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### Title

Modern Guitar Techniques; a view of History, Convergence of Musical Traditions and Contemporary Works (A guide for composers and guitarists)

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University of California, San Diego

Modern Guitar Techniques; a view of History, Convergence of Musical  
Traditions and Contemporary Works  
(A guide for composers and guitarists)

A dissertation submitted in partial satisfaction of the requirements for  
the degree Doctor of Musical Arts

in

Contemporary Music Performance

by

Pablo José Gómez Cano

Committee Members:

Professor Susan Narucki, Chair  
Professor Robert Castro  
Professor Aleck Karis  
Professor Lei Liang  
Professor Roger Reynolds

2016

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The dissertation of Pablo Jose Gómez Cano is approved, and it is acceptable in quality and form for publication on microfilm and electronically:

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Chair

University of California, San Diego

2016

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## D.M.A. Recitals

### DMA Recital 1

Wohin?	Franz Schubert (1797 – 1828)
Meeres Stille	Franz Schubert
Ne parlons jamais d’amor	Eduard Bruguere (1793 - 1863)
Gretchen am Spinnrade***	Franz Schubert
Soprano and guitar	
A journey into desire	Lei Liang (b. 1972)
guitar solo	
Drei Lieder	Anton Webern (1883 – 1945)
soprano, clarinet, guitar	
La Lógica de los Sueños*	Ignacio Baca Lobera ( b. 1957 )
soprano, guitar and electronics	
Spiralis*	Doina Rotaru (b. 1951)
flute and guitar	
Dream Mirror**	Roger Reynolds (b. 1934)
guitar and computer musician	

\* USA first performance

\*\* First Performance

\*\*\* Transcribed by Pablo Gómez

Tiffany Du Mouchelle, soprano  
Ariana Lamon-Anderson, Clarinet  
Berglind Thomasdottir, flute  
Jaime Oliver, computer musician

## **DMA Recital 2**

Guitar solos

Canticum

Metamorfosis

Sequenza XI

ImagE\*

Solo (electric guitar)  
Guitar and electronics

Passing Away in Two Strings

\* First Performance

Joachim Gossman, patch and electronics *Solo*

Leo Brouwer (b.1939)

Hilda Paredes (b. 1957)

Luciano Berio ( 1925-2003)

Roger Reynolds (b. 1934)

K. Stockhausen (1928-2007)

Uros Rojko (b. 1954)

## **DMA Recital 3**

Trio Op 16

She is Asleep  
Guitar and soprano

Apnea  
Guitar and electronics

The Wonderful Widow  
of Eighteen Springs  
guitar and soprano

Balandra \*  
Electric Guitar, Frame Drum and Electronics

\*First Performance

Batya Macadam, violin  
Arianna Warren, clarinet  
Tiffany DuMouchelle, soprano  
Ricardo Gallardo, frame drum

Joseph Kreutzer (1790-1840)

John Cage (1912-1992)

Edgar Guzman (b. 1981)

John Cage

Gonzalo Macías (b. 1956)



## **DMA Recital 4**

Prelude BWV 998

J.S. Bach (1685-1750)

Absence\*

Adam Greene (b. 1970)

Tellur

Tristan Murail (b. 1947)

Mundus Canis

Guitar and percussion

George Crumb (b. 1929)

Serenade

Guitar and percussion

Lou Harrison (1917-2003)

Pedacería Fantástica \*\*

Guitar and ensemble

Hebert Vazquez (b. 1963)

\*First performance

\*\* USA First Performance

Andy Helgerson, violin

Loie Flood, viola

Jennifer Bewerse, cello

Ine Vaneoveren, flute

Robert Zelickman, clarinet

Leah Bowden, percussion

Kyle Adam Blair, piano

Steve Solook percussion

Aleck Karis, conductor

## **Recordings**

1. A Fuoco, Luca Francesconi, guitar and ensemble
2. Luimen, Elliott Carter, guitar and ensemble
3. Dream Mirror, Roger Reynolds, guitar and computer musician
4. Balandra, Gonzalo Macías, electric guitar and frame drum
5. Pedacería Fantástica, Hebert Vazquez, guitar and ensemble
6. She is asleep, John Cage, guitar and soprano
7. Estructura Mandala, Diógenes Rivas, guitar solo
8. Sidolyra, Gabriela Ortiz, guitar solo
9. Tellur, Tristan Murail, guitar solo
10. On the Shattered surface of time, Ivan Naranjo, guitar, percussion, double bass
11. For an abundance of green apples, Eoin Callery, guitar, percussion, double bass

## **Published Recordings**

1. A Journey into Desire, Lei Liang, New World Records (2011)
2. Espejismo II, Ben Sabey, Albany Records (2015)
3. ImAge/ImageE, Roger Reynolds, Neuma Records (release October 2015)
4. Cuatro Corridos, Chamber Opera, Bridge R cords (release June 2016)

## List of supplementary files/ music examples

The present work is accompanied by a set of audio samples. Each example represents one guitar technique. For the rasgueado and tremolo tracks, the example begins with muted strings, then open strings and then the same technique in a particular context.

1. Basic rasgueado
2. Basic rasgueado with Thumb
3. Round rasgueado
4. Round rasgueado (Berio)
5. Round rasgueado in chamber concerto; A Fuoco, Luca Francesconi
6. Simple up and down strumming
7. Index tremolo (Dedillo)
8. Thumb tremolo
9. Simultaneous thumb and index tremolo
10. Inverse basic rasgueado I
11. Inverse round rasgueado II
12. Inverse round rasgueado with dedillo
13. Mixing rasgueado I
14. Mixing rasgueado II (Berio)
15. Mixing rasgueado III (Berio)
16. Inverse basic rasgueado in guitar concerto; Hebert Vazquez Concerto N.1
17. Flamenco percussion
18. Flamenco percussion II
19. Flamenco percussion in guitar concerto; Juan Trigos, Ricercare VI
20. Latin American Rasgueado Simple
21. Latin American Rasgueado Advanced
22. String bend basic, up
23. Reverse bend
24. Up and down bend
25. Up and down bend, vertical vibrato
26. Complex bend I
27. Complex bending in sixth string
28. Three step bending
29. Horizontal vibrato
30. Vertical vibrato
31. Tapping I (Berio)
32. Tapping II (Vazquez)
33. Tapping in chamber music; Cuatro Corridos
34. Basic Tremolo (Classic)
35. Basic Tremolo (Berio)
36. Advanced Tremolo I
37. Advanced Tremolo II (Two strings)

38. Advanced Tremolo III
39. Advanced Tremolo IV
40. Percussive map of the guitar
41. Percussion on the guitar
42. Percussion on the guitar (Donatoni)
43. Percussion in Chamber Music; Hebert Vazquez, Cuatro Corridos
44. Glissando I
45. Glissando II
46. Glissando III
47. Glissando with slide
48. Bartok Pizzicato Sequence
49. Mixing techniques example 1 (rasgueado, Bartok pizz, glissando, percussion)
50. Mixing technique example 2 (rasgueado, Bartok pizz, tapping, percussion)
51. Natural harmonics
52. All harmonics 6<sup>th</sup> and 5<sup>th</sup> strings (Rojko)
53. Natural harmonics “multiphonics”
54. Octave Harmonics
55. ImAge/Reynolds
56. ImAge/Reynolds
57. ImAge/Reynolds
58. ImAge/Tapping
59. Image/Reynolds
60. Image/Reynolds
61. Image/Counterpoint
62. Dream Mirror/Reynolds
63. Dream Mirror, rasgueado textures
64. Dream Mirror, bending with index tremolo
65. ImAge, bending and glissandos

## List of Guitar Works

Albeniz, Isaac, Asturias, guitar solo (transcription)  
Baca Lobera, La Lógica de los Sueños, guitar, soprano and electronics  
Bach, J.S., Prelude, Fuge and Allegro BWV 996  
Bellinati, Paulo, Jongo, guitar solo  
Berio, Luciano, Sequenza XI, guitar solo  
Boulez, Pierre, Le marteau sans maître, mixed ensemble with guitar  
Britten, Benjamin, Nocturnal, guitar solo  
Brouwer, Leo, Canticum, guitar solo  
Brouwer, Leo, El Cimarron, chamber opera  
Cage, John, She is asleep, voice and piano (arranged for guitar)  
Cage, John, The Wonderful Nineteenth Springs Widow, voice and piano  
Callery, Eoin, For an abundance of Green Apples, guitar, percussion, double bass  
Carter, Elliot, Luimen, guitar and ensemble  
Crumb, George, Mundus Canis, guitar and percussion  
De Milan, Luis, Ricercares y Fantasias, lute solo  
De Narvaez, Luis, Diferencias, vihuela solo  
Donatoni, Franco, Algo, guitar solo  
Dowland, John, Dances, Fantasies, lute solo  
Falla, Manuel, Homage to Debussy, guitar solo  
Ferneyhough, Brian, No Time (At All), two guitars  
Francesconi, Luca, A Fuoco, guitar and ensemble  
Francesconi, Luca, Alborada, guitar solo  
Fuenllana, Miguel, Fantasias, vihuela solo  
Ginastera, Alberto, Sonata, guitar solo  
Giuliani, Mauro, Grand Overture, guitar solo  
Granados, Enrique, Danzas Españolas, guitar solo (transcription)  
Greene, Adam, Absence, guitar solo  
Guzman, Edgar, Apnea, guitar and Electronics

