

Discovering Flamenco Metric Matrices through a Pulse-Level Analysis

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UNTIL recent times, theoretical analyses devoted to flamenco music were scarce, and even these have tended to consist of publications that never obtained widespread distribution and recognition (Rossy 1966; Donnier 1987). Traditionally, classifications of flamenco repertoire have been based on different types of non-musical criteria, lacking a holistic musicological consideration and paying little or no attention to core concepts of flamenco such as metric formula, harmonic ostinato, melodic contour, poetic unfolding, or formal structure.¹ It is true that flamenco performers themselves had seldom used musical analysis in their own discourse—at least not in the way analysis is understood in Western music of written transmission. Most likely, both the rule of oral tradition and the image of flamenco as an improvised, even anarchic art may have led to this shortage of analyses. In fact, among flamenco professionals and aficionados, the belief that explicit musical analysis was something foreign, even inappropriate, has persisted for decades due to the common conviction that flamenco music was primarily a vehicle for the performer’s emotions. At the same time, the lack of a musicological approach was probably exacerbated by an external perception of flamenco as a marginal folk art, an expression of illiterate musicians unworthy of analysis along the same parameters as “cultured” music.

However, in the last decade we have witnessed the emergence of important new studies of flamenco, with musicological approaches often based on the analysis of historical recordings or score music from the pre-phonographic era (Fernández 2004; Sanlúcar 2005; Manuel 2006; Ojesto 2008; Hurtado Torres and Hurtado Torres 2009; Blasco García 2012; Castro 2014; Jiménez de Cisneros 2015b). This new trend is showing that the undeniable weight of performers’ individual interpretive decisions and the vernacular origin of flamenco were (and still are) perfectly compatible with the existence in this oral tradition of a widely shared, sophisticated, and rigorous musical language, with its own kind of grammar and syntax.² Nowadays, it seems well established that flamenco is a genuine musical language that not only can, but should be analyzed as such.

In the face of the need and opportunity for musical analysis of flamenco, in order to

1. For instance, the classification of flamenco repertoire featured in the landmark record collection *Magna Antología del Cante Flamenco* (Blas Vega 1982) is based at the same time on: (a) morphological criteria (derivatives of fandango); (b) geography (*siguiriyas* de Jerez, de Cádiz and Sevilla); (c) origin or extraction (folkloric, Hispano-American); (d) authorship (*malaqueñas* de Chacón); (e) and even character (*primitivo*, i.e., purely flamenco, and *aflamencado*); and yet, some elements in the repertoire remain unlabeled (*cantes varios*). Hipólito Rossy (1966, 102–3) was the first to feature a holistic classification of flamenco singing under musicological parameters such as the metered or unmetered character of the melodies.

2. A syntactic analysis of flamenco guitar playing is attempted in Jiménez de Cisneros (2015b, chs. 11–12).

reveal and spread the richness of this language and—why not?—to furnish new horizons of creativity, the challenge of conducting such an analysis has proven quite formidable. The flamenco repertoire, regulated by codes and guidelines that are not usually made explicit, requires of the musicologist an insider’s knowledge of this language: how could we explain the grammar of a language without being able to speak it? On the other hand, the musicologist has to be flexible enough to combine the terms of standard musical analysis (developed for Western art music) with the information and criteria that may originate in flamenco praxis. This double challenge may explain why the numerous extant manuals on different flamenco disciplines have been reaching such different conclusions when notating and describing the practice

Hence, a mixed approach is needed, grounded in both academic and flamenco discourse, a system of analysis that may consider, respect, and include the perspective of flamenco musicians, while at the same time rooted in academic musicology. In this sense, this paper will present the results of combining a pulse-level analysis according to the model developed by the North American music theorist Fred Lerdahl and linguist Ray Jackendoff (1983), followed by the Argentinian musicologist Silvia Malbrán (2007), with flamenco rhythmical criteria (Jiménez de Cisneros 2015b). This analytic methodology, applied systematically to each of the flamenco genres known as *palos*, will lead to a holistic vision of metered flamenco.

Firstly, through the metrical analysis of Fandango de Huelva—both a folk genre of the province of Huelva and a flamenco *palo*—this paper will illustrate how pulse-level analysis can be combined with the terminology commonly understood by flamenco performers, such as their counting system, the finger tapping on the guitar, or the hand-clapping patterns. Next, I offer a classification of flamenco metered genres through figures and audio clips, distributing them into five metric groups arising from the concept of metrical tension, an approach that may partly explain why flamenco is often perceived as cryptic. Finally, considering the temporal and syntactic homologies of all the metric formulas that result from this mixed analysis, I will examine the two metric matrices or “unsounded temporal structures” of flamenco (Locke 2011, 51). Both of these include metric components or “genes” that may support the idea of flamenco as an entirely Hispano-American repertoire (Núñez 2013) or, at least, greatly influenced by Latin-American genres (Manuel 2002; Berlanga 2014; Castro Buendía 2014), beyond the commonly held belief that a great part of flamenco was a purely Roma tradition (Mairena and Molina 1963). By employing musical analysis as the guide to the essential traits and the roots of flamenco, instead of overstating the relevance of non-musical items such as the name, the lyrics or the emotional character of each *palo*, this paper also aims to provide an alternative departure point in phylogenetic studies of flamenco (Díaz-Báñez et al. 2005).

THE METRICAL ANALYSIS: A MIXED APPROACH

Fandango de Huelva, a flamenco genre of folk origin still practiced by villagers in certain local festivities of the province of Huelva (western Andalusia), is distinguished by a set of stock vocal melodies with their distinctive guitar accompaniment. The guitar playing itself (*toque*) is based on a number of characteristic rhythmic-harmonic ritornellos in flamenco Phrygian mode.³ A pulse-level analysis of the most basic of these ritornellos will now serve for an overview of the metrical structure of the genre.⁴

The metered character of Fandango de Huelva is perceived in terms of a prominent pulse that seems to organize all sounds ([Audio Example 1](#)).⁵ In my experience teaching flamenco guitar and hand clapping, listeners do not always focus on the same pulse level. However, flamenco has its own means to indicate the reference level or tactus: the numbering system (developed in flamenco dancing academies) and the basic patterns of hand clapping, both of which fix our attention on the pulse to be considered the beat level ([Audio Example 2](#)).⁶ Once the beat level is identified, a hierarchy among these temporal units is established, seeking some order to make the music flow more predictably. This hierarchy is perceived in the form of accentuation, not necessarily in the usual sense of strong and weak, but more in terms of gravity and lightness (differences of density rather than of intensity).⁷ We can determine the meter level (i.e., the supra-tactus level) from this kind of accentuation. In flamenco, there exist certain conventions regarding this metrical hierarchy; for instance, Fandango de Huelva has been traditionally described as a genre *a tres*, that is, in triple time. The fingernail tapping on the guitar and the accents in hand clapping clearly highlight this conventional triple meter, as shown in Example 1 ([Audio Example 3](#)).⁸

3. Phrygian mode in flamenco is distinguished, among other aspects, by its tonic harmony, which, instead of minor (as it should be according to the Phrygian scale), is a major chord.

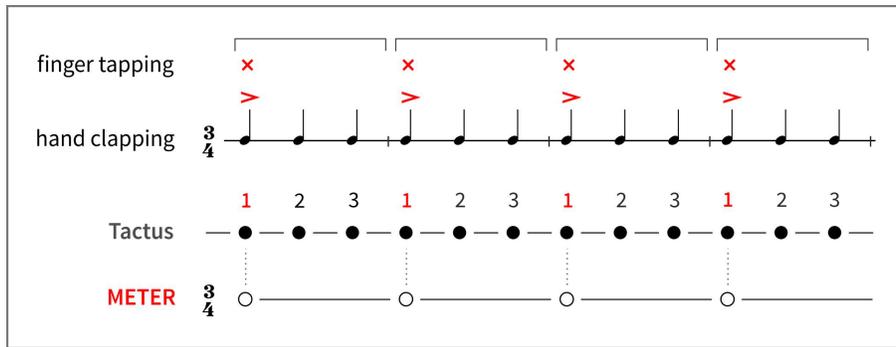
4. Regarding the use of the term “genre,” instead of “style” or “the most popular *palo*,” please see Jiménez de Cisneros (2015b, 310–11).

5. Due to the kind of audio clips that accompany this article, it is strongly recommended that the reader use stereophonic headphones.

