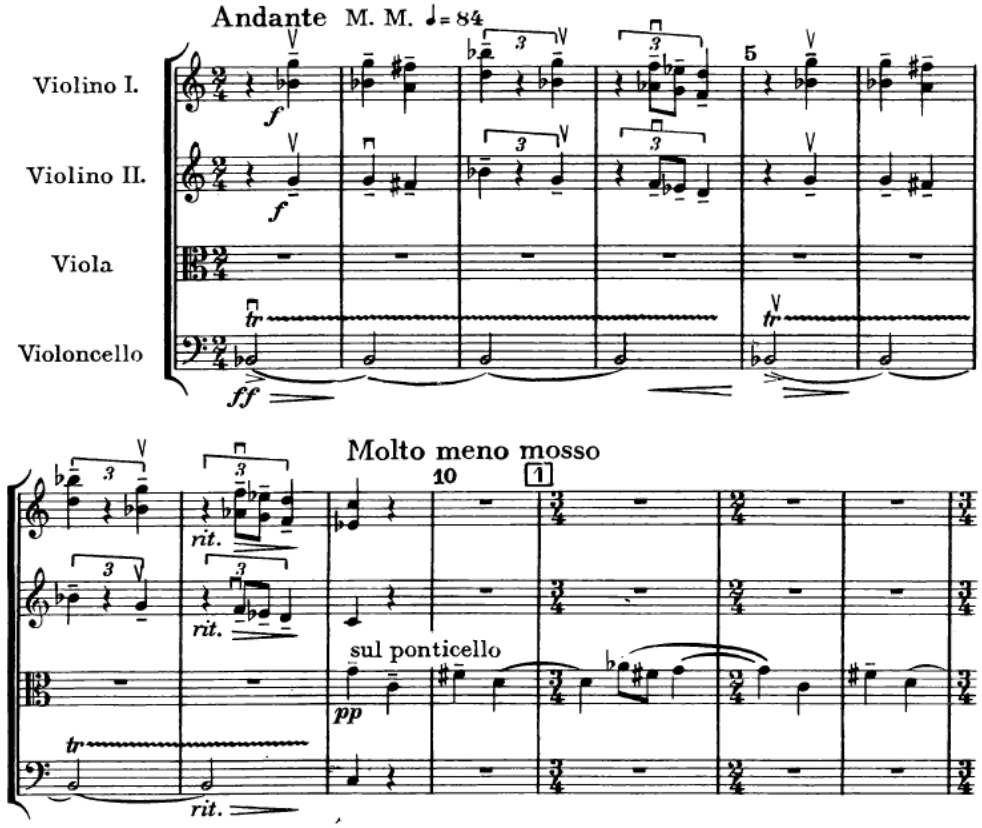
Example 20: Szymanowksi, Quartet No. 1, second movement



Sul ponticello

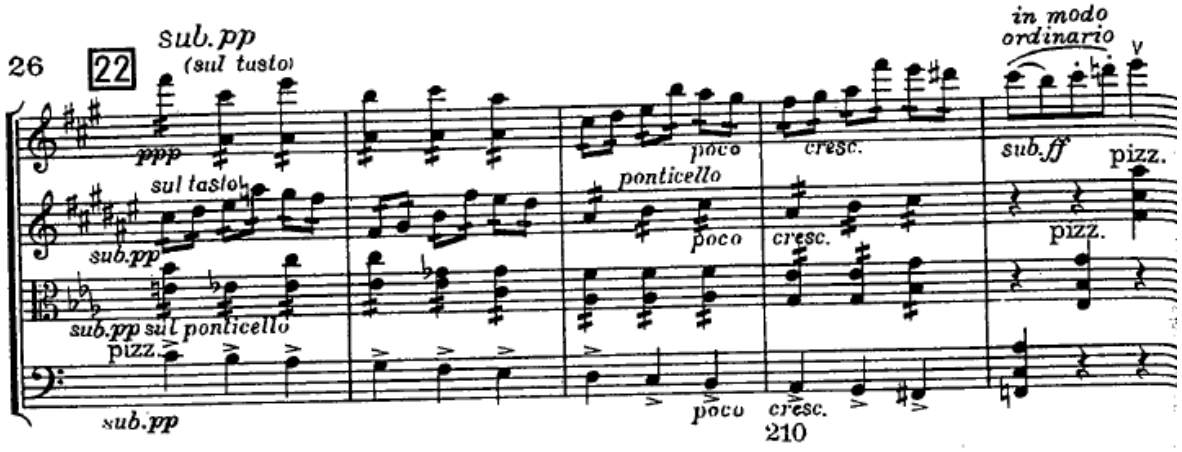
The melody in the Molto meno mosso is a striking example of a quiet *sul pont.* sound – harsh, glassy and without any of the warmth usually associated with string instruments.

