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

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Appendix A Vertical Cell Range

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Appendix A Vertical Cell Range

One of the challenging issues for composers who wish to score for the guitar is the question of which vertical cells are available on the guitar, an issue that has been referred to as “very puzzling for non-guitar playing composers” (Vassilandonakis, 2004). In this appendix, an account is given of the principles that govern vertical cells scoring, wide ranges, position writing, the possibilities of the capodastro and possibilities to score clusters on the guitar.

A.1 Principles and range

When writing intervals and chords for the guitar, there are two facts that should be taken into consideration:

- The guitar has six strings
- The guitarist uses four fingers of the left hand for holding down the strings (the left hand thumb is used to support the hand at the back of the neck)

This means that chords consisting of six notes can be written, but these notes would always have to be played with the four fingers of the left hand that the guitarist has at his disposal.

The guitarist has four fingers on the fretboard, each of which, as a point of departure, is assigned a fret. The first fret is assigned to the index finger, second fret to the middle finger, third fret to the ring finger, fourth fret to the little finger.

The barré is a playing technique that allows the guitarist to play more than one fingered note at a time with one finger. For this technique, the guitarist lays her finger flat over a number of strings to depress them all at once. The guitarist can use one finger to cover a fret on two up to six strings at the same time. The first finger⁵⁶ of the left hand is most commonly used for this technique.

A.2 Wide range

A.2.1 Pitch combination range

⁵⁶ For the numbering of the fingers of the left and right hand: see *Reading Guide*.

Figure A.1 Wide range

The widest range most guitarists can reach consists of 4 or 5 frets between the index and fourth finger of the left hand when playing in the first position. When moving to a higher position, this distance increases, as the width of the frets decreases. The largest distance between bass note and top note is pictured in Figure A.1. Any interval within the extremity of each mentioned interval is playable.

When using open string basses these extremes in range do not apply, since the bass note would not have to be fingered by the left hand. The largest interval then corresponds to the range of the guitar.

When scoring notes higher than a written e3 (sounding e2), sufficient time in advance should be allowed for the performer to locate the note and afterwards to leave the high position and return to a normal position. Ways to allow for such time is by:

- Making use of rests.
- Letting one or more notes ring on while the performer changes position. As the left hand has to move through the air in order to prepare the high note, this should be a note that is not fingered with the left hand, such as an open string or a natural harmonic that is ringing on.
- Writing the preceding section in a range that is positioned near the note in the extreme range that has to be played.

When the above options are not possible for musical reasons, the sounding result will be such that the note before the note in the extreme range sounds staccato, or the note in the extreme range is played too late.

A.2.2 Playing possibilities in wide ranges

Figure A.2 Jumping between notes within hand span

A guitarist can still perform Figure A.2 with a number of articulations, including legato.

Figure A.3 Jumping between notes outside hand span



Figure A.3 shows an alternation of two notes that exceed the maximum range between notes that can be held in one position. The example can be played, but not legato.

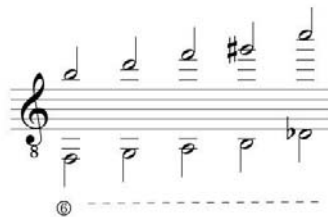
Figure A.4 Sounding result of jumping outside hand span



Because the left hand has to jump, the result will sound as notated in Figure A.4. When the top note is scored even higher, the rests between the notes will, as a consequence of the left hand having to jump further, become longer.

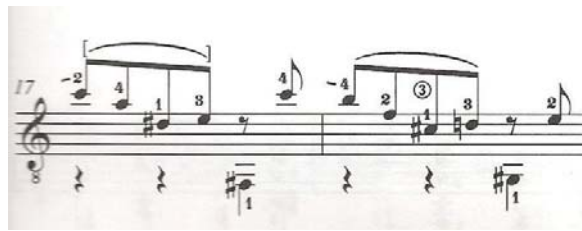
A.2.3 Left hand thumb on fingerboard

Figure A.5 Left hand thumb range



Rarely, the thumb of the left hand is moved away from the back of the neck and used to stop notes on the fretboard, making the interval ranges pictured in Figure A.5 possible.

Figure A.6 Left hand thumb on fingerboard



(SARABANDE BWV 995, BACH, EDITED BY FRANK KOONCE)

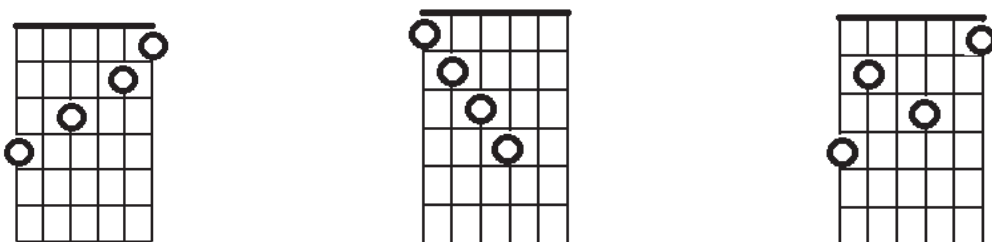
The interval f# on the sixth string and c on the first string can be performed by using the thumb of the left hand for the low f# (Figure A.6). The use of the left hand thumb in this example is not prescribed in the fingering. Koonce suggests the use of finger 1 of the left hand for the performance of the low f#. Because the interval between the low f# and the high c exceeds the left hand range, the solution here is to perform the low f# with the left hand thumb. A left hand thumb fingering should be indicated with a symbol specified in a legend or a short verbal description, as there is not standardized notation for such a fingering.

A.3 Position writing

A.3.1 Explanation

A position number on the guitar can be defined as the number of the fret where the leftmost finger of the left hand, normally the index finger, of the left hand is playing. We call the position the first, when the guitarist has its left hand index finger in the first fret, middle finger in the second, ring finger in the third and little finger in the fourth. The second position is the one in which each finger has moved one fret up, meaning that the left hand index finger is now holding down the string in the second fret, middle finger in the third, ring finger in the fourth and little finger in the fifth fret.

Figure A.7 Examples of possible combinations of four fingered notes



When scoring for the guitar, one is free to use any combination of four fingered notes and two open strings within a position (Figure A.7).