Harrison Lou, Serenade, guitar and percussion  
Hosokawa, Toshio, Renka II, guitar and voice  
Kreutzer, Joseph, Trio, guitar, flute, clarinet  
Lacheman, Helmut, Salut für Cadwell, two guitars  
Liang, Lei, A Journey into desire, guitar solo  
Macías, Gonzalo, Balandra, electric guitar and frame drum  
Macías, Gonzalo, Improvisación Dos, guitar and electronics  
Murai, Luca, Tellur, guitar solo  
Naranjo, Ivan, On the Shattered Surface of Time, guitar, percussion, double bass  
Ortiz, Gabriela, Sidolyra, guitar solo  
Paredes, Hilda, Metamorfosis, guitar solo  
Pisati, Maurizio, 7 Studi, guitar solo  
Ponce, Manuel, Concierto del Sur, guitar and orchestra  
Reynolds, Roger, Dream Mirror, guitar and computer musician  
Reynolds, Roger, ImAge/ImageE, guitar solo  
Rivas, Diógenes, Estructura Mandala, guitar solo  
Rodrigo, Joaquin, Concierto de Aranjuez, guitar and orchestra  
Rojko, Uros, Passing away in two strings, guitar solo  
Rotaru, Doina, Spiralis, guitar and flute  
Sabey, Ben, Espejismo II, guitar and electronics  
Sor, Fernando, Fantasia, guitar solo  
Stockhausen Karlheinz, Solo, for any melodic instrument and a delay device  
Takemitsu, Toru, Towards the Sea, guitar and flute  
Tarrega, Francisco, Recuerdos de la Alhambra, guitar solo  
Trigos, Juan, Ricercare VI, guitar and ensemble  
Vazquez, Hebert, Azucena, chamber opera  
Vazquez, Hebert, Concierto N. 1, guitar and orchestra  
Vazquez, Hebert, Elegía, guitar solo  
Vazquez, Hebert, Pedacería Fantástica, guitar and ensemble  
Walton, Willian, 5 Bagatelles, guitar solo

Webern, Anton, Drei Lieder, guitar, clarinet and soprano

Weiss, Silvius Leopold, Suites and fantasies, lute solo

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- 2000 Tañendo Recio, original solo works, Quindecim Recordings
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- 2015 Espejismo II, Ben Sabey, Albany Records
- 2015 ImAge/ImageE, Roger Reynolds, Neuma Records (release October)
- 2016 Cuatro Corridos, Chamber Opera, Bridge Records

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1998 Grant, to comission five mexican composers a piece for gutar, Fondo Nacional para la Cultura y las Artes  
1994 -96 Foreign Studies Scholar, Specialization in Contemporary Guitar in Stockholm, Fondo Nacional para la Cultura y las Artes,

## Abstract of the Dissertation

Modern Guitar Techniques; a view of History, Convergence of Musical Traditions and Contemporary Works  
(A guide for composers and guitarists)

by

Pablo José Gómez Cano

Doctor of Musical Arts in Contemporary Music Performance

University of California, San Diego 2016

Professor Susan Narucki, Chair

The purpose of this work is to provide an understanding of the performance techniques used in the practice of the classical guitar today, especially those relevant to the contemporary repertoire of the instrument. The techniques are broken down in accordance with their origins: some come directly from the classical performance tradition of the instrument in Europe, whereas others have been acquired from other performance traditions, including flamenco, American and Latin-American, and even Asian. The work demonstrates how the evolution of guitar technique has been continuous and is still ongoing. It shows how it is possible to acquire a certain technique, take it out of its original context, and turn it into a new way of expression on the instrument. The correlation of every technique with its

original tradition or source allows the reader to connect or even identify with the material at many different levels: musical, social, and historical. At the same time, it shows how these techniques can be used in different and hitherto unimaginable ways. Every technique is shown in its original and *pure* state, but is also presented in the context of contemporary works by important composers. Even in the case of new and different ways of playing the instrument, therefore, everything has been tested and used. There is no speculation, but rather a catalog of possibilities. The guitar is an instrument with a wealth of possibilities for the articulation of its sound. This is the view privileged by the present work. It is intended for musicians interested in the guitar, for guitarists who want to perform the modern repertoire, and for composers interested in writing for the instrument.

## **Introduction**

It always has been my main objective as a musician to promote the creation of new repertoire for my instrument, the classical guitar. I realized that the most relevant guitarists of the last hundred years have been those who not only had great skills as performers but also encouraged composers to write new music for them. Andrés Segovia, Julian Bream, and John Williams, among many others, helped to create what is today the core of the guitar repertoire in the twentieth century.

If we examine the repertoire of the guitar, it is evident that the most interesting music written for the instrument is by composers who were not guitarists. Ponce, Villa-Lobos, and Rodrigo, in the first half of the twentieth century, and later on Britten, Walton, and Ginastera adapted their ideas to the guitar and thus enhanced the instrument's technical possibilities. They also made the instrument embrace more sophisticated and complex musical languages, with far-reaching artistic significance. The only important exception would be guitarist/composer Leo Brouwer, who has been fundamental to bringing modern styles and techniques to the instrument. Most other composers responsible for enriching the guitar and making its music relevant have not been guitarists themselves.

It is very interesting to see the different approaches that these composers have taken with the instrument. They vary from using ancient lute and *vihuela* music, with its classic dance forms, as models, to using instrumental techniques

drawn from folk traditions such as flamenco and various Latin American styles. Manuel Ponce , for example, wrote baroque-like pieces, sonatas, and songs. Villa-Lobos, Brouwer and Ginastera wrote music using folk music techniques drawn from performance practices in their own countries, music which has been very influential among younger generations.

Luciano Berio wrote his *Sequenza XI* for guitar in 1988. The *Sequenza* series for solo instruments was already internationally known for its modern and innovative approach to the possibilities of different instruments. When Berio wrote the piece for guitar, he said that he conceived it as the convergence of two different traditions: the European tradition that evolved from ancient fretted instruments and early guitars, and the flamenco instrumental tradition of Spain. *Sequenza XI* for guitar is a very successful mix of the techniques used in these two traditions. One of the purposes of the work, however, is to show that the contemporary practice of guitarists today embraces much more than these two traditions. We also find, as I have mentioned, many techniques derived from Latin American traditions and others, such as bending the strings in the manner of Asian instruments like the *pippa* in China or sitar in India. Even some techniques from the electric guitar or steel string guitar have emigrated to the classical guitar, as for example what is called *tapping*. The main purpose of this text is to show the new palette of sounds, techniques, and approaches that the most influential contemporary composers have used over the last thirty years.

For a thorough and complete view of the techniques and possibilities of the guitar, it is important to have a historical perspective. It is easier to understand the techniques if we relate them to the music that created them, and if we understand them as an evolution of the instrument as it has addressed the needs of the music of each historical period.

## **Chapter 1**

### **A historical overview of the development of the guitar technique**

#### **1.1 The guitar elders: music for lute and vihuela**

The modern guitar inherits more than three centuries of musical and instrumental development, from the early Renaissance to the early Romantic period at the beginning of the nineteenth century. The first and most important tradition of the modern guitar originated with the old fretted instruments of Europe. The greatest achievement of the old masters who wrote for these instruments was to write polyphonic music for the lute and the vihuela: from two-voice counterpoint to four-voice chromatic fantasies. This was the greatest goal of music during the Renaissance and Baroque periods, masterfully achieved by composers like Luis de Narváez, Miguel de Fuenllana, and Luis de Milán in Spain, John Dowland in England, and later Silvius Leopold Weiss in Germany, to mention just a few of the leading names. In fact, the 1500s were the period when the ancestors of the guitar had the strongest presence in musical life. This presence continued to be strong in the early 1600s but began to decline at the end of that century. By 1750, these instruments were virtually out of use.

Achieving polyphony was probably the most remarkable feat but certainly not the only one. They were also among the first to apply the concept of chords to accompany a melody. The ancient guitarists were early users of functional chords:



fixed positions with tonal functions to give freedom to the melody line. Within this practice different ways of playing these chords was found, creating many styles of performance by the different ways of playing chords, for example, the *style brisé* (French for "broken style", a term for the broken, arpeggiated texture in instrumental music). Luis de Milán (born in Valencia) explained the best way to accompany different voices in a treatise published in 1547. The practice of the *basso continuo* with the lute and the theorbo was a high point of this performance practice in baroque times.

One important aspect to consider is that all the music written for the old fretted instruments was scored by means of a tablature. Regardless of the musical intent or performing style, when it came to writing down music for the instrument, composers were always thinking about finger positions on the fretboard. This concept of writing for the instrument with the positions in mind is something that still remains relevant in composing even today.

Another important musical form was the set of variations, which implemented increasingly sophisticated ways of moving from one position to another, using different kind of scales and ornaments. The set of variations was known in Spain by the name of *diferencias*. The way that these variations were composed required a new level of performing skills. Fast scales were played using a technique called *figueta* which consists of alternating the thumb and the index or middle finger (a technique still in use today). The *Tratado de glosas* (Treatise of Variations, 1553) by Diego Ortiz reveals a highly developed school of virtuosic

performance by vihuela players. These composer-performers were able to play chords with up to four notes in all their variations (blocked, broken and arpeggiated), as well as counterpoint of up to four voices and various virtuosic figurations. They were the avant-garde musicians of their time, and what they achieved was relevant to the evolution of music in general. Together with early keyboard players, they were the first composers to write music for a solo instrument. They were also the first to develop virtuosic techniques; indeed, these musicians may be said to have created the notion of a virtuoso soloist. Famous all over Europe, they played at the finest “venues” of the time.

There are many factors that led to the extinction of the “ancestors” of the guitar: too many strings to tune on the lute, too many classes and types of lutes and theorbos, and various musical changes of the time, including the disappearance of *basso continuo* in ensemble play, the standardization of the musical ensembles, the lack of room for instruments scored on a tablature, and the low sound volume.

## **1.2 Virtuoso music for six strings**

The transition from the old instruments to the guitar took place at a time when all the instruments were undergoing profound changes. The harpsichord fell out of use, stringed instruments changed their size and the form of their bows, wind instruments added more keys, and there were even changes in the materials out of which instruments were made (the traverse flute, for example, went from wood to

metal). It was in the midst of all these transformations that the early guitar appeared.

The guitar was the heir of a three-century-old instrumental tradition and became the natural descendant and successor of the lute and vihuela. The music of the late 1700s, however, would evolve in a way that would restrict the old guitar from playing a more prominent role in the music of that time. There were many great guitar performers in the early nineteenth century; Fernando Sor in Spain and Mauro Giuliani in Italy are at the top of a not-so-short list. It is documented that Giuliani performed with great success in Vienna at the time and made a deep impression on Beethoven at one of those concerts. There are even musicologists who claim that an unfinished manuscript attributed to Beethoven was an unsuccessful attempt to write a guitar piece for Giuliani. Nevertheless, it remains undisputable is that, from the early 1800s and through the rest of the nineteenth century, no major composer wrote anything for the guitar.