Example 21: Janacek, Intimate Letters, first movement



In this extract, the violins are *sul tasto* and the viola is *sul pont.* over a pizzicato cello line. The second violin moves to *sul pont.* after a few bars:

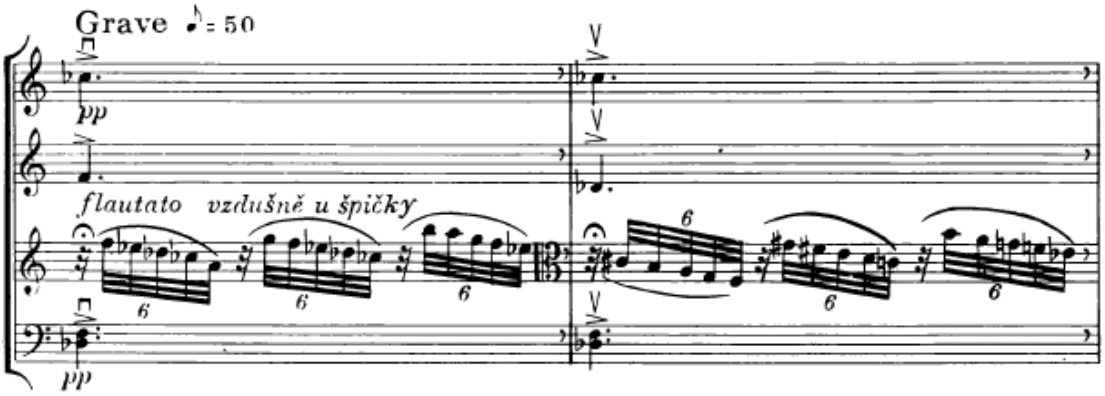
Example 22: Symanowski Quartet No. 1, last movement



Flautato

A related technique to *sul tasto*, and one that is nearly always performed towards the fingerboard, is to take nearly all the weight out of the bow in order to create a very floaty sound. The viola in this extract plays these short flurries with a quiet and ghostly tone.

30 Janacek first movement just before 14



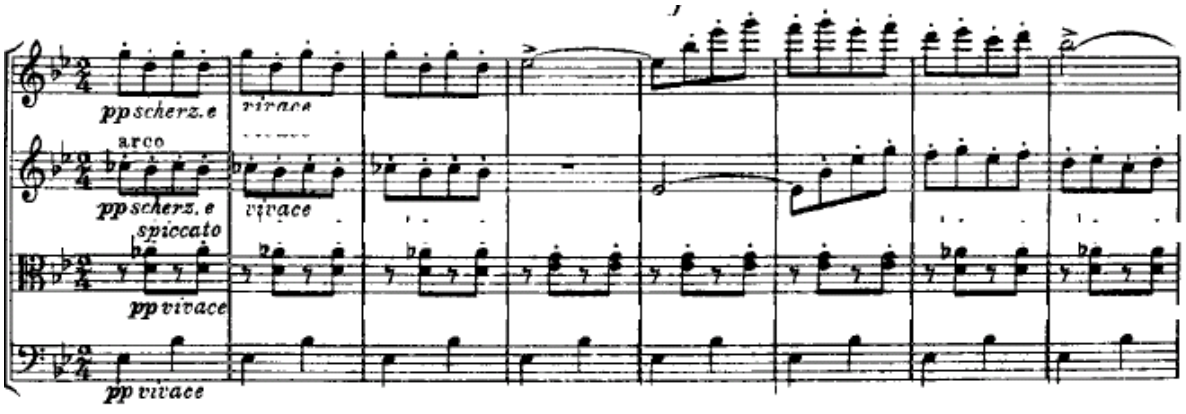
Other bowing techniques

Off-the-string strokes

When playing staccato notes, there is a choice as to whether the bow 'bites' the string without leaving it – **on the string** – or whether it bounces **off the string**. There are various names for techniques that take the bow off the string and on the whole players will decide whether or not they want to do so.