The first position on the guitar is the position that allows least extensions of the left hand, as the frets are at their widest here. The higher the position the guitarist plays in, the narrower the width of the frets. The range of notes that can be reached in the first position is therefore smaller than in higher positions. For this reason, the first, third, fifth, seventh, ninth and eleventh position are separately discussed here. For the positions in between one can make use of the scoring charts, range and rules of the previous position, transposing its range up by a minor second.

A.3.2 Notation

Positions are notated in Roman numerals, i.e. I for position one, II for position II, III for position 3, etc. When a barré is necessary, a number of notations are used: the most common being the Roman numeral of the position number, sometimes with an added C (meaning Capo), sometimes with a spanning line included for the duration of the barré.

A.3.3 The first position

Figure A.8 First position range

The figure displays six staves, labeled String 1 through String 6, each with a treble clef and a key signature of one sharp (F#). The notation is organized into three columns: 'Standard range', 'Extreme range', and 'Open strings'.
 - **String 1:** Standard range (open string, 1st fret), Extreme range (2nd fret), Open strings (open string).
 - **String 2:** Standard range (open string, 1st fret), Extreme range (2nd fret), Open strings (open string).
 - **String 3:** Standard range (open string, 1st fret), Extreme range (2nd fret), Open strings (open string).
 - **String 4:** Standard range (open string, 1st fret), Extreme range (2nd fret), Open strings (open string).
 - **String 5:** Standard range (open string, 1st fret), Extreme range (2nd fret), Open strings (open string).
 - **String 6:** Standard range (open string, 1st fret), Extreme range (2nd fret), Open strings (open string).
 In the 'Extreme range' column, the notes for strings 1-5 are marked with a quaver (eighth note) to indicate a stretch beyond the second fret. The 'Open strings' column shows the natural pitch of each string.

In Figure A.8, the ranges within the first position are explained per string. The minims correspond to frets one to four on each string. It is possible for guitarists to stretch their little finger one fret further: the pitch that is reached in such case has been indicated with a quaver. It is recommended not to use more than two notes from the extreme range.

When writing chords, it is recommended that the composer check the notes within the chord on the fingering chart to estimate whether it is possible to play the written chord. As a general rule, chords that require a distance of more than one fret between the middle and ring finger or the ring and little finger should be avoided, as well as chords including a large string distance between the ring and little finger with the little finger on the lowest string, as they are extremely difficult or impossible to play. When writing notes in the extreme range, special attention should be paid to whether the lateral distance between middle-ring finger and ring-little finger are still within the range of possible distances.

Figure A.9 First position chords

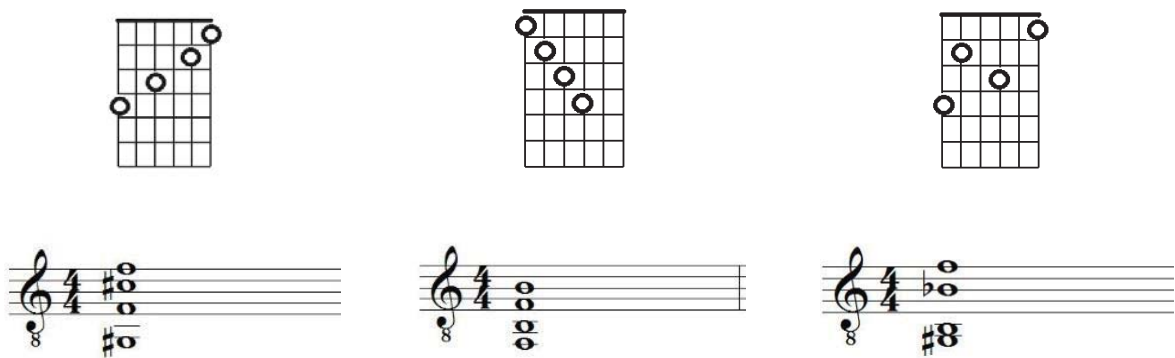


Figure A.9 shows examples of finger combinations in the first position and their sounding result.

A.3.4 The third position

Figure A.10 Third position range

	Standard range	Extreme range	Open strings
String 1			
String 2			
String 3			
String 4			
String 5			
String 6			

In the third position, notes within the standard range correspond to frets one to four in this position, being frets three to six. As we are moving up the fretboard, the frets themselves become narrower and, as a result, more potential for reaching the extreme range arises. The extreme range consists of two notes, of which the first can be reached with ease by many amateurs, while the second can be written when scoring for professional players. It is advised to use no more than two notes from the extreme range of the first quaver, and a maximum of one note from the extreme range of the second quaver.

A.3.5 The fifth position

Figure A.11 Fifth position range

The figure shows a musical score for six strings, labeled String 1 through String 6. Above the strings, three columns are labeled: 'Standard range', 'Extreme range', and 'Open strings'. Each string has a treble clef and a '8' below it, indicating the fifth position. The notes are as follows:

- String 1:** Standard range: G4, A4, B4; Extreme range: C5, D5; Open string: E4.
- String 2:** Standard range: F4, G4, A4; Extreme range: B4, C5; Open string: D4.
- String 3:** Standard range: E4, F4, G4; Extreme range: A4, B4; Open string: C4.
- String 4:** Standard range: D4, E4, F4; Extreme range: G4, A4; Open string: B3.
- String 5:** Standard range: C4, D4, E4; Extreme range: F4, G4; Open string: A3.
- String 6:** Standard range: B3, C4, D4; Extreme range: E4, F4; Open string: G3.

In the fifth position, notes within the standard range correspond to frets one to four in this position, being frets five until eight. Again, more potential for reaching the extreme range arises. The extreme range consists of three notes, of which the first can be reached with ease by many amateur players, while the second and third can be written when scoring for professional players. It is advised to use no more than two notes from the extreme range of the first quaver, and a maximum or one note from the extreme range of the second and third quaver.

A.3.6 The seventh, ninth and eleventh position

Figure A.12 Seventh position range

Standard range Extreme range Open strings

String 1

String 2

String 3

String 4

String 5

String 6

Figure A.13 Ninth position range

Standard range Extreme range Open strings

String 1

String 2

String 3

String 4

String 5

String 6

Figure A.14 Eleventh position range

Standard range Extreme range Open strings

String 1

String 2

String 3

String 4

String 5

String 6

In the seventh, ninth and eleventh position it is advised to use no more than two notes from the extreme range of the first quaver or a maximum of one note from the extreme range of the second and third printed quaver.

