Seth F. Josel MingTsao

# **The Techniques of Guitar Playing**



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# UNIVERSITY OF GOTHENBURG ACADEMY OF MUSIC AND DRAMA

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# Contents

Prefac Ackno	e	  5
<b>I.I</b> I.I.1 I.I.2 I.I.3 I.I.4	I Guitar Basics Essential components of the guitar Strings Soundboard Soundbox Fretboard	<b>17</b> 17 18 19 20
1.2	How a guitar tone is produced	21
<b>I.3</b> 1.3.1 1.3.2 1.3.3 1.3.4	Traditional and nontraditional tuningsHistorical tuningsEqual tempered tuningsMicrotonal tuningsTunings based on theharmonic series or just intonation	<b>22</b> 23 24 25 26
1.3.5	Tunings changed during a performance	26
1.4	Abbreviations and symbols for fingers and fingering positions	28
<b>1.5</b> 1.5.1 1.5.2 1.5.3 1.5.4	Notation basics Traditional Expressive Markings Multiple staves Tablature notation Action stave for the RH position	<b>29</b> 29 31 32
<b>I.6</b> I.6.1	Fretboard chart	<b>34</b> 37
<b>I.7</b> I.7.1 I.7.2 I.7.3	LH techniques Stopped notes and open strings Single notes to chords Beyond the fretboard	<b>39</b> 40 40 42

1.7.4	Clusters	42
1.7.5	"impressionistic polyphony"	43
1.7.6 1.7.7 1.7.8 1.7.9 1.7.10 1.7.11 1.7.12 1.7.13	Other ways of stopping notes on the fretboard Barré positions Slurs—hammer-on/pull-off Extensions of the pull-off Vibrato Trills—on one or two strings Glissandi/Portamenti String bending	47 48 50 51 52 54 55 57
1.8	RH techniques	60
1.8.1 1.8.2 1.8.3 1.8.4 1.8.5 1.8.6 1.8.7 1.8.8 1.8.9 1.8.10	RH patterns: arpeggiation (Giuliani, Tárrega, Pujol)	60 61 63 64 69 70 80 82 83
1.9	Orchestrating for the guitar: key historical works	84
<b>2.  </b> 2.   .   2.   .2	2 Guitar Harmonics What are harmonics?	<b>98</b> 98 100
<b>2.2</b> 2.2.1	Harmonics on the open strings of a guitar . How high?	<b>100</b> 100

2.2.2 2.2.3 2.2.4	Location of open string harmonics Harmonics on different strings	102 103
2.2.1 2.2.5 2.2.6 2.2.7	Webern's Drei Lieder, op.18         Scordatura         RH plucking techniques for harmonics         Harmonics produced by the LH alone	104 104 105 105
<b>2.3</b> 2.3.1	Examples from the literature Use of harmonics as sole material for a composition	<b>105</b> 108
<b>2.4</b> 2.4.1 2.4.2 2.4.3 2.4.4 2.4.5	Notation of harmonics Inclusion of the string number Harmonics notated at concert pitch Harmonics notated as fingered pitches Brief overview of harmonics notation More notational confusions	<b>   </b>   2   2   3   3
2.5	Half harmonics	114
<b>2.6</b> 2.6.1	Notation of natural harmonics and half harmonics Notation of harmonics on scordatura strings	<b>  6</b>   7
<b>2.7</b> 2.7.1 2.7.2 2.7.3	Multiphonics Positions of selected multiphonics on the fretboard Corresponding multiphonic chords Examples from the literature	<ul><li>118</li><li>120</li><li>121</li><li>123</li></ul>
<b>2.8</b> 2.8.1 2.8.2 2.8.3 2.8.4 2.8.5	Artificial harmonics. Timbral differences Examples from the literature Notation of artificial harmonics Extensions of artificial harmonics Notational reframing.	<b>125</b> 126 127 128 128 130
2.9	"Attackless" harmonics	131
2.10	Guitar harmonics in context	133
<b>3.1</b> 3.1.1	<b>3 Guitar as Percussion</b> Historical precedence Contemporary examples: LH tapping	<b>137</b> 138
<b>3.2</b> 3.2.1 3.2.2 3.2.3	<b>RH tapping</b>	<b>139</b> 140 142 145
<b>3.3</b> 3.3.1 3.3.2	<b>Bi-tones.</b> Bi-tone chart. Producing the auxiliary pitch of a bi-tone	<b> 47</b>  47  49