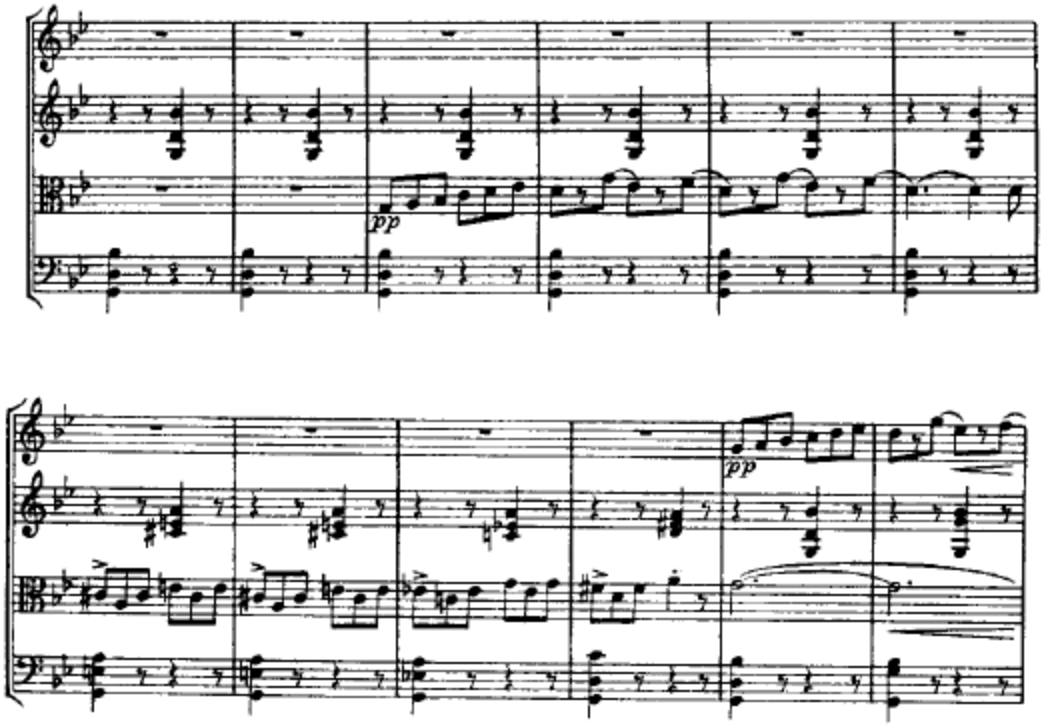
The most common off-the-stroke is *spiccato*. Grieg specifically asks for it in the viola part of this excerpt, which might otherwise be played on and, in this recording, the violins also play their quavers off the string, which is implied but not stated by the *scherzo* and *staccato* markings:

Example 32: Grieg String Quartet No. 1, last movement



In this second excerpt from the same work, there is no *spiccato* marking but the speed of these non-legato notes at least implies that it is a possibility. In this recording the viola starts just about on the string but then moves to *spiccato* in the second line. The violin plays all the non-slurred notes *spiccato*.

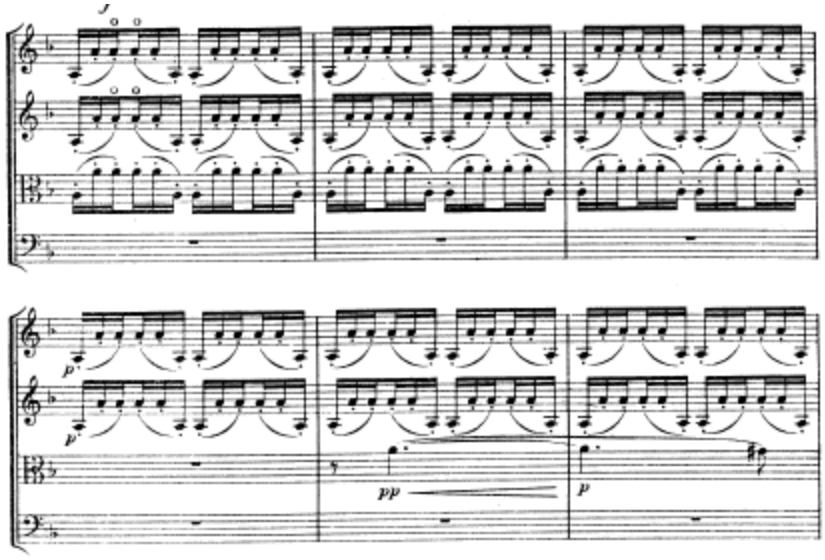
Example 33: Grieg String Quartet No. 1, last movement



Saltando

Saltando is an off-the-string technique that is implied when fast notes are both staccato and slurred. Slow slurred staccato will be played on the string with the notes 'tucked' together but the only way to play the type of figure written here is to throw the bow onto the string so that it bounces (which is the meaning of saltando):

Example 5: Sibelius Voces Intimae, Movement 5 (after fig. 1)