A.3.7 The thirteenth and fifteenth position

Figure A.15 Thirteenth position range

Figure A.15 shows the thirteenth position range across six strings. The notation is divided into three sections: Standard range, Extreme range, and Open strings. Each section shows the notes for each string (String 1 to String 6) on a six-staff system.

Figure A.16 Fifteenth position range

Figure A.16 shows the fifteenth position range across six strings. The notation is divided into three sections: Standard range, Extreme range, and Open strings. Each section shows the notes for each string (String 1 to String 6) on a six-staff system.

The thirteenth and fifteenth positions represent the highest range of the classical guitar. It is here that the guitarist is playing on the part of the fretboard that is directly connected to the top of the guitar body. This range lends itself well for brilliant passages on the first string, as it is here that we have reached the very top of the instrument's range. It may be noted that the second note of the extreme range is not available on every guitar, but most concert guitarists play guitars that include this high c.

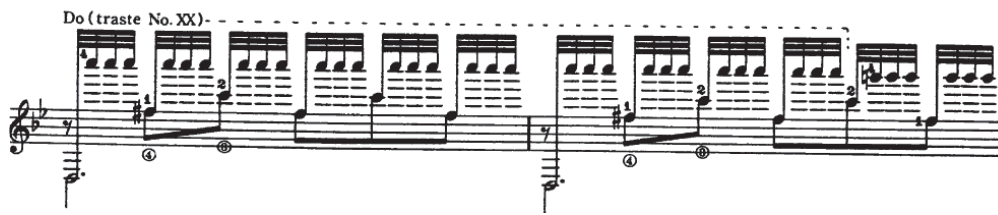
As the fretboard is placed on the top of the guitar body here, the player's left arm is partly blocked by the guitar body. This means that one cannot be as free in writing chords that include large spreads between strings. In the eleventh position, a chord of four notes on strings 1-2-3-4 or 1-2-3-5 is the advised maximum. In the thirteenth and fifteenth position, a chord of three notes on strings 1-2-3, 1-2-4 or 1-2-5 is the advised maximum.

Figure A.17 Fingering options

Figure A.17 shows fingering options for a chord in the thirteenth and tenth positions. The notation shows a single staff with two chord diagrams: Position thirteen and Position ten. Fingering options are indicated by numbers 1, 2, 3, and 4 below the notes.

A chord of three notes on strings 2-3-4 is very awkward to play in the thirteenth position, but would be playable a few frets lower on strings 1-2-3 (Figure A.17). Since high range notes are always available in lower positions on a higher string, the high range is mainly used to reach high notes on the first string.

Figure A.18 High c



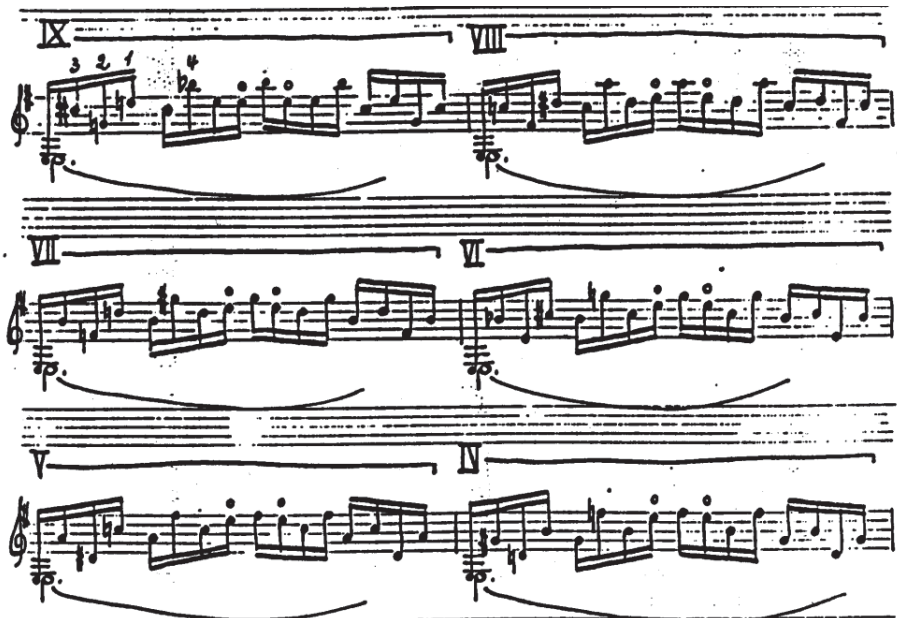
(UN SUEÑO EN LA FLORESTA, BARRIOS)

A famous repertoire example using the high c appears in Barrios' *Un Sueño en la Floresta*, where a continuous c, produced by the tremolo technique, functions as an expressive peak in the piece (Figure A.18).

A.3.8 Literature examples of position writing combined with open strings

Most guitar literature contains frequent changes in left hand playing position. Position changes extend the range of the first position, allow the performer to reach combinations of notes that are not available in the first position, or assist in attaining a different timbre.

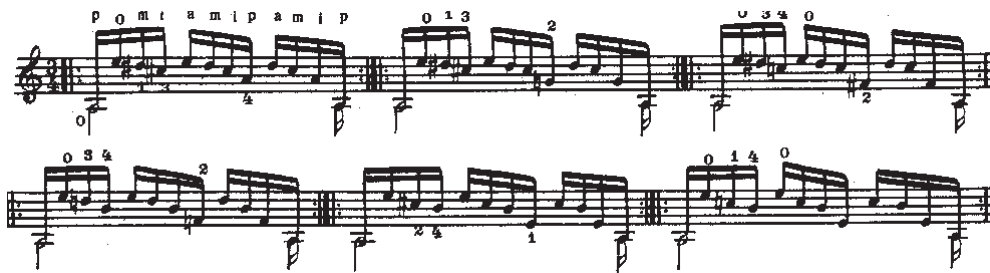
Figure A.19 Position writing



(ETUDE 1, VILLA-LOBOS)

A piece often recognized for its inventiveness in guitar scoring, the *Etude No. 1* by Villa-Lobos, exhibits an interesting procedure in writing idiomatic chords on the guitar (Figure A.19). Villa-Lobos takes one chord, starting in the tenth position, consisting of four fingered notes and two open strings. He then continues to move the chord one fret down every following measure, thus changing the chord and its inner voicings, as the pitches of the open strings (the open first and sixth strings) remain unchanged.

