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Thinking through the guitar : the sound-cell-texture chain

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Chapter 5 Plucked Sounds

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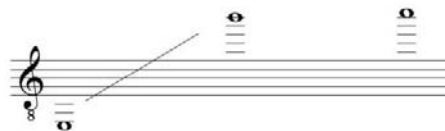
Chapter 5 Plucked Sounds

Plucked sounds are perhaps the most quintessential guitar sound – they surely are the sound most used in the guitar repertoire. It is because of these sounds that the guitar has earned its designation as a “plucked instrument” alongside the harp, the mandolin and the banjo. For this reason, the discussion of the different categories of sound-cell-texture chains starts with the plucked sounds. This chapter shows ways in which the composer can handle the characteristics of the plucked sound, use it to build horizontal as well as vertical cells, and finally, how these cells can be creatively combined to form musical textures playable on the guitar.

5.1 Sound

5.1.1 Pitch range

Figure 5.1 Plucked note range



The range of plucked notes is displayed in Figure 5.1. Concert guitars usually reach up to the high c, while non-concert models reach up to the high b. The guitar is a transposing instrument; notes sound an octave lower than notated. A transposing treble clef is used for the notation of guitar music (Figure 5.1). Standard noteheads are used for the notation of plucked notes. Notes in the higher range, starting from the third open string, are usually plucked with finger a, m or i, while notes in the lower range, up to and including the fourth string, are usually plucked with finger p.²³

5.1.2 Timbre possibilities

Each note a guitarist plays contains a certain timbre, regardless of timbre indications for individual notes or groups of notes in a score. Timbre is not a parameter that can be turned on or off, but is always present. Different performers have a different palette of timbres they consciously or unconsciously apply to their playing. It is, however, possible for composers to prescribe a particular timbre in their scores. The following account describes the elements influencing timbre and provides information on how these elements can consciously be used in the scoring process.

²³ Finger p: see *Reading Guide*.

Attack

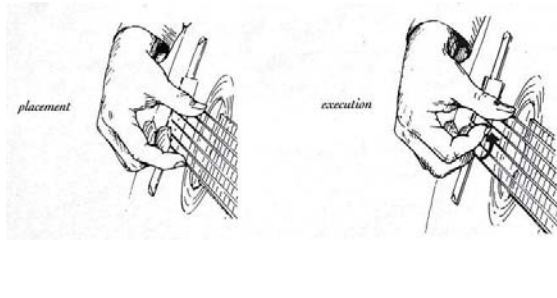
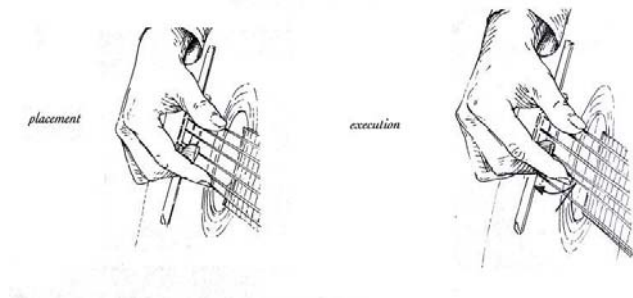
Figure 5.2 Tirando attack²⁴

Figure 5.3 Apoyando attack



Regular plucked notes are performed by the right hand with a tirando or apoyando attack. In the tirando attack, the string is plucked, and the plucking finger subsequently released in the direction of the hand palm (Figure 5.2). The apoyando attack, on the other hand, pushes the string into the direction of the guitar top²⁵ and lets the finger rest on the lower adjacent string, creating a more powerful sound than the tirando attack (Figure 5.3). The apoyando attack is normally used to emphasize a note or a sequence of notes, particularly in single lines, scales and sometimes for the top note of an arpeggio. The tirando attack is primarily used for the performance of arpeggio and tremolo figures, as well as for the performance of vertical cells. It is not always possible to use an apoyando attack; arpeggios and tremolo figures at moderate to rapid speeds can only be performed tirando, and the same is true for vertical cells at any speed. In the guitar literature, the prescription of tirando versus apoyando attacks is relatively rare, but without good reason. Variation in attack is a powerful timbral tool in guitar scoring, and composers should indicate their preference for a particular type of attack when they see fit. The prescription of an apoyando or tirando attack is done through the use of a symbol that is specified in a legend, or with a verbal instruction in the score.

Figure 5.4 Apoyando notation

(PERCUSSION STUDY NO.1, KAMPELA)

²⁴ The drawings in Figure 5.2 and Figure 5.3 originate from *Pumping Nylon* by Tennant (1995).

²⁵ For guitar top: see *Reading Guide*.

Kampela, for instance, prescribes *apoyando* attacks by using a straight line above the right hand fingerings (Figure 5.4).

Figure 5.5 Left hand plucking



(SEQUENZA XI, BERIO)

More rarely, notes are plucked with a finger of the left hand instead of the right hand. This leads to a more mellow sound color, as the notes plucked with the left hand are plucked with the flesh, instead of the nail attack that is usual for notes plucked with the right hand. In addition, the mellow sound color is caused by the fact that the attack with the left hand is usually over the fingerboard, which suppresses the higher overtones. Left hand attacks are prescribed with a symbol or a verbal instruction in the score. Berio uses a “+” sign for notes that are to be plucked with the left hand in his *Sequenza XI* (Figure 5.5). The “+” sign comes from conventional notation of the left hand *pizzicato* in violin scoring (Adler, 1989, p. 39). Using this sign is an acceptable way to prescribe left hand plucking as long as it is explained in a legend, which is the case in the *Sequenza XI*.

Figure 5.6 Nail vs. flesh sound



When scoring notes that are plucked with the fingers of the right hand, it is possible to ask for one or more notes to be plucked with the flesh instead of the nail. Such notes have a mellower and less direct sound. Notes played with the flesh are plucked with the thumb, as attacking the string with the thumb allows the performer to avoid having the nail touching the string, which is much more difficult to achieve when plucking with another finger. Since the performer plays with only one finger in such cases, passages played with the flesh should be scored at slow to moderate speeds. The indication of a flesh sound is done with a verbal instruction in the score (Figure 5.6).

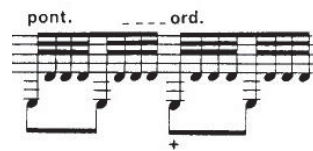
Sound color and playing position indications

Figure 5.7 Plucked note tone colors



It is possible to assign timbre indications to individual notes or groups of notes by specifying the desired sound, for instance ‘metallic’, ‘sharp’, ‘mellow’, ‘dark’. The performer can then find a fingering and a way of attacking the string that is in accordance with the tone color description (Figure 5.7).

Figure 5.8 Ponticello to ordinario sound change



(SEQUENZA XI, BERIO)

The other option for assigning timbre indications is by suggesting a position where the string should be attacked. There are three basic playing positions: *tasto* (close to the fretboard), *ordinario* (regular playing position) and *ponticello* (close to the bridge). A playing position indication is a kind of action notation (Karkoshka, 1966, p. 3), as it does not specify a particular timbre but rather an action. Playing positions refer to a position where the performer should pluck the string, with the expectation that this will create a particular timbre. *Tasto* is expected to sound round, dark and warm because of the reduced amount of high harmonics near the fretboard while *ponticello* is expected to sound sharp and bright because of the reduced amount of lower harmonics (Grove Music Online, 2012f; Grove Music Online, 2012e). The composer asks for a *tasto*, *ordinario* or *ponticello* sound by including a verbal indication to this effect in the score (Figure 5.8).

Figure 5.9 Low and high range *tasto* on string 1

A curious phenomenon occurs when we pluck the string in the *tasto* area while the left hand is stopping notes in a high position (second measure of Figure 5.9). The higher we play, the less dark, round and warm the notes sound, and the more they start to sound like *ponticello* notes. This is because the left hand functions like a second bridge: it creates an area of increased tension close to the point where the string is depressed, leading to a *ponticello*-like sound. It is the responsibility of the guitarist to create a *tasto*-like sound in the case a composer prescribes a *tasto* sound for high notes. The guitarist can

manage to create a *tasto* sound in such cases by selecting a playing position halfway between the stopping position of the left hand and the bridge.

Stopping position

Figure 5.10 High position fingering of middle range note



Playing a note from the middle or high range in a high position on a low string greatly alters its sound quality. When the composer wishes to score notes with a particular timbre that is the result of its stopping position, an indication of the fingering for the left hand should be provided. Figure 5.10 displays an example from the *Sequenza XI* where Berio fingers the g from the middle range in a high position of the sixth string, changing the sound quality of the g, in unison with a g played on the third string.