3.4 3.5	Battuto	52  54
<b>3.6</b> 3.6.1 3.6.2	TambourExamples of tambour.RH muting as a percussive effect	<b>154</b> 155 157
<b>3.7</b> 3.7.1 3.7.2	<b>Golpé</b> Possible areas on the guitar to execute a golpé Diversified golpé.	<b>58</b>  58  59
<b>3.8</b> 3.8.1	<b>Percussive map</b> Further extensions of golpé	<b> 6 </b>  62
<b>3.9</b> 3.9.1	Tamburo     Examples of tamburo.	1 <b>64</b> 165
<b>3.10</b> 3.10.1	Brushing/Rubbing/Scraping	<b>166</b> 169
3.11	String buzz	170
3.12	Notational conventions	171
<b>3.13</b> 3.13.1 3.13.2 3.13.3 3.13.4 3.13.5	Foreign objects Slide Other foreign objects: bows, beaters, thimbles, etc More notational conventions Beaters and mallets Miscellaneous objects	<b>173</b> 173 177 179 179 181
<b>3.14</b> 3.14.1 3.14.2 3.14.3 3.14.4 3.14.5	Prepared guitar	<b>183</b> 183 184 185 186 187
<b>3.14</b> 3.14.1 3.14.2 3.14.3 3.14.4 3.14.5 <b>3.15.0</b>	Prepared guitar         Capo tasto         Repertoire         Other preparations         Guidelines for guitar preparation         Repertoire         Guitar as percussion in context	<b>183</b> 183 184 185 186 187 <b>189</b>

# 

	<b>4.</b>  .	Octavine guitar
<b>139</b> 140	4.1.2	Terz guitar 195
ıs . 142 145	4.2	Deviation from the six strings: the seven-string guitar and the ten-string guitar/décacord 196
<b> 47</b>	4.3	Double-neck guitars
e 149	4.4	Ukulele

4.5	Acoustic steel-string "flat-top" guitar203
4.5.I	Ebow
4.5.2	Acoustic-electric guitar 207
4.5.3	Twelve-string acoustic guitar
4.5.4	Resonator guitar/slide guitar/Dobro® 209

# Appendices

<b>5.1</b> 5.1.1 5.1.2 5.1.3	Technical notes211Helmholtz resonator211Multiphonic analysis211Bi-tone formula for yielding hertz213
5.2	Diverse preparations and descriptions from Yates and Elgart 214

5.3	CD Track List
<b>5.4</b> 5.4.1 5.4.2 5.4.3 5.4.3	Bibliography
5.4.5 5.4.6	stage work with guitar
5.5	Index 225
5.6	About the authors 233

# Preface

Instrumento admirable, tan sobrio como rico, que áspera o duclemente se adueña del espíritu, y en el que andando el tiempo se concentran los valores esenciales de nobles instrumentos caducados cuya herencia recoge sin pérdida de su propio carácter, de aquel que debe al pueblo por su origen. This admirable instrument, both sober and sumptuous, seizes the soul sometimes roughly yet sometimes sweetly, having absorbed the essential values of noble bygone instruments whose heritage takes shelter—with no loss of individual character—in the people itself. How can one deny that the guitar, among all plucked-fretted stringed instruments, is the richest and most complete in its harmonic and polyphonic possibilities?

Manuel De Falla, preface to Emilio Pujol's "Escuela Razonada de la Guitarra" (translation Christopher Williams)

The earliest known music for the six-stringed instrument now commonly referred to as the classical guitar was composed in the mid- to late eighteenth century. Guitar music from this period survives in method books such as Federico Moret-ti's *Principj per la chitarra*, written in 1792.

