



El Cajón del Mariachi: Schemata of a Vernacular Genre

El cajón del mariachi: Esquemas de un género vernáculo

 Luis Zambrano (California State University, Los Angeles, Estados Unidos) y

 Amy Bauer* (University of California, Irvine, Estados Unidos)

*abauer@uci.edu

Abstract

Mariachi music has long been recognized as a—perhaps the—central genre of vernacular music in Mexico, with scattered academic studies investigating its ties to Mexican culture, myth, and national identity. But the music itself, still propagated largely through oral instruction, has received little attention. Good Mariachi practice is based on a holistic model of performance that includes a prescribed repertoire of bass lines, harmonic changes, meters, forms, and instrumental voicings that operate in synchrony. Despite having coalesced around distinct regional styles both within and outside of Mexico, the musical tradition of Mariachi rests on select formal principles drawn from the Mexican *Ranchera*, Mexican *Son* and the historic instrumentation of trumpet, violin, *vihuela*/ guitar, and *guitarrón*, transmitted primarily through aural instruction. This makes Mariachi an ideal case study for unique schema prototypes inspired by Robert Gjerdingen's *Music in the Galant Style* and modeled on foundational examples in the core Mariachi repertoire known as *Cajón*. These archetypes incorporate specific harmonic motions, bass patterns, and instrumental voicings within a single, well-defined unit. We will also address the practice of marrying instrumental performance practice to vocal delivery and describe how those units shape larger musical narratives. We further address these paradigms as they shape repertoire expansion and the expression of regional style within other genres of Norteño music.

Keywords: Mariachi, Cajón, schema theory, Ranchera, Norteño

Resumen

Se ha reconocido al mariachi durante mucho tiempo como un género —quizás el género— central de la música vernácula en México, con estudios académicos dispersos que investigan sus vínculos con la cultura, el mito y la identidad nacional mexicana. Sin embargo, la música en sí, que aún se transmite en gran medida a través de la instrucción oral, ha recibido poca atención. La buena práctica del mariachi se basa en un modelo holístico de interpretación que incluye un repertorio determinado de líneas de bajo, cambios armónicos, compases, formas y disposiciones instrumentales que operan en sincronía. A pesar de haberse consolidado alrededor de estilos regionales distintos tanto dentro como fuera de México, la tradición musical del mariachi se basa en principios formales preferidos y extraídos de la ranchera mexicana, el son mexicano y la instrumentación histórica para trompeta, violín, vihuela/guitarra y guitarrón, transmitidos principalmente a través de la instrucción aural. Todo esto significa que el mariachi es un caso de estudio ideal para prototipos únicos de esquemas, inspirados en Music in the Galant Style de Robert Gjerdingen y modelados a partir de ejemplos fundamentales en el repertorio central del mariachi conocido como Cajón. Estos arquetipos incorporan movimientos armónicos específicos, patrones de bajo y disposiciones instrumentales dentro de una unidad clara y bien definida. También abordaremos la práctica de unir la interpretación instrumental con la emisión vocal y describiremos cómo esas unidades dan forma a narrativas musicales más amplias. Abordaremos además estos paradigmas a medida que dan forma a la expansión del repertorio y la expresión del estilo regional dentro de otros géneros de música nortea.

Palabras clave: *mariachi, cajón, teoría de esquemas, ranchera, nortea*



Mariachi music has long been recognized as a—perhaps the—central genre of vernacular music in Mexico, with scattered academic studies investigating its ties to Mexican culture, myth, and national identity (Jáuregui 1990; Najera-Ramirez 1994; Sheehy 2006; Mulholland 2007; Campbell and Flores 2016; Ku 2017; Henriques 2021). But the music itself, still propagated largely through oral instruction, has received little attention.¹ Good Mariachi practice is based on a holistic model of performance that includes a prescribed repertoire of bass lines, harmonic changes, meters, forms, and instrumental voicings that operate in synchrony—voicings and melodic patterns are flexible; they are not included in our abstract schema but are addressed below—. Despite having coalesced around distinct regional styles both within and outside of Mexico, the tradition rests on select formal principles drawn from the Mexican *Ranchera*, the Mexican *Son*, and the historic instrumentation of trumpet, violin, *vihuela*, guitar, and *guitarrón*, transmitted primarily through aural instruction.²

This makes Mariachi an ideal case study for unique schema prototypes inspired by Gjerdingen (2007a) and a few scattered studies that apply that concept to vernacular and non-Western musics (Widdess 2013; Malin 2019). We first explain why we feel that Mariachi as a genre fits the expansive criteria that underpin the notion of schema theory as outlined by Gjerdingen (1988; 2007b), and summarized by Vasili Byros (2012a), as we discuss the larger network of cultural relations and associations

¹ An exception would be Jeff Nevin's *Virtuoso Mariachi* (2002), which is meant as a pedagogical handbook for those located largely outside the tradition.

² We designate Mariachi, Son, et al. as individual genres within the overarching Ranchera style. Cathy Ragland defines *música nortea* (Nortea music) as similar in instrumentation to Texas-Mexican *conjunto* but more focused on *corridos* and the *cumbia*, with a focus on the experience of Mexican immigrants throughout the United States. For the history and varieties of Nortea music, see Ragland 2009.

on which Mariachi draws. We then present schema prototypes modeled on foundational examples in the core Mariachi repertoire, known as *Cajón*. These archetypes incorporate specific harmonic motions, bass patterns, and instrumental voicings within a single, well-defined unit. We will also address the practice of marrying instrumental performance practice to vocal delivery, and describe how those units shape larger musical narratives. Before, we address these paradigms as they shape repertoire expansion and the expression of regional style within other genres of Norteño music.

Regional differences between Mariachi and Norteño

Although Son was the first genre to serve as the basis of Mariachi, the Ranchera style dominates Mariachi's current form. Ranchera in general focuses on the solo singer, and was featured in mid-century movie musicals that popularized the style. Rancheras are popular music that may appear in *lenta* (4/4), *corrida* (2/4) or *valseada* (3/4) meters. Their identity lies in the salience of component motives, as opposed to harmonic identity, which allows their dissemination among a variety of genres and ability levels. But we note here several important differences that distinguish Norteño music—popular music of northern Mexico and the American border—from the genre of Mariachi.