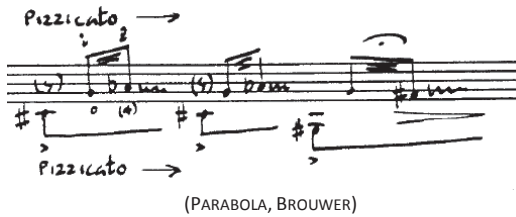
Nodal point plucking

Figure 5.11 Strike at nodal points



When the guitarist plucks the string at the nodal point where the octave harmonic is produced, a particular sound color emerges. This sound has variously been referred to as a *flautando*, clarinet-like or harp-like (Schneider, 1985, pp. 112-113). The nodal point of any pitch is found twelve frets above the point where the note is fingered. The first note, the low a, in Figure 5.11 is played as a fifth open string; the nodal point is found on the twelfth fret of that string. The second note, a low c, is played in the third fret of the fifth string; the nodal point is found on the fifteenth fret of the fifth string. When the composer wishes to score notes that are plucked at the nodal point, a verbal indication to that effect should be given in the score (Figure 5.11).

Etouffé

Figure 5.12 Right hand *etouffé*Figure 5.13 Left hand *etouffé*

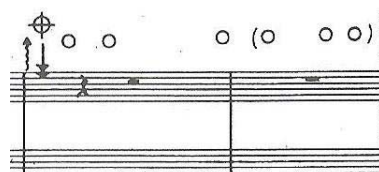
• nota de entonación apagada-indeterminada lograda apoyando los dedos de la mano izq. ligeramente sin llegar a la trastera. Pulsar normalmente la derecha. Se logra mejor sonoridad apoyando el borde de la uña (m.izq.).

(LA ESPIRAL ETERNA, BROUWER)

The timbre of plucked sounds can be changed by muffling the string, or in other words, *etouffé*. *Etouffé* notes are notes that are plucked, strummed, or struck with *rasgueado* on non-nodal points, while one of the hands simultaneously slightly damps the string. *Etouffé* plucked sounds are performed by plucking a note and simultaneously slightly damping it with the side of the right hand (Figure 5.12) or by lightly touching the string with the left hand (Figure 5.13). The most widely used is the first of these two possibilities. Muting with the right hand near the bridge creates a light damping, through which the original pitches are still audible, as well as a degree of resonance. Muting with the left hand, however, causes the original open string pitches to be inaudible; a purely muted string is heard with a slightly audible high pitch caused by this muting and virtually no resonance. In the latter cause, the high pitch caused by the string muting changes according to the muting position of the left hand; such pitch changes occur in Figure 5.13. Because the right hand is involved in damping the notes, the *etouffé* writing is most effective for single line writing and vertical cell sequences. For *etouffé* notes that are damped with the left hand, all types of horizontal cells described in section 5.3 can be applied. Sounds scored *etouffé* have a reduced dynamic range and reduced resonance. The composer scores *etouffé* notes with a verbal indication in the score, and should clearly prescribe for how long the *etouffé* should last, and with which hand it should be performed.

This timbre is referred to as *pizzicato* in some scores (Figure 5.12), however, this designation is confusing as all plucked notes on the guitar are played *pizzicato*. “*Etouffé*” would be a clearer indication.

Figure 5.14 Alternation of damping and release



(SALUT FÜR CAUDWELL, LACHENMANN)

Figure 5.14 displays how Lachenmann uses an alternation of “damping and releasing the strings very close to the bridge” of notes plucked with a plectrum (Lachenmann, 1985), changing the sound color during the resonance of the strings.

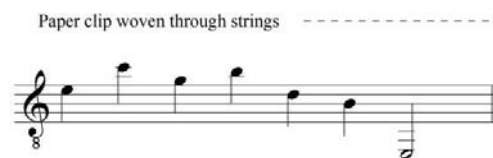
Figure 5.15 Little finger muting



(PERCUSSION STUDY NO. 1, KAMPELA)

Kampela uses the little finger of the right hand to mute the open e string, while the remaining fingers of the right hand pluck the string. The pinky moves along the string, thus causing the pitch of the damped string to go up and down (Figure 5.15).

Prepared guitar

Figure 5.16 Paper clip preparation²⁶

The timbre of plucked sounds can be changed by attaching an object to one or more strings, turning the guitar into a prepared guitar. Objects attached to the string muffle the string when it is attacked, creating a buzzing, gamelan-like sound in the case of metal objects like a paper clip (Figure 5.16), and a dry, dull sound in the case of wooden objects. Passages that are to be played with a prepared guitar should be provided with a verbal indication in the score (Figure 5.16) or a legend. Because the same note may be played in different positions on the guitar, the composer can alternatively use tablature notation to clearly indicate the fingering of each note to ensure the desired effect is reached (Yates & Elgart, 1990).

²⁶ There is a virtually endless range of external objects that one could attach to the guitar in order to change its sound. In all chapters of this study, a paper clip is used for the discussion of string preparation, as this preparation does very little to hinder the dynamic range of the sound. In addition, the paper clip is used in all chapters in order to demonstrate the range of sonic outcomes that can be achieved with one type of string preparation.

5.1.3 Dynamic range

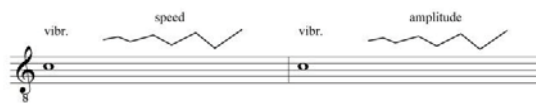
The dynamic range of regular plucked notes is wide (see Appendix C). Plucked notes can be performed at very soft dynamic levels, particularly with the *tirando* attack, as well as at loud dynamic levels, particularly with the *apoyando* attack.

5.1.4 Vibrato

Figure 5.17 Lateral and vertical vibrato



Figure 5.18 Increasing speed and amplitude



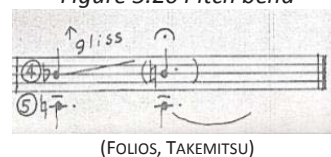
All notes that are stopped with a finger of the left hand on the string can be performed with a vibrato. There are two types of vibratos: lateral vibrato and vertical vibrato. In lateral vibrato, the stopping finger is moved sideways by wiggling the finger along the length of the string while continuing to stop the string, creating a small pitch amplitude around the original note. This is the standard method of performing vibrato used by classical guitarists. In a vertical vibrato, the finger is moved perpendicularly to the string, creating a larger pitch amplitude above the original note. The pitch amplitude in a vertical vibrato is larger than that of a lateral vibrato (Lunn, 2010, p. 17). The latter method is primarily used in blues and rock guitar styles. In order to ask for a vibrato the composer should use a verbal indication such as 'vibr.', use a dotted line or brackets to indicate the duration, and, if desired, a wavy line to indicate the amplitude or speed of the vibrato.

5.1.5 Pitch bends and microtones

Figure 5.19 Pitch bend



Figure 5.20 Pitch bend



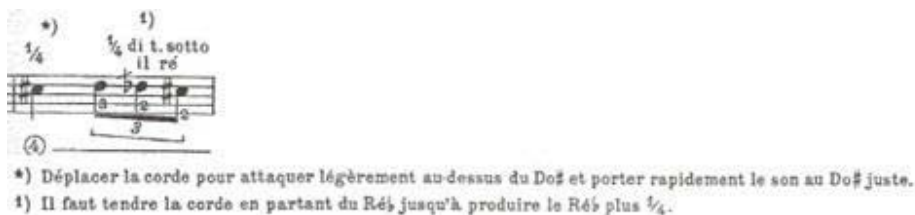
(FOLIOS, TAKEMITSU)

Pitch bends are stopped notes that are bent out of tune above the pitch of the original note. With a pitch bend, a maximum interval of a major second can be reached. The guitarist performs the pitch bend by vertically bending the stopped note upward or downward, in the same way a lateral vibrato is initiated. In order to prescribe a pitch bend, the composer indicates the original pitch and an upward bend sign

(Figure 5.19), or notate both the original pitch and the destination pitch (Figure 5.20; the string bend is confusingly described here as an “↑ glissando”).

Microtones are created by the guitarist either by using a microtonal scordatura (see Appendix D) or by using a pitch bend. A microtonal scordatura can greatly improve ease of reading, as the performer can relate printed notes to known locations on the fretboard. In contrast to bowed strings instruments without frets, the guitar cannot produce microtones by finger placement on the fingerboard, but only by bending the string out of its regular tuning. This means that for each microtone, the guitarist needs a short moment to bend the string before the microtone can be produced. The composer should score a microtone by indicating the pitch of the microtone, and should take into account, in case no microtonal scordatura is used to attain the microtonal pitch, that the performer needs to first bend the string to the desired pitch before it can be performed.

