

## ***Si amanece, nos vamos for solo guitar:***

### **Using multiphonics in a new way**

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**Resumo:** A técnica de multifónicos na guitarra é uma técnica performativa não convencional que dá origem a sons com timbres pouco usuais nos quais é possível perceber mais do que uma nota. Na maioria das composições que empregam esta técnica, isto é feito convencionalmente – não há praticamente variação no início e/ou fim dos sons. A peça apresentada neste artigo usa a técnica de multifónicos de uma maneira nova, à qual a autora chegou sem fazer intenção disso ao realizar investigação artística durante o processo composicional da terceira peça em que usou técnica de multifónicos na guitarra. Com a nova forma de utilização desta técnica há variação tanto no início como no final dos sons, já que estes surgem do som contínuo de uma corda solta no qual depois se esvaem. Na peça, o som contínuo é usado como uma nota pedal que soa insistentemente quase todo o tempo.

**Palavras-chave:** Técnicas performativas não convencionais, Timbres invulgares, Pesquisa tímbrica, Música contemporânea para guitarra, Los Caprichos.

**Abstract:** The technique of guitar multiphonics is an unconventional performing technique that gives rise to sounds of unusual colours, in which it is easier to perceive multiple pitches. In most compositions that employ the technique, this is done conventionally – there is hardly any variation in the beginning and/or end of the sounds. The piece presented in this article uses multiphonics in a new way. This was arrived at by the author unintentionally when conducting artistic research during the compositional process of the third piece in which she used guitar multiphonics. With the new form of usage of this technique there is variation in both the beginning and end of the sounds, as these gradually arise from, and vanish into the continuous sound of an open string. In the piece, this is used as a pedal tone that sounds insistently most of the time.

**Keywords:** Unconventional performing techniques, Unusual timbres, Tone colour research, Contemporary guitar music, Los Caprichos.

In 2015 I wrote a piece, titled *Si amanece, nos vamos* (If day breaks, we will be off), at the request of guitarist Jürgen Ruck to contribute to his project *Caprichos Goyescos*. The project consists of short caprichos for solo guitar by various composers, whose writing should depart from a print of the set *Los Caprichos* (1797-1798) by the Spanish artist Francisco Goya y Lucientes. At the same time, the piece should be written in the context of my scientific research on classical guitar multiphonics, and therefore make use of this unconventional performing technique. During the composition of the piece, I ended up carrying out artistic research, to investigate how to play multiphonics simultaneously with and on the same string as a gesture that was inspired by the imagery of the print that I chose for the departure of the creative process. I arrived at a new form of multiphonics usage, which I used in the longest section of the piece.

In this article, aided by score excerpts and audio and video recordings,<sup>1</sup> I explain the new way of using multiphonics, present the piece and clarify the notation used for multiphonics. In the first two sections, I introduce the technique and talk about its presence in my work.

## 1. The technique of guitar multiphonics

On the guitar, the technique of multiphonics works better on wound strings. Like the technique of harmonics, it consists in damping out some of the vibrational modes of the string. This is achieved by lightly touching the string (as opposed to conventionally stopping it, where the string is pushed against the fretboard) during or after its excitation (or both). Unlike harmonics, with multiphonics the filtering of the vibrational modes is not systematic with respect to mode number (TORRES, 2015c, p. 68). This makes the perception of multiple pitches easier; I called the sound's partials that correspond to the more easily perceived pitches *main partials* (TORRES, 2015c, p. 72). Also contrary to harmonics, the technique is continuously possible along the string. Most sounds of multiphonics present unusual colours and a low loudness level, rendering it difficult to perceive some of its components at a distance.