Mariachi music defines more clearly the roles of each instrument and its section; a violin section may contain up to 9 members, 2-3 trumpets, and 2-3 chordal strumming instruments. The guitarrón bass, unique to Mariachi, is played in octaves; its strings span—from low to high—A-D-G-C-E-A. This voicing, along with its function in the ensemble to outline harmonies rather than simply provide a chordal bass distinguish it from the bass of other, more typical Norteño ensembles. Furthermore, there is no other instrument in Mariachi music that can function to produce both a harmonic cue and anchor the down-beat. As such, guitarrón movement is restricted to its support function. Both guitarrón and vihuela provide a metric and harmonic outline for the ensemble by emphasizing beats 2 and 3. The aesthetics of the Mariachi sound world require that the functional balance of the timbre among different sections be maintained.

By contrast, Norteño styles split the role of vihuela and guitarrón between rhythm guitar and drum—bass and snare, or some combination. Guitar and accordion may outline harmonic motion in the Norteño ensembles, while the drum can set tempo and cue down-beats, with the assistance of the guitar. The timbral differences between Norteño instruments—and their one-to-one ratio—also encourages a more active bassline and allows more liberty with instrumental expression. Such freedoms are synonymous with the narrative focus of genres synonymous with Norteño musics. If instruments and timbral qualities distinguish Mariachi music from Norteño genres, they yet retain overlapping repertoires and hence formal song structures, based on their shared history of poetry and songs from 19th-century New Spain.

There is a high degree of difference between Norteño music and Mariachi music, especially apparent when both musical groups perform renditions of the same song. These differences are not just due to instrumentation and timbre, but also result from the implicit rules that govern the larger body of Ranchera music. The first Non-Cajón introduction of “Las Botas de Charro,” noted below, is very similar to the same song’s introduction in a performance by Norteño group Conjunto Primavera, with the exception that they perform the melodic instrumental lines on a single accordion.³ The accordion

³ Conjunto Primavera’s version can be heard at YouTube: <https://youtu.be/Mrz4IpraOPY>.

adds melodic and harmonic elements not possible with trumpet and/or violin. Additionally, the coordination required by the trumpet and violin results in a simplification of rhythmic movement and elements. Hence, while superficially different, the arrangement itself is nearly identical. In fact, both genres have their own methods of “filling out” songs based on their genre’s respective Cajón repertoire/schematic outline.

Schema theory and Mariachi

The notion of schema is bound up with the cognition and anticipation of events based on experience. The schema prototypes Gjerdingen first identified in Galant music relied on “events” shaped by meter, melody, bass, harmony, and contour, which—singly, or in conjunction with other events—formed various schemata, whose contrapuntal profiles could be identified in the abstract by scale degrees and metric stress. Mariachi schemata work similarly, although in a less abstract form, with implied phrase relationships and flexible application. Yet Gjerdingen recognized that the musical knowledge so derived relates to a specific cultural and historic matrix, including pedagogy and training as well as the expectations of listeners.⁴ As Vasili Byros avers, schema theory in music is less a single discipline than a collection of sub-disciplines, but the work of Gjerdingen has specifically focused on schemata as part of a cognitively informed ethnography that models events and maps their function within larger works: a microtheory of a microhistory of musical style (Byros 2012b, 113–115). The abstract, music-analytic act of defining and locating schemata models both a compositional system and situated psychology of hearing that together express a recognizable style that identifies a genre, an audience, and a place (Byros 2012a, 284).

As noted above, Mariachi draws from several post-colonial genres of Mexican music, and is associated with a unique instrumentation that has remained stable through its history. But its formal models are derived from the “Cajón versions” that constitute the core repertoire of a modern Mariachi ensemble, a standard repertoire established by the late 1970s and early 1980s. Classic *Rancheras Valseadas* like “Hermoso Cariño,” “Las Botas de Charro,” “Con la Misma Tijera,” and “Los Laureles” were codified in well-known performances by arrangers and artists such as Rubén Fuentes, Vicente Fernández, Linda Ronstadt, and Mariachi Vargas de Tecalitlán. These iconic recordings and arrangements became the basis for aural instruction, and the formulas and expressive gambits they contained offered models for further variation and expansion in new works. These classic performances are well-known to the community of listeners, which will evaluate any Mariachi ensemble according to the skill with which it executes and maintains central tenets of the style.

The pathway to development for a young Mariachi musician⁵ seeking to join the professional ranks is broadly based upon the study of prominent recordings, as well as performing alongside more expe-

⁴ See <https://partimenti.org/>.

⁵ Luis Zambrano has directed a professional Mariachi ensemble since he was 12 years old. His ensembles have appeared on programming for NBC, Fox, and Univision, and he and his musicians have shared the stage with Angela Aguilar, Lucero, Jenny Rivera, Mariachi Garibaldi de Jaime Cuellar, Mariachi Divas, and Las Colibri among others. As a freelance artist, he has worked with musicians who currently perform with every major Mariachi ensemble in the United States. Zambrano began his youth ensemble before K-12 school Mariachi programs were established, which allow young students to develop experiential and technical knowledge of the genre. To streamline his group’s development, he devised a pedagogical method based on patterns and generalities observed in classic Mariachi recordings, which became the foundation of the schemata presented in this

rienced musicians who can serve as mentors. Most apprenticeships take the form of paid ensemble members; thus finding an apprenticeship may depend on personal and professional recommendations, a musician's proficiency in one or more instruments, their ability to sing, and existing knowledge of the repertoire. Yet knowledge is not centralized; a musician of ability will find opportunities for growth thanks to the decentralization and availability of musical recordings by professional artists and Mariachi ensembles.