Figure 5.21 Microtones



*) Déplacer la corde pour attaquer légèrement au-dessus du Do# et porter rapidement le son au Do# juste.
 1) Il faut tendre la corde en partant du Réb jusqu'à produire le Réb plus 1/4.

(TIENTO, OHANA)

Ohana uses pitch bends to produce microtones in *Tiento*; in his directions, Ohana describes how the guitarist should bend the string to reach the prescribed microtones (Figure 5.21). The first note of the example is performed by first pulling the string up to above the c sharp and then quickly moving the finger back to the normal stopping position, dropping the pitch to c sharp. For the production of the second note of the triplet, the pitch of d flat is pulled up so that the pitch rises to a quarter tone above d flat.

5.2 Vertical cells

When creating vertical cells of plucked sounds, up to six notes can be plucked simultaneously. In order to see which notes can be combined, Appendix A may be consulted. Notes can be combined on adjacent and non-adjacent strings.

5.2.1 Two-note combinations

A wide variety of two-note combinations are possible on the guitar, ranging from unisons to intervals spanning over multiple octaves. The available interval options are described in Appendix A.

5.2.2 Sympathetic ringing

Figure 5.22 Sympathetic ringing

Andante, recitando $\text{♩} = \text{c.60}$

* B played staccato on (4), but let sympathetic (2)(B) ring on.

(SONATA, DAVIES)

Sympathetic ringing is the resonance of a pitch on one string produced by the plucking of the same pitch on another string. When one of the notes is plucked, the other begins to resonate. The composer should prescribe sympathetic ringing by indicating the string and pitch that should set the resonance in motion, as well as the string and pitch that is to start resonating as a result. Davies uses sympathetic ringing in the opening of his guitar *Sonata* (Figure 5.22). The b on the second open string is set into vibration by plucking the same pitch located on string four. Davies emphasizes the resonating of the second string by asking for a staccato articulation on the attacked note on the fourth string.

5.2.3 Vertical cell spacings

Figure 5.23 Chord spacings

narrow spacing wide spacing mixed spacing clusters spacings with unisons

Vertical cells of more than two notes can be scored using narrow spacings, wide spacings or combinations thereof that are, in consequence, mixed spacings. The first measure of Figure 5.23 consists of narrow spacings, the second measure of wide spacings and the third measure of mixed spacings. In addition, three-note clusters can be built around open strings (see the fourth measure and Appendix A). Note combinations may also include unison doublings: the first two note combinations of the last measure contain unisons over two strings, while the last combination contains a unison scored over three strings.

Chords scored over the metal-wound strings only, such as the first chord in Figure 5.23, have a more metal-like sound than chords scored over all nylon strings²⁷, such as the second and third chord of the same figure. Due to their larger intervals, wide spaced chords are often scored over metal-wound as well as nylon strings and consequently contain sonic characteristics of both string types. Because of the low pitches the guitar reaches in its lower register, narrow spacing in the lowest register of the guitar can sound rather heavy (see, for instance, Figure 5.24). Compared to triads of which all notes are stopped, clusters often have good resonance because they include an open string. Guitar clusters are not immediately associated with the typical open string sound by the listener because of the dense spacing of the pitch materials. Unisons that are part of a larger chord function as a way to make the chord more sonorous, and enhance the doubled pitch.

Chords of up to four notes are plucked with fingers p, a,m and i²⁸, with one finger assigned to a single string. In the case of five- and six-note chords, one finger plucks two or three notes simultaneously.

Figure 5.24 Performance of six note chords



In the case of arpeggiated chords, the notes are plucked in rapid succession. In the case of arpeggiated chords of more than four notes, one finger is used for multiple strings, or the chord is simply strummed (Figure 5.24, see Chapter 8 for strummed sounds). Plucked chords scored over non-adjacent strings are performed without difficulty by placing fingers of the right hand on the appropriate strings. Strummed chords are most effective when they are scored over adjacent strings (see section 8.2.2).

5.3 Horizontal cells

Regular plucked sounds can be used to create a variety of horizontal cells: single line horizontal cells, arpeggio horizontal cells, vertical cell sequences and multiple part horizontal cells.

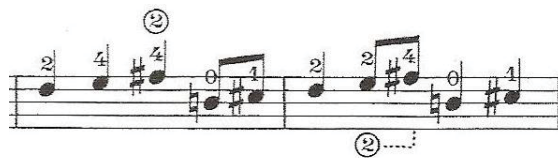
²⁷ For nylon versus metal-wound strings: see *Reading Guide*.

²⁸ Fingers p,a,m,i: see *Reading Guide*.

5.3.1 Single lines

Design

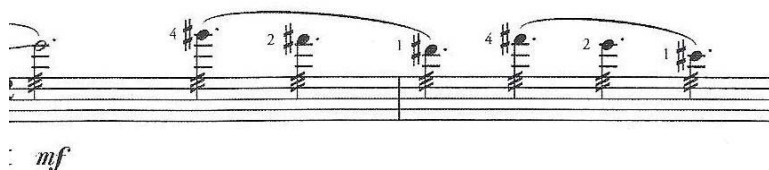
Figure 5.25 Single line with small intervals



(SONATA III, PONCE)

A single line horizontal cell is a succession of notes without accompaniment (Figure 5.25).

Figure 5.26 Single line tremolo



(ESTUDI DE CONCERT NÚM. 7, GASULL I ALTISENT)

Apart from single lines in which each note is plucked once (Figure 5.25), a single line can also be constructed with notes that are performed with the tremolo technique²⁹ (Figure 5.26).

Resonance

Figure 5.27 Single line with large intervals



(SEQUENZA XI, BERIO)

²⁹ Tremolo technique in guitar is the rapid performance of a p,a,m,i fingering, in which fingers a,m, and i pluck the same string.

Single line horizontal cells of plucked sounds can be scored either with or without resonance. The first possibility is for such cells to be scored in such a way that notes **do not** ring on into the temporal space of subsequent notes. This is possible when the single line is scored at a slow to moderate speed, when the intervals are relatively small, when both conditions are fulfilled (Figure 5.25), or when staccato articulation is used. In contrast, single line horizontal cells of plucked sounds can also be made to sound in such a way that notes **do** ring on into the temporal space of subsequent notes. This is possible when the line is scored over multiple strings, at moderate and high speeds, or when both conditions are fulfilled (Figure 5.27). In Figure 5.27, Berio does not explicitly specify that this ringing on should take place, but the notes do ring on as they are scored over multiple strings and at a high speed. In order to explicitly prescribe ringing on of notes, the composer should use ties or a verbal indication such as *l.v.* (*let vibrate*). When single lines are scored in such a way that all or most notes are located on a different string, they are in fact arpeggios and are performed with the arpeggio technique³⁰ (Figure 5.27).

Harmonic possibilities

Single lines have a very broad range of harmonic possibilities, because the performer only has to be concerned with the performance of one line. The complaint sometimes made that the guitar suffers from the “tyranny of its tuning” (Wade, 1980, p. 172) is not applicable in single line writing. It sometimes is in other types of cells, as we will see later on in this chapter. Because of the wide range of possibilities to combine pitches, single lines lend themselves well to writing in keys not directly associated with the pitches of the open strings, as well as for twelve-tone and serial writing.

Speed

Figure 5.28 Rapid scale passage



(SONATA III, PONCE)

Figure 5.29 Rapid single line passage



(SEQUENZA XI, BERIO)

Single line horizontal cells of plucked sounds can be performed slowly, but also at considerable speed. When scored as scale passages, they depend on the maximum scale speed of the performer, which in the case of professional guitarists is approximately four sixteenth notes per beat at a quarter note speed of 120 BPM. Fast passages in which each note is scored over a different string (Figure 5.29) are easier to perform at high speeds than scale passages (Figure 5.28). Tremolo passages of single lines can be performed at a maximum speed of approximately four sixteenth notes per beat at a quarter note speed of 130-160 BPM.

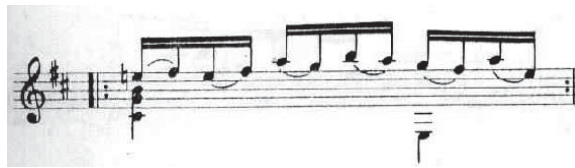
³⁰ Arpeggio technique: see 5.3.2.

Articulation

Single lines can be scored with a variety of articulations, such as slurs, legato, accents, staccato, and glissando.