Up to now, I have identified guitar multiphonics in only 42 scores by other authors

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<sup>1</sup> All audio and video examples are retrievable from <http://ritatorres.eu/Vortex2020-Torres.zip>

(TORRES, 2015c, pp. 50-64)<sup>2</sup>. This could be explained by the majority of scientific publications dealing with the subject (i.e., the publications where information on guitar multiphonics may be obtained) being recent and the oldest having been sold out for many years,<sup>3</sup> and also by the limited

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<sup>2</sup> The following scores were not covered by the review:

- LOPES, José M. *Estudo numerus nove*. Lisboa: AvA Musical Editions, 2009 [composed 1989]. 12 pp. Guitar;
- LÓPEZ LÓPEZ, José M. *Impresiones y paisajes*. Valencia: Piles, 2011. 7 pp. Guitar;
- JANG, Alex. *A gray, bent interior horizon*. Victoria, B.C.: the composer, 2016. 2 pp. Guitar;
- CARVALHO, Diogo. *Reveal*. Gainesville, FL: the composer, 2016. 12 pp. Guitar and tape;
- ARANDA, Yesid F. *1+1 et non franchement 2*. Bern: the composer, 2017. 24 pp. Guitar and ensemble.

<sup>3</sup> Publications in chronological order:

- SCHNEIDER, John. *The contemporary guitar*. Berkeley, CA: University of California Press, 1985;
- LEATHWOOD, Jonathan. *Some notes on writing for the guitar*. The author, 2010;
- ÇOĞULU, Tolgahan. *The adaptation of bağlama techniques into classical guitar performance: contemporary techniques, etudes and arrangements*. Saarbrücken, Germany: VDM Publishing, 2011;
- GIMENO, Julio. "Armónicos". In Francisco Herrera, ed., *Enciclopedia de la guitarra: Suplemento* (pp. A49-A83). Valencia, Spain: Piles, 2011;
- TORRES, Rita, & FERREIRA-LOPES, Paulo. Multiphonics as a compositional element in writing for amplified guitar (1). In: KOREAN ELECTRO-ACOUSTIC MUSIC SOCIETY'S 2012 ANNUAL CONFERENCE, 10, 2012, Seoul. *Proceedings*. Seoul: *Korean Electro-Acoustic Music Society*, 2012. pp. 73-83;
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- VISHNICK, Martin L. *A Survey of extended techniques on the classical six-string guitar with appended studies in new morphological notation*, Vol. 2. (Doctoral thesis). City University of London, 2014;
- LOPES, José M. *A música contemporânea portuguesa para guitarra de 1983 a 2008*. (Doctoral thesis). Universidade de Aveiro, Portugal, 2015;
- SCHNEIDER, John. *The contemporary guitar* (revised and enlarged edition). Lanham, MD: Rowman & Littlefield, 2015;
- VISHNICK, Martin L. *Sculpting sound on the classical six-string guitar*, Vol. 2. CreateSpace Independent Publishing Platform, 2015;
- TORRES, Rita L. *A new chemistry of sound: the technique of multiphonics as a compositional element for guitar and amplified guitar*. (Doctoral thesis). Universidade Católica Portuguesa, 2015;
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- TORRES, Rita. A mysterious black silhouette: from a print to a new form of usage of guitar multiphonics. *Leonardo Music Journal*, Cambridge, MA, v. 30, pp. 73-78, 2020. (*Tempo* published in 2020 a special issue dedicated to string multiphonics, but it does not address the classical guitar).

information on multiphonics in most of those publications (TORRES, 2015c, pp. 45-50).

In the scientific publications and in most of the 42 compositions, the technique is used conventionally, which is, the string is plucked with a single stroke while lightly touched, and is left to ring freely, as is shown in the Audio Example. Variation in the beginning or end of the sounds can be found in five pieces (LENTZ, 2014; LOPES, 2009; NASSIF, 2010; RADULESCU, 1985; ROJKO, 1984), as well as in a piece of mine (TORRES, 2004). In these compositions, some sounds are produced or terminate through seven different unconventional ways (TORRES, 2020).