"Los Laureles," "Con la Misma Tijera," and Mariachi Ranchera style

"Los Laureles" and "Con la Misma Tijera" offer examples of how such paradigms operate within traditional Ranchera forms. Both songs are highly popular among patrons and form part of the repertoire of every Mariachi musician. The structure of Ranchera songs follow a general pattern: Introduction, Verse(s), Interlude, Verse(s), and Closing Section. Each verse contains a primary harmonic objective and a cadence. The cadence will almost always consist of a V-I with a strong cadence on Primera (Tonic) approached through contrary motion in the bass; most verse endings follow such a general pattern of closure. Some of the most common harmonic and melodic resolutions include an ascending stepwise bass motion of $\hat{5}-(\hat{6}-\hat{7})-\hat{8}$ or $\hat{2}-\hat{1}$ in the bass. Embellishments of the V-I motion include expansions— $\hat{5}-\hat{7}-\hat{2}$ in the first of three measures, followed by a $\hat{5}-\hat{6}-\hat{7}$ motion, or $\hat{5}-\hat{7}-\hat{2}$ followed by a $\hat{4}-\hat{3}-\hat{2}$, both of which arrive on $\hat{1}$ in the final measure. Rhythmic variations may signal the start of a cadential sequence, modified to fit different meters. Introductions consist of highlighted melodic material from the verse section. The verse section itself is varied according to an array of forms, harmonic objectives, and acceptable lengths; the most common types are shown in Figure 1.⁶

Harmonic objectives are named according to the middleground harmony prolonged throughout a phrase: *Primera* (Tonic), *Segunda* (Dominant) and *Tercera* (Subdominant), as shown in the two primary verse types abstracted in Figure 1. *Primera*, *Segunda* and *Tercera* are the terms used for the three primary harmonic functions by Mariachi musicians, and correspond here to a middleground harmonic function; for instance, I-V-I prolongs *Primera* across four lines in the first segment. These objectives participate in the functional design of variably larger phrase units. All harmonic changes are confirmed by archetypal melodic material in the trumpets or violins, and certain melodic turns are used to separate stanzas within a verse. This archetypal melodic material is most commonly referred to as an *adorno*. Adornos come from the word *adornar* (decorate). Adornos vary by song in terms of melodic material, length, placement etc., but their decorative function is ever present throughout the repertoire. The most common placement of adornos is in between stanzas and on major harmonic changes/cadences. For instance, in a Ranchera Valseada such as "Los Laureles," the cadence will often contain melodic material seen in the refrain, or musical interlude, and the last verse and the ending material are often elided.

paper. His approach allowed musicians to quickly learn new repertoire requested by clients. Since establishing his own ensemble in 2012, Zambrano has orchestrated, transcribed, and taught repertoire that is often requested at paid performances, and trained musicians who have gone on to work in professional and semi-professional ensembles.

⁶ Each schema may be slightly compressed or expanded as in "Hermoso Cariño"—discussed below—which contains a *Primera*-*Segunda* with a harmonic rhythm of 2:2 and one cadence, and a *Tercera*-*Primera* with a harmonic rhythm of 2:2:2, where IV-I is repeated.

Figure 1. Verse types Primera-Segunda and Tercera-Primera. Numbers for the harmonic rhythm indicate beats per harmony.

Verse Type	Primera-Segunda	Tercera-Primera
Harmonic rhythm	4 : 2	2 : 2
Cadences	weak strong ("IAC") ("PAC")	strong ("PAC")
Harmonic Objective	I–V–I : V–I ↓ ↓ Primera – Segunda–Primera	(V ⁷ /IV) IV–I : V–I ↓ ↓ Tercera – Primera
Characteristic Bass Line	1̂ – 3̂ – 2̂	4̂ – 5̂ – 8̂

Our first example, "Los Laureles"—in an arrangement sung by Linda Ronstadt⁷—, is a fascinating exception to the group of four Cajón versions we discuss. Her *Canciones de Mi Padre* (*Songs from my Father*) was released in the late 1980s, much later than the Vicente Fernández examples we cite later. The arrangements and aesthetic of *Canciones* were intended to recreate a "romantic evening in Old Mexico" from the 1920s, and reflect a Ranchera style that serves as our baseline model.

"Los Laureles" (Figure 2)—see the full transcription in the supplementary materials—begins with a unique introduction, known by Mariachi musicians as *sinfonía*. A *sinfonía* serves as a sui-table introduction under two governing constraints: first, that the song is in one of three keys—F major, G Major, or A Major⁸—and second, that the opening vocal line of the first verse can be performed *ad lib*—as in "Los Laureles." In most other circumstances, the introduction would return as a musical interlude between verses. Regardless, the melody heard in the introduction introduces the most salient thematic material, while the interludes between verses capture the harmonic motion Segunda to Primera (mm. 68–73.2) and the subsequent cadential phrase (mm. 73.3–82). The verses themselves feature what we term verse type Primera-Segunda: a stanza-like structure expressed here with six segments per verse; this structure resembles a classical sentence, in the formal terminology established by William Caplin (1998). Cadences are designated as imperfect authentic (IAC), perfect authentic (PAC) or half (HC). Period and Sentence constructions divide into units designated by antecedent/consequent for the former and presentation/continuation for the latter. Thematic phrases are further divided into formal units designated Basic Idea (B.I.) or Contrasting Idea (C.I.). The harmonic rhythm follows a proportional 4:2 division between the first two-thirds—outlining Primera to Segunda (mm. 19–34)—and the final third, which moves from Segunda to Primera (mm. 35–43), with a characteristic 1̂–3̂–2̂ motion in bass throughout the first harmonic unit. "Los Laureles" in particular serves an important function within the genre, as it introduces a very typical Ranchera verse structure.⁹

⁷ Her version can be heard at YouTube: https://www.youtube.com/watch?v=Vd6UvP_iJU.

⁸ The *sinfonía* is a remnant of an older Mariachi style from the 1920s; the key was determined by historical restrictions of range within early ensembles.

⁹ All transcriptions used in this paper are by Luis Zambrano.

Figure 2. Annotated transcription of “Los Laureles,” mm. 19–43.

Verse Type Primera-Segunda

Basic Idea BI altered repeat

The score is divided into three systems, each with four staves: Voice, Violins, Trumpets, and Vihuela Guitarrón. The key signature is three sharps (F#, C#, G#) and the time signature is 3/4. The first system (mm. 19-28) features a vocal line with lyrics: "¡Ay, que lau - re - les tan ver - des! ¡Que ro - sas tan en - cen - di - das!". It includes Segment 1 (Basic Idea) and Segment 2 (BI altered repeat). The Vihuela part has circled numbers 1, 3, 2, and 2 below it. The second system (mm. 29-36) features lyrics: "Si pien - sas a - ban - do - nar - me me - jor qui - ta - me la vi - da Al - za los". It includes Segment 3, Segment 4, and Segment 5. The Vihuela part has circled numbers 2, 2, 5, 2, 3, 6, 7, and 1 below it, with the label "weak cad." under the final measure. The third system (mm. 37-43) features lyrics: "o - jos a ver - me Si no es - tas com - pro - me - ti - do." It includes Segment 6. The Vihuela part has circled numbers 3, 2, 6, 5, 3, and 2 below it, with the label "strong cad." under the final measure. The overall structure is labeled "Primera" and "Segunda" at the bottom of each system.