Slurs

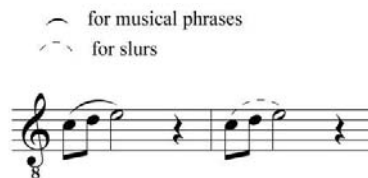
Figure 5.30 Ascending and descending slurs



(ETUDE III, VILLA-LOBOS)

Slurs are articulations that connect notes in a single line and tie them together, creating a legato sound. The notes that are connected by the slur must lie within the left-hand range of a given position for them to be playable (see Appendix A). There are two types of slurs, descending and ascending slurs, both of which are performed with the left hand. Descending slurs are performed by plucking the string with a finger of the left hand, directly after the finger has been used as a stopping finger. The sound of descending slurs differs from the right hand attack, because slurs are performed with the flesh instead of the nail³¹ and are therefore mellower and less direct in their sound. Ascending slurs are performed by hammering the finger onto the fretboard. Ascending slurs have a somewhat percussive sound quality because of the hammering motion. The guitarist can control the amount of percussiveness in the sound of the ascending slur; it is generally considered good practice to reduce the percussiveness of the ascending slur as much as possible in order to distinguish the slur from a hammered note. Standard notation for slurs is to use a slur mark drawn with a normal line to connect two or more notes, which indicates that after the first plucked note, subsequent notes are to be slurred.

Figure 5.31 Slur marks versus musical phrase marks



The similarity in appearance between slur marks and musical phrase marks can sometimes lead to confusion as to which of the two is intended. When a composer makes use of slur marks and musical phrase signs in the same composition, it is best to avoid confusion and make a distinction between the

³¹ This is because guitarists, while cultivating the nails of the fingers of the right hand, keep their fingernails on the left hand trimmed in order to allow the fingers to properly depress the strings without nails hindering this action.

two in notation. In the *Nocturnal* (Figure 5.32), Britten uses dotted lines for slurs and normal lines for musical phrase marks (Britten, 1965). When a different notation is used for musical phrase marks and slurs, this should be specified in a legend (Figure 5.31).

Legato

Figure 5.32 Phrase marks



(NOCTURNAL, BRITTEN)

Legato articulation connects a group of notes in such a way that no interruptions are heard in the transitions from note to note. The performer can play notes in a legato manner by avoiding premature decay of notes and avoiding interruptions caused by placing attacking fingers on resonating strings. The composer scores a legato by using phrase marks, as Britten appropriately does in Figure 5.32.

Accents

Figure 5.33 Strong accent



(SONATA III, PONCE)

The performer executes a dynamic accent by plucking the marked note louder than the surrounding notes. Accented notes, either strong accents or regular accents, can be used in single lines and are prescribed with accent marks (Figure 5.33). In the guitar repertoire, the horizontal accent mark (Figure 5.45, bass part) is more commonly used than the vertical accent mark pictured in Figure 5.33.

Staccato

Figure 5.34 Staccato



(SONATA III, PONCE)

Staccato articulation can be used in the scoring of single lines (Figure 5.34). At low and moderate speeds, the staccato can be performed convincingly, while at high speeds, a row of staccato notes may be less convincing as it demands an extra damping movement for each note. The guitarist performs the staccato either by lifting the finger off the fretboard after attack, or damping the string with a left or right hand finger. Staccato should be notated by placing a staccato mark above or below the affected note or group of notes.

Glissando

Figure 5.35 Literal glissando



Figure 5.36 Glissando illusion



(SEQUENZA XI, BERIO)

Glissando can be used to connect notes in a single line. This can be done literally, by prescribing a literal glissando between two notes, or more as an illusion, in which a partial glissando between notes suggests that the two notes are connected by the glissando. This second type of glissando is primarily used when glissandos are prescribed over distant pitches that cannot be connected on one string. Glissando should be notated with a line that connects the note of departure to the note of arrival.

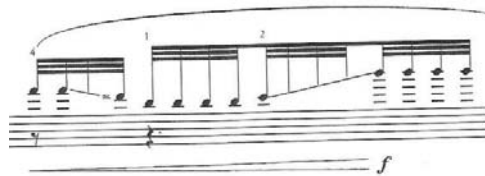
Figure 5.37 Glissando to connect multiple notes



(KURZE SCHATTEN II, FERNEYHOUGH)

A glissando can also be used to connect multiple notes, without attacking the string after each point of arrival. Such glissandi are notated with a combination of glissando signs between the notes that are to be connected and a phrase mark for the group of notes that is performed with this glissando (Figure 5.37).

Figure 5.38 Tremolo glissando



(ESTUDI DE CONCERT NÚM. 7, GASULL I ALTISENT)

When using tremolo, a glissando can be performed during the execution of the tremolo (Figure 5.38). The composer should notate a tremolo glissando by specifying the number of attacks during the glissando, and by drawing a glissando line between the pitch of departure and the pitch of arrival (Figure 5.38). In addition, a glissando can be scored by using the tuning keys. The range of such a glissando is a major second up and as far as desired in downward direction. The composer should score a tuning key glissando by specifying pitch of departure and arrival, accompanied by a verbal indication in the score or a symbol specified in the legend that indicates a tuning key glissando is to be used.

Figure 5.39 Tuning key glissando



(SEQUENZA XI, BERIO)

Berio scores a glissando between an open string and a fingered note without indicating the type of glissando that is to be used. A glissando between an open string and a fingered note only a minor second above does not become sufficiently audible as a glissando, as no actual sliding from one fret to another takes place. The solution for the performer in this case is to use a tuning key glissando.

Embellishment

Figure 5.40 Unison trill over two strings performed with the right hand



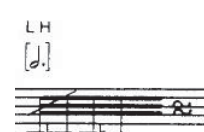
(CANTICUM, BROUWER)

Figure 5.41 Trill over three strings performed with the right hand



(SEQUENZA XI, BERIO)

Figure 5.42 Trill performed with left hand



mf
(SEQUENZA XI, BERIO)

A variety of trills and shorter embellishments can be scored for single line horizontal cells of plucked sounds. We distinguish two types of trills according to their performance: right hand trills and left hand trills. Trills are either performed with the right hand over multiple strings (Figure 5.40 and Figure 5.41) or with the left hand on one string (Figure 5.42). In both cases, trills can be performed at very high speeds. Right hand trills can be scored over two or three strings, using a minimum of one (Figure 5.40) and a maximum of three pitches (Figure 5.41). Left hand trills are performed on one string, and can include a minimum of two and a maximum of four notes. Figure 5.42 shows a left hand trill over three pitches. Trills can be short, or continue as a continuous trill for longer stretches of time.³²

Non-functional writing

Figure 5.43 Non-functional single line writing³³



Examples of non-functional writing in single lines are:

- Rapid alternations between successions of notes that lie outside the hand span (Figure 5.43)
- Legato phrases over successions of notes that lie outside the hand span

³² In Chapter 11, trills that consist of a combination of plucked sounds and hammered sounds are discussed.

³³ The examples of non-functional writing in this study are not included as video files.

5.3.2 Arpeggios

Design

Figure 5.44 Full chord arpeggio



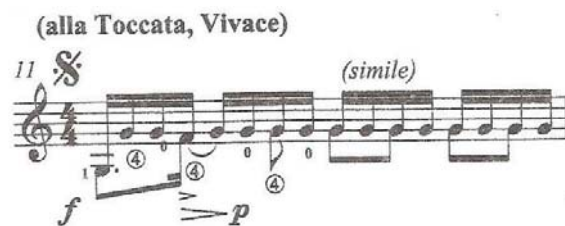
(ETUDE 1, VILLA-LOBOS)

In musical terms, an arpeggio is the “sounding of the notes of a chord in succession rather than simultaneously” (Grove Music Online, 2012a). A guitar arpeggio differs from this standard definition of an arpeggio:

- Because the individual notes that make up a chord on the guitar are spread over multiple strings, a technical guitar arpeggio is a succession of notes scored over multiple strings.
- The sounding of notes in succession of a vertical cell made up of two pitches is also considered an arpeggio because they are similar in sound and technique to chord arpeggios.
- Arpeggios can be scored as successions of notes that make up full chords (Figure 5.44) or partial chords. The smallest technical arpeggio unit is an alternation of two notes on different strings (Figure 5.45).

In much guitar music, arpeggios are notated as two different voices: one voice for the bass line, and one for the higher notes (Figure 5.44 and Figure 5.45).