## 2. Guitar multiphonics in my work

*Cyrano-Szenen* (2004) was the first piece I wrote for guitar and in which I first used multiphonics. While trying out ideas on the guitar in search for material for the piece, I ended up producing unconventional sounds while lightly touching string 6, which I decided to use in the piece. I easily categorised the sounds as sounds of multiphonics, as I was aware since 1997 that these kinds of sounds were possible on the guitar. Nevertheless it was a kind of discovery for me, because in the lessons and learning material on guitar harmonics where I had obtained the information, it was simply mentioned that double sounds (“a kind of multiphonics”) are produced on bass strings when playing artificial harmonics a fifth above the stopped note (LOPES, 1997, n.p. [Harmónicos Artificiais]).<sup>4</sup> I picked up the subject again in 2010 while writing the proposal for my PhD thesis: after reading the only source of information on guitar multiphonics then available (SCHNEIDER, 1985, pp. 135-138), I started realising that much was yet to be researched.

Since then, I used multiphonics in the piece presented in this article, as well as in three other pieces: *Le tombeau de Falla* (2012) for medium voice and guitar, and *The fireflies, twinkling among leaves, make the stars wonder* (2015, revised 2018) and *Luminescências* (2018), both for amplified guitar and live electronics. In all three pieces the technique is used conventionally. In *Le tombeau de Falla* a single sound of multiphonics is used once to do word painting (TORRES, 2012, p. 3); in *The Fireflies* six sounds are heard amplified multiple times (TORRES, 2015b, pp. 7-8); and in

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<sup>4</sup> In fact, this is possible at all (natural and artificial) harmonics locations, but only when the touch pressure is extremely light; moreover, for lasting sounds the touch duration needs to be extremely short.

*Luminescências* four sounds are heard amplified once (TORRES, in press, pp. 3, 4). As mentioned in the previous section, *Cyrano-Szenen* uses multiphonics unconventionally: one sound is produced with *tremolato* (i.e. repeatedly plucking the string downwards and upwards with a single exciter and a rapid movement) (TORRES, 2004, VI).

### 3. A new form of using guitar multiphonics

For the departure of the creative process of *Si amanece, nos vamos*, I chose Goya's print number 71, homonymously titled. The print depicts a group of five witches resting under a starry sky; behind them is the black silhouette of a figure with wings.<sup>5</sup> My interpretation of the print was that the witches have just arrived for a Sabbat, and the silhouette is a symbol of the devil who is yet to arrive (TORRES, 2020).

I came to carry out research during the composition of the piece because I wanted multiphonics to be played simultaneously with and on the same string as the main gesture of the piece. This was inspired by the print's black silhouette and consists in a dark pedal tone with the lowest pitch of the traditional tuning of the guitar (i.e., E<sub>2</sub> on open string 6)<sup>6</sup>. I decided then to explore the *tremolato* as the form of excitation of the string when playing multiphonics, while simultaneously a pedal tone with the pitch of the open string's tone is to be perceived (TORRES, 2020). The string is played in *pizzicato* (i.e., while damping the string at the bridge with the side of the hand palm).

I arrived at a new form of using of multiphonics, with which the sounds are produced by gradually increasing the touch pressure on a continuously excited string; and ended by gradually decreasing the touch pressure, which brings back the original tone. There is thus variation in both the beginning and end of the sounds. To produce some of the sounds, I had to gradually release the *pizzicato* as the touch pressure is increased, and gradually engage it as the touch pressure is decreased; to arrive at balanced sounds, I experimented different touch pressures and excitation locations, and ended up playing the *tremolato* with a plectrum (TORRES, 2020). Video Examples

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<sup>5</sup> For a reproduction of the print, search 'Si amanece, nos Vamos' at <http://www.museodelprado.es/coleccion>.

<sup>6</sup> Middle C is C<sub>4</sub> (American Standard Pitch Notation).