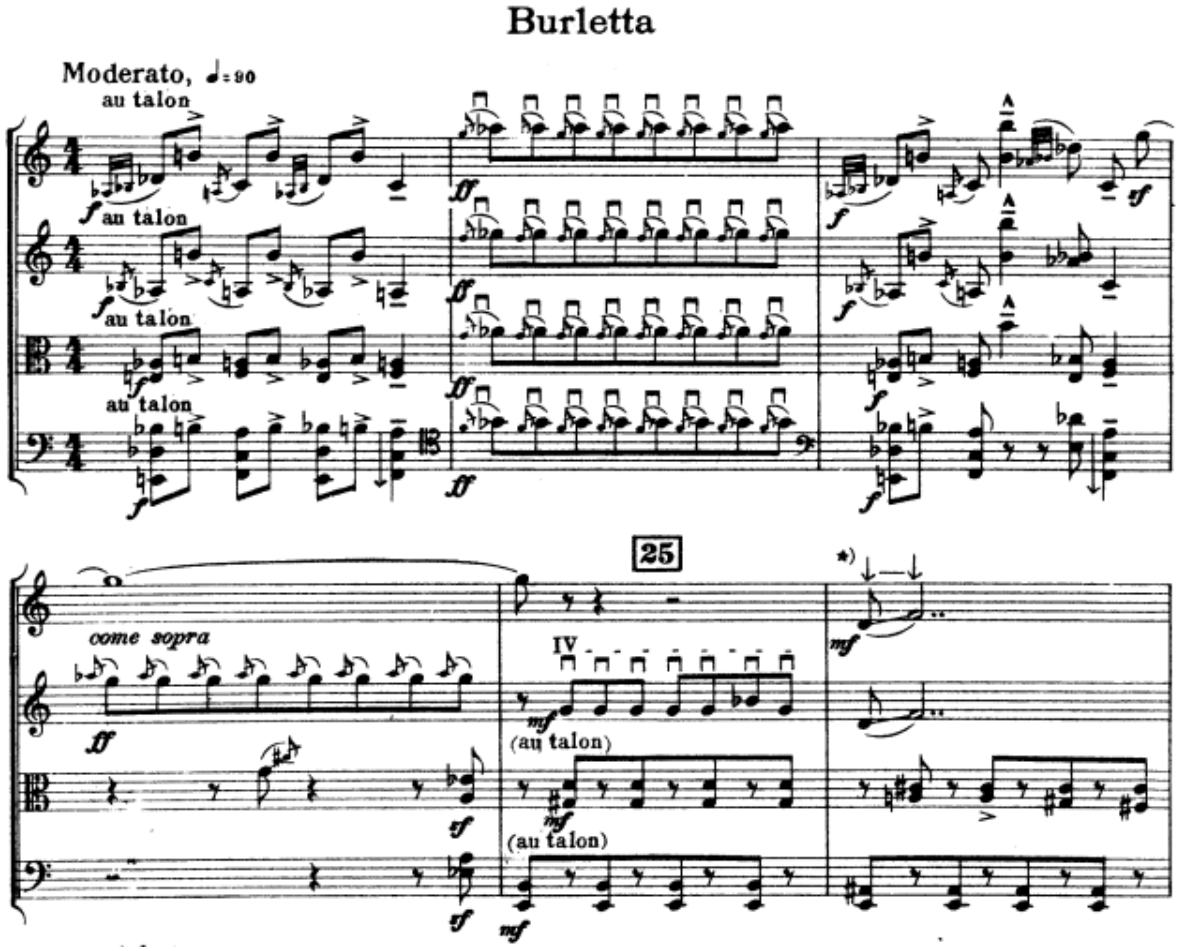


Au talon / repeated down bows

A more vicious off-the-string technique does not involve bouncing but attacking right at the heel (*talon*) of the bow. The heel is the bit closest to the players hand and where the most force can be exerted. The bow is pinged off the string creating the attack. This can be heard in the first bar of the beginning of this movement from Bartok's sixth quartet.

In the following bar the stroke is still *au talon* but combined with another forceful technique, that of the repeated down bow (indicated by the square brackets above each note). Many composers across music history have employed repeated downbows for extra emphasis and force.

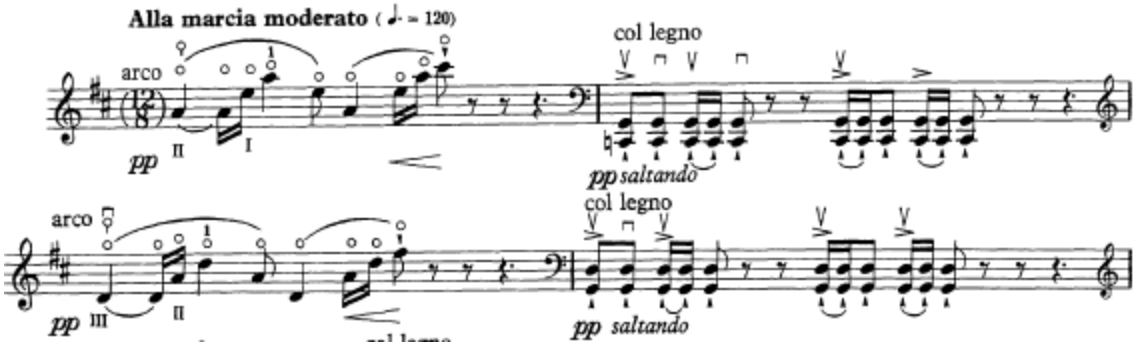
Example 31: Bartok, Strinq quartet no. 6, third movement



Col legno

A much rarer technique not much used before the twentieth century is to hit the strings with the wood of the bow to create a quiet, clattering woody sound (string players are not keen on doing this because it damages the varnish on their bows – orchestral players sometimes use a cheaper bow when asked to play *col legno*). A famous orchestral example of *col legno* is in Holst's 'Mars' from *The Planets* but the sound can be more clearly heard in this excerpt from Britten's first suite for solo cello:

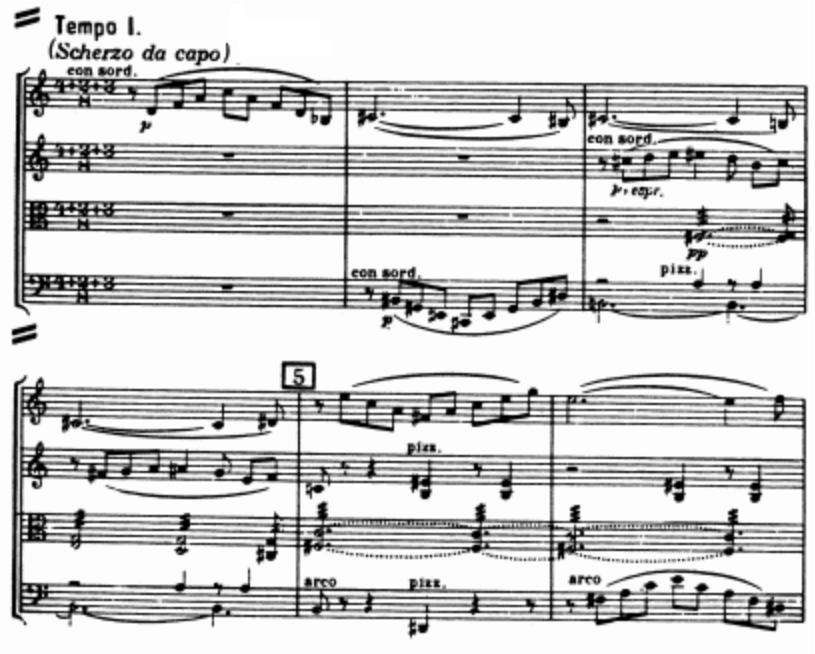
Example 23: Britten solo cello suite No. 1, IV



Muted timbres

The most obvious way to get a muted sound is obviously by using a mute! A mute clamps onto the bridge and dampens down the vibrations from the strings, thus deadening and dulling the sound (mostly by stopping higher harmonics sounding). The term used is **con sordino (or sord.)**.

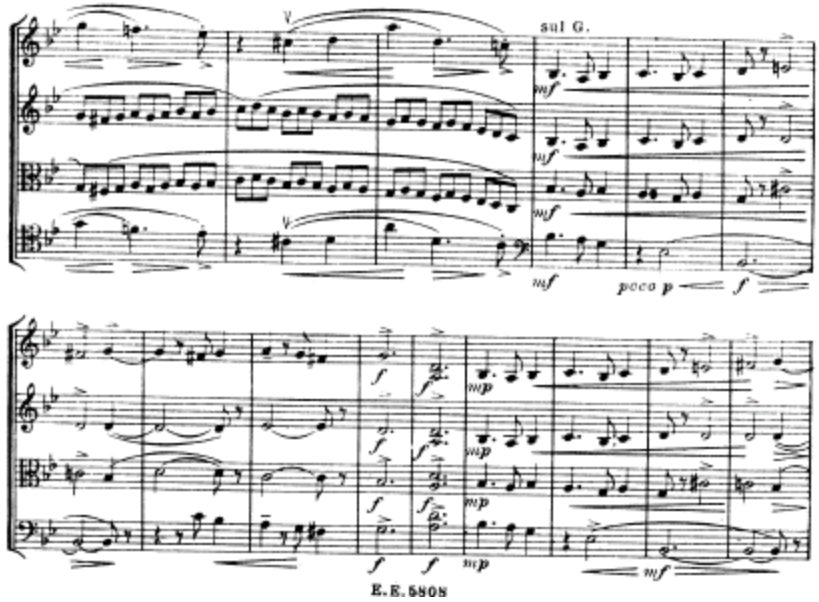
27 Bartok String Quartet No. 5 Scherzo (movement 3?)



Sul G

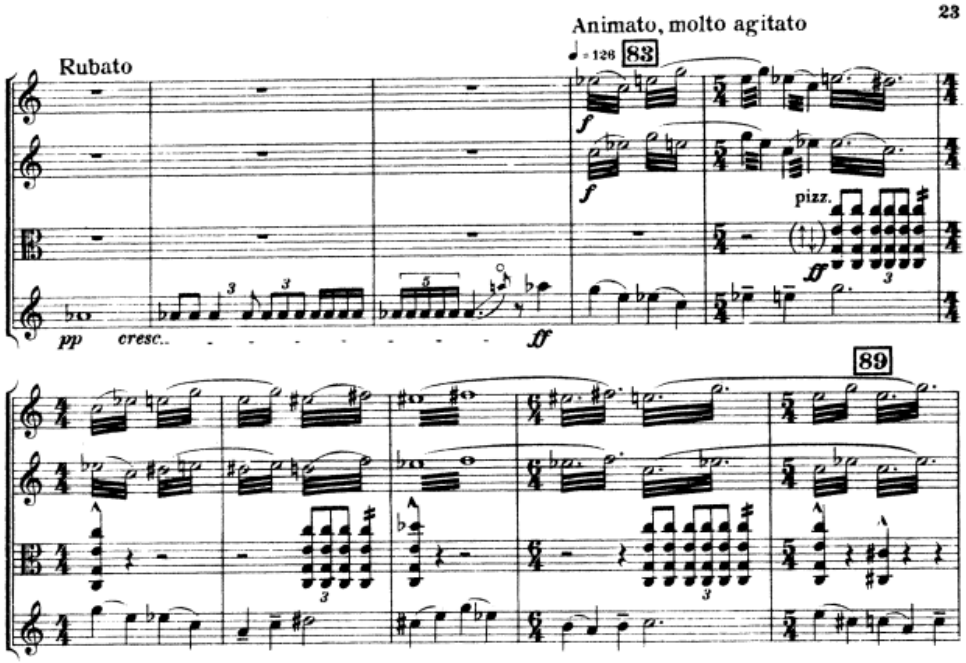
Another way of getting a more muted sound is to ask for a line to be played on a lower string than normal. Playing high up on the lower strings produces a more mellow but also richer sound. The commonest example of this is asking violinists to play melodies on the G string (*sul G*). In this example the first violin stays on the G string whereas without the instruction they would move onto higher strings:

Example 28: Sibelius Voces Intimae Fourth movement



A related effect can be gained by putting high melodic lines in the viola or cello, which produces a very different quality of sound. In this example the cello plays a tune that is in the violin register. The sound is slightly less bright and, at this volume a little forced (notice the fabulous slides or *glissandi* at the end of the recorded extract).

Example 29: Bartok, String quartet No. 6, second movement



Harmonics

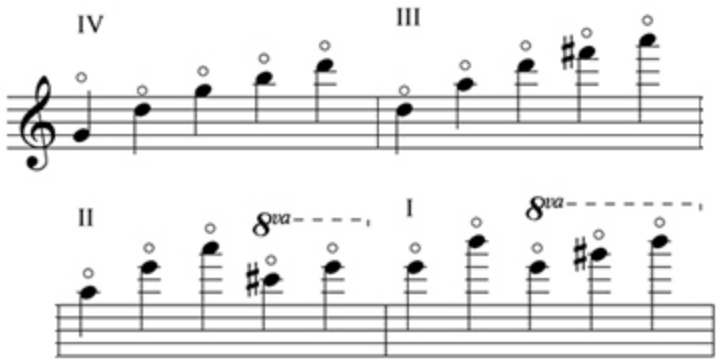
Natural harmonics

The notes on string instruments are usually created by changing the vibrating length of the string by 'stopping' it with the left hand. An alternative is to touch the string lightly to produce a harmonic. Harmonics are created when a standing wave is set up on the string that divides it into equal parts, the length of which create the new higher note. The simplest is to touch the node half way along a string so that the two halves of the string vibrate creating a note an octave above the open string, but there are many other possibilities.

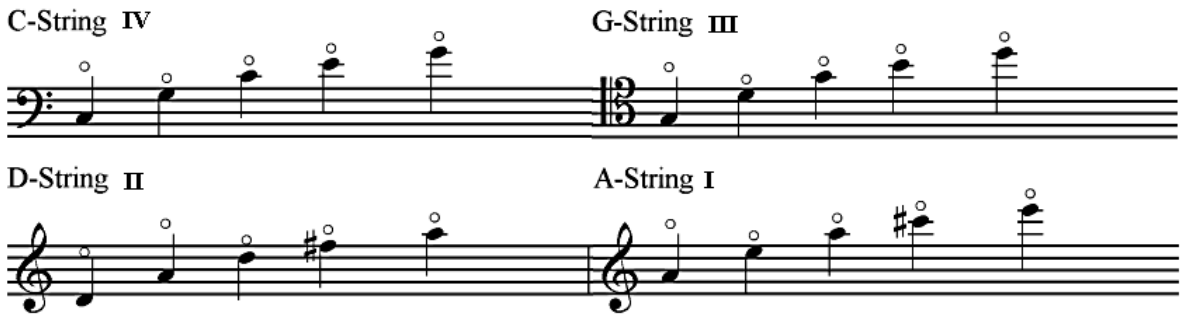
The natural harmonics that can be produced on the violin are shown in the diagram below.

- the Roman numeral denotes the string (IV = G, III = D, II = A, I = E)
- the small circle shows that it is a harmonic
- the note itself is the sounding pitch (not where you touch the string)

When notating harmonics you should include the string indication as well as the small circle.