In the nineteenth century guitarists and composers passionately explored the instrument's nearly boundless potential. Dionisio Aguado dedicates a whole chapter in his Nuevo método para guitarra (1837) to the "richness of the guitar" in which he explores the multitudinous timbral possibilities of the instrument: natural and artificial harmonics, vibrato to extend the duration of notes, sounds produced with the left hand only, muffled sounds, sounds imitating an ensemble of violin, viola, and bass (i.e., three-part writing), differences in timbre between different strings and playing with or without fingernails, and even sounds analogous to little bells.1 Aguado indicates further how "with some degree of propriety the guitar can mimic certain instruments," and proceeds to describe how to approximate the sound of a drum, a trumpet, or a harp.<sup>2</sup> Similarly, in his edition of the guitar method book by Fernando Sor published some years later, Napoléon Coste (1805–83), describes how the guitarist can imitate a horn, a trumpet, an oboe, or a harp.<sup>3</sup>

One of the great innovative orchestrators of the nineteenth century, who in many ways revolutionized the orchestra, was Hector Berlioz, a guitarist. Berlioz included the guitar in such compositions as *Huit Scènes de Faust, Benvenuto Cellini, Beatrice et Benedict,* and *Roméo et Juliet.* His contemporary Robert Schumann was sufficiently impressed with the guitar that he intended to use it in the "Romanze" of his fourth symphony (1841 version).<sup>4</sup>

The history of twentieth century literature for the classical guitar is as rich as it is diverse. Since the 1920s, the guitar has served an array of very different artistic purposes: composers have employed it (a) to contribute to a particular *Klangfarbe* as in Anton Webern's op. 10; (b) to evoke a folk atmosphere as in Arnold Schönberg's *Serenade*, the "Nachtmusik II" of Gustav Mahler's *7. Sinfonie*,

<sup>1</sup> Aguado, Nuevo método para guitarra, 42 ff.

<sup>2</sup> ibid, 48.

<sup>3</sup> Sor, Méthode pour la guitare, 14–16.

<sup>4</sup> Manuscript facsimile courtesy of the Gesellschaft der Musikfreunde in Wien.

or the Bühnenmusik of Alban Berg's Wozzeck;tech(c) to explore the instrument's sound spectrumuseas in Manuel De Falla's Homenaje pour le Tombeaumusde Claude Debussy and Heitor Villa-Lobos's DouzetremEtudes; and (d) to provide a platform for experi-predouter

mentation (particularly with regard to various tunings) as in early works by Harry Partch and Percy Grainger.

The guitar continues to feature in contemporary works, taking a range of roles in a variety of settings: (a) it produces the very precise "plucked string" timbre integral to the serial or serial-influenced compositions of Pierre Boulez (Le Marteau sans Maître), Karlheinz Stockhausen (Gruppen), Henri Pousseur (Libericare), Karel Goeyvaerts (Nr. 6) and Milton Babbitt (Sheer Pluck); (b) it performs as an equal contributor to the polyphony of the ensemble in works by Elliott Carter (Syringa) and Jean Barraqué (Concerto); (c) it becomes an instrument of "political protest" in combination with texts by Miguel Barnet and Christopher Caudwell in music by Hans Werner Henze (El Cimarrón) and Helmut Lachenmann (Salut für Caudwell) respectively; and (d) it generates spectral phenomena specific to the plucked strings of the guitar in works by Tristan Murail (Tellur) and Horatio Radulescu (Subconscious Wave). The solo guitar in recent years has also become a medium for virtuosic and "polyphonic" works such as Alvaro Company's Las Seis Cuerdas, Luciano Berio's Sequenza XI, Brian Ferneyhough's Kurze Schatten II, Elliott Carter's Changes, James Dillon's Shrouded Mirrors, Klaus K. Hübler's Reißwerck and the many guitar compositions of Maurizio Pisati. Other contemporary composers, among them Rolf Riehm (Toccata Orpheus), Helmut Oehring (Foxfire Eins), Josh Levine (Downstream), and Richard Barrett (Colloid) have used the guitar to create a unique and sometimes rarified sound world through the use of extended techniques or the use of elaborate guitar preparations.

*The Techniques of Guitar Playing* is aimed at musicians, composers, and others involved in creating contemporary art music particularly for the guitar. A thorough, in-depth guide to guitar

techniques is long overdue, given the expanding use of the instrument in contemporary classical music. Several factors have contributed to this trend. Small chamber ensembles have become a predominate force in contemporary music, especially in Europe and America, while a number of guitar virtuosos have dedicated themselves to developing the instrument in this context as well as in solo settings. In addition, guitar studies have emerged increasingly as an academic discipline, which in turn has generated greater interest in current guitar literature.