6. In this article, while the term “pulse” (or “pulse level”) is to be understood as any level (or layer) of motion, “beat level” is to be seen as equivalent to the tactus as defined by Lerdahl and Jackendoff (1983, 21), and “a beat,” to a unit of the tactus.

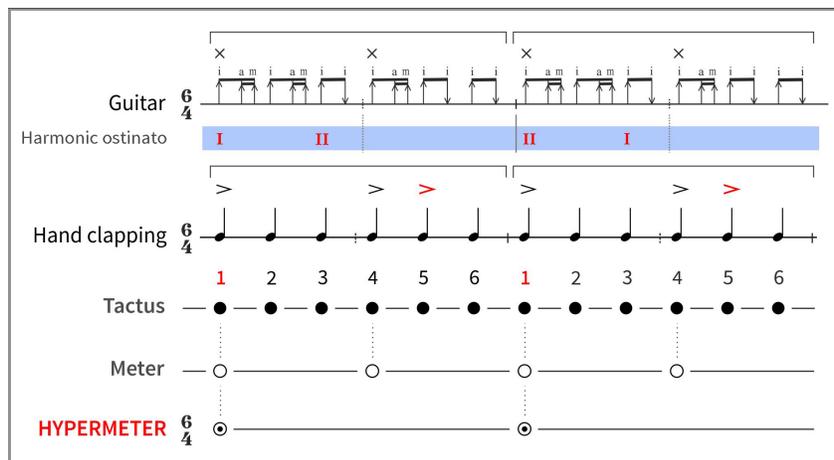
7. Flamenco performers are eloquent in this regard when they refer to “tierra” and “aire” (ground and air) instead of “strong” and “weak”; e.g., “cerramos a tierra” or “al aire” (“we shall end up on the downbeat” or “the upbeat”).

8. Notice that in this figure, pulse levels are represented with solid dots when they belong to the tactus level and with circles when they belong to the meter level; different circles will be also used in deeper levels.



Example 1. The meter level in Fandango de Huelva.

However, the accentual hierarchy is not limited to the tactus and meter levels, but includes levels with longer spans between their time points, which I refer to as deeper levels. Despite their relevance in the overall comprehension of the metrical structure, these levels often remain unacknowledged, both in Western music notation and in flamenco transcriptions. The recursive elements suggesting these deeper levels are the hand clapping, whose main pattern in Fandango de Huelva adds an extra accent every six beats, along with the strumming and the harmonic patterns of the guitar (Audio Example 4).⁹ Together, these elements give rise to hypermeter, the pulse level responsible for the hierarchy not between the beats, but between the metrical accents, as shown in Example 2.



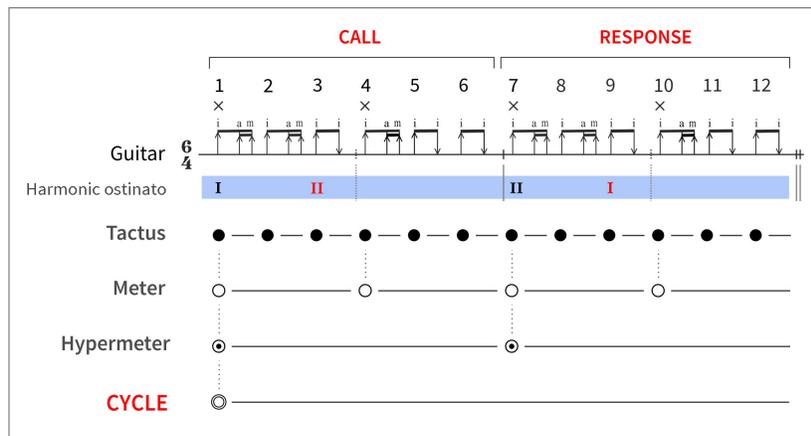
Example 2. Hypermeter in Fandango de Huelva.¹⁰

9. Though harmonic design has been related to grouping structure rather than metric structure (Lerdahl and Jackendoff 1983), the recurrence of the harmonic changes in Fandango de Huelva, and generally speaking in all metered flamenco genres, carries a de facto primary marker in the perception of meter.

10. The small letters above the top row of rhythm in this and subsequent figures represent the fingering of the guitar's strumming (made with the right hand).

As Fandango de Huelva is in flamenco Phrygian mode, the chord with a root on the second scale degree is \flat II (e.g., the progression II–I has chord roots such as F–E or $B\flat$ –A). The harmonic ostinato shown in Example 5 corresponds to its simplest version, also called “minimal.” It is more frequently played as part of the accompaniment rather than as part of a solo. The minimal ostinato can be heard with some rhythmic variations in the second guitar in the following example, featuring Sabicas and his brother Diego Castellón (Sabicas 1972; [Audio Example 5](#)). This minimal ostinato, despite not being as common or recognizable as the “paradigmatic” ostinato shown in Example 5, can be seen as the minimum harmonic expression needed to make the genre recognizable, as well as a clearer exposition of a call-and-response dialogue: the minimal ostinato features the same two chords (of tension and resolution) but in opposite ways (I–II and II–I).¹¹

The time signature of 6/4 accounts for this systematic pairing at the meter level if this time signature is treated as representing a literal “compound,” a duple hypermeasure in triple meter that contains six quarter-note beats instead of two dotted-half-note beats.¹² In addition, the systematic alternation of tension and resolution chords in Fandango de Huelva outlines a tie between these six-beat measures, forming a call-and-response dialogue comprising twelve beats ([Audio Example 6](#)). This syntax is responsible for the deepest pulse level in the metric structure of flamenco, namely the rhythmic–harmonic cycle. In flamenco, this time span is called *compás*, which indicates not only performers’ awareness of the deeper pulse levels, but also their metric priorities.¹³ In this sense, the numbering system used in dance academies indicates both the tactus (the beat level) and this twelve-beat cycle or *compás*, as seen in Example 3.



Example 3. The cycle level in Fandango de Huelva.

11. Regarding this issue, see also Jiménez de Cisneros (2015b, 84–85).

12. The time signature 6/4 has already been employed in Fandango de Huelva by Manuel (2003, 30) and Fernández (2004, 52).

13. Though the term “compás” means in Spanish either meter or measure, but this term is understood in flamenco in a more comprehensive way, as will be explained.

METRICAL TENSION: A TAXONOMIC CRITERION

As we have seen, musical meter consists more of a vertical or stratified grid of pulse levels than of a merely linear or flat structure. Indeed, the four levels of temporal hierarchy—tactus, meter, hypermeter, and cycle—constitute a grid of overlapping pulses which manifest not only in music, but also through performers' explicit off-stage resources such as their counting system, which is used as a didactic and rehearsing tool in *baile* (dance) and flamenco guitar teaching. However, the most idiosyncratic aspect of flamenco metrical structure, on which the following classification will be based, is metrical tension.

In Fandango de Huelva, several elements do not seem to fit the triple meter marked by the finger tapping (which reproduces the foot tapping commonly used by guitarists themselves). The harmonic rhythm and some accents in the strumming or the hand clapping suggest a duple meter ([Audio Example 7](#)).¹⁴ Indeed, *Fandango de Huelva* is based on the superimposition of two different accentuations at the meter level, triple as the governing one and duple as a subdued or “antimetrical” pattern of accentuation (Krebs 1999, 31). This cross-meter formula—a 6/4 with an underlying 3/2 (i.e., 2/4 + 2/4 + 2/4) embedded in it—is the true measure of the genre and its metrical minimum; within the 6/4 hypermeasure, duple-meter accents derived from the hand clapping pattern and the harmonic rhythm and strumming in the guitar are “forced” to become dynamic stresses within the conventionally governing triple meter, and thus seem subdued.¹⁵ Example 4 represents this metrical tension.

Example 5 summarizes the essential traits of Fandango de Huelva, constituting the “theme” of this genre. The theme is not understood in a traditional Western sense of the term, but as the synthesis of three parameters: metric formula, harmony, and tempo, rendered in the form of variations that maintain recognizable features of the genre ([Audio Example 8](#)).¹⁶

In a certain way, this flamenco theme is equivalent to the “ensemble thematic cycle” described by Meki Nzewi (1997) regarding African music.¹⁷ In this theme, the harmonic resolution has a prominent role: always placed in the same beat of the cycle, it represents the

14. Though aware of the predominance of triple meter, flamenco guitarists and hand clappers generate through these duple-metered elements a sort of “composite pattern” (London 2012, 67), thus permitting themselves to match and feel both meters in a unique rhythmic stream.