Figure 5.45 Arpeggio containing two-note alternation



(PAISAJE CUBANO CON FIESTA, BROUWER)

Resonance

Figure 5.46 Arpeggio resonance



Figure 5.47 Resonance with indicated duration



(ALL IN TWILIGHT, TAKEMITSU)

Characteristic for arpeggio horizontal cells of plucked sounds is that most notes ring on beyond their notated value (Figure 5.46), unless it is explicitly specified that they should be damped after their notated value, or if the resonance of a string ends because it is damped as the result of the fingering. When an arpeggio is notated as two distinctive parts, as in Figure 5.44, the value of the bass line is typically notated correctly, while for higher pitches, only the instant of plucking is notated. When writing arpeggio horizontal cells of plucked sounds, it is not necessary and even impractical to notate the exact note duration of each note during its resonance. Kachian argued, fittingly, that it is “pointless and cluttered to use webs of ties and clusters of rests in an attempt to track the decay of each individual tone on any string” (Kachian, 2006, p. 10). However, if the composer wishes to create an intricate web of sounds, in which certain notes ring on while other notes are damped, this is possible. Figure 5.47 shows an example of such a case; the c sharp in the second measure, for instance, is not supposed to ring on, unlike the preceding f natural and the e flat that follows it.

Harmonic possibilities

The harmonic possibilities of the arpeggio are derived from the possibilities to create vertical cells and are therefore slightly more limited than single lines. The consequence of scoring arpeggio passages in higher registers is that a more limited amount of bass notes is available.

Figure 5.48 Arpeggio chord progression



(ETUDE 1, VILLA-LOBOS)

Figure 5.49 Arpeggio over relatively narrow chord spacings



(ORFEUNISM, TITRE)

Arpeggios that contain open strings are often considered to be idiomatic, as particular chord progressions typical for the guitar become possible (Figure 5.48; a chord is moved a semitone down while the open strings pitches remain the same), and notes in close intervals may be played as an arpeggio, making it possible for the performer to play them at great speed (Figure 5.49).

Figure 5.50 Unison arpeggio³⁴

(ETUDE 11, VILLA-LOBOS)

Arpeggios can also include unisons scored over multiple strings (Figure 5.50).

Figure 5.51 Bar chord arpeggios



(LA CATEDRAL, BARRIOS)

By using bar chords in higher positions, it becomes possible to reach tonalities not directly associated with the open string pitches (Figure 5.51). In order to make optimal use of the possibilities of such bar chords, refer to Appendix A.

Speed

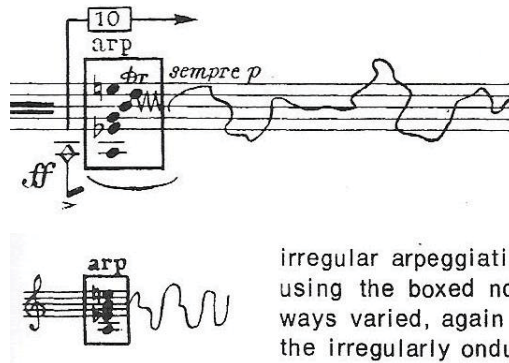
Arpeggios are among the fastest note combinations possible on the guitar. The combination of the thumb with finger *i*, *m* or *a* can be performed at high speeds. The arpeggios in Figure 5.44 and Figure 5.45 can be performed by professional guitarists at an approximate quarter note speed of 130-160 BPM.

³⁴ In this example, Villa-Lobos uses the antiquated practice of indicating strings with circled pitch names instead of string numbers. For clear and understandable notation, circled string numbers should be used (see *Reading Guide*).

Rhythmic possibilities

Because of the high speed that can be reached with arpeggio horizontal cells of plucked sounds, they lend themselves well to acceleration and deceleration, as well as to a wide range of rhythms.

Figure 5.52 Irregular arpeggio



(TELLUR, MURAIL)

Figure 5.52 shows how Murail uses an “irregularly undulating line” to indicate that the boxed notes are to be played as irregular arpeggios (Murail, 1978).

Articulation

Arpeggios can be scored with a variety of articulations, such as slurs, legato, accents, staccato, and glissando.

Slurs

Figure 5.53 Slur in arpeggio



(INVOCACIÓN Y DANZA, RODRIGO)

A slur can be used in an arpeggio to connect notes that have been scored on the same string (Figure 5.53).

Legato

Figure 5.54 Legato arpeggio



(PAISAJE CUBANO CON FIESTA, BROUWER)

As arpeggios are scored over multiple strings, they lend themselves well to legato scoring. Arpeggios that contain open strings make it possible to connect arpeggios located on different positions on the fretboard in a legato manner, because the open strings can ring on during position shifts. The composer should use a phrase mark to indicate that a succession of arpeggiated notes is to be played legato, as Brouwer appropriately does in Figure 5.54.

Accents

Accents can be scored in arpeggio horizontal cells of plucked sounds to bring out a particular note in the sequence (Figure 5.45).

Staccato

Figure 5.55 Staccato



(SEQUENZA XI, BERIO)

Staccato articulations for arpeggios are particularly effective when scored for alternations of two notes (Figure 5.55). In larger arpeggios, staccato works well when applied to a small number of notes or at the end of a passage; this is because each staccato note requires an additional damping or lifting move of the performer, which is difficult to perform when other notes are simultaneously attacked.

Glissando

Arpeggio cells can be scored with literal glissando, partial glissando, simultaneous glissando and plucking, and tuning key glissando. Glissando can also be used to connect two vertical cells that are performed as arpeggios.

Embellishment

Figure 5.56 Embellishment in arpeggio



(INVOCACIÓN Y DANZA, RODRIGO)

Embellishments can be used in arpeggio figures: they are most easily performed by the guitarist when the embellishment can be finished before a following note of the arpeggio (Figure 5.56).

Non-functional writing

Figure 5.57 Non-functional arpeggio writing



Examples of non-functional arpeggio writing:

- Rapid arpeggios that contain combinations of notes that lie outside the hand span
- Rapid arpeggios that contain long successions of staccato notes (Figure 5.57)

5.3.3 Vertical cell sequences

Design

Figure 5.58 Repeated vertical cells



(ETUDE 4, VILLA-LOBOS)

Vertical cell sequences of plucked sounds consist of sequences or repetitions of vertical note combinations ranging from two to six notes (Figure 5.58 displays vertical cells of four notes).

Resonance

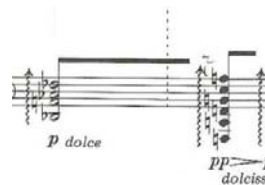
Figure 5.59 Resonance due to string change



(ETUDE 4, VILLA-LOBOS)

Individual vertical cells in vertical cell sequences of plucked sounds usually do not last beyond their notated value, unless a large interval change is made, which leaves a string unoccupied by the right hand, allowing it to ring on (Figure 5.59). When vertical cells contain open strings, the degree of resonance increases.

Figure 5.60 Visual representation of chord duration



(TOWARD THE SEA, TAKEMITSU)

Takemitsu uses a horizontal bar to indicate the length of the resonance of a chord (Figure 5.60), an effective way to visually represent the duration of resonance.

Harmonic possibilities

The options for pitch combinations can be examined in Appendix A. When a succession of vertical cells is scored with fewer notes, it is easier to be flexible in the choice of different pitches and keys than is the case with vertical cells containing many notes.

Speed

Most successions of vertical cells are repeatedly plucked with the same finger, which makes it difficult to play them at high speeds. A speed of quarter note equals 80 BPM for repeated plucked vertical cells in sixteenths is approximately the upper speed limit for a passage such as the one pictured in Figure 5.58.

When chords are strummed or played as rasgueados they can be played at much higher speeds; for more details refer to the appropriate chapters.

Figure 5.61 Vertical cells performed with *a,m,i* fingering



(ETUDE 12, VILLA-LOBOS)

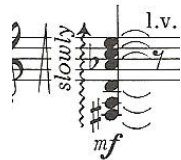
In contrast, vertical cells consisting of two notes scored over two adjacent strings can be played at high speeds (Figure 5.61). This is because both notes in the vertical cell may be plucked at once with one finger. The vertical cell successions in Figure 5.61 are performed with the right hand, using an *a,m,i* fingering pattern.

Articulation

Vertical cell sequences of plucked sounds can be scored with a variety of articulations, such as arpeggiated attack, slurs, legato, accents, staccato, and glissando.

Arpeggiated attack

Figure 5.62 Upward arpeggio



(TOWARD THE SEA, TAKEMITSU)

Figure 5.63 Downward arpeggio



(SEQUENZA XI, BERIO)

Chords can be plucked in an arpeggiated manner: the arpeggiated attack can be executed in an upward (Figure 5.62) or downward (Figure 5.63) direction. The composer should use a wavy line next to the chord to indicate that the chord is to be arpeggiated, accompanied by a downward arrow in the case of a downward arpeggiation. An upward arrow can also be attached to a wavy line to indicate an upward arpeggiation (Figure 5.62). When a wavy line without an arrow is used, this means anyhow that the arpeggiation is performed in the upward direction. In Figure 5.62, a vertical decrescendo mark is used to prescribe a decrescendo that is to be executed during the performance of the chord, which is a clear way to notate such a gesture.