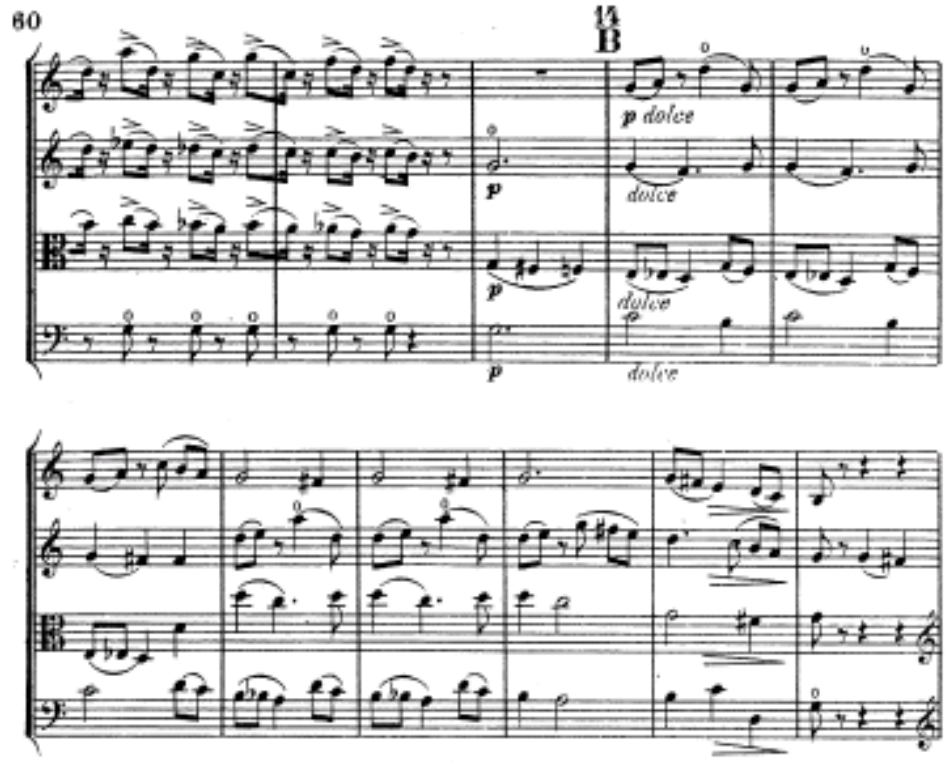


This shows cello harmonics (viola is the same but an octave higher):



The use of natural harmonics in this extract create a purer colour to the tone and lightens up the overall sound:

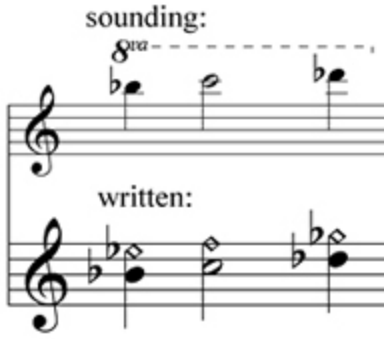
Example 25: Borodin, Quartet No. 1, fourth movement (Allegro Risoluto)



False harmonics

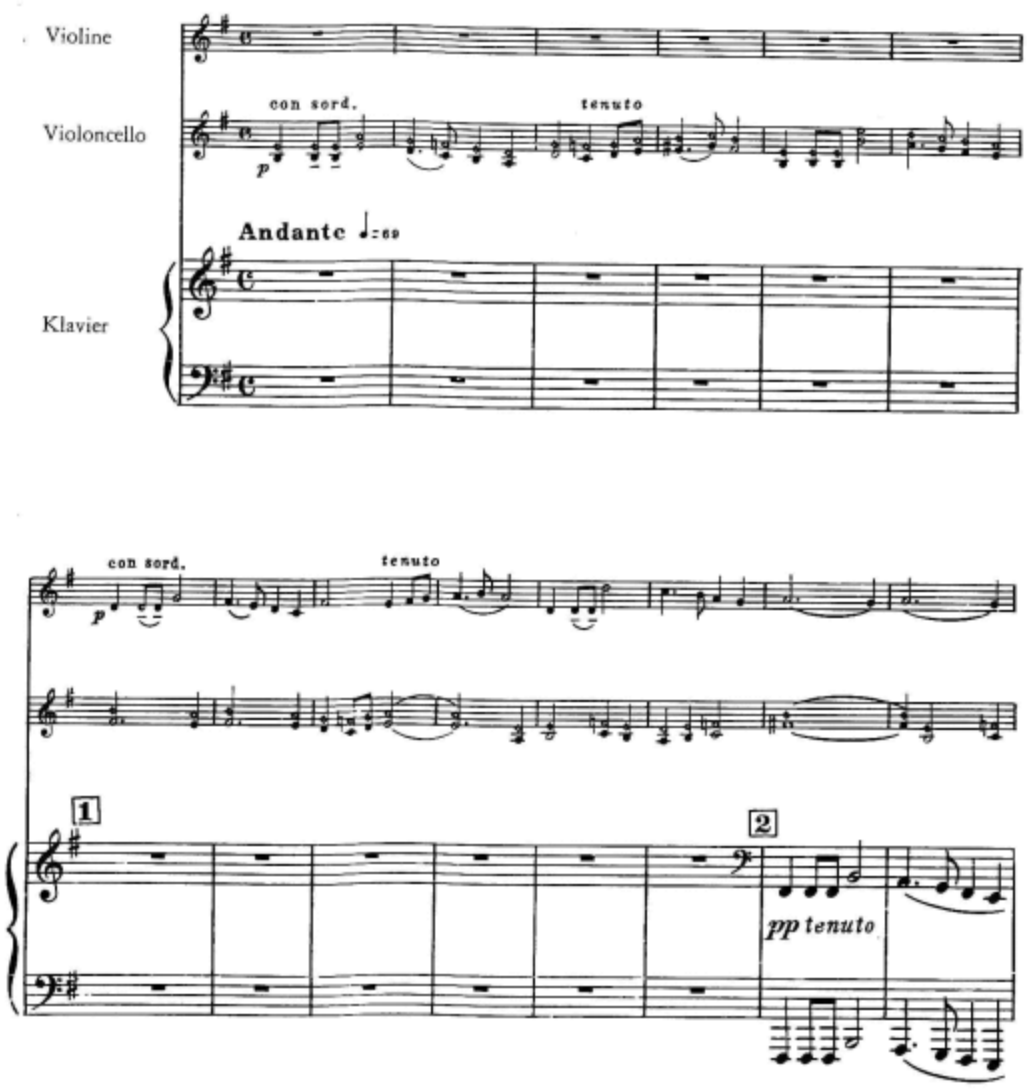
Natural harmonics can only be created on the notes shown above, but a natural harmonic on any note can be faked by changing the length of the string with one finger (or on the cello and bass the thumb) and then lightly touching the string a fourth above, which generates a very whispery note two octaves higher.