However, writing for and playing the guitar both present special challenges, especially in the context of contemporary music. Established composers as varied as Luciano Berio, Pierre Boulez, Elliott Carter, and Mauricio Kagel have successfully realized major works for or with the instrument largely because they relied on close, painstaking collaborations with particular guitarists. Moreover, even for composers who themselves play the guitar, writing for it often remains problematic. The composer must contend with how to blend and balance the guitar's unique timbre and dynamic qualities with other instruments. They must be aware of the rich variety of sounds that the guitar itself can produce, even from a single plucked string. No less importantly, they must be able to notate an array of such techniques so that the performer can properly interpret them.

Music students and faculty in both Europe and the America have repeatedly asked for an upto-date book explaining contemporary guitar performance practice. Similarly, young composers throughout the world have requested more information about writing for the guitar but have no access to the necessary repertoire or expertise. Indeed, only three books on extended performance technique for modern classical guitar have appeared to date: Patrizia Rebizzi and Ruggero Tajè's *La Chitarra nella Musica de* '900 (tecniche e semiografia nella musica contemporanea), published in 1987, John Schneider's *The Contemporary Guitar*, published in 1985, and Jean-Luc Mas' Sonorités Nouvelles, published

#### **Preface**

in 1984. Even in major metropolitan areas, very few guitarists possess the requisite knowledge and experience to successfully address contemporary guitar literature.

There is thus a pressing need for a solid reference book that will facilitate an understanding not only of more extended guitar techniques but also of orchestrating new sounds with the guitar as well as contemporary guitar notations-that is, how best to integrate the guitar into different musical settings, and how, visually, to convey new musical ideas and techniques to guitarists. Through detailed, comprehensive documentation (both graphic and acoustic), The Techniques of Guitar Playing will help aspiring composers to expand the literature and performers to better interpret it. The accompanying CD will hope to sonically illuminate many of the timbres and textures discussed throughout. In each of the examples from the literature cited, if the tempo indication is not in the example itself, then we have provided it for the reader below in order to fully appreciate the musical context in which a given technique is executed.

This book addresses as many paths as possible that have been traversed by the contemporary guitar in order to give the reader a sense of the guitar's rich recent history and unlimited future possibilities. Rather than cataloguing techniques for the guitar, our book presents these techniques within the stylistic, aesthetic, and historical contexts from which they are inseparable. We give equal importance to guitar acoustics, literature, history, orchestration and playing techniques. Originally, we intended to also include the electric guitar because of its ever-increasing use in contemporary music. However, the vastness of the electric guitar's sound palette in combination with sophisticated analog and digital technologies, requires that this subject be dealt with in a separate volume.

The Techniques of Guitar Playing aspires to be user friendly, incorporating clear fingering charts, harmonic charts, bi-tone charts, etc., as well as best defining the musical context for each example from the literature cited. Furthermore, over the years, as performer and composer, we have been in a unique position to practically experience what does and does not work with the guitar in a multitude of contexts. Throughout the book, we occasionally offer suggestions both in terms of practical notation of techniques and their orchestration. These suggestions are not meant to delimit the guitar's potential but rather to serve as a springboard for further imaginative speculation with the instrument by young composers and musicians. Indeed, we hope that this book will motivate, inspire, and provoke composers and performers to further explore, experiment and create new works for the classical guitar.

If a natural harmonic is to be produced by the use of the RH only, then a diamond with "RH" above it is recommended:

```
RH
```

6 Figure 2.7. Notation for a natural harmonic played solely by the RH.

## 2.6.1 Notation of harmonics on scordatura strings

The scoring of both natural and half harmonics is best transposed to standard tuning. We suggest notating them just as in the scordatura where the sounding pitches are notated on a smaller upper stave, as discussed in Chapter 1. In the score for Tsao's *Not Reconciled*, where the guitar is detuned, barred harmonic chords are transposed to standard tuning (Example 2.29, measure 1).