The harmonic paradigm “Primera/Segunda/Primera” proceeds at a slower harmonic rhythm, and closes with a weak contrapuntal cadence formed by an ascending line in the bass: the Mariachi equivalent of an IAC. This is followed by a hemiola—harmonies change every two beats—and concludes with what functions as a PAC in this style: approach to the final tonic via a descending bass. Similar to a classical sentence, the vocal line of “Los Laureles” introduces a B.I. which repeats with a specific final

variation whose conclusion rhymes with that of the first. The opening B.I. ends with scale degrees $\hat{6}-\hat{5}$, to form a 6-5 intervallic resolution over the bass (m. 22), while the altered B.I. ends with a $\hat{5}-\hat{4}$ motion and 4-3 intervallic resolution over the bass (m. 26) at the end of the characteristic $\hat{1}-\hat{3}-\hat{2}$ motion in the bass.

A Mariachi musician is alert to the harmonic movement implied by the shift from $\hat{6}-\hat{5}$ to $\hat{5}-\hat{4}$ between measures 22 and 26, and the fact that it triggers the subsequent “continuation” phrase. The vocal line signals the continuation with a $\hat{5}-\hat{7}-\hat{2}$ line segment over dominant harmony (mm. 30–31), followed by a $\hat{7}-\hat{1}-\hat{2}-\hat{1}$ motion in voice over an arpeggiated and walking bass line (mm. 33–35). The fourth vocal segment (mm. 32.3–35) no longer arpeggiates the dominant, but circles the tonic, harmonizing the trumpet line in thirds (mm. 30–33). The fifth segment (mm. 36–38) contains two archetypal movements: a continuation of the thirds between lead trumpet and voice, and a contrapuntal $\hat{1}-\hat{3}-\hat{2}$ motion in the bass. Segment six (mm. 39–42) follows segment five with the vocal line outlining scale degrees $\hat{8}-\hat{7}-\hat{6}-\hat{5}-\hat{3}$ to close out the verse.

Violins and trumpets are voiced according to prescribed harmonic and melodic cues, which vary with the size of the section. For example, trumpet takes the third and fifth of A major (m. 23), while violins voice the upper triad of a seventh dominant chord (m. 29). Where accompanying voices fall back, the solo line harmonizes with the vocal line (e.g. mm. 38–40, first trumpet). A typical Mariachi ensemble features two trumpets, which alternate between solo, unison, and homophonic lines in thirds or sixths. The violin section usually includes three parts, which also alternate between solo and trio, but with the second and third violin performing in unison.¹⁰ Figure 3 outlines the structure of “Los Laureles” with incipits for each formal section.

Our second example, “Con La Misma Tijera,” is best known in a version by Vicente Fernández, which we will use as our exemplar.¹¹ It can be considered an elaborated version of “Los Laureles,” with a combination of verse type Primera-Segunda and the second verse type Tercera-Primera, and a proportional 2:2 division of the harmonic objective Tercera-Primera—IV-I-V-I, with an optional tonicization of the opening IV—and the characteristic bass motion $\hat{4}-\hat{5}-\hat{8}$.

“Con la Misma Tijera” alters the “Los Laureles” bass line slightly; the bass line $\hat{1}-\hat{b}\hat{3}-\hat{2}$ (mm. 15–17) functions identically to the $\hat{1}-\hat{3}-\hat{2}$ motion seen earlier, implying a secondary leading-tone embellishment of the dominant (Figure 4). Verse type Tercera-Primera (Figure 5) is also pervasive in the Ranchera genre, and is found in verse three of “Con la Misma Tijera” (mm. 67–84). The first section of two outlines the harmonic motion I-(V/IV)-IV (mm. 66.2–69), complemented by a descending vocal line whose $\hat{b}\hat{7}-\hat{6}$ establishes a 4-3 intervallic motion over the bass (m. 69). Trumpets follow the conventions established earlier, with a four-note linear ascent to scale degree $\hat{4}$ in bass—a recurring trope in this style. Other hallmarks include a passing Segunda between Tercera and Primera (mm. 70–74) and a trumpet adorno that elaborates the cadence (mm. 73–76). The ensuing phrase (mm. 76–84)—as in “Los Laureles”—recalls the song’s introduction at the cadence to verse three.

¹⁰ These conventions extend to the voicing of triads within the string section. At the end of lines the fourth will always be voiced by second and third violin in a second-inversion chord, and by first and second violin in a first-inversion chord. If the ensemble has only two violins, the fourth is dropped; the second violin part essentially disappears, and the third may shift an octave higher.

¹¹ His version can be heard at YouTube: <https://www.youtube.com/watch?v=b4bWFWj7498>.

Figure 3. Formal structure of "Los Laureles;" time stamps reflect the Ronstadt recording.

The musical score is divided into several sections, each with a time stamp and a label:

- 00:16**: **A** (19-44) - *que lan - re - les tan ver - des!*
- 00:47**: **B** (45-67)
- 01:37**: **C** (68-82)
- 01:27**: **B** (83-91) - *D.S. al Coda*
- 01:56**: **B** (44-62) - *8^{va}*
- 02:16**: **B** (88-91) - *8^{va}*

Section labels and their corresponding measures are shown in dark grey arrow-shaped boxes:

- Sinfonia** (mm. 1-18)
- Verse 1 (Primera-Segunda)** (mm. 19-44)
- Verse 2 (Primera-Segunda)** (mm. 45-67)
- Musical Interlude** (mm. 68-82)
- Verse 3 (Primera-Segunda)** (mm. 83-84 || : 22-44)
- Verse 4 (Primera-Segunda)** (mm. 44-62 || : 85-91)
- Coda** (mm. 88-91)

Instrument parts include Voice, Violins, Trumpets, and Vihuela/Guitarra. The score is in 3/4 time with a key signature of two sharps (F# and C#).

Figure 4. Annotated transcription of “Con la Misma Tijera,” mm. 10–38 (altered to reflect current practice).