The notation is very precise as shown in the lower staff below, with the sounding note not written. Other false harmonics are possible – consult an instrumentation book if you are interested but they are hard to produce and rarely used.

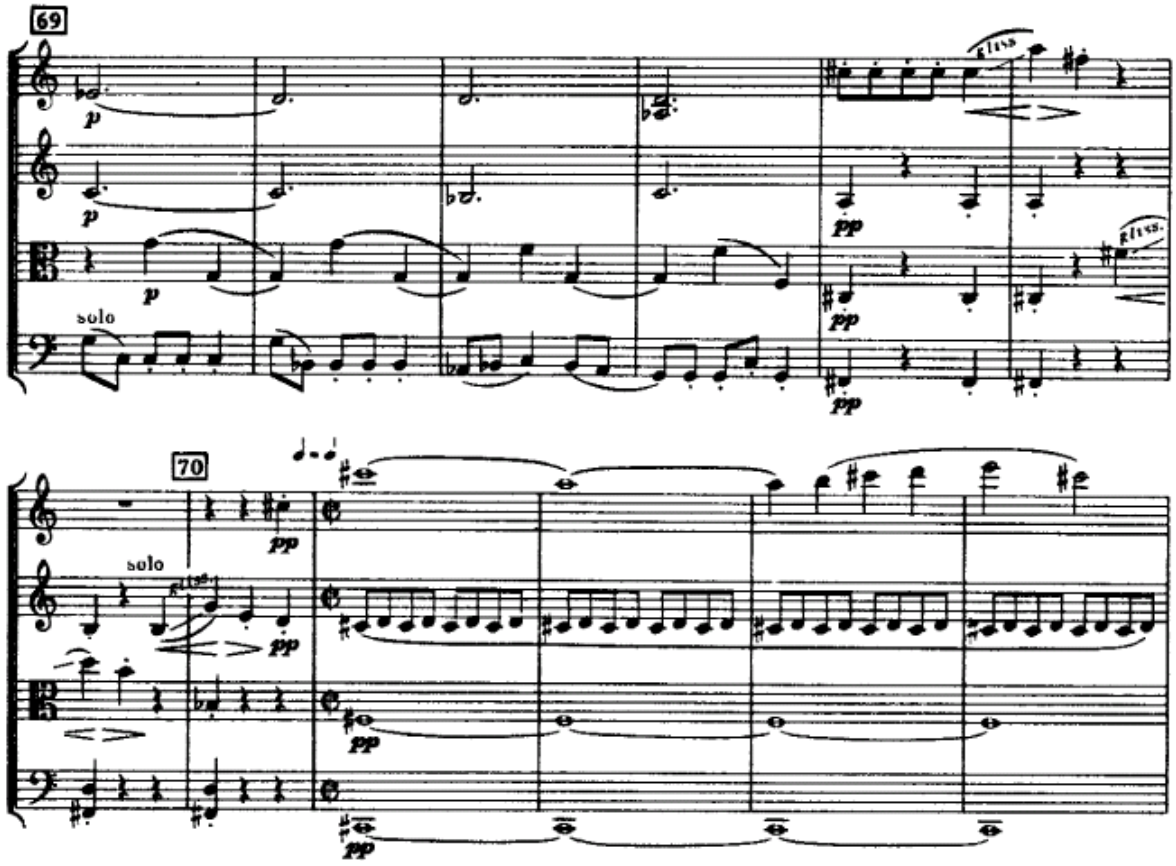


In this famous example the cello plays muted solo false harmonics as a solo for the first six bars – the effect is cold and magical:

Example 26: Shostakovich, Piano Trio No. 2, first movement



Glissando

A glissando is when you slide rather than move cleanly between notes. In this example the effect is rather light-hearted but simultaneous glissandi (as in the second movement of Bartok's sixth string quartet) can be powerful and dramatic.s

Example 24: Shostakovich, Quartet op. 49, fourth movement