15. Regarding this cross-meter formula, see also Jiménez de Cisneros (2015a; 2015b, 229–38). Though creating a “metrical dissonance,” as dubbed by Curt Sachs (1953), it is more likely a permanent overlapping that has no ambition to be resolved, but rather aims to pervade as an idiosyncratic metrical tension or “conflict.” As Robert Layton Wells (2015, 10n) explains, “the term ‘dissonance’ implies that any conflict is either temporary or a marked local phenomenon that must at some point be ‘resolved.’ While this is an apt metaphor for much of the Western tonal canon, it is less apt for much contemporary and non-Western music, where metric conflict may be an integral part of the metrical makeup rather than a passing phenomenon.”

16. This concept of “theme” was first used to describe flamenco by Granados (1998, 48). However, it has been more widely described as a mental construct by Manolo Sanlúcar (2005, 60).

17. Displayed in the form of isochronous variations, this “thematic cycle” is an essential musical device of flamenco. As described by Manuel (2006, 102–3), “it provides a form of expressive local structure and dynamism that, in flamenco, is more important than any sort of extended formal structure.”

The diagram illustrates the metrical structure of Fandango de Huelva over 12 beats. At the top, guitar notation shows rhythmic patterns with accents (i, a, m) and rests (x) above the staff. The harmonic ostinato is shown as a sequence of Roman numerals: I, II, II, I, II, I. Hand clapping is represented by vertical stems with accents (>). The tactus is shown as a series of black dots. The meter section includes three staves: 3/4, 2/4, and Hypermeter, with red circles indicating specific metric points. The cycle is represented by a circle with a dot.

Example 4. Metrical tension in Fandango de Huelva.

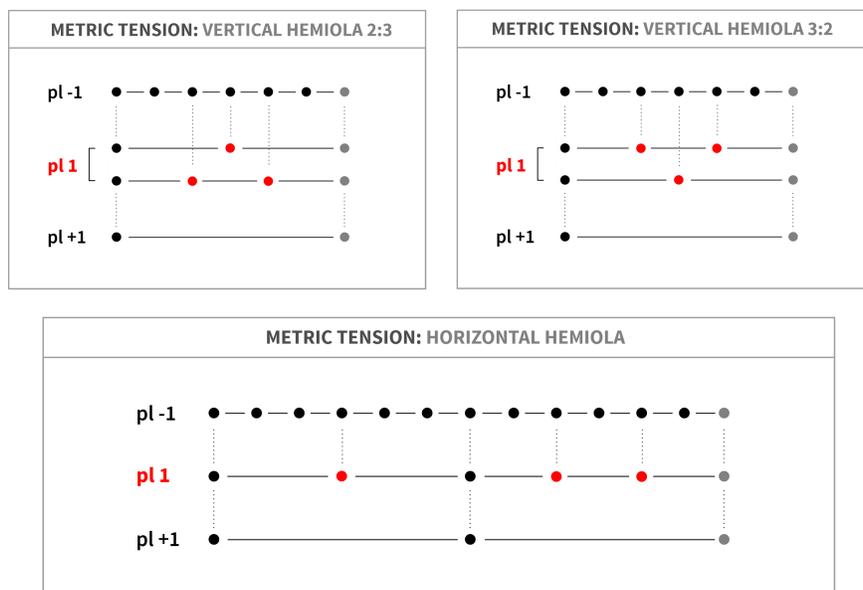
This diagram provides a detailed analysis of the 'theme' of Fandango de Huelva. It features a central musical staff with 12 beats. Above the staff, a green box titled 'TEMPO' specifies 'HISTORICAL SPEED RANGES' as $\text{♩} = 138-200 / 112-168$; *moderato...presto*, with sub-ranges for 1917-1936 and since 1977. To the left, a red box titled 'METRIC FORMULA' identifies the 'RULING METRIC FORMULA' as 6/4 and the 'Subdued metric formula' as 3/2. Below the staff, a blue box titled 'HARMONIC MODE AND OSTINATOS' lists three modes: 1) Minimal ostinato (I, II, II, II, I, I), 2) Paradigmatic ostinato (I, IV_m, IV_m, III, II, I, I), and 3) Complementary ostinato (I, IV_m, III, II, I, I). A blue dashed box highlights beat 9, with a downward arrow pointing to the 'HARM. RESOLUTION' label. The 'FLAMENCO MODE' label is positioned at the bottom left.

Example 5. The “theme” of Fandango de Huelva.

necessary “regulative time-point” (Anku 1995, 177) or referential beat, thanks to which the attuned listener never gets lost despite the flow of variations. In the case of Fandango de Huelva, this resolution is always placed on beat number 9, unaccented in the prevailing triple

meter, but accented in the subdued duple meter.¹⁸ In fact, this resolution could be considered as an accent in all three senses described by Lerdahl and Jackendoff (1983, 17): metrical, as belonging to the subdued duple meter; structural, as being the center of gravity of each variation; and phenomenal, as it would be felt by an attuned listener as a dynamic stress on an upbeat under the governing triple time.¹⁹

Tension between different metric organizations on the same pulse level, found in most metered flamenco genres, lies at the core of the following classification of flamenco genres into five metric groups. As shown in Example 6, this metrical tension always includes the primary hemiola 3:2 or 2:3. Mostly found on the pulse levels with greater impact on our perception of the metrical structure (tactus and meter), the hemiola can be seen as vertical, when duple meter and triple meter ($3/4$) occur simultaneously; horizontal, when duple and triple alternate; or even including both types simultaneously.²⁰ In Example 6, “pl” means pulse level; since these levels are not identified with specific metric interpretations (tactus level, meter level, hypermeter level, etc.), units are always represented with solid dots. Dots in a relationship of metric tension appear in red.



Example 6. Metrical tension in flamenco: Vertical and horizontal hemiola.

18. In Example 5, the Phrygian harmonic degrees IV^m, III, II, I are A minor, G major, F major and E major, the latter being the harmonic resolution and tonic chord in the cadence.

19. Some other relevant devices of African music, such as “metric matrix” and “call-and-response” (Locke 2011, 2013), are also typical in flamenco while hardly represented in neighboring musical traditions. This parallelism may also support the idea of an important influence on flamenco by African and Afro-American slaves brought to the south of Spain (Navarro García 1998, Martín Corrales 2000).

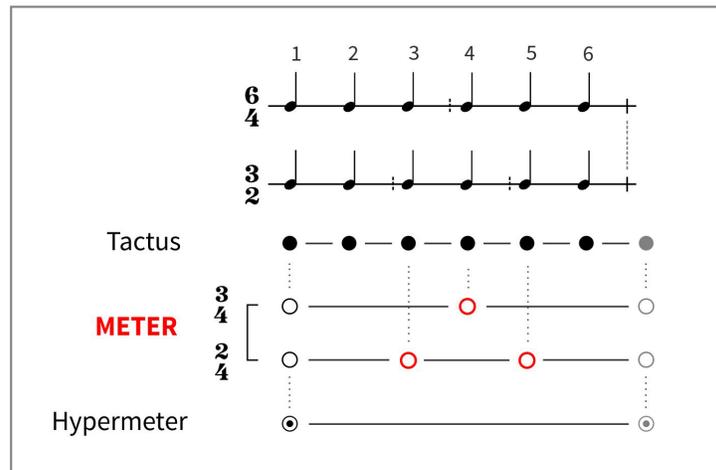
20. In this article, “vertical” and “horizontal” hemiola correspond to what Harald Krebs (1999, 45) calls “direct” and “indirect” dissonance.

CLASSIFYING METERED FLAMENCO GENRES: FIVE METRIC GROUPS

The following classification, based on a pulse-level analysis, adopts the concept of metrical tension as the primary parameter. Metered flamenco genres will be grouped according to the presence or absence of tension within their metrical structure, as well as the pulse level involved (meter, tactus, subtactus) and the kind of metric tension featured (vertical, horizontal; permanent, variable).