Nineteenth century guitar music was, however, successful in short forms. Like the music for ancient guitars, the most significant repertoire is that of dances, themes and variations, fantasies, capriccios, and various short virtuosic pieces. As in Paganini's famous violin pieces, the guitar repertoire of the time showed off the instrumental techniques of playing very fast scales, arpeggios, parallel intervallic sequences (octave, thirds, etc.), trills, and left-hand ornaments.

The larger forms had a more difficult time of it. Many sonatas were written by nineteenth-century guitarist-composers, but they are usually extremely simple or merely incomplete in a strict formal sense. Why then did the most important composers of the time not even write for the guitar?

I think that the answer to that question may give us a better understanding of the harmonic nature of the instrument, and explain why the guitar lost its formerly prominent position in the music of this period.

Once the tonal system was fully established and the tuning standardized, music started moving in a direction where more and more distant tonalities (keys) would be covered in just one piece. This was extremely bad news for the guitar. The sonata form already required a complex harmonic path, which would go further and further as sonata form evolved. It is not possible to play freely in every key on the guitar. Those keys that do not use open strings like e-flat or b-flat are extremely difficult to play and also less sonorous. There were no problems with keys in the case of the short forms of the baroque period, but even then the number of keys from which to choose was limited in the case of the lute. It still worked somewhat in early sonata form, but as things moved toward the romantic period and chromatic harmonies, the instrument became obsolete in terms of the higher goals of music of the time.

There were still some important guitar performers until the mid-1800s, but in second half of the century, at the peak of chromaticism, guitarists became like lute players one century before virtually "extinct." The word extinct means in this case,

gone from the concert music circles, in popular music, the guitar has been always present.

### **1.3 Late nineteenth century and beginning of the twentieth**

Francisco Tarrega (Spain, 1852–1909) was the only important guitarist-composer who flourished in the late-nineteenth century. Well-known as a performer, he was also a famous teacher. His best students—Emilio Pujol and Miguel Llobet—were the founders of the guitar school in the twentieth century. Tarrega’s music is simple in style and form, but has very inspired melodies with a romantic spirit.

The composer/performer relationship has changed over time. In the Renaissance, every great composer was also a great performer. Slowly but gradually this began to change, as music became increasingly complex and composers faced the challenge of writing for longer time spans and larger and more varied groups of instruments. By the beginning of the twentieth century this division had become very evident, and a new relationship between composers and performers would arise as one of the characteristics of the new music in this period. This fundamental change opened up a new world of possibilities for the guitar.

Impressionist composers such as Debussy and Ravel began writing with non-functional chords and exotic scales, generally becoming more interested in sound color and mood than in the functionality of the system. When their explorations took them away from the advanced tonal system, the guitar immediately became an

option again. The reason why Debussy and Ravel did not in fact write for the guitar was mostly owing to the fact that there were few sufficiently competent guitarists in Paris at the time. The first important piece of the early 1900s came from an impressionist composer in Spain, Manuel de Falla (1876–1946). The aforementioned new musical *needs*, plus the trend in Europe towards nationalistic music, led Falla to write the composition of *Omaggio per le tombe di Claude Debussy*. Written in 1920 for the guitarist Miguel Llobet, it marked a turning point; and ushered in a new renaissance for the instrument. Other small pieces by Roussel, by other impressionist composers, and by Poulenc were soon added to the repertoire, but the real breakthrough came in 1939 with the *Concierto de Aranjuez* for guitar and orchestra by Joaquín Rodrigo (1901–1999). Also of great significance was the collaboration of Andrés Segovia with contemporary composers.

The *Concierto de Aranjuez* had a significant impact on the musical community. It was the first romantic concerto for the guitar. Written in the instrument's most comfortable key, D major, it is very simple in terms of form, but highly successful in handling the relation between the guitar and the orchestra. It also captures the Spanish style and spirit, with some very beautiful romantic melodies. It was probably the first instance of a guitar playing with a full wind section: both woodwinds and brass. On a technical level, it is a tour de force of three basic techniques: scales, arpeggios, and chord strumming. What Rodrigo demanded was a series of very rapid transitions from one technique to another, with demanding left hand positions and virtuosic speed. I believe that this piece set a new

standard in technical performance. Many other guitar concertos followed the *Aranjuez*.

Andrés Segovia's work represents another significant moment in the instrument's history. His skills with the instrument may not have been as great as his legend claims, but he was without a doubt a visionary. He created the profile of the modern guitarist by the way he framed the instrument's repertoire. He was the first guitarist to make transcriptions of vihuela and lute music and the first to play Bach on the guitar. He also revived the classical repertoire of Fernando Sor, Giuliani, Carulli, and others. He made marvelous transcriptions of Spanish piano music by Albéniz and Granados. Above all, he commissioned works from many composers, thereby promoting a wide range of new music. Other guitarists and younger generations followed his example, and the guitar repertoire grew exponentially.

Already in 1925, and without any Spanish guitarist involved, Anton Webern had written his marvelous *Drei Lieder*, op. 18 for soprano, e-flat clarinet, and guitar. This succinctly finished work has achieved the status of a "classic." The composer was so faithful to the new twelve-tone system he was exploring that his works tended to be very short, almost miniatures. In Webern's attempt to get away from consonant, symmetrical music, these pieces are dissonant, with irregular phrases, and very rich in texture and expression.

## 1.4 The last 60 years

The 1950s brought many great new pieces for the guitar, alone or in ensembles, including *Le marteau sans maître* by Pierre Boulez. This is another important turning point for the guitar. Written in 1955, a sextet for voice, viola, alto flute, vibraphone, and marimba, it has become a classic of its time. It is a marvelous set of songs with a unique instrumentation. The guitar part is conceived with an understanding of the instrument's two natures: first as a plucked percussion instrument and also as a resonating source of chords. The composer's approach in this piece highlights the guitar's capacity for rich and variable articulations of sounds. The advanced serialism of the composition includes timbre as a serial pattern, so instruments rich in articulation of sound are required. As guitar repertoire, the piece is novel owing not only to its compositional approach, but also to the fact that allowed the instrument to work in a chamber music ensemble, in a context totally new until then.

Leo Brouwer has also made a substantial contribution to the development of the guitar. As a guitarist he has collaborated with composers, commissioning, for example, the chamber opera *El Cimarrón* by Hans Werner Henze. He has also brought new approaches to the interpretation of early music. But his contributions as a composer have been particularly decisive. He has created a vast body of works for the guitar, incorporating into the repertoire elements such as open forms, complex rhythms, and the aleatoric notation associated with Lutosławski. In general, he brought the guitar's repertoire up to date in the 1960s and 1970s in



terms of notation and esthetic. Brouwer took from Villa-Lobos the idea of moving chords on the fretboard with the same position. He discovered innovative techniques by combining irregular patterns in the right hand with slurs in the left hand. He has also imported many techniques from different folk music styles in Latin America, including the initial idea of the guitar as a *drum*.

In 1977 two major works were written for the guitar: *Salut für Caldwell* by Helmut Lachenmann and *Tellur* by Tristan Murail. Both works are considered to be among the finest examples of their respective composers' works.

*Salut für Caldwell* is a guitar duo written from beginning to end with unconventional techniques. Not even the position of the guitars is the conventional one. Both guitars lie on the laps of the guitarists, facing upwards. The musicians play with plectrums and percussion, and have very active voice parts. Several kind of glissandos, the use of the slide bar, string bends, and chord strumming make for a rich and complex universe of timbres. The composer is famous for his music that brings unconventional sounds and noises out of the instrument. He found in the guitar the means to create one of his most significant pieces.

Tristan Murail's *Tellur* is one of the most important works for the guitar written in the late twentieth century. It is the first guitar piece of the Western classical music tradition written with actual flamenco techniques. Strange as it may seem, since most of the repertoire originated in Spain, there were no actual flamenco techniques in the entire classical guitar repertoire until 1977. Although there was the *Concierto de Aranjuez* and all the Spanish music by Moreno Torroba

and Turina, including even transcriptions of Granados and Albéniz, there were no real flamenco techniques. The rhythmic gestures and loud chords were written just as on the piano: the pitches and the rhythm were notated. There was a simple understanding of strumming techniques and they were done just in a simple movement up and down. Real rasgueado was not needed until musical developments led composers onto a search for sound transformations, textures, timbres, and physical sound qualities. In *Tellur*, many techniques for producing continuous sound were required. The piece uses the fundamental right-hand techniques of flamenco: basic rasgueado, round rasgueado, *dedillo*, and thumb rasgueado.

Luciano Berio took one step further in his *Sequenza XI* for guitar. Not only did he incorporate all the traditional western techniques and the basic flamenco rasgueados, but he also glimpsed the possibility of using rasgueado techniques not only as tremolos and continuous sounds but as rhythms. This stimulated explorations that have produced an interesting result: the inverse rasgueado. (There is a detailed explanation of this technique in the next section.)

The rasgueado technique consists basically of the right hand producing a sound in an outward movement. All Western technique is based on the action of the fingers when the active movement goes from the outside to the inside of the hand. Arpeggios, scales, and tremolos are all like this. The rasgueados explore many combinations and possibilities when the active movement of the hand is outwards. Murail's *Tellur* was first played by a flamenco guitarist (Rafael Andia), but it took

more than ten years for a classical guitarist to be able to play it. Music such as this has forced classically-trained guitarists to embrace idiomatic flamenco techniques. A guitarist nowadays who wants to master the modern repertoire must be fluent in these performance traditions.

These two ways of playing are the core of guitar technique today. They are at the core because they are the most sophisticated techniques and belong to traditions that have evolved through many years. They take years for a musician to develop. There are other techniques that require some training, but with the core technique in place, these should take less time to be incorporated, and some tricks can always be taken from different sources.

One thing that is important to understand is the *poly-articulative* nature of the contemporary guitar. The palette of sounds possessed by the modern guitar is much larger than one hundred years ago, when composers first began to be interested in the instrument. The musical *needs* of the twentieth century have found a good medium of expression in the guitar. But they have also caused a transformation in the technique of the instrument, by incorporating flamenco, Latin-American techniques, features from rock and jazz music, as well as from Western culture in general, and techniques from the sitar, the *pippa*. and other Asian instruments.