Slurs

Figure 5.64 Slurs in vertical cell sequence



(ETUDE 19, BROUWER)

One or more notes in a vertical cell sequence can be connected to a subsequent chord by means of a slur (Figure 5.64).

Legato

Figure 5.65 Legato in vertical cell sequence



(SEQUENZA XI, BERIO)

Sequences of different vertical cells that are located close by on the fretboard are easier to perform with a legato articulation than vertical cells that are further apart. Vertical cells that contain an open string (such as the chords in Figure 5.65) are easier to connect in a legato manner than those not containing open strings, because the open strings can ring on during position changes.

Accents

Figure 5.66 Accented chords



(ETUDE 19, BROUWER)

The composer can provide vertical cells with accents to make them stand out (Figure 5.66).

Figure 5.67 Accents on selected notes



It is also possible to specify that only a specific note from the vertical cell must be accented (Figure 5.67). To this effect, the accented note should be scored with a separate stem, if possible in a direction different from the rest of the vertical cell, with an accent mark attached.

Staccato

Figure 5.68 Staccato chords



(ETUDE CAPRICHE, DODGSON)

The performer executes the staccato by quickly damping the strings affected by the staccato with the right hand, or, in the case of stopped notes, by lifting the stopping fingers after attack (Figure 5.68).

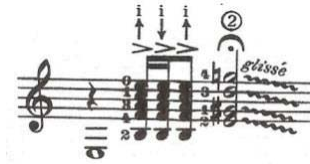
Figure 5.69 Staccato on selected notes



As is the case with accents, it is possible to have only one note from a vertical cell performed with staccato articulation (Figure 5.69). The staccato note should then be notated with a separate stem, preferably in a different direction than the rest of the vertical cell, with a staccato mark attached.

Glissando

Figure 5.70 Unspecified glissando destination



(CINCO PIEZAS, PIAZZOLLA)

Figure 5.71 Vertical cell glissando



(CONCERTO DE VOLOS, BROUWER)

Vertical cells sequences of plucked sounds can be scored with literal glissando, partial glissando, simultaneous glissando and plucking, and tuning key glissando. When scoring vertical cells with tuning key glissandos, only one string can be detuned at a time. Literal glissandos of vertical cells are most

effective when they are scored with the same left hand fingering; changing fingerings during the course of such glissandos reduces the clarity of the glissando. Piazzolla uses a downward glissando after a chord with unspecified destination (Figure 5.70). Brouwer uses literal glissandos to connect two vertical cells (first measure of Figure 5.71) and to connect three vertical cells without right hand attacks interrupting the glissandos (second measure of Figure 5.71).

Figure 5.72 Vertical cells connected with glissando

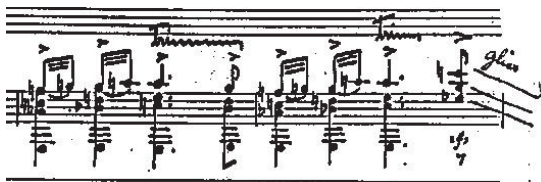


(ETUDE 12, VILLA-LOBOS)

Villa-Lobos' *Etude 12* principally consists of sequences of chords that are connected with glissando articulation (Figure 5.72).

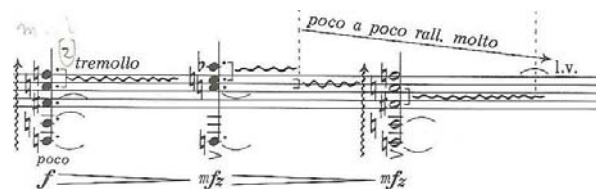
Embellishment

Figure 5.73 Trills on top of vertical cell



(ETUDE 7, VILLA-LOBOS)

Figure 5.74 Trills inside vertical cell

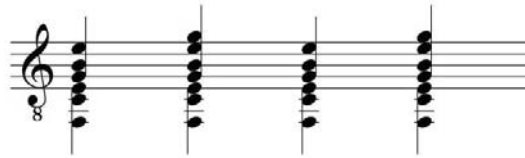


(TOWARD THE SEA, TAKEMITSU)

Vertical cells can be scored with embellishments: they can be located anywhere in the cell, for instance on top (Figure 5.73). It is also possible to create a trill (marked here as *tremollo* by Takemitsu) over selected notes from a vertical cell (Figure 5.74).

Non-functional writing

Figure 5.75 Non-functional vertical cell writing



Examples of non-functional writing for vertical cell sequences of plucked sounds:

- Long and rapid successions of bar chords
- Long stretches of legato five- or six-note chords without open strings in any of the chords
- Chords containing more than six notes (Figure 5.75)

5.3.4 Multiple parts

Design

Figure 5.76 Two-part writing



(ETUDE 18, CARCASSI)

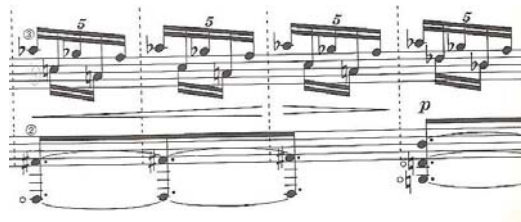
Figure 5.77 Three-part writing



(SONATA III, PONCE)

Multiple-part writing consists of multiple individual voices that are notated on the staff as separate voices. In the guitar repertoire, the most common amount of voices is two (Figure 5.76), but three-part writing also appears occasionally (Figure 5.77). Two part writing poses fewer restrictions on possible note combinations than is the case in three-part writing, and allows for more fluent performance. Bream, fittingly, declared that although two-part writing may seem limited, “two parts played on the guitar have an effect of peculiar fullness and completion” (Bream, 1957, p. 6). Three-part writing is at its most effective if one of the parts consists of a relatively static part, such as a slow bass part, and at slower speeds (Figure 5.77).

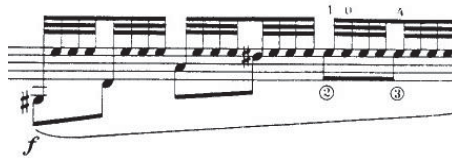
Figure 5.78 Two-staff notation



(TOWARD THE SEA, TAKEMITSU)

When notation of all parts on one staff would make a cluttered impression, or when the composer wishes to emphasize the distinct characteristics of the parts, it is best to use two staves to represent three different parts in order to achieve notational clarity (Figure 5.78).

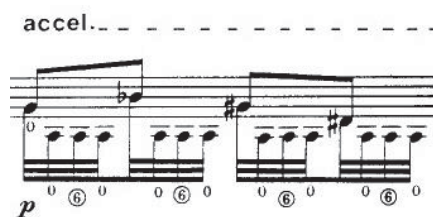
Figure 5.79 Tremolo sequence



(SEQUENZA XI, BERIO)

A two-part horizontal cell that is typical for the guitar is a tremolo sequence: a bass note followed by three repeated notes in a higher register. The technique used to perform these sequences is referred to as “tremolo” technique by guitarists; the bass note is played with the thumb, while the repeated notes are played in by fingers a,m and i.

Figure 5.80 Inverted tremolo



(SEQUENZA XI, BERIO)

Tremolo sequences can also be inverted in such a way that the initial note is scored higher than the repeated notes (Figure 5.80). In this case, instead of using the tremolo technique, the guitarist makes an i,p,i combination for the repeated notes. The repeated notes in this example are scored over two strings, the fifth and sixth string, where finger p plucks the sixth string and finger i the fifth string.

Figure 5.81 Melody in thirds

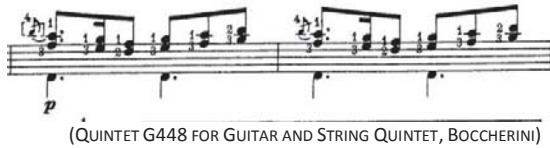


Figure 5.82 Melody in sixths



The melodic part in two-part writing is often reinforced with an additional note that adds harmony and sonority to the passage. In the classical repertoire, this often manifests itself in melodies in thirds (Figure 5.81) and in sixths (Figure 5.82).

Figure 5.83 Chord-melody sequence



Figure 5.84 Bass line reinforcement



A melodic line or bass line can also be reinforced with two additional notes, creating a chord melody (Figure 5.83) or chord bass (Figure 5.84).