The cross-meter formula or metric tension identified in Fandango de Huelva is also present in Sevillana,²¹ a lively dance-song form, typically performed as an amateur social dance or as a light ensemble dance in flamenco stage shows. Under this metric homology, arising from common origin of both genres, we can identify the cross-meter group of genres summarized in Example 7.²²

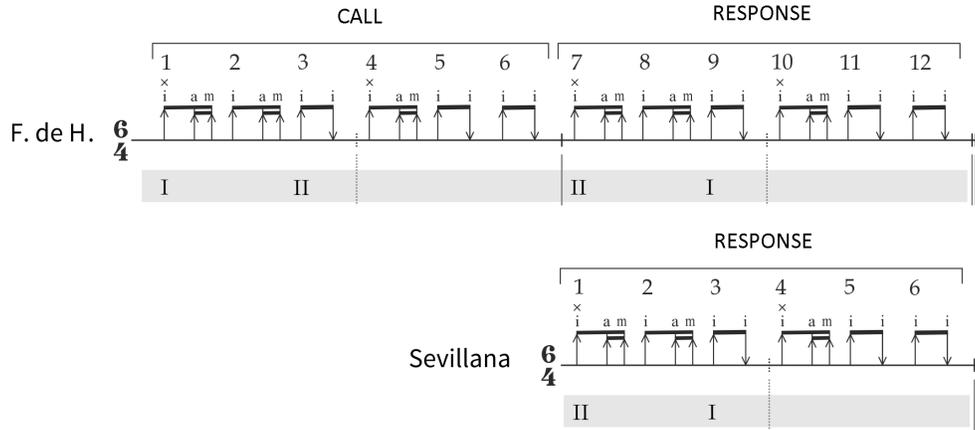
Regarding the guitar playing, Sevillana has a less developed syntax than Fandango de Huelva since the background ostinato does not outline an entire cycle of twelve beats. Thus, it has less autonomy as a guitar genre, its “compás” suggesting a kind of permanent response, instead of a call-and-response dialogue, as shown in Example 8 ([Audio Example 9](#)).



Example 7. Metrical structure of the cross-meter group: Fandango de Huelva and Sevillana.

21. The use of “Sevillana” instead of the more popular plural “sevillanas” is intentional. The *palo* is written in singular and with a capital letter when referring to a genre, i.e., the distinct or unique set of parameters that I refer to as a theme (as shown in Example 5). On the other hand, *palo* nouns written in plural and lower case designate a concrete piece within the genre. In this regard, see also Jiménez de Cisneros (2015b, 310–11).

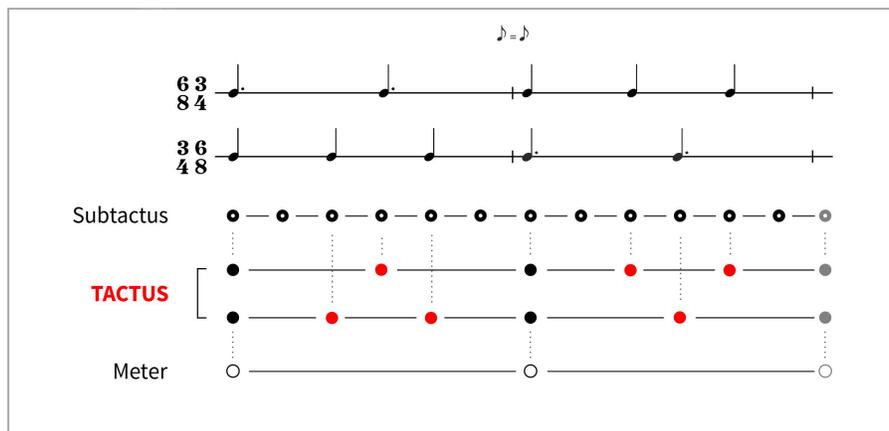
22. The traditional hand-clapping pattern of Fandango de Huelva and Sevillana (Example 2) has been identified as an “essential element of flamenco syntax” and related to “some of Spain’s oldest dance steps” (Baird, Goldberg, and Newman 2015, 631).



Example 8. Syntactic correlation of Fandango de Huelva and Sevillana ostinatos.

Metrical tension in the following metric group, represented in Example 9, derives from horizontal hemiola on the tactus level. Most genres within this group are known for incorporating this hemiola systematically, according to the formula $6/8 + 3/4$, as in Petenera and Guajira, or $3/4 + 6/8$, as in Siguriya and Cabal ([Audio Example 10](#)).²³

However, this alternation is not the only formula that governs the metric group. In different proportions, all genres may feature asymmetric phrases—an outstanding trait of Fandango Abandolao, also known as *toque por verdiales*, and the traditional guitar

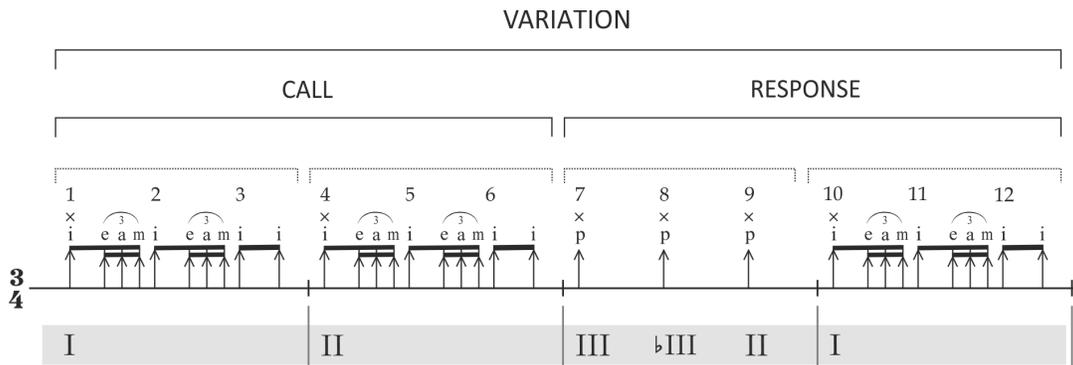


Example 9. Metrical structure of the variable tactus group: Fandango Abandolao, Petenera, Guajira, Siguriya and Cabal.

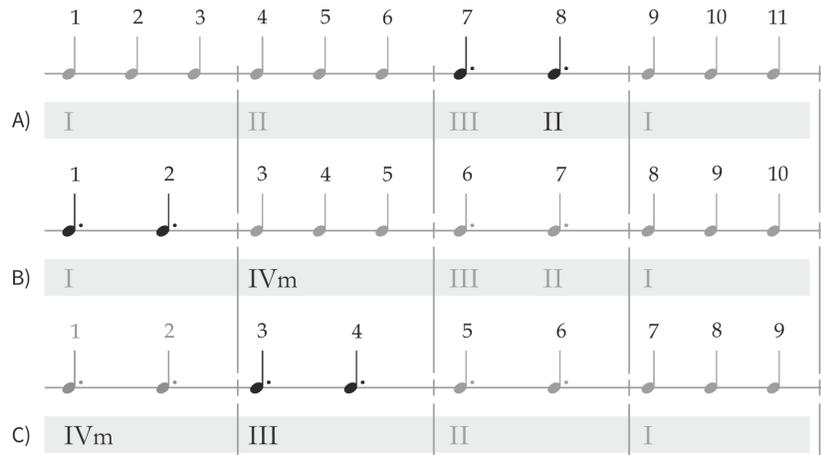
23. The formula $6/8 + 3/4$ has generally been described in flamenco as an amalgam. However, advocating against this use of the term, Spanish flamencologist Hipólito Rossy (1966, 116) dubbed this combination “compás alternó” (alternate meter), while Spanish folklorist Manuel García Matos (1984, 107) called it “compás mixto” (mixed meter). I adhere to these terms, reserving amalgam for the union of time signatures with different numerators (number of beats per measure) but the same denominator (beat value; e.g., $5/4$, as $3/4 + 2/4$), which is not the case here. From this viewpoint, there are no amalgams in flamenco (see also Jiménez de Cisneros 2015b, 50–51).

accompaniment of the eastern Andalusian sung fandangos. As shown in Example 10, the paradigmatic variation of the genre is a cycle of twelve beats, articulated in two halves as a call-and-response phrase. The harmonic rhythm defines a clear triple meter, with no trace of metrical tension ([Audio Example 11](#)).

Nevertheless, other typical variations may not be in triple time only, but rather play with the tactus. These variations introduce changes in the harmonic design that alter the perception of triple meter. While triple meter always marks the point of harmonic resolution (which falls on the last measure of the cycle), the emerging impression of a duple meter (6/8) results in cycles comprising a different number of beats; see Example 11 ([Audio Example 12](#)).²⁴



Example 10. Paradigmatic variation of Fandango Abandolao.