The twentieth century changed the history of instruments like the guitar, the double bass, and the percussion family. Historically, the parameters of timbre were emancipated from the mere contrast of bright and dark (*ciaro/osbcuro*) within one

instrument, as was the case at the beginning of the 1900s, to their playing a primary role in the structure of music. What all the aforementioned instruments have in common is that they are rich in timbres.

Electronic music has also been a source of new sounds, and this has had an influence on the performance practice. Acoustic instruments now coexist with electronic sounds, having been forced, in a way, into *speaking computer language*. The modern programs used by composers to make electronic music, transform the sound in various ways: filtering, synthesizing and modulating sounds. Today, the acoustic instruments, including the guitar, imitate and represent these new sounds by adapting their techniques into this new esthetic.

## Chapter 2 Guitar techniques; convergence of musical traditions

I have working with composers and performing their pieces for fifteen years. My main objective has been to help them understand the guitar, so that they can adapt their ideas to the instrument without any influence from a particular esthetic trend or idea. The best way I have found to do this is to draw up a catalog of techniques and demonstrate them in a real context, with different examples. It is important to show that a particular technique does not necessarily imply a musical idea; it is just a means.

It is also important to show concrete musical examples, because there is no place for speculation. It is not simply a catalog of effects that a particular guitarist can perform. It is a list of technical *features* that have already been used and proven functional by recognized composers.

I have found that it is more difficult for composers to understand the way the right hand works than the left hand. All the flamenco techniques incorporated into the Western tradition are for the right hand. In the pages that follow, my catalog of techniques begins with the right hand, goes on to some features for the left hand, and finally shows some examples of combinations.

It is important not only to know the techniques but also to learn the best way to notate them. There are some conventions now that govern the notation of the majority of these new techniques, but there are still some for which no conventional notation exists. It is important for composers to be as clear and coherent as possible

when writing for guitar. Good notation is essential to good music. The following examples also include a way to notate them.

The designations of the fingers of the right hand in the guitar are taken from their names in Spanish:

p (*pulgar*) = thumb

i (*índice*) = index

m (*medio*) = middle finger

a (*anular*) = ring finger

e (*meñique*) = little finger

The use of the little finger (e) is exclusively for the flamenco techniques. Traditional and other techniques never use the little finger.

## 2.1 The Flamenco

### Basic rasgueado (track 01)

e a m i

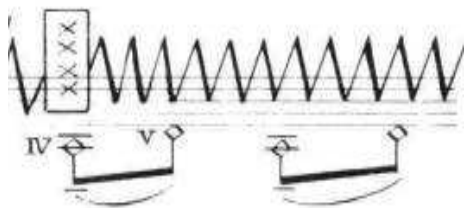
The basic rasgueado is the outward movement of fingers e, a, m, i, in this order and in a repetitive pattern. It works like a tremolo and is preferably used with few strings, say, three or four.

This example by Tristan Murail is from the opening of the piece *Tellur*.

This basic rasgueado is very much used in the flamenco as a grace note or upbeat gesture to an important chord. It is commonly used as an ornament, but also in a continuous movement.

### Basic rasgueado with thumb (track 02)

The basic rasgueado uses only the fingers e, a, m, i, so the thumb is free. It is possible to play with the thumb while the other fingers play the tremolo. This opens up a lot of possibilities for many combinations. Here is another example from Murail:



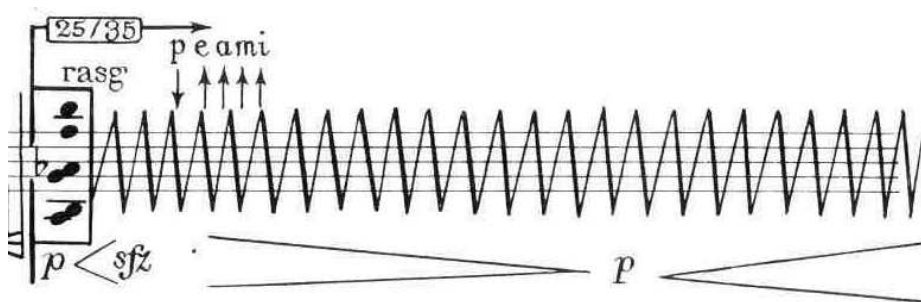
The X marks the strings where the basic rasgueado is being played, with the thumb placed on a given bass.

### Round Rasgueado (track 03)

e a m i p

This is the king of flamenco techniques. It produces the loudest of all chord strummings on the guitar. It is a tremolo, now played with all the fingers, including the thumb. It is an outward movement that uses the wrist to facilitate a round movement of the hand. It can be performed on just three strings (lower and upper sections of the strings), but it is generally used with the six strings.

First example: *Tellur*, Tristan Murail





The best way to notate this technique is the way that Berio has done in his *Sequenza*. He writes the chord, the length of the chord, and at top a mark that notates the fast movement of the rasgueado.

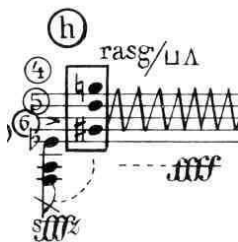


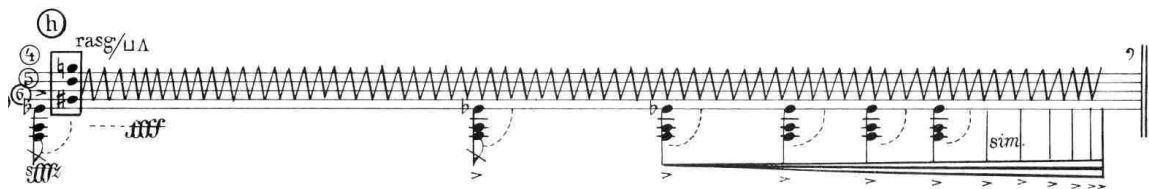
(Track 04)

**(Track 05)** Round Rasgueado in Chamber Concerto. A Fuoco, Luca Francesconi

### Simple up-and-down stroke (Track 06)

This is very basic up-and-down strumming, of the kind used by classical guitarists before flamenco techniques were incorporated. It is important to differentiate this from other strummings and rasgueados, because the idea is to create a complete palette of textures with these techniques. Here another example of Tristan Murail. **(Track 6)**





### (Track 06)

In one position using only the lower strings, the rasgueado moves only up and down and the left hand position leaves the open strings to resonate. I like the fact that for this technique the composer uses the bow notation for up and down.

### Index tremolo, *dedillo* (track 07)

A smaller version of the up-and-down strumming is the index tremolo. A fast movement up and down with the index finger (which can also be done by the middle finger) can create a tremolo for from one to three strings. Traditionally, this technique has been used to prolong melody lines in the manner of a mandolin or balalaika. Highly versatile, it can be combined and rapidly alternated with several other techniques.

Here in another example from Tristan Murail's *Tellur*:



### Thumb tremolo (Track 08)

The same technique as with the index is performed with the thumb. When the index is being used for a tremolo, the other fingers can interact playing chords or notes; likewise, when the thumb is playing, the rest of the hand can play other things. The most interesting effect, however, is when both tremolos are used at the same time.

### Simultaneous index and thumb tremolo (Track 09)

The purpose of all these techniques is to create a wide variety of strumming colors. For this one, we have a wonderful example from *Elegía* by Hebert Vázquez:

The image displays a musical score for the piece 'Elegía' by Hebert Vázquez, specifically focusing on the simultaneous index and thumb tremolo technique. The score is written for six guitar strings, labeled 1a.c. through 6a.c. The music is in 4/4 time and features a variety of dynamic markings and articulations. The upper strings (1a.c. and 2a.c.) are primarily responsible for the index tremolo, while the lower strings (3a.c., 4a.c., 5a.c., and 6a.c.) are primarily responsible for the thumb tremolo. The score includes numerous dynamic markings such as *pp*, *f*, *mf*, *p*, *mp*, and *mf*, as well as articulations like *last.*, *poco a poco*, *piente*, *p.n.*, *subito*, *seco*, *yema*, *cuasi*, and *al cero*. The piece is characterized by its intricate strumming patterns and the interplay between the two tremolos.

Each staff on this piece represents a string on the guitar. It is a piece built on tremolos. The index tremolo plays the first three strings and the thumb plays the lower three, and at certain moments they play together. It is a well-crafted *choral* for solo guitar.

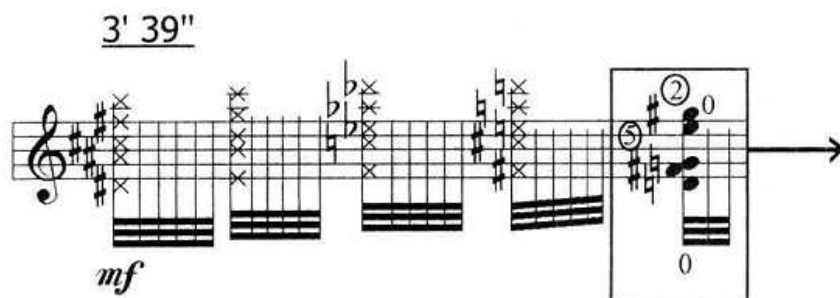
### **Inverse *rasgueados***

In the *Sequenza* by Berio, it is clearly stated that the *rasgueados* have three different presentations throughout the piece: the basic *rasgueado*, the round *rasgueado*, and some figures with precise rhythms to be played as *rasgueado*. The challenge for the guitarist is to differentiate between the usual flamenco techniques, which basically work as tremolos, and to find a way to play *rasgueados* with rhythms. Most performers solve this issue by doing the rhythmic ones with up-and-down strumming. It works musically for this piece. There has been a search among some guitarists, however, to find ways to achieve this by using flamenco fingering. Guitarists Angelo Gilardino (b. 1941 in Italy) and Magnus Andersson (b. 1956 in Sweden) have worked on the idea of using exactly the same fingerings but in an inverse way:

*Basic inverse rasgueado*                      i m a e **(Track 10)**

*Round inverse rasgueado*                      p i m a e **(Track 11)**

This enables the performer to start with a stronger finger. Starting the movement with i, or p makes the movement possible without using the wrist. When the skill is mastered, it becomes possible to play rhythms very accurately and yet to keep the particular texture that we get from this particular fingering. In order to play figures that are not written in four or five, the new movement allows the guitarist to begin from any finger, so the accent can be changed within each cycle of the moment. This provides the possibility of achieving any rhythmic figure.