Figure A.20 Position writing



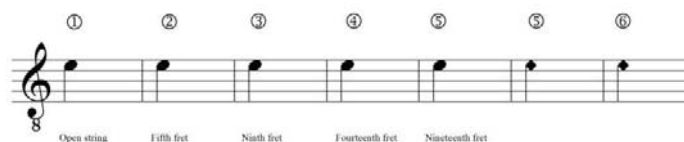
(ETUDE VI, BROUWER)

Brouwer employs a similar procedure in his *Etude VI*. Against the backdrop of an open 5th and open first string, Brouwer changes the pitches on strings 2, 3 and 4 (Figure A.20). These scoring examples demonstrate a distinctive “guitaristic” sound, as the open strings ring on much longer than the fingered notes, taking on a drone-like quality when repeated over longer periods of time.

A.3.9 Choice of fingering

One of the characteristics of the guitar is that most notes can be played on multiple locations. Except for the open sixth string, the first four frets of the sixth string and the highest positions on the first string, each note can be played in at least two different places. The pitch that sounds when playing the open first string can even be played on five different strings, with additional possibilities of playing it as a harmonic.

Figure A.21 Fingerings



The e from the open first string can be played in a number of different places: on the first, second, third, fourth or fifth string (Figure A.21). The last two notes are natural harmonics on the sixth and fifth strings. The first choice for many guitarists would be to play the e from the above example as on open string. If, however, the music requires the left hand to be in a higher position, or the performer prefers the sound of the second or third string for this particular e, the second or third string can be chosen. Playing this

note on the fourth or fifth string will happen only rarely, as we are reaching the extreme range up the neck of the guitar. Harmonics are normally only played when explicitly prescribed in the score.

This example can serve not only to make clear how sight reading on the guitar is a complex task, but also how each fingering represents a choice in timbre. For nearly every written note, the performer has to decide where to play it in case no fingering has been specified by the composer. This also means that the composer has an enormous palette of subtle differences in tone color to work with. If the composer is looking for a specific tone color for a section of his music, she should indicate the sounding result she is looking for, so that the guitarist can create that sound through the available tools, or prescribe a specific fingering.

A.3.8 Additional possibilities of the barré technique

First finger barré

Figure A.22 Barré chord with three added fingers



The barré technique allows the composer to score a chord consisting of more than four fingered notes within any position. This barré can be executed by the first finger over all the strings, thus making all notes in the first fret of a given position available at the same time. To these notes, any note within the regular range of the position can be added. This makes it possible to score six fingered notes, achieved by the performer by using one up to four fingers of the left hand (Figure A.22). The possibilities of the barré, however, come at a cost: the open strings are not available anymore, as they are covered by the barré.

A solution that allows open strings to be used anyway is the use of a partial barré that does not cover all strings. One could use a partial barré over two strings, making it possible to score a chord consisting of five fingered notes with an additional open string. Depending on the technical capabilities of the player, it is recommended not to ask for an open string just over the topmost note of a barré as it is often not possible for the finger to avoid touching the next string. Such scoring should only be used for professional guitarists.

Figure A.23 Partial barré over two strings

The barré pictured in Figure A.23 is possible for professional players. Amateur players may have trouble avoiding touching the fourth open string.

The danger of the partial barré is that when on the higher neighboring string a note in a lower fret or an open string is scored simultaneously, the finger may touch the next string, so that a buffer zone of one string may be required. That buffer string can be used by writing a note in one of the available frets, provided that it is in a higher position than the barré. If the guitarist touches that string with the first finger there is no problem, as touching the string of a fingered note to the left will have no effect on its sound.

Figure A.24 Partial barré with buffer string

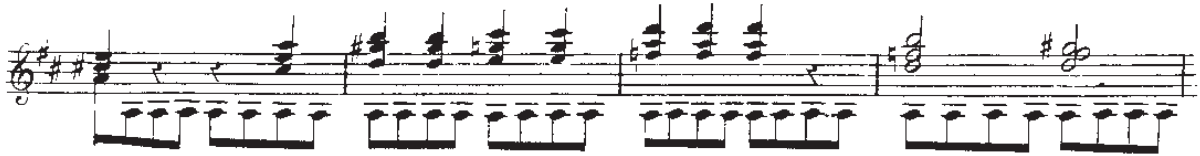
The chord pictured in Figure A.24 is playable, as there is one fingered string between the highest note of the barré (string 5) and the open string (string 2).

Fourth finger barré

The fourth finger is sometimes used for the execution of a barré over two notes, almost without exception over the first and second string.

Literature example of barré writing

Figure A.25 Partial barrées



(GRAND SOLO, SOR)

In Fernando Sor's *Grand Solo* we see how the open strings are still be available when scoring partial barrées, regardless of the position we are in. The fifth string functions as a bass pedal, while chords played with partial barrées are played in various positions (Figure A.25).

A.4 Additional possibilities of the capodastro

The capodastro is a device that is applied the neck of the guitar and functions like a mechanical barré, leaving the other fingers of the guitarist free to play in higher positions without having to finger notes in a lower position. Applying and moving the capodastro takes some time, so changes in the capodastro position are usually made between movements or pieces. For the possibilities of the capodastro, the various positions discussed in the chapter section on position writing should be consulted. Note that the open string pitches are replaced by the open string pitches transposed to the position the capodastro is placed in. This makes is possible to play transcribed music in its original key, and to create "unusual sonorities" (Marchione, 1998).

Figure A.26 Capodastro in first position

Largo

Capo I

loco

(FANTASIA VII, TELEMANN, TRANSCRIBED BY CARLO MARCHIONE)

Marchione prescribes a capodastro in his transcription of violin works by Telemann for the guitar. For the example in Figure A.26, a capo in position one is prescribed. The composer should either notate the sounding result of the capo, or notate the music as if it were played in first position. Marchione use the latter option.