1 and 2 show in detail this new form of multiphonics usage, which, thanks to the continuous *tremolato*, may be employed at the usual harmonics locations (e.g., frets VII and XII) without any risk of failure (TORRES, 2020). The colours of the sounds at these locations are more conventional than those of the sounds at other locations.<sup>7</sup>

#### 4. The piece

The piece has four sections, which were composed mostly intuitively. The introduction consists of only noise *tremolati*. It ends with a continuous transition to the pedal tone that characterises the following section, which employs multiphonics in the new way. The pedal tone is absent from the next section, but a reminder of the devil still haunts it, as strings 5 and 6 are tapped in tritones. The pedal tone returns in the last section, in which sounds of multiphonics are played continuously along the string, and also left ringing after being attacked with short *tremolati*.

The introduction of the piece – the score lines of which are depicted in Figure 1, bars 1-12 – starts with all strings being rubbed with the hand palm. First with *tremolato* and then with accentuated short gestures, symbolising respectively the witches' broomstick flight and arrival. The string-rubbing *tremolato* also foreshadows the low-pitched *tremolato* that will be played a few bars later. This is arrived at by cross-fading the noise of the string-rubbing *tremolato* with the noise resulting from plucking the muted string 6 in *pizzicato* with an edge of the plectrum (bars 10-12), and then progressively unmuting the string (maintaining the *pizzicato*) to introduce the pedal tone (bar 13). At this point, the longest section of the piece starts (Section 1). The plucking noise is progressively reduced by rotating the plectrum to the tip (Figure 1, bar 15); and the *pizzicato* pressure is reduced to light *pizzicato* (Figure 1, bar 16). Audio Excerpt 1 contains a recording of the performance of the piece up to this moment.

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<sup>7</sup> The more easily perceivable pitches of the sounds at usual harmonics locations are those of the open string and the usual harmonics sound.

FIGURE 1 – Introduction (bars 1-12) and beginning of Section 1 (bars 13-17) of *Si amanece, nos vamos* (2015) by Rita Torres.

♩ = ca. 56

Rub strings crosswise with flat hand at an angle of ca. 45° with strings

Mute strings lightly

Guitar

*cresc. dal niente* **pp** *poco cresc. molto cresc.* **ff** **f** *sempre*

(a tempo)

5

**p** *cresc. poco a poco*

7

change to other hand (maintain angle and direction), crossfading the sound; grab plectrum

PLECTRUM

*pizz. sempre*

plectrum (plect.): very light plucking with edge (rubbing noise) (keep muting strings with other hand)

*decresc. al niente*

*molto cresc. ff* *molto decresc. p*

**ppp** *cresc. poco a poco*

12

unmute string 6 progressively (noise & tone) (*pizz.* is maintained)

plect.: (side) ----- tip (tone)

(*pizz.*) ----- light *pizz. sempre*

**pp** *cresc. poco a poco* **mp** *decresc. poco a poco* **p**

Source: TORRES (2015a, p. 1)

Section 1 (bars 13-60) may be divided in two parts. In the first part (bars 13-31), the new way of using multiphonics is only employed at usual harmonics locations (and also at fret IX)<sup>8</sup>. The score lines concerning these moments – which are always played with *light pizzicato* – can be found in Figure 2, and the recording of the performance in Audio Excerpt 2. In the second part (bars 32-60), the new way of using multiphonics occurs at other locations. Although originally not intended, the more conventional sounds at harmonics locations adequately symbolise the print's starry sky, whereas those of unusual colours at the other locations symbolise the witches.<sup>9</sup> To produce the latter sounds, the *pizzicato* needs to be released.

FIGURE 2 – First part of Section 1 of *Si amanece, nos vamos* (2015) by Rita Torres, in which the technique of multiphonics is played at usual harmonics locations (t.p.: touch pressure).

touch pressure (t.p.):  
dal niente - extremely light

----- al niente

18

cresc. mp decresc. p sempre

t.p.: dal niente - extremely light

----- al niente dal niente - extremely light

----- al niente

23

cresc. mp decresc. p cresc. mp decresc.

(light pizz.) - pizz. sempre

t.p.: dal niente - extremely light

----- al niente

27

cresc. mp decresc. p sempre

Source: TORRES (2015a, p. 2)

<sup>8</sup> The exact location for harmonics is slightly before fret IX but, with the playing conditions used, the result is almost the same.