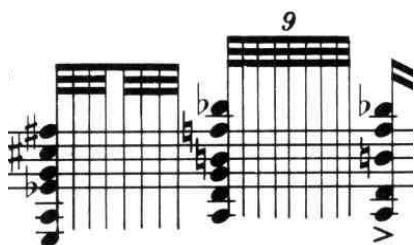


**(Track 12)**

p i m a e  
 ↓ ↑ ↑ ↑ ↑

p i m a e p i m a e p i      m a e p i m      a e p i m a      e p i m a e  
 ↓ ↑ ↑ ↑ ↑ ↓    ↑ ↑ ↑ ↑ ↓ ↑    ↑ ↑ ↑ ↓ ↑ ↑    ↑ ↑ ↓ ↑ ↑ ↑    ↑ ↓ ↑ ↑ ↑ ↑  
 ---6-----      -----6-----      -----6-----      -----6-----

The possibility of making real rhythms does not exclude repetitive patterns. Precise and concise figures can be performed.

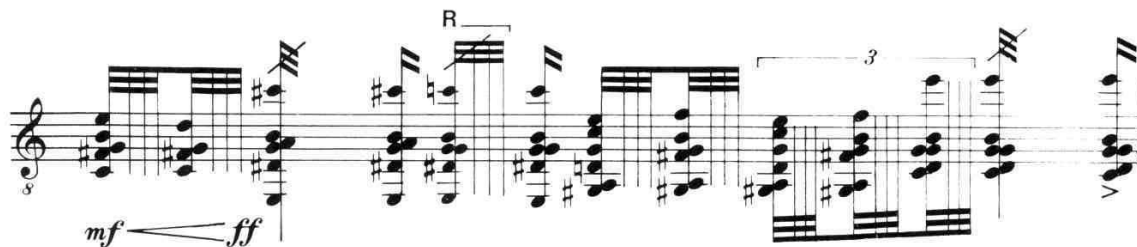


**(Track 13)**

The fact that the thumb is the link between the two techniques makes it possible to switch between the inverse movements very rapidly.

**(Track 14)**

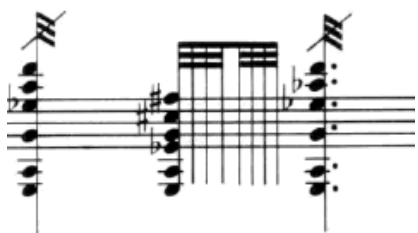




imae imae                      peami p eami p                      pima pima e                      p eamip  
 ↑↑↑↑ ↑↑↑↑                      ↓↑↑↑↑ ↓ ↑↑↑↑ ↓                      ↓↑↑↑ ↓↑↑↑↑                      ↓↑↑↑↑ ↓

In spite of the difficulty, this level of complexity *can* be achieved. It creates a new realm of textures through the rasgueados and the changes from one technique to another, which can take place within just one phrase.

Mixing round rasgueado with basic inverse rasgueado



**(Track 15)**

**(Track 16)** Inverse Basic Rasgueado in guitar concerto. Hebert Vazquez, Guitar Concerto N. 1.

Two years ago, in one of the courses at the Music Department, I was introduced to Chinese *pippa* playing for the first time. It was in Lei Liang's course on Chinese art. I had always thought that the guitar was the only instrument that could play rasgueados, not only I found the exact version of the flamenco ones, but also the inverse rasgueados that I have described. My first reaction was of great surprise

and fascination. As far as rasgueado was concerned, *I had been searching for hot water, when it had already been boiling long before in China.* It was amazing to discover the notation of rasgueado for *pippa*: round rasgueado with three, four, or five fingers, normal and inverse rasgueado, everything. I have not yet seen a piece for classical guitar with rasgueado inspired by *pippa* playing, so the discovery of this common ground vindicates my explorations in this field.

This inverse way of playing the rasgueado is a recent development and very few people can do it. But I have now discovered the rasgueado skills of *pippa* players in China (in such a different context!). They can perform all sorts of strumming techniques, including rapid changes in the movement of the rasgueado. They play both inversions exactly as I have described. This discovery convinced me that the exploration of this technique in western musical culture is only just beginning,

### **Flamenco percussion (Track 17)**

Every flamenco guitar has a plastic plate just below the sound hole. Its purpose is to allow the guitarist to make high-pitched percussion sounds while playing rasgueados that alternate at a very fast speed. This is only possible with the plate, because the percussion can be done with the nail, thus allowing the movement of the finger that is identical to the rasgueado; the percussion becomes a sort of lower rasgueado on the guitar. This percussion is usually used between chords.

In the example by Juan Trigos we can see the fast changes between the chords and the percussion. This is a very flamenco-inspired gesture.



(Track 17)

In another context, we find the same type of percussive action in this example by Gabriela Ortiz.



(Track 18)

(Track 19) Flamenco Percussion in context; Juan Trigos Guitar Concerto

## 2.2 Latin-American

### Latin-American *rasgueado* (Track 20)

The Latin-American *rasgueado* is very different from those used in flamenco. It developed within a completely different tradition. It is much simpler, but it is very versatile and colorful. Again, it is a mix of percussion and chord strumming.



Although there are many variations, there is a basic figure and unit for this technique.

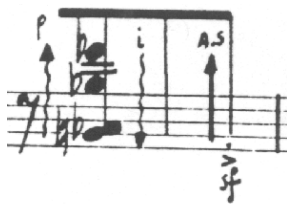
↑ ↓ X

p i (hand/fist)

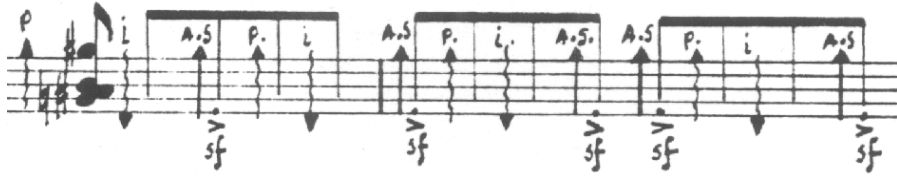
The thumb plays downwards from the low strings to the high. The index or the middle finger play upwards and the hand performs a muted strike on the strings to create a percussive effect. In some styles the percussion is generated with the palm of the hand, or even with the fist. There is a slight difference in timbre. The fist works better when the passage requires many changes of technique.

There is no standard notation for Latin-American rasgueado. Composers generally use a percussion symbol, which varies, however, from composer to composer. It is important to maintain the basic pattern. In the same way that the flamenco rasgueado patterns can be arranged into different rhythms, the Latin-American pattern can be used in different contexts.

Juan Trigos, *Ricercare VI* (1999)

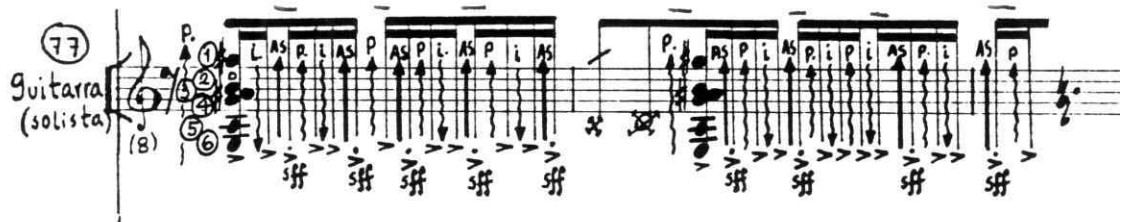


(Track 20)



The “A. S.” in this example stands for the percussive notation. I do not consider this a satisfactory solution, although I do like the accent with the *sforzando* marking.

The same pattern in a faster and more complex situation:



(Track 21)

### 2.3 Asian Techniques

Diaspora is an ever more important word: it has acquired particular relevance since I arrived at UCSD. It can refer to the dispersion of knowledge, culture, style, and craft all over the world. This work is an exploration of how different performing traditions have merged with that of the classical guitar. This is clear enough in the case of flamenco and of the Latin-American tradition, since both derive from the practice of western art music culture on the same instrument. The

notion of diaspora becomes even more interesting when the western guitar acquires techniques from totally different cultures and instruments.

Many composers have borrowed or developed techniques from the Indian sitar and the Chinese *pippa*. These techniques are particularly connected with ways of playing on the strings, including different forms of vibrato and string bendings. There is also a long tradition of bending the strings in American popular music. It has been done for a long time on steel-string guitars and electric guitars, and the basic bending forms are definitively not Asian in nature: *simple upward bending*, *reverse bending*, and *up-and-down bending* by a half-tone or full tone. This is common practice for rock, blues, jazz, and steel-string folk guitarists.

The Asian techniques work with the same basics but with a wider variety of possibilities. They are more complex and embedded in a more profound and structural context. We find microtonal bendings, melodies created through bending the strings, three-step bendings, and various combinations with different types of vibrato (through different shapes of bending). Toru Takemitsu, Lou Harrison, Lei Liang, and Toshio Hosokawa are among the many composers who have brought these techniques to the western classical guitar.

For the bending examples I have used the piece *Journey into Desire* by Lei Liang. It uses one of the most diverse and complex set of bendings. Its score also illustrates the best way to notate the bendings.

### **Basic upward bending (Track 22)**

This is the simplest kind. It can go a quartertone, halftone, or full tone up.



### Reverse Bend (Track 23)

It begins in the high bended note, and it moves to the normal position of the string. It can also be of a  $\frac{1}{4}$  tone,  $\frac{1}{2}$  tone, or a full tone.



### Reverse bending (Track 23)

This begins on the high bended note and moves to the normal position of the string, moving down by a quartertone, halftone, or full tone.

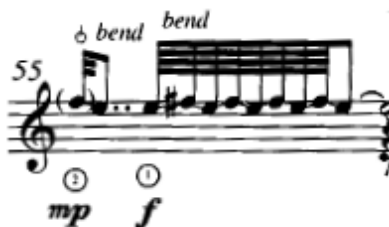


### Up-and-down bending (Track 24)

This starts from the basic note, moves up, and returns to the original position. In the following examples we can see how the same idea becomes more complex in the course of the piece. There is also a transition between the bending and a horizontal vibrato.