Example 11. Complementary ostinatos of Fandango Abandolao.²⁵

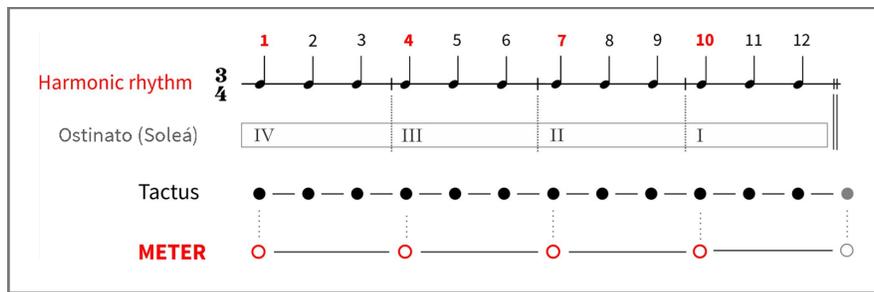
24. For a historical approach to this shifting beat-feel in Fandango, see Castro Buendía (2015).

25. Rhythmic values and chords (Roman numerals) that differ from those in the previous pattern are shown in black; for instance, in comparison with the ostinato in Example 11a, the first measure in Example 11b differs in rhythm, and the second measure features a different chord. The differences marked in Example 11a are relative to the paradigmatic ostinato shown in Example 10.

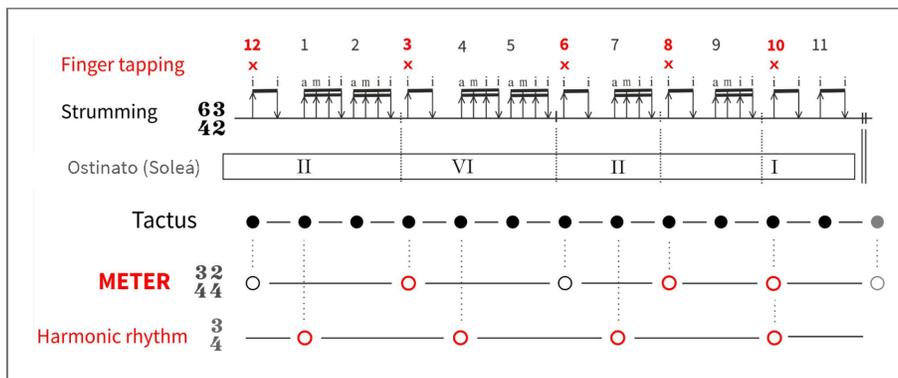
The third metric group in flamenco is led by Soleá, the most paradigmatic genre of flamenco. Soleá is a blend of different styles, namely *jaleo*, *fandango*, *polo*, and *petenera* (Castro Buendía 2014, 1053), but its precise historical origins are still challenging for flamencologists. As shown in Example 12, its harmonic rhythm, akin to that of Fandango Abandolao, suggests a twelve-beat formula in triple time, which most transcribers have traditionally adopted ([Audio Example 13](#)).

However, strumming patterns lie at the heart of flamenco and provide the best window into the flamenco performer’s viewpoint. Most of the strumming variations are based on a set of fingernail taps that alternate between triple and duple, suggesting the metric formula $6/4 + 3/2$ shown in the top row of Example 13 ([Audio Example 14](#)).

In adopting the formula $6/4 + 3/2$ as the overriding one, the chord changes are shifted by one beat, thereby becoming emphasis rather than metrical accents. As a result, Soleá features two types of tension at the meter level: horizontal hemiola on the one hand and the contrast between metrical accents and the displaced triple meter suggested by harmonic rhythm on the other.²⁶ When beat number 1 is placed according to the harmonic design and the traditional



Example 12. Traditional harmonic rhythm in the variable meter group: Soleá, Alegría, and Bulería.



Example 13. Metrical tension in the variable meter group.

26. This harmonic rhythm can be seen as a “displacement metrical dissonance” interacting with the “grouping metrical dissonance” of the alternating hypermeters $6/4$ and $3/2$ (Krebs 1999, 33). This may explain why for a casual listener the metrical perception of Soleá is often more disruptive than that of the cross-meter genres (Fandango de Huelva and Sevillana).

phrase departure, the downbeats or metrical accents fall on beats 3, 6, 8, 10, and 12. The viewpoint of performers might also be illustrated with the traditional hand-clapping pattern in Example 14, where accents from both formulas are brought together in the simplest way ([Audio Example 15](#)).²⁷

Inherited by *Alegría* and *Bulería*, this struggle between the harmonic rhythm and the conventional metrical accents in the twelve-beat cycle is the hallmark of *Soleá* and the origin of confusion amongst novice musicians as well as of great controversy among transcribers.²⁸ In this metrically challenging context, the harmonic resolution on beat 10 arises as the metric nexus between the formulas, a necessary structural accent that allows the performers to follow this parade of variations without losing their place in cycle.²⁹

Belonging to the same metric group as *Soleá*, *Bulería* features a metric formula with much more flexibility in the sense that the horizontal hemiola in the guitar is not as systematic

The diagram illustrates the traditional hand-clapping pattern of *Soleá* and *Alegría* over a 12-beat cycle. It consists of several horizontal layers:

- Finger tapping:** A sequence of 12 notes with accents (x) on beats 1, 3, 6, 8, and 10. The notes are labeled with guitar fret numbers: 12, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.
- Strumming:** A sequence of 12 notes with accents (x) on beats 1, 3, 6, 8, and 10. The notes are labeled with guitar fret numbers: 6, 3, 4, 2.
- Ostinato (Soleá):** A sequence of 12 notes with accents (x) on beats 1, 3, 6, 8, and 10. The notes are labeled with guitar fret numbers: II, VI, II, I.
- Tactus:** A sequence of 12 notes with accents (x) on beats 1, 3, 6, 8, and 10. The notes are labeled with guitar fret numbers: 3, 2, 4, 4.
- METER:** A sequence of 12 notes with accents (x) on beats 1, 3, 6, 8, and 10. The notes are labeled with guitar fret numbers: 3, 2, 4, 4.
- Harmonic rhythm:** A sequence of 12 notes with accents (x) on beats 1, 3, 6, 8, and 10. The notes are labeled with guitar fret numbers: 3, 4.
- Hand clapping:** A sequence of 12 notes with accents (x) on beats 1, 3, 6, 8, and 10. The notes are labeled with guitar fret numbers: 1, 2, 3, 7, 8, 9, 10.

Example 14. Traditional hand-clapping pattern of *Soleá* and *Alegría*.

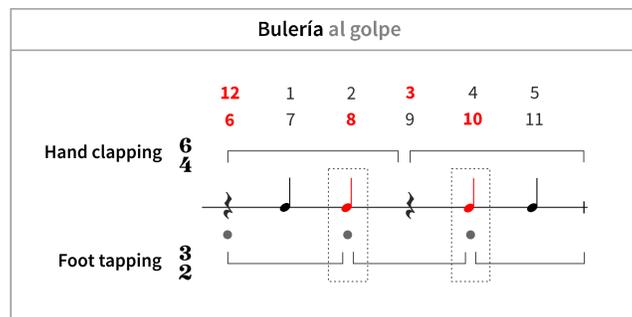
27. This hand-clapping base could also be seen as a “composite pattern” (London 2012, 67).

28. Regarding this confluence of different saliencies and the resultant tension or dissonance, Peter Manuel (2006, 102) asserts that “it is better to regard this compás [of *Soleá*] merely as a cycle, with internal tensions and resolutions rather than a meter in which the first beat has a special prominence as a starting or finishing point.”