Verse Type Primera-Segunda

A

The score is divided into segments and includes performance markings:

- Segment 1:** Measures 10-19. Lyrics: "Por la for - ma en que te an - das por - tando. Sé que no an - das a - gus - to con - migo." Includes circled 'A' and circled 'k3' markings.
- Segment 3 Primera:** Measures 20-29. Lyrics: "Yo de - seo que me di - gas de pla - no. ¿Qué pa - pel de - sem - pe - ño con - ti - go? Si tan - te - as que". Includes circled '1' and circled '2' markings.
- Segment 4:** Measures 30-31. Lyrics: "te es - toy es - tor - bando Yo me lar - go y no hay na - da per - dido." Includes circled '1' and circled '2' markings.
- Segment 5:** Measures 32-33. Lyrics: "Si tan - te - as que". Includes circled '1' and circled '2' markings.
- Segment 6:** Measures 34-38. Lyrics: "te es - toy es - tor - bando Yo me lar - go y no hay na - da per - dido." Includes circled '1' and circled '2' markings.

Instrumental parts include Violins, Trumpets, and Vihuela Guitarron. Fingerings are indicated at the bottom of the score: 5 6 7 1 6 5 4 3 2 1.

Compared to “Los Laureles,” trumpet and violin lines take on a more involved role, but follow the same general conventions. Each instrumental group, in alternation, supplies an accompanimental function to the vocal or bass line to fill out the arrangement. It is our contention that this alternation is necessary to allow the vocals to project, as the lyrics and their content are perhaps the most important feature of the Ranchera style. Both instrumental groups typically play together only in the singer’s absence. Figure 6 indicates the formal outline of “Con la Misma Tijera.”

Figure 5. Annotated transcription of “Con la Misma Tijera,” mm. 66–84 (altered to reflect current practice).

Verse Type Tercera-Primera

(01:15 in Fernández recording)

① (Tercera) Segunda Primera ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

This brief introduction to common verse forms within Rancheras should provide a useful lens through which to view the expanded verse constructions in the popular songs “Las Botas de Charro” and “Hermoso Cariño.”¹² The first verse of “Las Botas de Charro” is an extended version of Type Segunda-Primera we will call SPSP, which also lacks a preliminary cadence before the final approach to Primera (Figure 7). The expansion of Segunda-Primera relies on a static repetition of the basic idea over the first prolonged harmony. The second verse also expands Type Tercera-Primera in similar fashion. Musicians consider this Primera to Tercera/Tercera to Primera, although the second phrase actually moves from Segunda to Primera. The introductory material of “Las Botas de Charro” furnishes instrumental material for verse 3, a kind of inverted type Segunda-Primera that terminates with an IAC. Its repetition closes with a PAC to reveal an expanded period, which again furnishes material for the following interlude. Verse 4 is immediately succeeded by the final verse. This SPSP/TPTP verse structure also applies to “Hermoso Cariño” (Figure 8). The brief interlude between verses 1 and 2 functions more as a buffer, followed by an extended second verse. Once again, the interlude that follows repeats the Tercera-to-Primera motion in verse 2. Ranchera music provides a wide array of lyrics and

¹² Both Fernández’s versions can be heard at YouTube: <https://www.youtube.com/watch?v=50583bUBbWE> and <https://youtu.be/vseHc4lc-Do> respectively.

Figure 6. Formal structure of "Con la Misma Tijera," time stamps reflect the Fernández recording.

The musical score is divided into several sections, each with a time stamp and measure range:

- Introduction** (mm. 0.2–10)
- Verse 1 (Primera-Segunda)** (mm. 10.2–38)
- Verse 2 (Primera-Segunda)** (mm. 38.2–66)
- Verse 3 (Tercera-Primera)** (mm. 66.2–84)
- Interlude (from V1, V2)** (mm. 84.2–94)
- Verse 4 = Verse 2** (mm. 38.2–66)
- Verse 5 = Verse 3** (mm. 66.2–80; 95–99)
- Coda** (mm. 99–102)

The score includes staves for Voice, Violins, Trumpets, Vibraphone, and Guitar. Time stamps are provided at 00:14, 00:45, 01:16, 01:36, 01:46, 02:06, and 02:37. Section markers A, B, C, and D are placed at the beginning of their respective sections.

Figure 7. Formal structure of "Las Botas de Charro," time stamps reflect the Fernández recording.

Introduction
mm. 0.2–8.1

Verse 1 (PSPS)
Primera–Segunda,
Segunda–Primera
00:13 00:45

Verse 2 (Type TPTP)
Primera–Tercera,
Tercera–Primera (via Segunda passing)
00:45 01:16

Verse 3.1 (Inverted PS)
Segunda–Primera, weak cadence
Verse 3.1, strong cadence
01:16 01:30

Verse 3.2 (Inverted PS)
mm. 64.2–74.1

Verse 4 (PSPS)
Primera–Segunda,
Segunda–Primera
01:44 01:55

Verse 5 (TPTP)
Primera–Tercera, weak cadence
Tercera–Primera (via Segunda passing)
01:55 02:26

Coda
mm. 81–84

Interlude
From 3.2
m. 74.2; 1–8.1

Verse 4 (PSPS)
Primera–Segunda,
Segunda–Primera
01:55 02:26

Verse 5 (TPTP)
Primera–Tercera, weak cadence
Tercera–Primera (via Segunda passing)
02:26 02:56

Coda
mm. 81–84

Figure 8. Formal structure of “Hermoso Cariño;” time stamps reflect the Fernández recording.

The figure displays a musical score for "Hermoso Cariño" with four systems of staves (Voice, Violins, Trumpets, and Viola/Celli). The score is divided into sections with time stamps and measure ranges indicated by arrows:

- Introduction:** mm. 0.3–16.2
- Verse 1 (Primera-Segunda):** mm. 16.3–49. This section includes a "Musical buffer" and is categorized as "Primera-Segunda, Segunda-Primera".
- Verse 2 (Tercera-Primera):** mm. 48.3–80.1. This section includes a "Musical buffer" and is categorized as "Primera-Tercera, Tercera-Primera".
- Interlude:** mm. 80.3–96.2. This section is categorized as "Tercera-Primera".
- Verse 3 = Verse 2:** mm. 96.3–97 D.S. 48.3–77. This section is categorized as "Primera-Tercera, Tercera-Primera".
- Coda:** mm. 98–103. This section is categorized as "3-note descending motive heard throughout".