Example 2.29. Ming Tsao, Not Reconciled, measures 1-4, Edition Peters

## 2.7 Multiphonics<sup>86</sup>

A multiphonic occurs when at least two pitches are made to sound simultaneously. One of the earliest instances of multiphonics in guitar music is found in Sor's *Fantasie Villageoise* (Example 2.30). Here, the dotted brackets above the stave indicate an unspecified multiphonic chord between the 3<sup>rd</sup> and  $4^{\text{th}}$  harmonics ( $6^{\text{th}}$  position) on strings 6 and 5 (the notated *E* and *A*), which is intended to replicate the complex sound of church bells. In order to produce the multiphonics at this juncture, one must coax the LH finger into the just the right position so that several harmonics sound at once.



Example 2.30. Fernando Sor, Fantasie Villageoise, op. 52, page 8 (1832), Tecla Facsimile Edition (Tempo: "Andantino")

Multiphonic technique has been most thoroughly explored and developed by wind and brass players. On the guitar, multiphonic phenomena most closely resemble "split tones" on brass instruments. Split tones result from adjusting the speed of lip vibrations to the vibrating frequency of the pipe length. This adjustment "decenter[s] the note while keeping the pressure in the mouth constant" in such a way that it produces two distinct pitches in the same harmonic series.<sup>87</sup>

Similarly, if one touches a guitar string lightly with the LH, using harmonic pressure between two consecutive nodes on the string, the string vibrates in at least two modes that contain nodes in the same general area. The string vibrates simultaneously in both modes but with conflicting periodicity. For instance, when ones plays lightly with harmonic pressure between the third and fourth fret, the string vibrates in modes 5, 6, 11, and 16 (since these modes have nodes in this area of the fretboard) thus producing a chord that contains the 5<sup>th</sup>, 6<sup>th</sup>, 11<sup>th</sup>, and 16<sup>th</sup> harmonics.<sup>88</sup> The amplitude of the lower harmonics will usually be greater than that of the higher harmonics. As a rule, every multiphonic will be some combination of natural harmonics on a given string; this combination will be determined by those harmonics that have nodes near where the finger touches the string.

We recommend that a multiphonic be notated in terms of its fingered position on the guitar, including the string number, and with a separate stave showing the concert pitches above the fingered note. The recommended notation for the fingered notes is a diamond-shaped notehead (to indicate harmonic left-hand pressure) with an " $\times$ " through the notehead to distinguish it from a natural harmonic:

<sup>86</sup> Guitar multiphonics were first discussed in Schneider, *The Contemporary Guitar*, 135–38 and have recently been expanded upon in Torres and Ferreira-Lopes "Multiphonics as a Compositional Element," 61–69.

<sup>87</sup> Sluchin, Contemporary Trombone Techniques, 13–16.

<sup>88</sup> Between the third and fourth frets, many other harmonic nodes (higher than the 16<sup>th</sup>) are present but are usually too faint to be discerned.

### 6 Figure 2.8. Multiphonic notation

×

The strongest and most reliable multiphonics are produced on the bass strings, i.e., strings 4–6 on the classical guitar. On the steel-string acoustic guitar, the round-wound G string (string 3), which is commercially available as an option, responds as effectively as strings 4–6. A normal stainless steel G string, like the B and e strings (strings 2 and 1), will tend to respond with less satisfying results.

The charts that appear in the next section (Figure 2.9 A-B) map reliable multiphonics. Each multiphonic appears between two harmonic nodes. When one of the multiphonics is executed, adjacent harmonics, as well as other possible harmonics in the general area, should sound. For example, with Multiphonic V.5+, which is situated between harmonics 11 and 18 (between the fifth and sixth frets), both the 11th and 18th harmonics should sound, as well as the 4th and 7th harmonics, which have a strong presence in that locality. Higher harmonics are rarely audible although they may well lie in the adjacent areas (e.g., the 15<sup>th</sup> and 19<sup>th</sup> harmonics that lie to the left of Multiphonic V.5<sup>+</sup>, etc.). Each multiphonic in Figure 2.9 is accompanied by a position number (i.e., I.5, II -, etc.). Each position number correlates to a chord, which is annotated in Figures 2.10-2.12 as follows:

- (a) The concert pitches of each multiphonic chord (all of which will be harmonics based on the open string)
- (b) Beneath each chord, the numbers of the harmonic series of the pitches involved
- (c) To the right of each chord, the stopped pitch for executing the multiphonic

- (d) The string number at the beginning of each figure
- (e) The relative amplitude of the pitches in the chord