Resonance

In multiple-part writing, the degree of resonance depends on the way the individual parts are scored. If a multiple part passage contains an arpeggio, for instance, the notes in the arpeggio will ring on beyond their notated value. If a multiple part passage contains a bass line and a melodic part scored in relatively small intervals, notes last as long as they are notated.

Figure 5.85 Resonance in two-part scoring



(SONATA, BROUWER)

Brouwer creates a horizontal cell containing a high degree of resonance by scoring a sequence of notes on various strings (Figure 5.85).

Harmonic possibilities

Two-part writing for the guitar, particularly in the first position, provides enormous flexibility in pitch choice, while at the same time allowing for guitar writing that is more typical for the guitar repertoire than single part writing.

Figure 5.86 Two-part writing

The image shows a musical score for guitar with two staves. The top staff is labeled 'Scord.' and the bottom staff is labeled 'Sounding'. Both staves are in G major (one sharp) and 3/4 time. The top staff contains a sequence of eighth notes with various scordatura positions indicated by numbers above the notes: 3, 2, 1, 0, 2, 4, 4, 0, 4, 1, 4, 0, 4, 3. The bottom staff shows the resulting sounding pitches, which are mostly natural notes (G, A, B, C, D, E, F, G) with some accidentals (sharps and naturals) to indicate the actual pitch heard. The notation includes slurs and ties to indicate the flow of the two-part writing.

(PRELUDE FROM NOUVELLES DECOUVERTES POUR LA GUITARE, CAMPION, TRANSCR. MARLON TITRE)

In the music of François Campion, a high degree of pitch flexibility is attained, not just through the use of scordatura tunings, which alters the pitch choice possibilities but does not necessarily widen them, but also through the use of first position two-part writing (Figure 5.86, top line depicts scordatura positions, while bottom line represents the sounding pitches).

Speed

When one of the parts, such as a bass line, is relatively simple, it is possible to perform faster voices on top of this line. The speed of these voices can then be scored at the same speed as a single line. Given the fact that bass lines are usually plucked with one finger alone (the thumb), the note values of bass lines in multi-part writing should be scored with relatively long note values. The more complex the multi-part writing, the more difficult it becomes to perform passages at high speeds. Tremolo passages can be performed at high speeds, particularly if the repeated notes are scored on a higher string than the first note of the pattern, allowing the performer to use the tremolo technique. Professional guitarists are able to play tremolo passages of sixteenth notes at an approximate quarter note speed of 130-160 BPM.

Articulation

Multiple-part writing can be provided with a variety of articulations, such as slurs, legato, accents, staccato, and glissando.

Slurs

Figure 5.87 Slurs in two-part writing



(ETUDE 10, VILLA-LOBOS)

Slurs are effective when they are scored in one part alone (Figure 5.87), or alternatingly between parts.

Legato

Figure 5.88 Multiple articulations in two-part writing



(SONATA, DAVIES)

Multiple parts can be scored legato, or one part may be scored legato, while the other is scored with another articulation (Figure 5.88).

Accents

Accents can be used in multiple parts or in one part while the other is scored with a different articulation (Figure 5.87).

Staccato

Staccato articulations can be used in multiple parts or in one part while the other is scored with another articulation (Figure 5.88).

Glissando

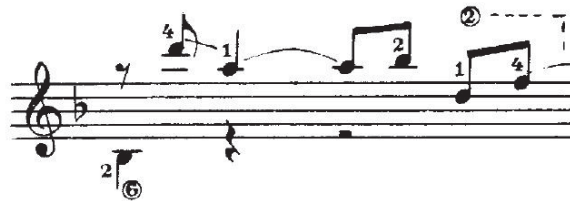
Figure 5.89 Glissando during tremolo



(SEQUENZA XI, BERIO)

Two-part horizontal cells of plucked sounds can be scored with literal glissando, partial glissando, simultaneous glissando and plucking (Figure 5.89) and tuning key glissando. When scoring vertical cells with tuning key glissandos, only one string can be detuned at a time.

Figure 5.90 Glissando in two-part writing

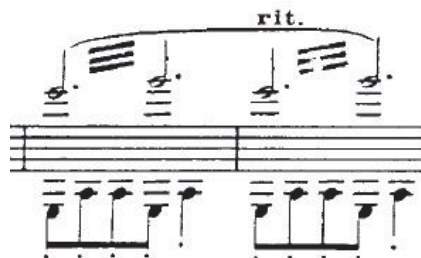


(SONATA III, PONCE)

Glissando writing in two-part cells is most effective when scored in one part at a time (Figure 5.90).

Embellishment

Figure 5.91 Left-hand trill in top voice

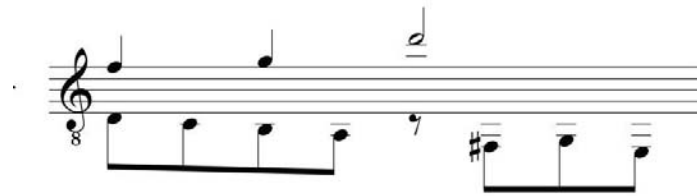


(DANZA DEL ALTIPLANO, BROUWER)

Embellishments in multiple-part scoring are most effective when they appear in one part at a time (Figure 5.91).

Non-functional writing

Figure 5.92 Non-functional multiple-part writing



Examples of non-functional writing in multiple-part horizontal cells of plucked sounds:

- High tempos in three part scoring with three highly individual parts
- Note combinations spread over parts that lie outside the hand span
- Request to let notes ring on that cannot be held because they lie outside the hand span (second half of Figure 5.92)

5.4 Textures

Plucked sounds can be scored into a variety of textures; these textures can be continuations of horizontal cells over a longer period of time, or combinations of different horizontal cells. The following examples are presented primarily for the purpose of illustrating how textures in repertoire pieces have been put together.

5.4.1 Textures as continuations of horizontal cells

Monophonic texture

Figure 5.93 Monophonic texture

I Musingly (♩)
(Meditativo)

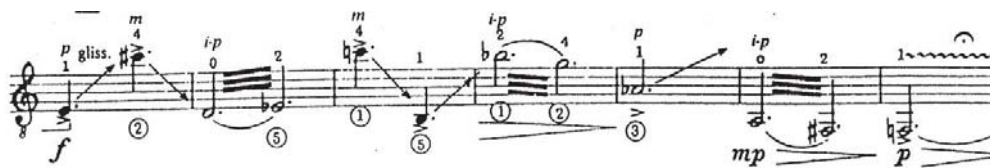
GUITAR

pp very freely (molto liberamente)

(NOCTURNAL, BRITTEN)

A single line passage may continue on for many measures, creating a monophonic texture. An example of such writing can be seen in Figure 5.93, which shows the opening of Britten's *Nocturnal*. In monophonic textures, the guitarist is in an ideal position to perform the various indications of dynamics, articulation and tempo with undivided attention, as she is only concerned with the performance of one single line. As a result, such textures, especially when they are scored at relatively slow speeds and with fluctuations in dynamics, range and articulation, can create a very meditative atmosphere, as is the case in this Britten example.

Figure 5.94 Monophonic texture with glissando, trills and quarter tone vibrato

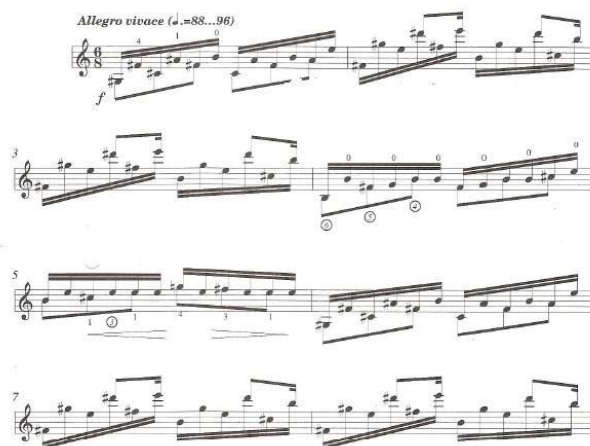


(SONATA, GINASTERA)

Ginastera creates a monophonic texture containing glissando articulations, trills and quarter tone vibrato in his *Sonata* (Figure 5.94). Ginastera here effectively makes use of the possibility to score non-literal glissandos, such as in the first measure, where a glissando starting on the fourth string reaches its destination at a high positioned note on the second string. The first trill and the third trill include open strings, facilitating position changes without interruptions in sound.