A.5 Clusters

Figure A.27 Open string fingerings



Figure A.27 shows how the same pitch can be played on different locations. If we look at the last measure in the above overview, we see that the e can be played on the first, second and third string. If we play all these notes at once, we have a unison played over three strings.

Figure A.28 Guitar clusters



If we would move the e on the second string a semitone up, and the e on the third string a semitone down and play these notes at once, we would have a cluster of three notes: d#, e and f. These pitches can all be reached in the sixth position. By grouping two notes around, above or under an open string, the clusters pictured in Figure A.28 become available to us.

Figure A.29 Cluster



(SEQUENZA XI, BERIO)

In Luciano Berio's *Sequenza XI*, a right hand trill technique is used to create a rapid and continuous ringing of a cluster interval. Figure A.29 exhibits a fragment of this technique, while finishing on a simultaneously performed cluster of three notes. Clusters of more than three consecutive minor seconds are not available in standard tuning.

Appendix B Harmonics Fingering Chart

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Appendix B Harmonics Fingering Chart

B.1 Chart

Figure B.1 Harmonics fingering chart

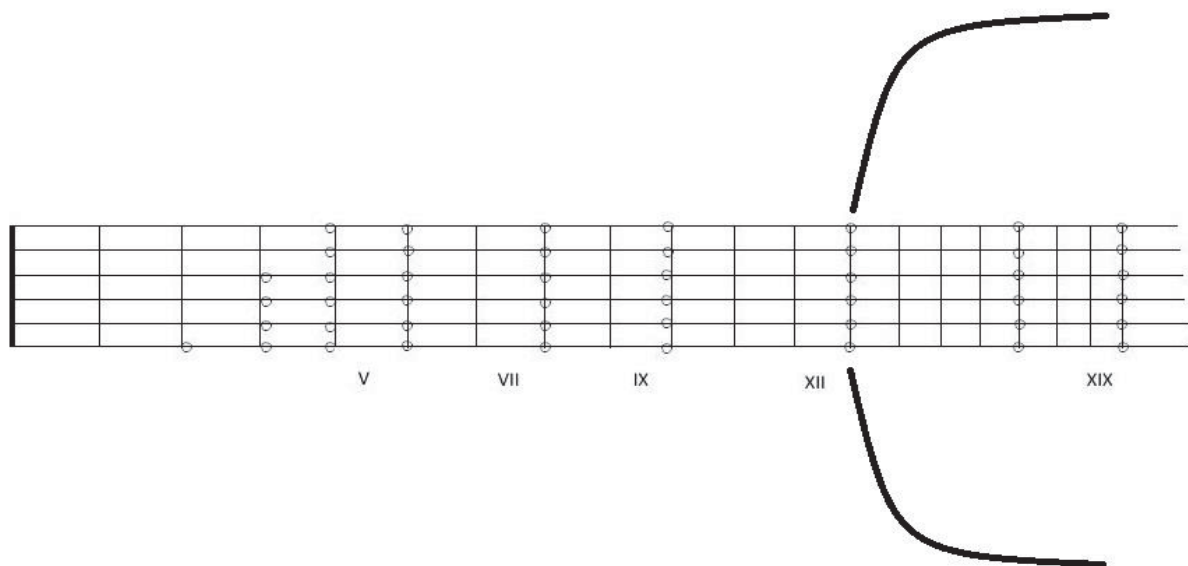


Figure B.1 displays the nodal points that are used to create natural harmonics on the guitar.

B.2 Nodal point pitches

An overview is listed below of the interval relation between the open string and the natural harmonic at a particular nodal point position:

- II: 3 octaves and a major third
- III: 2 octaves and a perfect fifth
- IV/IX/XVI: 2 octaves and a major third
- V: 2 octaves
- VII/XIX: 1 octave and a perfect fifth
- XII: 1 octave

B. 3 Vertical combinations

B.3.1 Two-note combinations

Any combination of two harmonics can be scored within the following position ranges:

- From position II to VII
- From position IV to IX
- From position VII to XII
- From position XII to XIX

B.3.2 Three- and four-note combinations

The most effective combinations are scored within one of the abovementioned position ranges with one harmonic in the low position and the other two or three in the higher position, or vice versa with one harmonic in the higher position and the other two or three in the lower position. If the fret distance is only two frets or less, any combination can be scored. Any combination of harmonics on the same nodal point can be scored, and any combination of harmonics between position V and IX; in both of these cases, a barré is used.

B.3.3 Five- and six-note combinations

The most effective combinations are scored within one of the abovementioned position ranges with one, two or three harmonics on adjacent strings in the low position, and the other three, four or five harmonics in the higher position, or with one harmonic in the high position and the other five in a lower position. Additionally, any combination of harmonics on the same nodal point can be scored.

Appendix C Relative Dynamics Chart

		<i>pppp</i>	<i>ppp</i>	<i>pp</i>	<i>p</i>	<i>mp</i>	<i>mf</i>	<i>f</i>	<i>ff</i>	<i>fff</i>	<i>ffff</i>
Plucked sounds											
Harmonics	Natural harmonics										
	Artificial harmonics										
Rasgueado sounds											
Strummed sounds											
Percussion sounds											
Tambora sounds	Pitched tambora										
	Percussive tambora										
Hammered sounds											
Bartok pizzicato sounds											
Buzzing string sounds											
Scratching string sounds											
Inverted stopping sounds											
Bottleneck guitar sounds											

Appendix D Scordatura

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Appendix D Scordatura

D.1 The scordatura

D.1.1 Definition, timbre and range

The term scordatura refers to “tunings other than the normal, established one” (Boyden & al., 2012). With the help of a scordatura, the pitch range of the guitar is altered. The most usual detunings ask for strings to be tuned down a maximum of a major second to a minor third, and up to a maximum of a major second (but preferably not more than a minor second). When tuning a string up more than a minor second, there is a risk that the string breaks due to increased tension. Scordaturas detuning on or two strings are relatively common in both the classical and the more contemporary guitar repertoire.

Scordatura alters the timbre of the guitar by changing the tension on the string; in this manner, pitches take on a different timbre. Scordatura is often used to make other keys or note combinations accessible; a common scordatura tunes the sixth string down to a d, making the key of d major and minor more accessible in guitar scoring.

Detuning a string has as its consequence that the range of a string is transposed; when considering the vertical cell range of the guitar, this should be taken into consideration.