<sup>9</sup> The locations other than the usual harmonics locations were chosen for the sounds' colours. Although these sounds symbolise the witches, it is a coincidence, as far as I can recall, that they are the same in number as that of the witches depicted in the print.



The second part of Section I may be subdivided in two phases: in the first phase, after the *pizzicato* is released, the excitation of the string remains *not so close* to the bridge (*poco sul pont.*), whereas in the second phase, the hand continues to slide up to *near* the bridge (*sul pont.*) after the release of the *pizzicato*. Figure 3 contains the score lines of the first phase, and Audio Excerpt 3 corresponds to the recording of this performing part. The score lines of the second phase can be found in Figure 4, and, accordingly, the recording of this part of the performance is the Audio Excerpt 4.

FIGURE 3 – Phase 1 of the second part of Section 1 of *Si amanece, nos vamos* (2015) by Rita Torres, in which the technique of multiphonics is played at touch locations other than the usual harmonics locations (t.p.: touch pressure).

The figure displays three systems of musical notation for guitar, each representing a different measure of a piece. Each system includes a treble clef staff with a multi-measure rest (M) and a bass clef staff with a multi-measure rest (m). Above the treble staff, there are notes and accidentals indicating the pitch and fingering. Above the bass staff, there are notes and accidentals indicating the bass line and fingering. Dynamic markings (cresc., mp, decresc., p) are placed below the bass staff. Performance instructions are provided above and below the staves.

**System 1 (Measure 32):**  
 Treble staff: Multi-measure rest (M) with notes G<sup>14</sup>, A<sup>11</sup>, B<sup>8</sup>, C<sup>3</sup>.  
 Bass staff: Multi-measure rest (m) with notes G<sup>1</sup>, F<sup>1/4</sup>.  
 Dynamics: cresc., mp, decresc., p.  
 Instructions: (pizz.)-----normale, poco sul pont. t.p.: dal niente ----- very light ----- pizz., ord. ----- al niente

**System 2 (Measure 37):**  
 Treble staff: Multi-measure rest (M) with notes G<sup>17</sup>, A<sup>13</sup>, B<sup>9</sup>, C<sup>4</sup>.  
 Bass staff: Multi-measure rest (m) with notes G<sup>1</sup>, F<sup>1/2</sup>.  
 Dynamics: cresc., mp, decresc., p.  
 Instructions: (pizz.)-----normale, poco sul pont. t.p.: dal niente ----- very light ----- pizz., ord. ----- al niente

**System 3 (Measure 41):**  
 Treble staff: Multi-measure rest (M) with notes G<sup>10</sup>, A<sup>10</sup>, B<sup>10</sup>, C<sup>1</sup>.  
 Bass staff: Multi-measure rest (m) with notes G<sup>1</sup>, F<sup>1/8</sup>.  
 Dynamics: cresc., mp, decresc., p sempre.  
 Instructions: (pizz.)-----normale, poco sul pont. (p.s.p.) t.p.: dal niente ----- very light ----- pizz., ord. ----- al niente

Source: TORRES (2015a, pp. 2-3)

FIGURE 4 – Phase 2 of the second part of Section 1 of *Si amanece, nos vamos* (2015) by Rita Torres, in which the technique of multiphonics is played at touch locations other than the usual harmonics locations (t.p.: touch pressure).

The figure displays three musical staves, numbered 47, 52, and 56, illustrating the technique of multiphonics. Each staff features a treble clef and a 1/2 time signature. The notation includes notes with accidentals and arrows indicating touch pressure (t.p.) locations. Above the staves, there are labels for touch pressure: '(pizz.) - normale, p.s.p. - sul pont.' and 't.p.: dal niente - very light'. Below the staves, there are dynamic markings: 'cresc.', 'mp poco cresc. decresc.', and 'p'. The notation also includes 'M' (marcato) and 'pizz., ord.' (pizzicato, ordered) markings. The first staff (47) shows a sequence of notes with touch pressure locations at 1/2, 5, 7, 12, and 19. The second staff (52) shows a sequence of notes with touch pressure locations at 3, 7, 10, and 17. The third staff (56) shows a sequence of notes with touch pressure locations at 4, 9, 13, and 17, followed by a section marked 'p sempre'.