Arpeggio texture

Figure 5.95 Arpeggio texture



(SONATA, BROUWER)

Similarly, sequences of arpeggios can continue on for many measures, creating an arpeggio texture (Figure 5.95). In the above passage, Brouwer scores arpeggios that, over a period of multiple measures, form a texture. In the second and third measure, Brouwer uses double stems on the highest notes of the

arpeggio, which is an appropriate way to indicate that these notes should be considered as separate voices and are to be performed accordingly. Brouwer realizes a fruitful marriage of virtuosity and playability by constructing the arpeggios with great care; left hand positions are maintained for at least a full measure, which facilitates rapid performance without interruptions caused by excessive amounts of left hand changes.

Two-part texture

Figure 5.96 Two-part texture

(BOURRÉE BWV 996, BACH (ORIGINALLY FOR LUTE), TRANSCRIBED AND EDITED BY FRANK KOONCE)

A two-part texture can continue on for many measures, creating a two-part texture (Figure 5.96). This texture is particularly suited for contrapuntal music, music containing many modulations or for atonal music, especially when scored in the first position.

Tremolo texture

Figure 5.97 Tremolo texture

(UN SUEÑO EN LA FLORESTA, BARRIOS)

A tremolo cell can continue on for many measures, creating a tremolo texture (Figure 5.97). Tremolo textures are well suited for music containing modulations and keys not associated with the open string pitches, particularly when used in conjunction with arpeggios of chords formed with the left hand barré. Barrios creates an intense passage by scoring a tremolo in the highest range of the guitar, here reaching the high a on the first string (last line, first measure). The enormous amount of ledger lines in this passage also demonstrates that, when scoring on one staff in treble clef, the employed range of the guitar both in its high and low range can exceed the pitch range that is convenient for score reading. When scoring large amounts of notes in extremely high ranges, the composer should use an *8va* mark for the high pitched notes if this improves readability.

Chordal texture

Figure 5.98 Chordal texture

The image shows a musical score for a guitar piece titled "Meno mosso C III" from "SONATA III, PONCE". The score is written in treble clef with a key signature of one flat (B-flat) and a 4/4 time signature. It features a dense chordal texture with frequent left-hand position changes, indicated by circled numbers 1, 2, 3, and 4 above the staff. The music consists of vertical cells of plucked sounds, with some notes marked with a 'p' for piano. The score is divided into measures, with some measures containing multiple chords. The overall texture is complex and requires precise fingerings and position shifts.

(SONATA III, PONCE)

A vertical cell sequence of plucked sounds can continue for many measures, creating a chordal texture (Figure 5.98). The fewer the amount of notes included in the vertical cells, the more possibilities there are for modulations and keys not associated with the open strings. This is because the density of vertical cells limits the amount of fingering options, making fluent changes between vertical cells more difficult. In the above passage, frequent left hand position changes are necessary for its performance. At the same time, few open strings are used, which creates the risk of interruptions between vertical cells as a result of position shifts. Most position changes in Figure 5.98 take place while progressing between vertical cells consisting of three pitches; the more pitches that appear in the vertical cell that is to be arrived at through a position change, the more difficult it is to perform the position change without interruptions of sound.

5.4.2 Textures as combinations of horizontal cells

Rather than being continuations of one type of horizontal cell, most textures we find in guitar compositions are combinations of different types of cells. Provided that proper use is made of notation and scoring of the sounds and cells that make up the texture, the composer is free in the choice of the sounds and cells she combines into a texture.

Melody and accompaniment texture

Figure 5.99 Melody and accompaniment texture

The musical score for 'Capricho Árabe' by Tárrega is presented in three systems. The first system shows the beginning of the piece with a treble clef and a 3/4 time signature. The melody is written in a high register, often using two- or three-note vertical cells. The accompaniment is written in a lower register, often using single notes or simple chords. The second system includes markings for 'C. 7^a' and 'C. 10^a', indicating specific guitar techniques or positions. The third system includes a marking for 'C. 5^a' and the instruction 'poco cresc.'. The score ends with the number 2087.

(CAPRICHÓ ÁRABE, TÁRREGA)

When the composer adds two- or three-note vertical cells in between a bass line and a melody in the high register, the result is a melody and accompaniment texture (Figure 5.99). Typical for much guitar repertoire is that the middle part of a melody and accompaniment texture is not consistently present; it rather appears, disappears and reappears again when the composer desires. As a consequence, three-part notation is not always consistently continued throughout the measure (Gilardino, 1990, pp. 106-107), as is also the case in Figure 5.99. As long as the note values can be deduced from the score, this should not create problems for a rhythmically correct performance of the score by the performer.

Two-part texture with added chords

Figure 5.100 Two-part texture with added chords³⁵

(SONATINA, MORENO-TORROBA)

A much used texture in guitar literature is the two-part texture to which notes have been added on some of the beats. Such textures are characterized by the sound of chords followed by melodies. This type of texture offers the composer the possibility of writing music that is rich in harmonic detail when she places full chords on strategic places in the score, thus avoiding passages that are excessively dense or unplayable. In traditional repertoire, such chords are mostly positioned on heavy beats (Figure 5.100). The frequent use of the open string basses and natural harmonics on the bass strings in Figure 5.100 allows for a high degree of scoring freedom in the higher playing positions (as can be deduced from both pitch range and the Roman numerals³⁶ above the score), while the notes on the bass strings can still continue to resonate. The scordatura in the *Sonatina*, which prescribes a detuning of the sixth string down to d, allows Torroba to comfortably score in the key of d major.

³⁵ In this example, the composer does not indicate the sounding pitch of natural harmonics, but instead notates the open string pitch and indicates the position in which the finger should touch the nodal point. This notation can be confusing for the performer. Therefore, the composer should notate the sounding pitch instead, and use diamond shaped noteheads to signal that the note is a harmonic (see section 6.1.1).

³⁶ For the use of Roman numerals: see *Reading Guide*.

Figure 5.101 Two-part texture with occasional added chords

The musical score for '6ª en Re' by Ponce is presented in five systems. The first system is marked 'Allegro moderato' and begins with a forte (*f*) dynamic. The second system features a piano (*p*) dynamic. The third system includes a crescendo (*cresc.*) marking. The fourth system is marked 'tranquillo' and includes a piano (*p*) dynamic and a decrescendo (*dim.*) marking. The fifth system concludes with a crescendo (*cresc.*) marking. The score includes various fingering numbers (1-4) and circled numbers (1-4) for both hands. The piece is identified as 'SONATA III, PONCE'.

(SONATA III, PONCE)

The composer can use a combination of chords at some points, while at other times falling back to two-part scoring without added chords (Figure 5.101). At some places in Figure 5.101, the melodic line has been spaced over relatively large intervals and over multiple strings (second line, fourth and fifth measure; third line, third and fourth measure), which makes them into arpeggios. Ponce uses the variations within this texture to score musical material in various ways; the first two measures are rescored as arpeggios in the fourth and fifth measure of the second line. The use of non-open string basses in Figure 5.101 allows for an active bass line, a high number of different bass note pitches as well as full-range encompassing chord progressions and modulations. The downside of such scoring is that the level of bass note resonance decreases in accordance with the amount of non-open string basses employed.

Texture of contrasting or alternating cells

Figure 5.102 Contrasting texture

(*accel.*) ♩ = 84
pont. — — — ord. *)

1) Stimmung der E-Saite (VI) prüfen / Check tuning of E string (VI)
2) Stimmung der H-Saite (II) prüfen / Check tuning of B string (II)
3) Stimmung der D-Saite (IV) prüfen / Check tuning of D string (IV)
4) Stimmung der A-Saite (V) prüfen / Check tuning of A string (V)
5) Stimmung der G-Saite (III) prüfen / Check tuning of G string (III)
6) Stimmung der E-Saite (I) prüfen / Check tuning of E string (I)
*) Ad libitum: Einige Male wiederholen, nur falls die Saite gestimmt werden muß / Optional: repeat a few times only if the string needs tuning

(SEQUENZA XI, BERIO)

The composer can also create a texture that juxtaposes different contrasting cells; Figure 5.102 shows how Berio contrasts a slow single line texture of repeated notes with tremolo, arpeggio cells, as well as harmonics and rasgueados sounds. The overall texture takes on its characteristics from the alternation of different types of cells present in this passage. The passage above is a section where Berio gives the guitarist the opportunity to re-adjust the tuning of the guitar. Harmonics are used in the first and second line as coloristic variations of the same pitch played as a regular plucked note.

At the end of this chapter on the sound-cell-texture chain most employed in the guitar literature, the sound-cell-texture chain of plucked sounds, the appearance of harmonics and rasgueado sounds in Figure 5.102 points us ahead to the upcoming chapters where sound-cell-texture chains formed by other sounds are examined.