The charts are not exhaustive. Their purpose here is merely to give possible multiphonic chords for a composer or performer to use. Theoretically, multiphonics can be executed between *any* two harmonic nodes on a string. We have indicated only multiphonics that are relatively responsive. The response time and resonance of each multiphonic can vary widely and depends on the type of instrument, the strings, and the method of execution. Precisely locating each multiphonic demands practice. Some of the essential parameters in multiphonic production, at least for the multiphonics represented here, are listed below:

a) *Position of the LH finger*: finding the exact spot on the fretboard to draw out the desired harmonics requires some searching. Very slight movements of the LH finger in either direction will elicit different harmonics that lie in the vicinity. Angling the finger slightly may help it to isolate the particular harmonic "sweet spot".<sup>89</sup>

b) *RH plucking position and manner of plucking*: the RH plucks the string either *apoyando* with the thumb or as a quasi-plectrum stroke with the fingernail of the index finger. Key to the manner of each stroke is a very incisive and forceful attack. The plucking is performed best sul ponticello in order to extract the higher harmonics.<sup>90</sup>

<sup>89</sup> The very lightest touch possible in the LH is a prerequisite—even more so than when playing a natural harmonic. The little finger has the least amount of flesh at the tip and, when extended, makes a taught skin surface; thus, it

is the finger best suited for accurately locating the mid-way points between the harmonic nodes.

<sup>90</sup> On the steel-string guitar, it is advisable to use a plectrum near the bridge.



### 2.7.1 Positions of selected multiphonics on the fretboard

Figure 2.9(A). Location of select multiphonics

Close-up on the Fretboard above the  $12^{\mbox{\tiny th}}$  Fret



Close-up on the Fretboard below the 12<sup>th</sup> Fret



Figure 2.9.(B). Location of select multiphonics in close-up

#### 2.7.2 Corresponding multiphonic chords

1. Note on the position number for each multiphonic:
Roman Numeral = Fret Number
Arabic Numeral = 1/4, 1/2, 3/4 of the distance up (towards the bridge) between the two neighboring frets

, + = slightly to the left or right respectively of the indicated fret position

2. Note on the accidental for the multiphonic notation:

quarter-tones = placing the LH finger midway between the two neighboring fret positions
accidentals with arrows = raising or lowering slightly the placement of the LH finger from the indicated fret position

3. General note on the accidentals for the resultant harmonics:

µ = natural 7th (or 14th) harmonic (31 cents flat)
√, s = close to a quarter-tone difference (for the natural 11th and 13th harmonics)

The notation of all other harmonics are approximated to equal tempered tuning. All resultant harmonics is differentiated by either strong or weak where:

<e>o in amplitude.









Figure 2.10. Select multiphonics on string 6



Figure 2.10. Select multiphonics on string 4

#### **Multiphonics**

Factors other than the harmonics proximal to the finger stopping the multiphonic can affect the sounding result:

- (a) The fundamental frequency that varies with each guitar can affect the resonance of the multiphonic and even cause other harmonic nodes to resonate slightly.
- (b) The presence of harmonics that are lower in the harmonic series, not necessarily very close but still near the finger (e.g., the 3<sup>rd</sup> and 2<sup>nd</sup> harmonic nodes) can often accompany the multiphonic sound.
- (c) Octaves of harmonics, particularly lower harmonics, may be audible.
- (d) On occasion, undertones (the inverse of the harmonic series) can be heard.

The morphology of a multiphonic can also change: some harmonics may disappear while others gradually emerge. The harmonic content of a multiphonic chord can thus change subtly with time.<sup>91</sup>

#### 2.7.3 Examples from the literature

Few composers until recently have exploited guitar multiphonics in their compositions, with some notable exceptions.<sup>92</sup> Today, however, several composers have begun utilizing this technique, although in very distinctive ways. In *AXE(S)*, Hayden uses guitar multiphonics in an isolated passage that represents a further variation of the

harmonic techniques utilized elsewhere in the composition (Example 2.31). Hayden designates the multiphonics with an uppercase M. He indicates the appropriate fingered position with quartertones to suggest playing between two frets, and also adds the concert pitches in parentheses above.



Example 2.31. Sam Hayden, AXE(S), measure 269, British Music Information Centre

In *Subconcious Wave*, Radulescu specifies the string number but leaves the choice of the multiphonic up to the performer. At times he asks that the multiphonic be performed with a violin bow. In the following passage, multiphonics are explored on successive pairs of strings (Example 2.32).