Source: TORRES (2015a, p. 3)

The touch locations that are situated between frets were called *virtual frets*. They were formally established and are easy to visually situate (TORRES, 2015c, pp. 76-77). In this piece, they were notated with accidentals with an arrow and a fraction, as well the numeral of their closest fret in parentheses (being redundant, this is merely an aid). For example, in Figure 3, bar 41, of the five virtual frets that result from the subdivision of a space between frets in six equal parts, the string is touched at the virtual fret that lies below fret II and is closest to it (thus the arrow pointing downwards and the numerator equal to 1). The pitches in parentheses other than that of the fundamental are related with the results from an experiment conducted in the context of my research: they are the pitches of the sounds' main partials in the highest loudness category for a time

segment right after the sounds' attack (because this is the part of the sound that is repeated during the *tremolato*) (TORRES, 2015c, p. 118); the partials in other categories are not expected to be perceived by an audience.

As depicted in Figure 4, bar 60, Section 1 ends by slightly decelerating the *tremolato*, and then playing it shortly at normal speed with constant accentuation, ending on a beat (Gesture 1). The transition to the next section, depicted in Figure 5, consists in repeating Gesture 1. First, once at the soundhole, and then four times at the fretboard. In the first two repetitions the string is slightly damped on the nut, an effect similar to the *light pizzicato*, in the other repetitions the string is completely muted. In the last repetition, the *tremolato* is continued and immediately ended by a strong deceleration. Audio Excerpt 5 contains the recording of this transition's performance.

FIGURE 5 – Transition to Section 2 of *Si amanece, nos vamos* (2015) by Rita Torres (t.p.: touch pressure).

Source: TORRES (2015a, p. 3)

The section that follows (Section 2), the score lines of which are depicted in Figure 6, bars 66-69, is quite contrasting: strings 5 and 6 are slowly tapped (i.e., hammered against the fretboard) with a regular rhythm, producing the interval of a tritone (the musical symbol of the devil). This gesture is repeated three times in different transpositions, being the last repetition longer. String 6 is then muted and plucked at fret X with the same rhythm (Gesture 2), which starts the transition to the last section of the piece. In this transition (Figure 6, bars 70-73), Gesture 2 is repeated twice; the second repetition is continued and accelerated to *tremolato*. This is maintained and the string is progressively unmuted until the beginning of the last section of the piece, in which the string is only slightly damped on the nut. A recording of the performance of Section 2 and of the transition to the final section can be found in Audio Excerpt 6.

FIGURE 6 – Section 2 (bars 66-69) and transition (bars 70-73) to the final section of *Si amanece, nos vamos* (2015) by Rita Torres.

Source: TORRES (2015a, p. 4)

The pedal tone returns in the final section of the piece. Figure 7 depicts the score lines of this section; Audio Excerpt 7 contains a recording of its performance. The pedal tone is now more resonant, as the string is only slightly damped on the nut, and its timbre is varied by slowly moving the excitation location towards the bridge while stopping briefly at some locations (bar 74).<sup>10</sup> When the hand reaches near the bridge, the finger that is damping the string starts moving towards the bridge (*glissando*) with *extremely light* pressure, thus playing continuously multiphonics (bars 75-76). The *glissando* ends at one of Section 1's multiphonics locations, and the *tremolato* ends with Gesture 1. This gesture is then used twice to recall two other multiphonics sounds of Section 1, and, in the very end of the piece, to produce for the first time the sound of the non-damped open string. This is preceded by a gesture that reminds bar 74 in fast motion.

<sup>10</sup> The excitation of the string's vibrational modes increases when the excitation location moves towards the vibrational modes' anti-nodes. Some partials are therefore emphasised during the movement.



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