D.1.2 Tuning

Scoring multiple scordaturas in a composition may lead to tuning issues, as it takes some time and re-tuning for a scordatura to settle.

D.1.3 Notation

For the use of scordatura, one of two possible types of notation can be chosen. In the first type of notation, the score is notated with accurate, sounding pitches. In the second type of notation, the score is notated as if no strings were detuned, usually improving readability. This second type of notation is particularly effective in scordaturas in which multiple strings are detuned. A downside of this type of notation is that if the performer decides to play a note on another string, wrong notes may easily be played as the usual string interval relationships do not apply and the performer cannot directly derive the correct pitch from the score. A remedy to this issue is used in *Koyunbaba*, where a double staff is used, one with the sounding pitches and one with the second type of notation (Domeniconi, 1998).

D.2 Literature Examples

D.2.1 Regular scordaturas

Most scordaturas used in the repertoire require detuning one or more strings to another tempered pitch. In the following section, common and less common examples of such scordaturas are discussed.

Common scordaturas

Sixth string to d

Figure D.1 Sixth string to d

(CONCIERTO DE ARANJUEZ, RODRIGO)

By far the most common scordatura in the 19th and 20th century repertoire is the tuning of the 6th string to d. This makes the key of d major and minor more accessible in scoring, and adds two pitches to the range of the guitar (Figure D.1).

Sixth string to d, fifth string to g

Figure D.2 Sixth string to d, fifth string to g

(CHORO DE SAUDADE, BARRIOS)

Another common scordatura tunes the sixth string down to d and the fifth down to g, making the key of g more accessible to guitar scoring: the open fifth string is a g, while the d on the sixth string is the dominant of g.

Third string to f#

Figure D.3 Third string to f#

3rd to F#

Alonso de Mudarra

(FANTASIA, MUDARRA)

In transcriptions of lute, vihuela and baroque guitar music, a scordatura with the third string tuned to f# is frequently suggested (Figure D.3). This scordatura is similar to the tunings of the abovementioned instruments, making the rendition on the guitar both more faithful in sound to the original score and technically more playable.

*Less common scordaturas**Sixth string down to e flat*

Figure D.4 Sixth string to e flat

(THURIS, TITRE)

A less common, but effective scordatura for extending the low range of the guitar by a semitone, appears in Titre (Figure D.4).

Sixth string down to e flat, second string down to b flat

Figure D.5 Sixth and second string semitone down

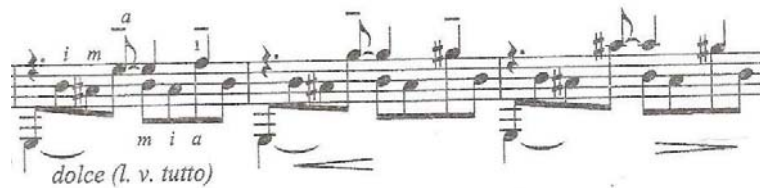
(1984)

(DUE CANZONI LIDIE, D'ANGELO)

D'Angelo uses a scordatura in which the sixth string and the second string are tuned down a semitone (Figure D.5).

First string down to d sharp

Figure D.6 First string down to d sharp



(PAISAJE CUBANO CON FIESTA, BROUWER)

Brouwer prescribes a scordatura in which the first string is tuned down a semitone, changing the sonority of the higher register (Figure D.6). The score is notated as if the first string were not detuned in order to improve readability.

Sixth string up to f

Figure D.7 Sixth string to f



(SONATA, BROUWER)

In the *Sonata*, Brouwer tunes the sixth string up a semitone to f, making the key of f more available for guitar scoring (Figure D.7).

Scordatura of all strings

Figure D.8 Scordatura of all strings

(KOYUNBABA, DOMENICONI)

Domeniconi uses a scordatura in which the guitar is tuned to a d minor chord (Figure D.8). In the introductory note, Domeniconi suggests for the guitar to be tuned a semitone lower than the printed d minor chord in the score, creating a scordatura that affects all strings. The score is notated as if the strings were not detuned, in order to improve readability.

D.2.2 Microtonal scordaturas

Microtonal scordatura of multiple strings

Figure D.9 Microtonal scordatura

(KURZE SCHATTEN II, FERNEYHOUGH)

Ferneyhough uses a range of microtonal scordaturas in *Kurze Schatten II* (Figure D.9). When a string is detuned to a microtonal pitch, this ensures that all stopped notes performed on that string are microtones.

Appendix E Video Files

Files

The video files appendix consists of the following files:

- Figure 5.1 – Figure 5.102.wmv ; containing video performances of the image files from the chapter on plucked sounds
- Figure 6.1 – Figure 6.46.wmv ; containing video performances of the image files from the chapter on harmonics
- Figure 7.1 – Figure 7.29.wmv ; containing video performances of the image files from the chapter on rasgueado sounds
- Figure 8.1 – Figure 8.42.wmv ; containing video performances of the image files from the chapter on strummed sounds
- Figure 9.1 – Figure 9.29.wmv ; containing video performances of the image files from the chapter on percussion sounds
- Figure 10.1 – Figure 10.40.wmv ; containing video performances of the image files from the chapter on tambora sounds
- Figure 11.1 – Figure 11.35.wmv ; containing video performances of the image files from the chapter on hammered sounds
- Figure 12.1 – Figure 12.17.wmv ; containing video performances of the image files from the chapter on Bartok pizzicato sounds
- Figure 13.1 – Figure 13.24.wmv ; containing video performances of the image files from the chapter on buzzing string sounds
- Figure 14.1 – Figure 14.18.wmv ; containing video performances of the image files from the chapter on scratching string sounds
- Figure 15.1 – Figure 15.17.wmv ; containing video performances of the image files from the chapter on inverted stopping sounds
- Figure 16.1 – Figure 16.16.wmv ; containing video performances of the image files from the chapter on bottleneck sounds
- Figure A.1 – Figure A.29.wmv ; containing video performances of the image files from Appendix A
- Figure D.1 – Figure D.9.wmv ; containing video performances of the image files from Appendix D

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

Equipment

Microphone: Neumann KM 184

Audio interface: M-Audio Fast Track

Camera: Logitech C920 HD Pro Webcam

Recording dates

Video files were recorded in June/July of 2012 and in July of 2013.