6.  

$$GkS$$
  $-->Sk+$   $-->+23$   
 $7 - ->3k2$   $(sempre L.V.)$   
SUBITO  $sh All (G) \leftrightarrow (A)$ 

Example 2.32. Horatio Radulescu, *Subconscious Wave*, systems 6–7, Lucero Print (Tempo: dots = ten seconds; dashes = five seconds)

91 See Appendix A, Part 2 for multiphonic analysis, including spectrographs.

*in Three Sections* (1975) the multiphonics, which he calls "complex harmonic partials" are executed in rapid succession. Schneider, *The Contemporary Guitar*, 136.

92 William Bland was one of the first composers to use guitar multiphonics. In his composition *Untitled Compositions* 

With the accented  $A^{\dagger}$  indication above middle C, Pisati proposes another unorthodox means of eliciting a multiphonic: a passage from his *Setti Studi* (Example 2.33) instructs the guitarist to bring the LH thumb around to the fretboard to

stop string 6 between the fifth and sixth frets. As it does this, the width of the thumb in itself guarantees that many harmonics lying in that area of the fretboard will sound.



Example 2.33. Maurizio Pisati, Setti Studi, Studio 4, page 15, system 4, Ricordi (Tempo: 🕹 = 44)

Ambrosini signals the use of the multiphonic through what he calls *meta posizione* (meta position)—as opposed to normal position—of the LH finger. The meta position appears above the stave and indicates which two frets to place the finger between and how far from each fret it should sit. In Figure 2.13, for example, " $\frac{1}{2}$  III" denotes a position halfway between frets II and III, first on string 4, the lowered *F* natural, and then on string 5, the lowered *C* natural.



Figure 2.13. Claudio Ambrosini, RAP, legend, manuscript93

Clemens Gadenstätter's *variationen und alte themen* contains a passage scored for trombone, guitar, cello, and contrabass (Example 2.34) in which all three string instruments are to produce multiphonics (*M*). The guitarist (fourth and fifth systems from the bottom) is to play unspecified multiphonics on string 6 in an area of their choosing, but under the condition that they must find the multiphonics with the richest sound possible.<sup>94</sup> Note that the last multiphonic is performed in a barré manner across strings 6–3, rather than on 6 alone.

<sup>93</sup> Legend translates as follows: Meta position: the indicated notation asks for the harmonic that is achieved by placing the finger about half the distance between two frets. Ambrosini, legend for *RAP* (translation Ambrosini/Seth Josel).

<sup>94 &</sup>quot;Die genauen Berührungsstellen sind frei wählbar, sollten aber immer ein möglichst charakterisisches Klangbild erzeugen." Gadenstätter, *variationen und alte themen*, legend.



Example 2.34. Clemens Gadenstätter, variationen und alte themen, measures 80–83, Ariadne Verlag (Tempo: J = 76)

## 2.8 Artificial harmonics<sup>95</sup>

Any fretted note creates a new fundamental pitch on the guitar and, by implication, a new harmonic series. *Artificial, false,* or *prepared* harmonics, three common terms that denote the same phenomenon, are harmonics derived from fretted pitches rather than open strings. Artificial harmonics allow one to produce harmonics using any fretted pitch as a fundamental. They thus considerably expand the harmonic possibilities of the instrument beyond the confines of natural harmonics, which stem exclusively from the fundamental pitches of the open strings. Artificial harmonics on the guitar are executed in a manner similar to classical string techniques employed on the violin and cello. In general, the LH little finger stretches past the fretted note and *lightly* touches the string at a certain interval or node above it. Some harmonics will emerge at intervals not far above the fretted note and therefore involve less of a stretch: to trigger the 5<sup>th</sup> harmonic requires reaching only a major third, and the 9<sup>th</sup> harmonic only a major second. Touching the string a perfect fourth above the note will produce the 4<sup>th</sup> harmonic. Similarly, touching a perfect fifth above it will elicit the 3<sup>rd</sup> harmonic, but only if the guitarist can extend the little finger that far.

<sup>95</sup> See Mas's section on "prepared harmonics." Mas, Sonorités Nouvelles Pour Guitares, 31–32.