(Track 25)



### Complex bending I

Here is a first example of the more complex bendings. We do not find this in any rock or popular music technique. It is a combination of a reverse bending with vibrato ranging from a half-tone to a full tone. A melody of tone and texture is created by bending the string.



(Track 26)

### Complex bending II

Another melodic bending, now on the sixth string.



(Track 27)

### Complex bending III (three-step bending)

This is the most complicated and ambitious bending technique in guitar practice. It requires one string to hit three different pitches in one bending (the three steps). It is also melodic in nature, and in this particular example it evokes the sound of a person sobbing. Most of the bendings in this piece begin with a Bartok pizzicato, though this is by no means required for the bending itself.



(Track 28)

(Track 29) Horizontal vibrato (classic)

(Track 30) Vertical vibrato

## 2.4 American Popular Music

The exchanges between popular and “art” music have been a constant throughout history. In North America there has been constant interchange between the steel-string, electric, and acoustic guitars. We have already mentioned bendings, but there is also the use of different objects to produce sound, particularly what is called a “slide,” a cylinder of metal or glass that produces a gliding effect as it moves over the strings. A slide is now a regular part of the classical guitarist’s gear. This is not strictly speaking a technique, but simply a feature that is commonly used nowadays.

There is, however, a genuine technique that has emerged from the practice of the steel-string or electric guitar, called *hammering* or *tapping*. In classical guitar technique, tapping has not yet achieved the high level mastered by some electric guitarists, but it is being widely used and composers are writing ever more challenging passages that require this technique.

### **Tapping**

Tapping is defined by the right hand playing on the fretboard, the string being set into vibration as part of the single motion of being pushed onto the fretboard. Generally, after hitting the string, the right hand finger pulls the string to articulate the next sound (a *pull-off*), making for a combination of taps, pull-offs, and left-hand slurs in a continuous pattern. These techniques have proved to be loud enough to be effective in the acoustic guitar, and have been used by many

composers, including Berio and Hebert Vázquez. Usually tapping is written in regular patterns, as in the example from Berio below. The pitch in the lower part of the line is the one that should be performed with the right hand. Putting it into a very contemporary context, I call this style of tapping the “Eddy Van Halen” kind.

The image shows three measures of musical notation. Each measure consists of a treble clef staff with a series of eighth notes, some with square stems, and a lower staff with notes. The first measure is marked with a piano *(p)* dynamic and includes a circled '8' and the letters 'RH'. The second measure is marked with a pianissimo *pp* dynamic. The third measure is also marked with a circled '8'. The notes in the upper staff are grouped by a slur and have a small square above them, indicating tapping. The lower staff contains notes that correspond to the tapping positions.

This creates a repetitive pattern not unlike from a tremolo. **(Track 31)**

There are other ways to incorporate tapping into a more complex context. The best way to notate it has been formulated by Mexican composer Hebert Vázquez: one staff for the right hand, one staff for the left hand, with the notes to be played by the right hand written with a square.

The image shows two staves of musical notation. The upper staff has notes with square stems, indicating tapping. The lower staff has notes with standard stems. There are circled numbers 5 and 6 next to specific notes. The dynamic marking *ff* (fortissimo) is placed below the lower staff.

**(Track 32)**



The image shows a musical score for two staves. The upper staff is for the left hand and the lower staff is for the right hand. The music is written in a key signature of one flat (B-flat) and a 2/4 time signature. The upper staff contains a melodic line with eighth and sixteenth notes, including slurs and ties. The lower staff contains a rhythmic accompaniment consisting of quarter and eighth notes, with some notes marked with a '7' indicating a tapping technique. A dynamic marking of *f* (forte) is placed below the lower staff.

The upper staff is for the left hand, the lower for the right.

**(Track 33)** Tapping in chamber music context. Cuatro Corridos, Hebert Vazquez

## Chapter 3 Extended Techniques

### 3.1 Tremolo

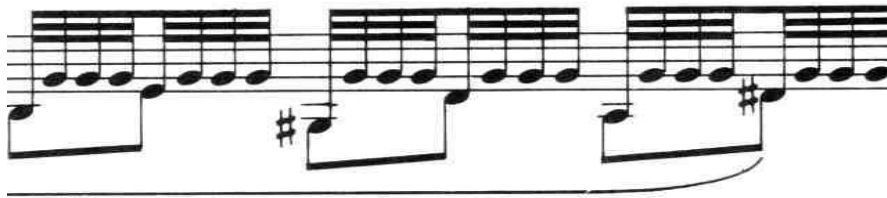
#### Simple tremolo (Track 34)

The tremolo is a very traditional technique with some modern variations. The traditional version consists of the fingers playing inward in the following pattern:

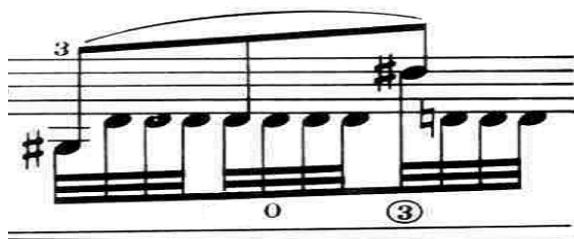
a m i  
P

The continuous repetition of the a, m, i pattern on one string allows for a more sustained melody. The free thumb can play a harmony. Many iconic works of guitar literature incorporate extensive use of tremolo.

#### Berio, *Sequenza XI* (Track 34)



In the traditional repertoire, the thumb always plays on strings lower than the tremolo line. Berio, in his *Sequenza*, proposes the possibility of the thumb playing *over* the tremolo line: a simple little trick that was never used before.



(Track 35)

### Advanced tremolo (Track 36)

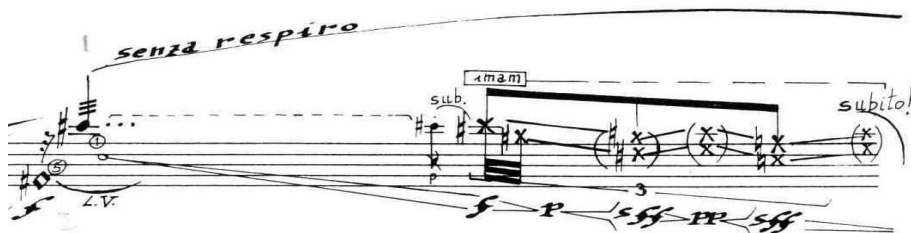
A continuous tremolo can be achieved in a round pattern with the following combinations of fingers:

i m a m    or    a m i a

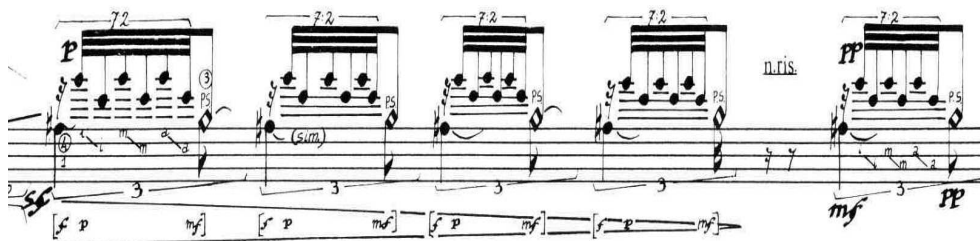
It is also possible to do this on one, two, or even three strings at the same time, particularly the first three strings. These techniques have been put to interesting uses in the repertoire.

### Study no. 1, by Maurizio Pisati: tremolo on two strings. (Track 37)

### Without stop: tremolo on one and two strings. (Track 38)



Tremolo on two strings in a fixed position. (Track 39)



### 3.2 Percussion on the guitar

The guitar is a fantastic drum. Using its sound box and its whole body, many percussive sounds can be made: from low or high pitches to strange sounds created by rubbing and scratching on the strings. It has been used as a drum in many traditions. In fact, the notion of the guitar as a stringed percussion instrument has been widely prevalent in both pop and other kinds of contemporary music.

There is a piece by Scelsi entitled *Ko-Tha* in which he uses the guitar completely as a drum. The fingers of the left hand never play pitches on the fretboard, which is even laid flat as a lap drum. This piece is often performed by

percussionists and the scoring is exactly like that used for percussion instruments. There is a staff on which a line represents a particular sound in the body of the guitar.

**(Track 40)** Percussion Map on the guitar

**(Track 41)** Percussion on the guitar advanced example

As with any percussion set, the composer must be aware of the *geography* of the set, in this case the guitar as a whole. The composer must understand what sounds will be performed with the left hand and what sounds with the right. But the real challenge comes when a faster alternation of percussive sounds is required, especially if chords and standard string plucking is also required. Franco Donatoni, in his *Algo* for solo guitar, has found an elegant solution. **(Track 42)**



Each symbol represents a given point in the body of the guitar required to produce a percussive sound. In order to return the hands to a normal position or to prepare them to reach a striking point away from the strings, Donatoni has two solutions. The left hand can play a pattern of slurs that will end in an open string,

thus giving the right hand time to prepare. The other solution is for the left hand to play without right-hand articulation (hammer-on), in order to allow a moment for the right hand to return to position. Donatoni writes an “S” (for *sinistra*, ‘left’) before the note that should be hammered on.

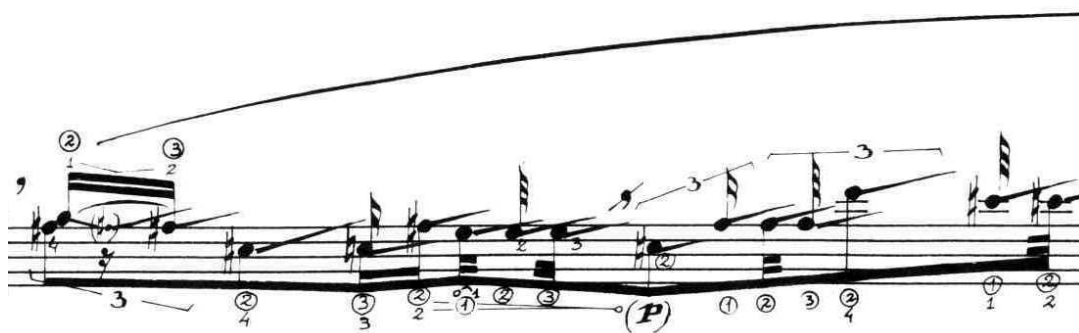
The result is a little choreography on the body of the guitar. When it is done well, the combinations and possibilities are infinite.