Time stamps for the beginning of each section are: 00:21, 00:54, 01:34, and 02:27.

melodies, presented in the form of verses throughout a song. While the collection and presentation of these verses is diverse and song specific, there is a unifying pattern to the harmonic framework shared by these verses. Most verses follow one of two major harmonic frameworks, Segunda-Primera or Tercera-Primera, reflecting the primary major harmonic objective of the verse type. Despite their large array of potential harmonic and melodic embellishments, all Ranchera verses can be distilled to one of these verse types.

Fixed and flexible concepts within Ranchera performance

While the standard Mariachi repertoire is for the most part established, there is a huge amount of variability in how this repertoire is performed, despite the use of conventional Cajón versions. The most obvious alterations apply to the varied instrumental groupings possible: a performing Mariachi ensemble can range anywhere from 3 to 14 members at any time. The way in which musicians work also plays a factor. Specifically, working ensembles are decentralized; a musician may work with an entirely different group of musicians from one day to the next. This applies as well to learning repertoire, as a musicians' acquisition of repertoire and style is contingent upon the peers they work with and the area in which they work. The performance of Cajón renditions may be thwarted by decentralized work environments and repertoire acquisition. The ensemble may lack musicians or the musicians present may lack knowledge of a particular song or arrangement. However, musicians use their understanding of implicit conventions to perform songs that may not be mastered by all musicians in the particular performance ensemble. This section will revisit previous musical examples and present a multitude of hypothetical solutions to performance situations in which a Cajón version of a given song cannot be executed.

¿Sabes cómo va? (Do you know how it goes?)

Within Ranchera style, any song can be performed if two conditions are met: someone in the ensemble—usually the person singing—understands the melodic structure underpinning the lyrics, and the group understands the harmonic objectives that operate in each individual verse. Specifically, musicians require knowledge of what constitutes a verse type. As an example, we consider the song “Las Botas de Charro.” As long as the appropriate harmonic objectives within each verse are met, the means by they are achieved are arbitrary. Specifically, if the first verse of the song contains a I-V progression and closes with its corresponding V-I motion, that verse may contain supplements or alterations in the form of introductory material, embellishing harmonies, and melodic material that suits the harmonic progression. Additionally, voicing and meter are open to change. Musicians will use their understanding of Cajón renditions of other songs to form a working directory of schemata, to augment songs for which they lack knowledge of a specific Cajón arrangement. The following analysis will reconstruct and explore a non-Cajón version of “Las Botas de Charro” and examine various ways in which musicians may use their personalized working schematic outline and intuitions of Ranchera style to execute the song.

¿Cómo va la entrada? (How does the introduction go?)

Consider the Cajón introductory material of “Las Botas de Charro” (Figure 9a). The material used in the introductory material is derived from the cadential section of the second verse—verse type TPTP (Figure 9b). Two examples of non-Cajón introductions are presented: Figure 10a utilizes the first half of the original Cajón introduction, while the second half contains non-specific cadential material. The voicing must be restructured such that the upper voice of each melodic instrument does not end on scale degree $\hat{5}$. As such, the top voice of the violin takes $C\sharp$ rather than an E, so that the second half of the introduction has the upper voice ending on scale degree $\hat{3}$. The trumpets can circumvent this in two ways. They may use the example as presented. Alternatively, they could voice the first four measures with E over the $C\sharp$ and continue the second half of the introduction as written. Most importantly,

Figure 9a. Introduction to "Las Botas de Charro."

Musical score for Figure 9a, Introduction to "Las Botas de Charro." The score is in 3/4 time and D major. It features four systems of staves. The first system includes Violins, Trumpet in Bb, Armonia, and Guitarron. The second system includes Voice, Vns, Arm., and Gtrn. The music consists of chords and melodic lines. Chord diagrams for A7 and D are provided for the Armonia and Vns parts. The score is marked with a '6' at the beginning of the second system.

Figure 9b. Material from which the introduction to "Las Botas de Charro" is derived.

Musical score for Figure 9b, Material from which the introduction to "Las Botas de Charro" is derived. The score is in 3/4 time and D major. It features four systems of staves. The first system includes Voice, Vns, Arm., and Gtrn. The second system includes Voice, Vns, Arm., and Gtrn. The music consists of chords and melodic lines. Chord diagrams for A7 and D are provided for the Vns and Arm. parts. The score is marked with a '6' at the beginning of the second system.

Figure 10a. Non-Cajón introduction to “Las Botas de Charro.”

Figure 10b. Introduction to “Que Te Vaya Bonito.”

Figure 10c. Revoiced non-Cajón introduction.

the preference for the dyad shifts mid-introduction. In the first half of the introduction, the salient dyadic pairing is between C# and E, whereas in the second half, the salient dyadic relationship is between the C# and the A; with their homophonic movement culminating in an F# and D dyad. The second half of the introductory material is borrowed and reconfigured to fit a new song as shown in Figure 10b with “Que Te Vaya Bonito.” If the ensemble decided that Figure 10a was going to be their introductory material, they would address the shift in dyadic salience by revoicing the introduction. This can be done by having the first four measures played by a single trumpet, whereas the violins would enter on the second half of the introduction, as in Figure 10c.

Figure 11a. Second non-Cajón introduction.

Violins

Trumpet in Bb

Armonia

Guitarron

6

Voice

Vns

Arm.

Gtrn.

Figure 11b. Revoiced version of the second non-Cajón introduction.

Voice

Vns

Arm.

Gtrn.

The second introduction uses none of the original Cajón material and instead uses the primary melodic idea of verse type Segunda-Primera (Figure 11a). The material is then paired with a 6-note descending scale. This 6-note descending scale is a typical device used at the end of verses, usually succeeding the V-I harmonic motion. A Mariachi musician's schematic knowledge includes a range of

preferred voicing practices. The melodic material may be voiced in octaves or unison and split into the typical voicing for a descending scale. The introductory material may also be voiced by harmonizing the melodic material up a sixth or down a third as the group sees fit (Figure 11b). Scale degrees $\hat{1}$ and $\hat{6}$ are preferred to initiate phrases over scale degree $\hat{3}$, with phrases ending on scale degrees $\hat{1}$ and $\hat{3}$. This resembles the relation between PAC vs IAC in 18th-century Classical voicing, but rather than prioritizing the bass lines, in Mariachi schemata, priority is given to the upper voices.

Meter: Boom chuck or boom chuck chuck?