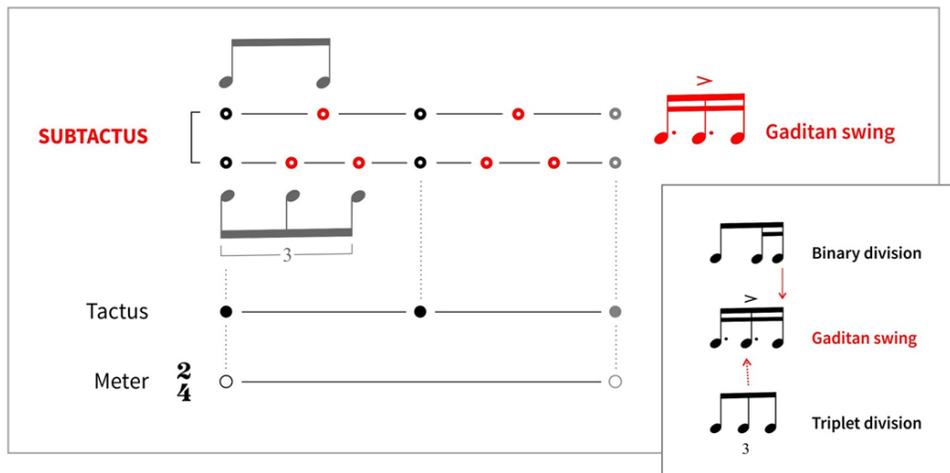
29. Flamenco harmonic progressions, here called ostinatos, are not necessarily constantly repeated. Each guitar genre, and particularly those of the variable meter group (*Soleá*, *Alegría*, and *Bulería*), is based on a number of harmonic designs that the guitarist combines according to flexible guidelines of the oral tradition. However, in these latter genres, the common harmonic resolution on beat 10 (sometimes anticipated to beat 9) also compensates for all the harmonic variations. As mentioned above regarding *Fandango de Huelva*, in a strict sense, these progressions are more likely characteristic designs that always come back in performance to refresh the genre identity rather than formal ostinatos. In this connection, see Jiménez de Cisneros (2015b, 86, 134–36).

as in Soleá. Both the predominance of binary accents in the traditional melodic design and the great ambiguity of Bulería at a syntactic level (often not keeping the call-and-response dialogue) have traditionally pushed performers towards bi-dimensionality, in which both the crossed and the linear hemiola are performed at once. The best example of this dual metric viewpoint is the primitive hand-clapping pattern known as *bulería al golpe* (Example 15), which superimposes triple grouping in hand clapping and duple grouping in foot tapping, a combination that allows performers to feel and follow both levels simultaneously ([Audio Example 16](#)).

The next group, headed by Tanguillo de Cádiz, is based on a different metrical foundation. More clearly outlining duple meter, the metrical tension in Tanguillo is embedded at the subtactus level, where different beat subdivisions are used simultaneously. In addition to the friction between beats divided into halves and thirds, Tanguillo is also distinguished by the use of an irregular beat subdivision or *swing gaditano* (Cádiz-style), made of two dotted sixteenth notes followed by a sixteenth note (similar to the Cuban 3-3-2 *tresillo* but found within the tactus). As illustrated in Example 16, the swing is due to the subtle anticipation of



Example 15. Traditional hand-clapping pattern *al golpe* (Bulería).



Example 16. Metrical tension and the resulting "swing" of Tanguillo de Cádiz.

the second note in the rhythm labeled “binary division”—influenced by the division in thirds or triplets—together with the systematic stress of this note.

Traditionally, the hand clapping outlines steady binary/quaternary subdivision, whereas the guitar accompaniment transcribed in Example 17 features Gaditan swing ([Audio Example 17](#)). The singing, meanwhile, usually combines all three subdivisions (in halves, in triplets, and according to the Gaditan swing), as shown in Example 18 (Vargas and Heredia 1970; [Audio Example 18](#)).

The metrical tension resulting from the vertical clash of these three subdivisions (when singing, hand clapping, and guitar accompaniment are performed together, as in the latter audio clip) does not affect the higher levels of metrical hierarchy.³⁰ However, the result of Tanguillo swing is a sense of greatly syncopated motion. In fact, the other genres of this group might be classified depending on how they traditionally developed or transformed this rhythmic cell: (a) drastically slowed down, as in the case of Tiento ([Audio Example 19](#)); (b) towards duple or quadruple meter featuring systematic triplets, as in case of modern Tanguillo (6/8) and modern Zapateado (12/8); and (c) complete binarization, as in Tango Flamenco, the leading genre of the following and final flamenco metric group.³¹

Example 17. Paradigmatic guitar strumming in Tanguillo de Cádiz.

Example 18. Mixture of divisions in a vocal fragment of Tanguillo de Cádiz.

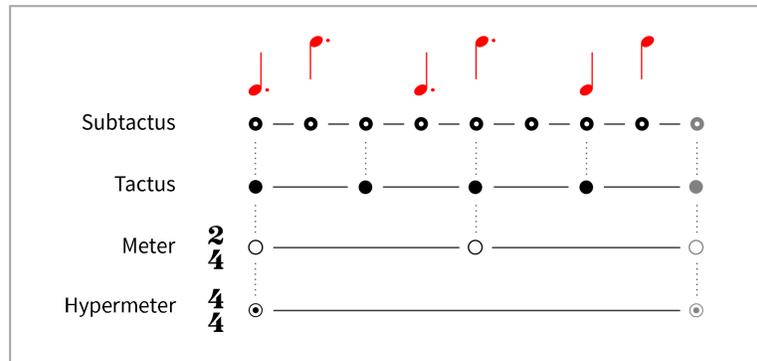
30. In his taxonomy of “metrical dissonance,” Harald Krebs (1999, 53) considers these “submetrical interactions” as “low-level grouping dissonances.”

31. On this effect, see also Jiménez de Cisneros (2017).

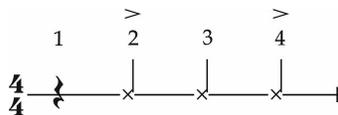
The last metric group stands out for its apparent lack of metrical tension, given that all genres in this group share the binary-quadruple frame shown in Example 19.³² In a context where vertical and/or horizontal hemiola represents a common trait, metrical stability or “consonance” now appears as an outstanding trait.

However, the absence of metrical tension does not mean the rhythm is lethargic or rigid. All genres in this group share the same hand-clapping pattern (at different speeds), governed by a strong backbeat feeling; that is, beats 2 and 4 are systematically stressed as in Example 20 ([Audio Example 20](#)).

Additionally, some of the genres within this group can be distinguished by systematic syncopation and off-beat stressing, using rhythmic ostinatos from Cuban son, particularly its *tresillo* and *clave* (as shown in the top row of Example 19). One of the best examples can be found in the early Colombiana, which inspired Rumba Flamenca ([Audio Example 21](#)). The shifted *tresillo* and the aforementioned emphasis on the backbeat can be seen as “displacement metrical dissonances” (Krebs 1999, 33), thus carrying a certain degree of metrical tension into an allegedly “consonant” metric group.



Example 19. Metrical structure of the steady pulses group: Tango Flamenco, Farruca, Garrotín, Colombiana, and Rumba Flamenca.³³



Example 20. Main hand-clapping pattern of Tango Flamenco.

32. This metrical frame corresponds entirely to one of the metric matrices identified by David Locke (2011, 54, fig. 2) in African music.

33. The red notes with downward stems in Example 19 refer to the higher voice, while the others indicate the ground bass in the characteristic ostinato of Colombiana (from o’18” in Audio Example 21).