**(Track 43)** Percussion on the guitar in chamber music. Cuatro Corridos.

### 3.3 Glissandi (Track 44)

The glissando is a traditional resource that has lent itself to many interesting new approaches in the modern repertoire. Maurizio Pisati gives us an idea of using very fast glissandos on alternating strings. The effect is particularly special because the glissando always starts from the same note that is later re-articulated with another glissando in another string. This makes a gesture with a lot of movement and energy, but which always moves around the same note.

This idea takes advantage of the many unisons that can be found on the fretboard of the guitar. **(Track 45)**



### (Track 46)

Glissandos can start from a real pitch and end freely, or vice versa: they can start from an uncertain pitch and end on a very precise one. There can be glissandos on anywhere from one to six strings, though for agility and speed, the fewer the strings, the better.

### Track (47) Glissando with slide

### 3.4 Bartok pizzicato and Bartók pizz sequence

The Bartok pizzicato is a very common effect nowadays. It is created when the right hand pulls the string upwards and snaps it back onto the fretboard. It produces a loud percussive sound with pitch.

A Bartók pizz sequence is when the right hand snap the strings while the left hand produces a continuous passage through slurs. This makes the guitar sound like an electric bass; it is a very sonorous technique.

### Hebert Vazquez, Cuatro Corridos (Track 48)

Two staves of musical notation. The top staff shows a sequence of chords with fingerings 4, 3, and 4. The bottom staff shows a melodic line with a trill, fingerings 4 and 5, and the instruction *molto vibr.*

### 3.5 Combined Techniques

- Juan Trigos, *Ricercare VI* (Track 49)

Musical notation for Juan Trigos, *Ricercare VI*. The score features complex textures with markings such as *i. a. m. mg. p.*, *sempre*, *simile*, and *T.D.* (Tremolo). Fingerings 6, 5, and 6 are indicated.

Inverse *rasgueado*, flamenco percussion, glissando and Bartók pizz.

- Hebert Vázquez, *Guitar Concerto* (Track 50)

Musical notation for Hebert Vázquez, *Guitar Concerto*. The score shows complex textures with markings such as *m.s.* (messa di voce) and *sim.* (simile). Fingerings 2, 4, and 5 are indicated.



Latin American rasgueado, flamenco inverse rasgueado, and tapping.

The image shows a musical score for guitar, measures 102 through 105. The score is written in two staves: a treble clef staff and a bass clef staff. Measure 102 is in 3/8 time and features a melody in the treble staff with a phrasing accent (φ) and a circled 4. The bass staff has a bass line with a circled 3. Measure 103 is in 3/8 time and features a complex texture with chords in the treble staff, some with upward arrows, and a bass line with 'm.s.' and 'x' marks. Measure 104 is in 3/8 time and features a melody in the treble staff with a circled 4 and a bass line with a circled 3. Measure 105 is in 4/4 time and features a complex texture with chords in the treble staff, some with upward arrows, and a bass line with 'gliss.', 'm.s.', a circled 4, and a circled 5. The score includes various musical notations such as accents, phrasing marks, and fingerings.

Bartók pizz sequence, Latin American *rasgueado*, glissando, tapping, percussion.

## Chapter 4 Harmony and Harmonics

The guitar has a distinctive way of expressing harmony. It has a unique set of chord inversions and, among the stringed instruments, it is the one that can most easily change the tuning of the strings (scordatura).

In my experience, composers who are more “piano dependent” when composing have greater problems writing for the guitar. This is because the nature of the chord inversions are completely different on the piano and the guitar. If chords are taken from keyboard positions into the guitar, it is very likely that they won’t work. It is better to work directly with the instrument or with a diagram of the fret board. It is important to remember that the constant use of open strings is crucial to the proper “ringing” of the instrument, in terms of harmonics. This is very easy to demonstrate. If we examine the most successful guitar pieces of the nineteenth century and earlier, we see that they are all written in keys that would use a lot of open strings. This is why the keys of D, E, A, G, and C are very common, and why there are no pieces in sharp or flat keys. As mentioned above, I consider this the most important reason why the guitar was of so little interest to the most innovative nineteenth-century composers.

Although the guitar is not the best instrument for music with a wide-ranging tonality, it does have unique characteristics in terms of its harmonic possibilities. As we have seen, it uses a unique set of chord inversions. The very ancient method of writing chords, whereby the lower strings play higher pitches and the higher strings play lower pitches (known as the *campanella* effect), was widely used in the sixteenth century. The guitar is also full of unisons. It is possible to play chords with up to five notes in unison. There are many pieces, as for example the *Alborada* of Luca Francesconi, that build an astonishing harmonic framework out of chords using unisons. It is also possible to construct chords that mix harmonics and real notes, thereby creating interesting colors and textures. A good example of this is the guitar music of Hilda Paredes.

#### 4.1 Scordatura

Every professional guitarist is able to play with many different tunings. There are at least three tunings that are common to the basic guitar repertoire. Going from low to high (that is, from the sixth string to the first), this is the standard tuning:

E, A, D, G, B, E.

Also very common are:

D, A, D, G, B, E;

E, A, D, F#, B, E; and

E, A, D, F3, B, D.

In *Tellur*, by Tristan Murail, we find the tuning F, A, E, G, B, E, which during the performance of the piece must change to C#, A, E, G, B, E.

It is possible to find a wide range of different examples of scordatura. It is essentially a matter of practicality and coherence. It is possible to change the tuning of each string by one full tone, or even by two, in the case of the lower strings. In Brian Ferneyhough's *no time (at all)*, written for two guitars, one of the guitars is tuned a quartertone lower than the other.

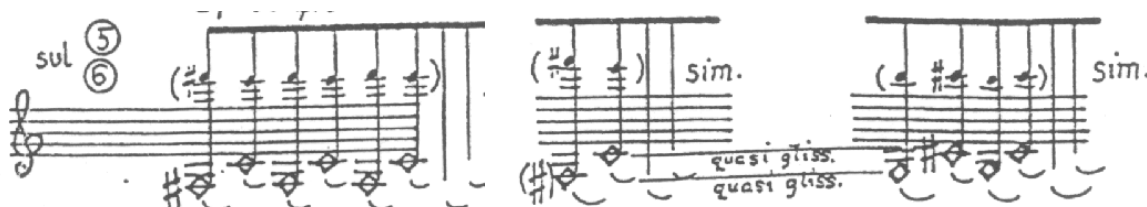
Normally, the composer writes real pitches in the score and the guitarist figures out the different positions, but sometimes the scordatura can be extremely complex, with micr- intervals and strange pitches. In this case the piece should be written as it would be played, with normal sounds and notation, indicating only the position of the notes on some sort of score/tablatore.

Some general considerations: Scordatura involving only one or two strings, with the difference of a halftone or full tone, should pose no problem to any professional guitarist. The more strings there are with tuning changes, however, and the more radical the pitches are, the more time it will take for the piece to be learned. Complicated scordatura can be more difficult to fit into a program, since performers are not always able to have more than one instrument at the concert. Some tunings might be impossible to adjust during a concert. It is more about practicality, therefore, than about possibility. Under the right conditions, I have been able to play a piece with six sixth strings, or in other words six bass strings on one guitar.

### Natural harmonics (Track 51)

The guitar is very rich in the production of harmonics. The strings are sufficiently long to be able to produce very high and uncommon harmonics, particularly in the upper section of the fretboard. The best way to notate them is to write the node, the real pitch, the string, and the fret. Then there will be no doubt as to which harmonic is required. Between the second and fifth frets, there is more than one harmonic per fret.

### Uros Rojko, *Passing Away on to Strings* (Track 52)



### (Track 53) Natural harmonics in uneven frets “multiphonics”

#### 4.3. Octave harmonics

The strings on the guitar have their acoustic center at the twelfth fret, there we find the octave harmonic. However, this node can be moved by pressing the first position on the fretboard, and the octave harmonic can still be produced by using a right-hand technique, with one finger placed on the node and another pulling to produce the sound. This is a classic technique for producing harmonics.

### From Benjamin Britten's *Nocturnal for Solo Guitar* (Track 54)

artificial harmonics

*pp* freely (*liberamente*)

This technique is also called artificial harmonics.

Harmonic series by string (Chart by Josel – Tsao)

String ④

4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

1 2 3

Note: concert sounding pitch

String ③

3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

1 2

String ②

2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

1

String ①

2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

1

String ②

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

String ①

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

## Chapter 5 The use of the moderns techniques in the works *Dream Mirror* and *ImAge/ImagE* by Roger Reynolds

### 5.1 The approach and the compositional process

One of the most significant opportunities UCSD has given to me is to have been able to work with composer Roger Reynolds. It is by no means common to be able to work with such an experienced and accomplished composer. It was a privilege to be in close proximity to the composition process. I can only define the experience as very enriching.

Reynolds was already acquainted with many guitar techniques, and he already had an idea of what *colors* are in the *palette* of sounds that the guitar can produce. He had already written for guitar before. The master plan was first to write two small pieces that would be part of the cycle *ImAge/ImagE*. This cycle is made up of pairs of pieces for solo instruments. Each pair explores two contrasting, but idiomatic sides of the same instrument. *A* stands for articulation, aggressive, and assertive, while *E* stands for expressive, elusive, and evocative. With the material of these pieces Reynolds would later write a larger piece for guitar and live electronics. This piece became *Dream Mirror*, for guitar and computer musician.

To begin he studied some flamenco techniques, particularly the wide range of *rasgueados* (strumming techniques). The first task was to divide and classify the techniques into two worlds: fast and aggressive, or soft and evocative.

There were other techniques that the composer was also interested in studying, particularly two usually more associated with the electric guitar: tapping and string bending. This adds complexity to the gesture and makes them particularly difficult to learn.

The piece also uses some *string bending techniques*. The bends are used in interesting combinations with *rasgueados*, particularly in the “evocative” and “expressive” sections of the music. The piece is a great mix of different techniques: from flamenco to rock, including even Renaissance lute music. At one point, Reynolds created a counterpoint passage with modern harmony but in the manner of the sixteenth-century lute players.