As mentioned earlier, the meter of the song is variable as long as the melodic integrity and harmonic objectives within each verse are upheld. Further examples of this flexibility are contained in the supplementary materials of this paper: Appendix 1a shows an example of the Cajón introduction restructured in 2/4 meter which maintains the position of downbeats found in the 3/4 original; Appendix 1b gives an example of this in the first non-Cajón introduction; Appendix 1c restructures the second non-Cajón introduction in 2/4 time—note the descending 6-note scale at the end of the passage, which is restructured while maintaining the same voicing.

Harmonic changes within verses: Coloring outside the lines

As noted, the main harmonic objectives within each verse type must be maintained and upheld. For instance, in verse type Primera-Segunda, I-V motion and its corresponding V-I motion must be preserved. However, there are multiple ways to execute I-V motion. Consider the I-V harmonic motion in verse type Segunda-Primera in “Las Botas de Charro.” For reference, a conventional harmonic change is provided in the supplementary materials (Appendix 2).²³

The entire harmonic motion spans three events. The first event functions as the preparation, while the second event initiates the movement to the harmonic change. The third event starts on the new harmony. The musicians alone determine how this is done, just as the sequence starts in Primera and resolves on V. Appendix 3 shows alternative bass lines that maintain the simple harmonic movements of I-V, while Appendix 4 indicates non-chord tones and chromatic basslines that may be introduced by the guitarrón players, as well as chordal embellishments which are also possible within the second sequence of type Segunda-Primera.

As observed, harmonic, chromatic, and melodic variability is confined to the second sequence when traveling from Primera to Segunda. When moving from Segunda to Primera, a similar three-event sequence follows. However, this time the variability occurs in the first event rather than the second event (Appendix 5). In verse type Tercera-Primera, the harmonic objectives of I-IV and the corresponding IV-I are facilitated by what is known as “preparation.” In both instances, the preparation is inserted between the Primera and Tercera in either direction. On the motion from I-IV, the preparation can be a I-V⁷/IV-IV or even a I-ii⁷/IV-V⁷/IV-IV (Appendix 6).²⁴ In practice, such preparation sequences are an important means of signaling to the other musicians upcoming section or harmonic

²³ The first measure functions to signal the harmonic change: the guitarrón alters its usual rhythm from dotted half notes (or one note per measure) to a half note and a quarter note in the measure. This is then followed by a measure in which the guitarrón plays scale degree $\hat{3}$ (F#) in the same half-note plus quarter-note rhythm. The guitarrón then resumes the dotted half-note per measure—one note per measure—on scale degree $\hat{2}$ (E).

²⁴ Another way to structure verse type Tercera-Primera is I-(V⁷/IV)-IV-(V-I-V)-I.

Figure 12. Adorno played at the first harmonic change in “Las Botas de Charro.”

The musical score consists of four staves. The top staff is for the Voice, with lyrics 'de tan-to que - rer - te'. The second staff is for Trumpets, showing a harmonic change from D major to A7 major. The third staff is for Armonia, featuring a steady eighth-note accompaniment. The bottom staff is for Guitarrón, providing a bass line with dotted rhythms.

changes. Whether a musician plays a harmonic or melodic instrument, they are conditioned to hear specific progressions within the guitarrón that indicate upcoming harmonic changes. Again, the experience, ability, and knowledge of the guitarrón musician and the others will allow for the improvisation or makeshift interpretation of a song to come off as coordinated—structured—as possible.

Filling out the song: Adornos confirming major harmonic changes

In Mariachi, adornos refer to any musical material not included in the song’s introductory or closing materials. To differentiate embellishment types, musicians often indicate, for example, that the adornos in the second verse should be different than those in the initial verse. Oftentimes, adornos are used as a way to “adorn” the measures in between verses. However, adornos may also occur while the vocalist is singing. At a minimum, two adornos should be used per verse over the harmonic movements Primera-Segunda and Segunda-Primera, chosen from a range of general melodic substitutes.

For instance, consider the arrival of Segunda in verse type Segunda-Primera of “Las Botas de Charro” (Figure 12). The example shows an adorno played at the first major harmonic change where previously the trumpets were silent. The ensemble may execute substitutes and variants in the case where the original material cannot be used, as shown in the supplementary materials: Appendix 7a maintains the same rhythmic values and ends on the same pitches as its model; Appendix 7b offers a rhythmic variant. Appendix 8a shows the commonly-found 4-note descending scale; at the end of verse type Primera-Segunda, the ensemble may use the material introduced earlier in the verse (Appendices 8b and 8c). Additionally, a 6-note descending scale—used in the non-Cajón introduction—is a very common device found throughout the standard repertoire, often used to confirm V-I cadences (Appendix 9).

The “filler” material for verse type Tercera-Primera is slightly different, and includes a 6-note ascending scale from I-IV (Appendices 10a and 10b), and a variant of the ascending scale (Appendix 10c). This material may be performed over V/IV or after the arrival of IV, depending on the structure of the vocal melody. While the main harmonic objective tonic to subdominant requires specific melodic material, the subdominant to tonic section of verse Tercera-Primera will cadence via dominant-tonic motion. But the cadence need not be confirmed by the melody, as the end of verse type Tercera-Primera either elides with the return of the introductory material or its ending. The treatment of its

harmonic objective varies widely in verse type Tercera-Primera. For instance, the harmonic motion of I-V/IV-IV may span three, eight, or twelve measures. The vocal line that follows the arrival of Tercera may start on IV and connect through IV-V-I or resume on V. As in “Las Botas de Charro,” there may be new material at the cadence. As such, the execution of non-Cajón melodic material in verse type Tercera-Primera is left entirely to the musicians’ existing knowledge of the style and repertoire.