THE METRIC MATRICES: TOWARDS THE GENESIS OF FLAMENCO

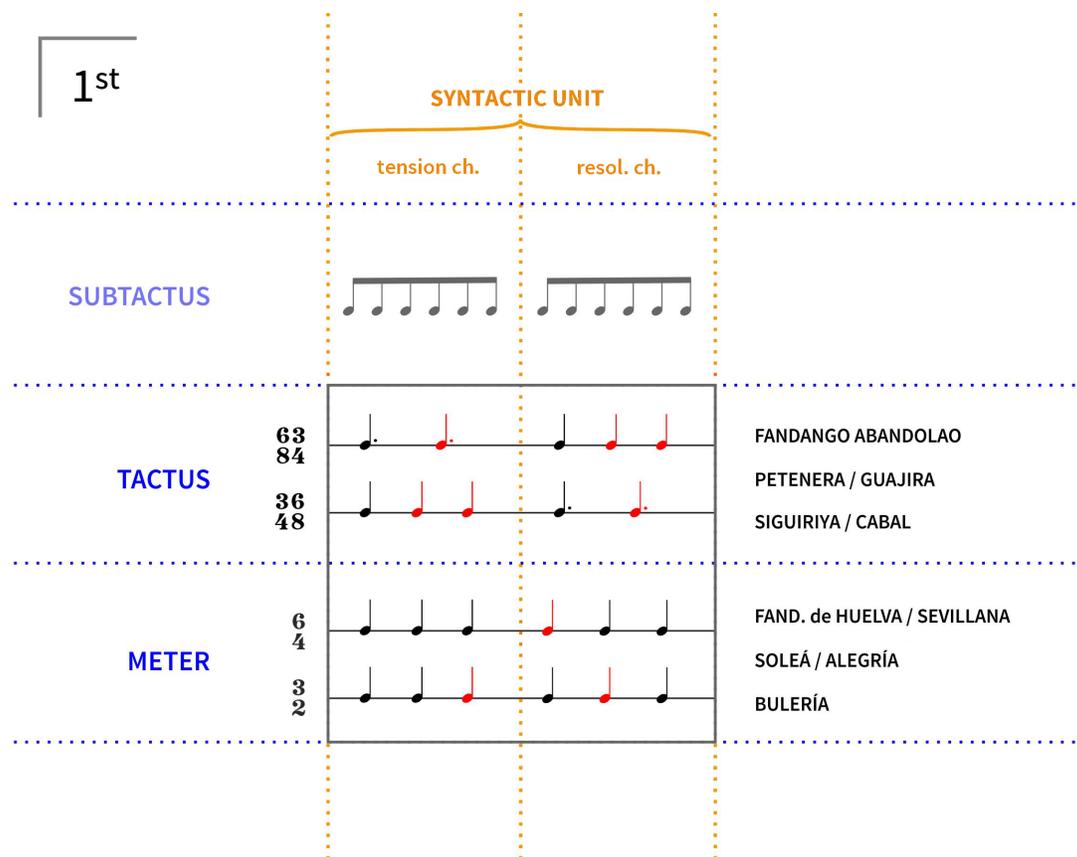
Heretofore, the pulse-level analysis has indicated that multifaceted metrical tension is a key factor that may help to track the musical genesis of flamenco, both in terms of grammar essentials and genealogy. The final part of this paper highlights a second key factor: the metric matrix, a shared time frame from which the rhythmic essence of all flamenco metered genres emerges. More than simultaneous multidimensionality, as described by David Locke (2011) regarding African music, the metric matrices of flamenco are indivisible time spans resulting from the homologies between different metric groups (the first three groups on the one hand; the last two on the other). They represent the metrical minimums, the only temporal units in which metered rhythm can make sense in flamenco, strongly marked by metrical tension. Therefore, rather than a combination of patterns unfolding simultaneously, flamenco matrices can be seen as the synthesis of different evolutionary lines.

First Metric Matrix

The genres in which the metrical tension is located at the tactus and meter (or supra-tactus) levels—those in the first three groups—are derived from the first metric matrix of flamenco. Based on a twelve-eighth-note time span (beat subdivisions), the first matrix features a systematic dialogue between tension and resolution chords, thereby forming a syntactic unit (Example 21). The most outstanding feature within this matrix is the multiple grouping of these eighth notes (at the tactus level). A great number of pre-flamenco Hispano-American genres show that the original use of this matrix served in some way to furnish a regular time span in which to play with the tactus through melodic, harmonic, and rhythmic variations.³⁴ From a prevailing $3/4$, these variations push towards a two-beat feel, at times in a systematic alternation, generating a clear five-beat span ($6/8 + 3/4$, i.e., $3/8 + 3/8 + 2/8 + 2/8 + 2/8$), as for instance in Guajira or Siguiriya, and at other times in a more ambiguous way.³⁵ In other words, the more systematic this alternation is, the greater the feeling of a linear hemiola, as in the

34. “In such nonelite contexts, the guitarist would continue the ‘la-mi’ ostinato with as many variations (*diferencias, falsetas*) as time and imagination would admit. The keyboard fandangos of [Antonio] Soler and others retain this loose, improvisatory, and clearly nonteleological character (which, together with other features, strongly suggests an Afro-Latin origin)” (Manuel 2002, 315). The improvisatory character within this matrix may involve not only the beat-feel and the harmony, but also dancing, with an intrinsic choreographic flexibility present in many of the “eighteenth-century social dances” inherited by most flamenco metered genres (Baird, Goldberg, and Newman 2015).

35. See also Jiménez de Cisneros (2015b, 109, 113). Guillermo Castro (2014, 184) speaks to this prevailing three-beat feel in pre-flamenco genres: “The most important is the ubiquitous ternary rhythm; and this, with a potential hemiola, is something that will lead to some modalities of alternate meter. This ternary rhythm will come up in all flamenco styles, except the family of tango. That is, the family of fandango (ternary styles with binary grouping: $3/4+3/4$ or $6/4$), *soleares, cantiñas, alegrías* and *bulerías* (ternary with hemiola in 6+6 cycles: $3/8-3/8 - 3/8-3/8$, or alternate: $6/4-3/2$), the family of *siguiriya* (alternate: $3/4-6/8$), *peteneras* and *guajiras* (alternate: $6/8-3/4$)” (translated by the author). Castro (2014, 165–84) has also insightfully analyzed the number and relationship of the pre-flamenco and flamenco genres involved in this first matrix (sixteenth to nineteenth centuries), all nested by the same hemiolic “gene.”



Example 21. The first metric matrix of flamenco.

Mexican example from the seventeenth century by Juan García de Zéspedes (Savall 2003; [Audio Example 22](#)).³⁶ When the two-beat feel is more subtle or sporadic, the feeling is closer to a vertical hemiola 2:3, as in the late baroque fandango by Santiago de Murcia (O’Dette 1998; [Audio Example 23](#)).³⁷

A second type of hemiola within the first metric matrix arises due to chord changes falling after four eighth notes (units of subactus) instead of three or six, introducing new metrical accents every two beats. This harmonic rhythm moves the hemiola from the tactus to the meter level, where two new accents struggle with the central one. These shifted chord

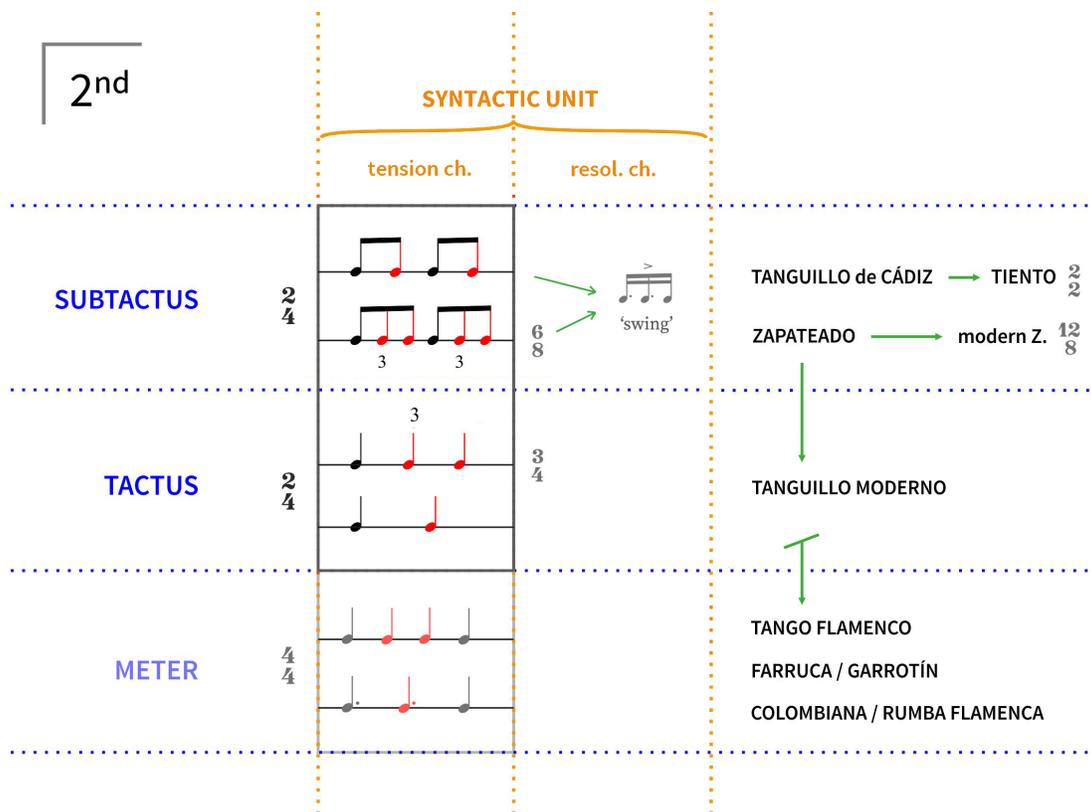
36. The horizontal hemiola is established here by the harmonic ostinato, in major tonality ($B\flat-C$ in $6/8 + F$ in $3/4$, i.e., IV-V-I).