Appendix F Etudes: Scores

Twelve etudes for guitar

Marlon Titre

written with the findings presented in the author's study "Thinking through the guitar: the sound-cell-texture chain"

Contents

- I. Die Puppe aus Luft
- II. Die alte Dame
- III. Eriko
- IV. Tengo
- V. Die Vorreiter
- VI. Der Leader
- VII. Zählen
- VIII. Und jetzt beginnt die Geisterstunde
- IX. Mäuse herausholen
- X. Wenn die Daughter erwacht
- XI. Solange es zwei Monde gibt
- XII. Der Ritt auf dem Tiger/Solange es die Wärme noch gibt

Performance notes for "Die Puppe aus Luft"

This etude was written with the use of findings presented in the chapter on plucked sounds.

This composition was inspired by the "Air Chrysalis" phenomenon from Haruki Murakami's 1Q84.

R. indicates that a selected region is to be performed ragueado.

Standard tuning

I. Die Puppe aus Luft

Marlon Titre

Guitar

$\text{♩} = 58$

f

mp

f

p

mf

mf

p

dtt

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Die Puppe aus Luft

f

Liquore (c on 4)

mf

p

6

Die Puppe aus Luft

The musical score is written in treble clef with a key signature of one sharp (F#) and a 3/4 time signature. It consists of several staves of music with various performance instructions and technical markings:

- Staff 1:** Features a *rasgueado* instruction with the note "Outward rasgueado with ami". A tempo marking of $\text{♩} = 126$ is present. The music includes a triplet of eighth notes marked with *f* and *R*.
- Staff 2:** Contains a triplet of eighth notes marked with *p* and *R*. A *Tasto* instruction is placed below the staff.
- Staff 3:** Shows a *Pont.* (ponticello) instruction above a triplet of eighth notes. Below the staff, there is a *Tasto* instruction.
- Staff 4:** Features a *dat* (dactyl) instruction above a triplet of eighth notes. Below the staff, there is a *Ord.* (Ordine) instruction.
- Staff 5:** Includes a *f* dynamic marking and a *LH* (Left Hand) instruction below the staff.

Throughout the score, there are numerous triplet markings and dynamic markings (*f*, *p*) indicating specific rhythmic and volume requirements.

Die Puppe aus Luft

7

The image displays three staves of musical notation for guitar, illustrating a progression from a simple melody to a complex texture. The first staff is marked *pp* and *molto lento*, featuring a simple melody on a treble clef staff with a key signature of one sharp (F#) and a time signature of 4/4. The second staff is marked *pp* and includes a tempo marking of $\text{♩} = 70$. The third staff is marked *ff* and features a complex texture with multiple voices, including triplets and a 'R' marking. The notation includes various musical symbols such as notes, rests, and dynamic markings.

Performance notes for "Die alte Dame"

This etude was written with the use of findings presented in the chapter on harmonic sounds.

This composition was inspired by the character "The Dowager" from Haruki Murakami's 1Q84.

Harmonics are notated at their sounding pitch with diamond shaped noteheads. For some harmonics, notes in parentheses are provided to help the performer find the fingering.

Standard tuning

II. Die alte Dame

Marlon Titre

Guitar

Fig. 2a with irregular rhythms, ranging for slow to fast, while adding glissando, vibrato and pitch bends ad libitum, varying dynamics from pp to ff

2x

Fig. 2c first time, moderately fast with indicated dynamics. The second time, very slowly, pianissimo.

3x

1.5x

2x

Play once, as fast as possible

Play 3x

Cross strings 5 and 6

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Performance notes for "Tengo"

This etude was written with the use of findings presented in the chapter on rasgueado sounds.

This composition was inspired by the character "Tengo" from Haruki Murakami's 1Q84.

Sections marked with R. are to be performed with a continuous rasgueado.

The continuous rasgueado sections are to be executed with a finger combination that allows for the performance of a continuous rasgueado, such as pami or pcami.

Standard tuning

III. Tengo

Standard tuning musical score for guitar, titled "III. Tengo". The score is written for guitar in standard tuning (E2-A2-D3-G3-B3-E4) and consists of 66 measures. It features a variety of textures and dynamics, including *pianissimo* (pp), *piano* (p), *mezzo-forte* (mf), and *forte* (ff). The piece is marked with *Tempo primo* and includes sections labeled *Lento* and *Piu animato*. The score includes detailed fingering, dynamics, and articulation markings such as accents, slurs, and breath marks (R). The piece concludes with a *rit.* marking and a final *poco rit.* section.

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Performance notes for "Eriko".

This etude was written with the use of findings presented in the chapter on strumming sounds.

This composition was inspired by the character "Eriko" from Haruki Murakami's 1Q84.

Scordatura: 6th string tuned to D.

The arpeggios in the second half of the piece are to be performed with an outward movement of finger a striking the 6th to the 2nd string, followed by an inward movement of finger i over multiple strings.

Performance notes for "Die Vorreiter".

This etude was written with the use of findings presented in the chapter on tambora sounds. This composition was inspired by the organization called "Die Vorreiter" in Haruki Murakami's 1Q84.

Scordatura: 6th string tuned to D, 5th string to G. Strings 1-3 are prepared with a paper clip.

Notes marked with a + sign are to be plucked with the left hand.

Notes on the top staff that are scored with crossed noteheads and marked "hammered" are to be played by hammering the indicated pitch on the appropriate position on the fretboard.



Strike the guitar top above the strings (above string 1) with fingers a, m and i simultaneously.



Strike the guitar top below the strings (above string 6). The default performance is with fingers 1, 2 and 3 of the left hand. However, when the letter R appears above the note, it is to be performed with fingers a, m and i of the right hand.



Strike the side of the guitar with the right hand.

Performance notes for "Der Leader"

This etude was written with the use of findings presented in the chapter on tambora sounds. This composition was inspired by the character "Der Leader" from Haruki Murakami's 1084.

Scordatura: 6th string tuned to D.

All notes in the bottom voice are to be performed as pitch tamboras, unless otherwise indicated. Pitch tamboras are notated with regular noteheads.