Performance practice, education, and professionalism

Teaching Mariachi involves instilling not only the formal principles discussed above, but modeling rhythmic feel, style, and the musicality inherent in the genre. For example, students are taught to de-emphasize those notes which fall on the beat unless they are isolated by rests, in which case they will receive greater emphasis. They must emphasize almost every off-beat eighth-note, except for those in the middle of an eighth-note run that lie more than a step lower than both the note that precede and follows it, known as “ghosting.” Proper vibrato in Mariachi music is of vital importance to the aesthetics of the style and the timbre of the ensemble as a whole. Trumpet and violin adjust their vibrato to best match that of vocalists: a literal interpretation of “sing with your instrument.” To achieve this, violinists and trumpet players are trained to metrically subdivide their vibrato into triplets or duplets, whose subdivisions—depending on tempo—represent sixteenth- or eighth-notes. Instrumental accompanying figures are adjusted to ensure that the vibrato does not become a distraction. During instrumental refrains or harmonic confirmations, the vibrato continues to match that of the vocal, in width, tempo and in how it tapers. Finally, as Jeff Nevin (2002) observes, modern virtuoso Mariachis are obligated to contribute new arrangements, medleys or transcriptions, while retaining the essential elements that define the genre. Nevin identifies three aesthetics: a revisionist, a constructionist—new compositions—and a perfectionist, and identifies contemporary groups that exemplify each of the three approaches. But unlike our paper, Nevin never addresses the theoretical edifice or pedagogical skills that form the foundation of ranchera performance within the modern Mariachi practice.¹⁵

Conclusion: Cajón, a moving target

Another way to interpret the Cajón version of a song is to view it as the “standardized version.” As in most performance repertoires, standards change over time. Consider the 1958 version of “Los Laureles” made famous by Miguel Aceves Mejía and the 1987 Cajón version made famous by Linda Ronstadt.¹⁶ Both versions of “Los Laureles” have the same introductory material, but have different adornos. Next, consider the 1972 version of “Las Botas de Charro” by the original author Jose Alfredo

¹⁵ According to Nevin, “What all rancheras have in common is the fact that they are essentially a venue for a solo singer with a very simple accompaniment [sic]. All of the *other* types of songs which are also venues for a solo singer, for example the bolero, have very well defined musical characteristics to which about every song of that type adheres—the ranchero then can perhaps be identified as simply most Mexican songs which do *not* belong to any of the other more well defined types of song [sic]” (2002, 117). Nevin’s statement implies that there is no way to identify a Ranchera without excluding it from other categories, hence that the Ranchera has no style of its own. The authors take issue with this assertion. For the purpose of this study, the reader should note that most of the other song types are more clearly defined *musically* than the Ranchera: the category “Ranchera” contains more diverse sounding music than that of the other song categories in Mexican music. The—sadly incomplete—website by deceased “Mariachi Queen” Laura Sobrino contains more information on this topic: https://www.sobrino.net/mer/The_Ranchera.html.

¹⁶ Aceves Mejía’s version can be heard at YouTube: <https://www.youtube.com/watch?v=gEWdbJGMHUI>.

Jiménez¹⁷ and the 1979 Cajón version made famous by Vicente Fernández. These two versions vary drastically in terms of refrain material and adornos.

However, while ever-changing, the concept of Cajón schemata is of prime importance for Mariachi musicians. Not only do musicians learn “standard” versions that directly impact their ability to work with other musicians, but they are also learn conventions, styles, and practices through this repertoire. Most Mariachi musicians will find themselves repurposing material from songs that they have learned to execute songs that they do not know. The nature of verse types Segunda-Primera and Tercera-Primera allows little harmonic variation within a majority of songs. As such, identifying how and when to execute adornos, understanding harmonic and melodic contours, and Mariachi stylings is a skillset that is entirely contingent upon knowledge of the repertoire. For instance, the adornos used in Miguel Aceves Mejía’s version of “Los Laureles” have and will be repurposed when needed. Learning may be decentralized, but Cajón provides a centralized framework that allows for the schema at large to be learned by performers binationally across generations.



References

- Byros, Vasili. 2012a. “Meyer’s Anvil: Revisiting the Schema Concept.” *Music Analysis* 31 (3): 273–346. <https://doi.org/10.1111/j.1468-2249.2012.00344.x>
- . 2012b. “Unearthing the Past: Theory and Archaeology in Robert Gjerdingen’s ‘Music in the Galant Style.’” *Music Analysis* 31 (1): 112–124. <https://doi.org/10.1111/j.1468-2249.2012.00348.x>
- Campbell, Patricia Shehan and Leticia Soto Flores. 2016. “Mariachi Music – Pathways to Expressing Mexican Musical Identity.” In *Sustainable Futures for Music Cultures: An Ecological Perspective*, edited by Huib Schuppers and Catherine Grant, 271–302. Oxford: Oxford University Press.
- Caplin, William. 1998. *Classical Form: A Theory of Formal Functions for the Instrumental Music of Haydn, Mozart, and Beethoven*. New York: Oxford University Press.
- Gjerdingen, Robert O. 1988. *A Classic Turn of Phrase: Music and the Psychology of Convention*. Philadelphia: University of Pennsylvania Press.
- . 2007a. *Music in the Galant Style*. New York and Oxford: Oxford University Press.
- . 2007b. “Partimento, que me veux-tu?” *Journal of Music Theory* 51 (1): 85–135. <https://doi.org/10.1215/00222909-2008-024>
- Henriques, Donald A. 2021. “Mariachi (USA).” *Grove Music Online*. <https://doi.org/10.1093/gmo/9781561592630.article.A2256992>
- Jáuregui, Jesús. 1990. *El mariachi: Símbolo musical de México*. Mexico City: Instituto Nacional de Antropología e Historia – Consejo Nacional para la Cultura y las Artes – Taurus.
- Ku, Luis, editor. 2017. *El mariachi: Bailes y huellas*. Jalisco: Colegio de Jalisco.
- Malin, Yonatan. 2019. “Listening to Klezmer Music with Schema Theory.” Paper delivered at the Annual Meeting of the Society for Music Theory.
- Mulholland, Mary-Lee. 2007. “Mariachi, Myths and Mestizaje: Popular Culture and Mexican National Identity.” *National Identities* 9 (3): 247–264. <https://doi.org/10.1080/14608940701406237>
- Najera-Ramirez, Olga. 1994. “Engendering Nationalism: Identity, Discourse, and the Mexican Charro.” *Anthropological Quarterly* 67 (1): 1–14. <https://doi.org/10.2307/3317273>

¹⁷ Jiménez’s version can be heard at YouTube: <https://www.youtube.com/watch?v=WiDDQfpoRDE>.

- Nevin, Jeff. 2002. *Virtuoso Mariachi*. Lanham: University Press of America.
- Sheehy, Daniel. 2006. *Mariachi Music in America*. New York and Oxford: Oxford University Press.
- Ragland, Cathy. 2009. *Música Norteña: Mexican Migrants Creating a Nation between Nations*. Philadelphia: Temple University Press.
- Widdess, Richard. 2013. "Schemas and improvisation in Indian music." In *Music and Interaction*, edited by Ruth Kempson, Christine Howes, and Martin Orwen, 197–209. London: College Publications.

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