37. The pre-flamenco fandango by Santiago de Murcia (Audio Example 18) features a $Dm-A$ chordal ostinato within this matrix. From a Western tonal viewpoint, this syntactic unit could have been described as a resolution-tension dialogue, rather than a tension-resolution one (Dm as the tonic chord; A as the dominant). However, from a flamenco perspective, these chords would rather correspond to a subdominant-tonic ostinato (in fact, this piece by Murcia ends on A instead of Dm). From a historical viewpoint, ethnomusicologist Peter Manuel (2002) lucidly asserts that the harmonic conception in such popular Spanish and Latin American pre-flamenco genres is more about “dual tonicity” (so Dm and A struggling as potential tonic chords within the matrix). In a way, this dual tonicity may represent the harmonic matrix of flamenco (and many Latin American genres).

changes can be heard not only in Fandango de Huelva and Sevillana, as previously shown, but also in early recordings of Fandango Abandolao (Pozo el Mochuelo, Encarnación la Rubia, and López [1905?]; [Audio Example 24](#)). This metrical tension later developed as a horizontal hemiola in genres such as Soleá, creating periods of twelve beats. However, old recordings and many guitar scores from the nineteenth century show the prevalence of six-beat motifs in this genre, as can be heard in this recording from 1908, where twelve-beat periods in the guitar only arise through the phrasing of the singing verse (Pena and el Hijo de El Ciego 1908; [Audio Example 25](#)).

Second Metric Matrix

The second metric matrix of flamenco represents a more recent evolutionary line in flamenco, including the genres of the last two metric groups, all of which derived from an Afro-Cuban polyrhythmic cell in duple time, formerly known in Spain as “*tango de negros*” or “*tango americano*.”³⁸ This cell presents metrical tension at subactus level, in which the aforementioned Gaditan swing results from the use of two different types of beat subdivision,



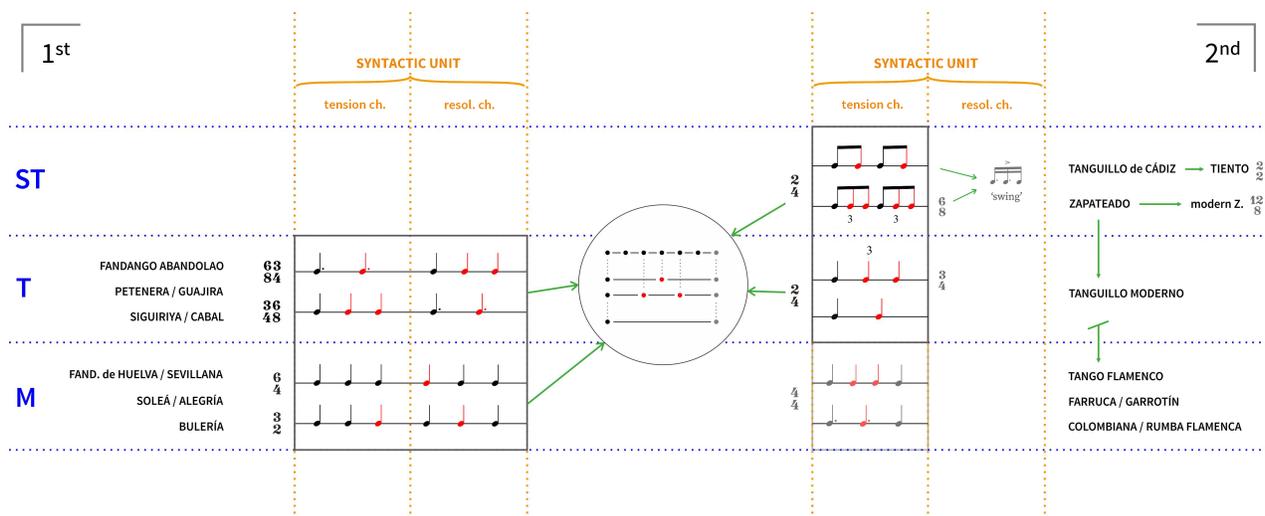
Example 22. The second metric matrix of flamenco.

38. As asserted by Faustino Núñez, the origin of this American Tango takes us back to Afro-Cuban genres from the eighteenth and nineteenth centuries such as Contradanza (Linares and Núñez 1998, 189–91).

into halves and thirds.³⁹ On the other hand, it is enlivened by a three-beat feel, either in the form of the so-called Cuban *tresillo* or the African three-over-two (Example 22). This cell can be heard in a wax cylinder featuring an early twentieth-century tango by the Spanish composer Federico Chueca (Gómez Montejano 2005; [Audio Example 26](#)).

As previously mentioned, all flamenco genres in quadruple time, apparently double value of this duple time span, actually evolved from this matrix, either after a process of binarization (i.e., from Tanguillo's irregular subdivision, named Gaditan swing, to a regular binary subdivision performing four isochronous pulses per measure) or a radical slowing down. Indeed, they represent the emergence of different branches from this Afro-Cuban seed. Whether duple or quadruple, all these time signatures can be equally considered the metrical minimums of each genre, the bearers of their metrical essence.⁴⁰

The differences between both matrices can be better understood from Example 23. From a metrical point of view, each matrix represents different time spans and depths. From a syntactic viewpoint, only the first matrix is equivalent to a syntactic unit, which I define as a completed pairing of harmonic tension and resolution. However, since the tension in the second matrix is likewise located within the time span despite being on different pulse levels, the matrix is already a freestanding musical unit, as proven by the fact that all genres involved with this matrix are much more flexible regarding regular cyclic phrasing than those in the



Example 23. The two metric matrices of flamenco and the hemiolic “gene.”

39. I adhere to Krebs's reasoning regarding the aptness of the adjective “metrical” in this kind of interactions at subactus level: “But what of sets of layers whose pulses are submetrical, in some cases not even notationally present (for instance, the micropulse arising from superpositions of eighth notes and triplet eighth notes)? It might be argued that sets containing such layers should not be termed ‘metrical’ consonances or dissonances. Since, however, I am defining meter as the union of all layers of motion active within a composition, I include even these submetrical interactions under the terms of ‘metrical consonance or dissonance’” (Krebs 1999, 30).
40. In this regard, see Jiménez de Cisneros (2017, chs. 8–9).

first one. Beyond these differences, the analysis has shown that both matrices are related, so to speak, to the same hemiolic “gene,” a paramount element of flamenco music.

CONCLUSION

The metrical structure of flamenco consists of a grid of five interacting pulse levels: subtactus, tactus, meter, hypermeter, and cycle, thoroughly marked by a transversal factor of metrical tension in the form of a hemiola. Although this sort of metrical dissonance is present in many other world music traditions, in flamenco it is pervasive, manifesting in multiple forms (vertical, horizontal, or even both), and on three different pulse levels: subtactus, tactus, and meter. This metrical tension is hence to be considered an essential feature of flamenco, governing almost all metric formulas. From a heuristic viewpoint, it becomes a taxonomic criterion, a key towards a holistic classification of metered flamenco. From a performing viewpoint, it helps to hold together the metrical structure: either crossed or alternated, the hemiola guides the common sense of musicians and dancers, becoming the main device for rhythmic cohesion.⁴¹

The pulse-level analysis has given rise to five metric groups or families, with ties not limited to the genres in each group, but extended among the groups, as reflected in the two metric matrices of flamenco, the true metrical minimums of flamenco. Considering the number of Hispano-American pre-flamenco genres involved in these matrices, new musicological paths in the research of flamenco genesis might be opened in the future.

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41. According to Krebs’s (1999, 22–62) taxonomy, the metrical tension of flamenco can be seen as a set of relatively “weak” and “simple metrical grouping dissonances” (as generally based on a ratio 3/2 or 2/3 and two “conflicting interpretive layers”). However, this relatively low intensity or minor complexity of flamenco’s metrical tension (e.g., compared to a 5:4 ratio or the 3-layer ratio 7:4:3) probably grants it its crucial role: rhythmic cohesion (instead of confusion or disorientation), of special relevance in collective performance not based on any formal hierarchy or rehearsing process. In some way, this “low tension” gives the musical motion the right degree of both magnetism and challenge to allow simultaneous participation of attuned listeners of all ages, as has been traditional in flamenco.

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