Strike the guitar top below the strings (below string 6) with finger p



Strike the guitar top above the strings (above string 1) with fingers a, m and i simultaneously

The image displays two staves of musical notation for guitar. The top staff is in treble clef and contains a series of chords and melodic fragments. The bottom staff is in bass clef and contains a series of chords and melodic fragments. The notation includes various symbols such as 'p' (piano), 'pp' (pianissimo), and 'cresc.' (crescendo). The chords are represented by black dots on the staff lines, and the melodic lines are represented by notes with stems and beams. The notation is arranged in a vertical orientation on the page.

Performance notes for "Zählen"

This etude was written with the use of findings presented in the chapter on hammered sounds.
This composition was inspired by chapter 12 in Book 2 Haruki of Murakami's IQ84.

For this piece, the guitar is prepared with a paper clip. The paper clip is woven through the strings in such a way that it touches all of the strings.

Notes that are scored with crossed noteheads and marked "hammered" are to be played by hammering the indicated pitch on the appropriate position on the fretboard.

Performance notes for "Und jetzt beginnt die Geisterstunde"

This etude was written with the use of findings presented in the chapter on Bartok Pizzicato sounds.

This composition was inspired by chapter 15 in book 2 of Haruki Murakami's 1Q84.

For this piece, the guitar is prepared with a paper clip. The paper clip is woven through the strings in such a way that it touches all of the strings.

A scordatura is used: the sixth string is tuned to D, the third is tuned to F# and the first string is tuned to D#.

The top staff indicates the pitches that would sound if the guitar were tuned according to its standard tuning with a detuned sixth string (D-A-D-g-b-e) in order to facilitate reading for the performer. On the bottom staff, the sounding pitches are indicated.

- ① to D#
- ③ to F#
- ⑥ to D

Prepared guitar (paper clip through all strings)

$\text{♩} = 130$

Scordatura

Sounding pitches

VIII. Und jetzt beginnt die Geisterstunde

Und jetzt beginnt die Geisterstunde

The image displays a musical score for guitar, consisting of three systems of staves. Each system includes a vocal line (top staff) and a guitar line (bottom staff). The first system is marked with a tempo of $\text{♩} = 59$ and a dynamic of ff . The second system is marked with a dynamic of p and includes the instruction "2nd time respicendo ad lib". The third system is marked with a tempo of $\text{♩} = 130$ and a dynamic of pp . The score features various musical notations such as notes, rests, and dynamic markings.

Performance notes for "Mäuse herausholen"

This etude was written with the use of findings presented in the chapter on buzzing string sounds.

This composition was inspired by chapter 17 in book 2 of Haruki Murakami's 1Q84.

The bottom staff is reserved for the notation of buzzing string sounds, while the top staff is used for all other sounds.

The inverted stopping sound in the last staff system is notated as if it were plucked as a buzzing sound between the stopping position and the bridge.

Standard tuning

IX. Mäuse herausholen

Marlon Titre

♩ = 64

Guitar

① (Cyclic buzzing sound by pulling string of the neck)

p *mf*

Tambora

mf

p

p

rit.

p

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Performance notes for "Wenn die Daughter erwacht"

This etude was written with the use of findings presented in the chapter on scratching string sounds.
This composition was inspired by chapter 19 in book 2 of Haruki Murakami's 1Q84.

X. Wenn die Daughter erwacht

Marlon Titre

Standard tuning

$\text{♩} = 130$

Scratch with the thumb nail on string 6 at a consistent dynamic level.
Both the high pitched scratching sound and the resonant pitch should be audible.
Ca. 15'

Guitar

p

ca. 3N, ca. 8N, ca. 3N, ca. 7A, ca. 5N, ca. 2N, ca. 6K, ca. 3N, ca. 2N, ca. 3N, ca. 3N, ca. 2N, ca. 2N, ca. 3N, ca. 3N, ca. 2N, ca. 1N, ca. 1N, ca. 1N, ca. 3N

ca. 2N, ca. 2N, ca. 2N, ca. 3N, ca. 2N, ca. 2N, ca. 2N, ca. 3N, ca. 3N, ca. 2N, ca. 2N, ca. 3N, ca. 1N, ca. 1N, ca. 1N, ca. 3N, ca. 1N, ca. 1N, ca. 1N, ca. 3N

Strumming

ca. 2N, ca. 3N, ca. 2N, ca. 2N, ca. 6N, ca. 3N, ca. 2N, ca. 2N, ca. 6N, ca. 10N, ca. 3N

Simple scratch across the string

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Decreases, causing the pitch to disappear

Performance notes for "Solange es zwei Monde gibt"

This etude was written with the use of findings presented in the chapter on inverted stopping sounds.

This composition was inspired by chapter 22 in book 2 of Haruki Murakami's 1Q84.

The top line is reserved for the notation of the sounding pitches of inverted stopping sounds. The middle line is used for the notation of the pitches that were to sound if the notes were plucked between stopping position and bridge. Instead, the notes are performed as inverted stopping sounds, which means that the string is plucked with the right hand between the stopping position and the nut. The bottom staff is used for the notation of all other sounds.

Standard tuning

XI. Solange es zwei Monde gibt

Marlon Titre

Slow

Inverted stopping sounds: sounding practices

Inverted stopping sounds

Other sounds

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Performance notes for "Der Ritt auf dem Tiger/Solange es die Wärme noch gibt"

This etude was written with the use of findings presented in the chapter on bottleneck sounds. This composition was inspired by chapter 23 and 24 in book 2 of Haruki Murakami's 1Q84.

Scordatura: 6th string tuned to D

Bottleneck notes are notated with diamond shaped noteheads.
X-shaped notes are bottleneck tamboras.

XII. Der Ritt auf dem Tiger / Solange es die Wärme noch gibt

Marlon Titre

⑥ to D

♩ = 110

Guitar

mp *pp* *pp* *fp* *fp* *fp* *mp*

triso *point* *ord.*

Vibr. and gliss. on backneck part -----

f

mp

pp *mp* *ff*

♩ = 90

Hammer the backneck onto strings in the rhythm muted below while performing glissando. Remove your right hand fingers and take it in the left hand.

Continue hammering the backneck onto strings in the rhythm muted below while performing glissando. At the same time, perform trisolo point combination over strings 1, 2, and 3, and the 5th and 6th side of the backneck. CA. 10-15 seconds.