Since the guitar is rich in the different ways to articulate sounds, the composer took advantage of this. He took the resources, understood them, and appropriated them. I suggested working with what are called “licks” in the rock/jazz world, short, idiomatic phrases, so Reynolds started writing small contemporary licks. I would provide him with some raw material, and he would return it to me as a more fully refined product. You can see now these raw elements embedded in musical phrases in the style of the composer. The idea of writing little licks proved practical until they started to pile up. The composer would always ask if the little phrases were possible, and they usually were. But when placed together in the larger sections of the piece they became dangerously close to impossible. After some adjustments, the piece remained difficult but playable.



I just want to emphasize the beauty of this process. The performer provides a sophisticated palette of sounds. In order to meet the composer's needs, he or she also requires a comprehension of the esthetic style and language. The collaboration is not only about responding to musical requests but also about provoking them. For composers, the real alchemy of this craft resides in the transition from understanding the material to appropriating it. Once this crucial step is taken, finishing the piece is only a matter of following a map for most composers. Once the score is finished, the baton is passed, as in relay race, and now the performer has to finish the race.

In fact, however, the fun was only just beginning. The master plan involved writing a large piece with all of the material for guitar and live electronics. For years, electroacoustic music used a format whereby the electronic part was pre-recorded and reproduced during the concert. The live instrument would play over it, karaoke-like, sometimes coordinated with a stopwatch. Musicians call this a piece for instrument and "tape," since in the first pieces the electronic part was dubbed on a tape. We are now in a different era. Music programs are able to transform sounds in live situations, in as many ways as the composer can imagine. Programs like MAX msp and PD have literally transformed the music world. The programs have various applications, but in the hands (i.e. brains) of the computer musicians at UCSD they seem limitless.

In *Dream Mirror*, Roger Reynolds formulated some algorithms (behavioral patterns of the sounds) that Jaime Oliver programmed using PD. We spent many

hours in the Calit2 auditorium exploring these electronic transformations in combination with the different *licks* that had been previously written. After some time, several musical fragments were chosen to interact with certain electronic processes. Each process was given a name, and the precise moment when a particular process was to start and end was clearly indicated in the score. In this way, a larger piece with electronics was created.

The piece is written for guitar and computer musician. The electronic processes are conceived so as to have open parameters that can be controlled and changed during the live performance. For this reason, the composer decided to place the computer musician on stage, where he or she interacts with the guitar in a duo of instruments. This works amazingly well in the process of rehearsing the piece. It is like a normal rehearsal of chamber music. Communication and shared listening are needed. The electronic part can be interpreted and be different on different occasions and for different performers. The challenge here is to combine the activity and plasticity of an acoustic instrument with the realm of the computer and the manipulation of faders on a mixer. This opens up new horizons in the relationship between electronics and live instruments, a vast uncharted territory for the chamber music of the future.

*Dream Mirror* is an amazing journey of sonorities, textures, intensities, and beautiful landscapes.

Dream Mirror was first performed during my first DMA recital on January 27<sup>th</sup>, 2011. In March 11<sup>th</sup> of 2011 there was a performance at the Phillip Collection Museum in Washington D.C. This performance gave us this review by Stephen Brooks.

“Gomez opened with two Reynolds works for solo guitar that both contrasted with and complemented each other: the assertive "imAge/guitar" (full of bold, eruptive gestures) and the more delicate "image/guitar" (a ravishing piece awash in shadows and evanescent mysteries). Both pushed the guitar to a demanding virtuosic edge, but Gomez kept the effect lyrical, the thinking coherent and the poetry intact.

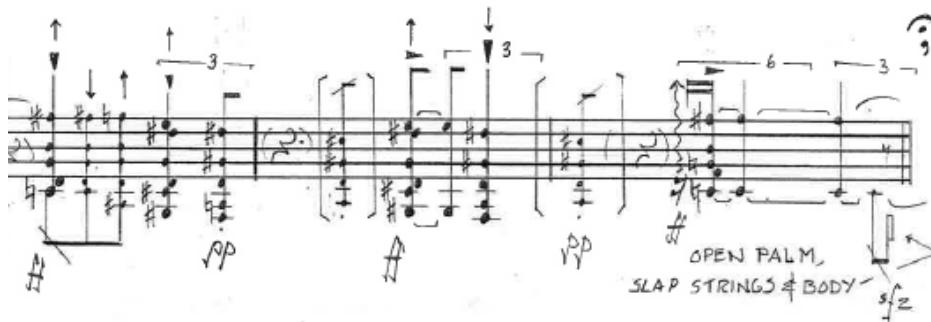
Then things got really interesting. Oliver switched on his MacBook and joined Gomez for "Dream Mirror," which took material from the previous two guitar works, transformed it and sent it out through speakers around the gallery. The effect was electrifying, as if the computer had become a sort of meta-guitar, revealing a hidden universe of ideas, dreams, possibilities and memories behind the original works.

Gomez's intimate, human-scale playing took on new depth and beauty against the otherworldly sounds Oliver was producing, and the result was a work of extraordinary lyricism: the lucid dreaming of a 21<sup>st</sup>-century poet.”

**Stephen Brooks** (*The Washington Post*)

## 5.2 The use of the different techniques

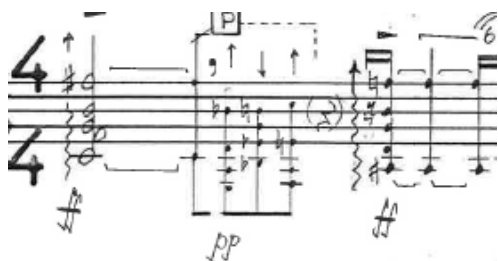
Up and down strumming, with basic Rasgueado and percussion (**Track 55**)



Example of the small phrases (licks) use as building blocks of the piece. In this particular example we find an unusual combination of scalar material with harmonics at a fast speed. **(Track 56)**

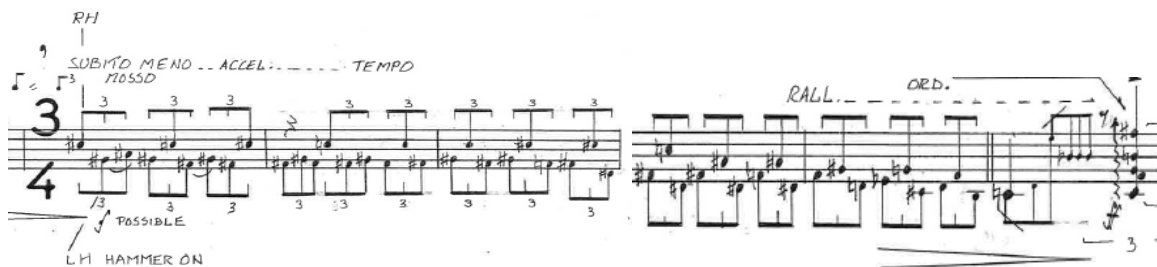


Basic rasgueado, round rasgueado and basic rasgueado **(Track 57)**



Tapping/hammering section

This is the particular way that we find tapping in the piece by Reynolds. Contrary to normal tappings, this one does not have a regular pattern. The notes with the upper stem should be played with the right hand and the lower stem with the left. **(Track 58)**



In the search for continuous rasgueado movement but with soft and piano textures, Reynolds found a variation of the index tremolo without using the fingernail thus producing a very soft tremolo. **(Track 59)**

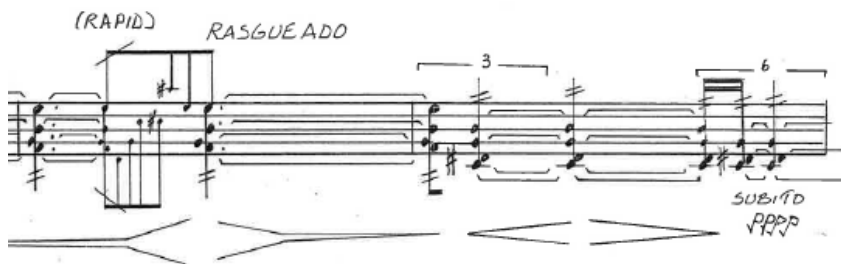


In this section the use of the index finger rasgueado (dedillo) is used. The strumming moves from two to three to four strings, and it adds a bending in two strings.

**(Track 59 cont.)**



For this passage the index tremolo is required again. The particular movement of this section requires the rasgueado to change from the 4 upper strings, moving into the middle strings and finally playing the lower strings. With this technique it is possible to isolate two, three, or four strings for a rasgueado.



This phrase requires of a fast arpeggio that finishes with a flamenco percussion on the top of the guitar. **(Track 60)**

3  
4  
FERDCE  
a  
x x x x x x

This section is a two-voice counterpoint similar to those in the renaissance lute. This example is whoever not tonal and works as an independent phrase in the music. **(Track 61)**

REALITY  
BROADLY, LYRICALLY, ALLA CADENZA  
mp/mt  
2.

Round rasgueado with two string bending **(Track 62)**

> (p↑) 250 + 255 (4) [LUL I] 259 + (11)  
TREMOLLO → RASGUEADO (DRAMA)  
ARTICULATE TEXTURE → CUE CONTINUES, SAMPLE CHANGES  
MÁ JAM  
SUDEN

### Multiple rasgueado textures (Track 63)

In this passage we find the diverse use of the round rasgueado to create different textures. It goes from simple up and down strumming to three finger round rasgueado, four finger round rasgueado and five finger round rasgueado. The result is a very interesting mixture of textures of sound.

Handwritten musical notation for Track 63, showing a sequence of rasgueado textures. The notation includes fingerings (1, 2, 3, 4, 5) and dynamic markings (f, mf, p). The textures are labeled with measure numbers: 950 (11), 961, 992, and 983. The notation shows a progression from simple up and down strumming to more complex three, four, and five finger round rasgueado patterns.

### Simple up and down tremolo on three strings with one tune bending (Track 64)

Handwritten musical notation for Track 64, showing a simple up and down tremolo on three strings with one tune bending. The notation includes fingerings (281) (7) and (288) and the instruction *ESPRESSIVO*.

### Fast Glisandos (Track 65)

Handwritten musical notation for Track 65, showing fast glissandos. The notation includes dynamic markings (*ESP.*, *ORD.*, *f*, *mp*) and the instruction *(CARESSING)*. The notation shows a sequence of glissandos with various fingerings and dynamics.