Aspects of Extended Techniques in Mario Lavista's *Canto del Alba* for Amplified Solo Flute

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ABSTRACT – Early in his life, Mexican composer Mario Lavista moved to Europe to immerse himself in the most avant-garde composition techniques of the time, enabling him to develop his own distinct style and language. Influenced by prominent figures such as Jean-Étienne Marie and Iannis Xenakis in Paris, as well as Karlheinz Stockhausen in Darmstadt, Lavista returned to Mexico in 1969. There, he joined other renowned artists in forming a movement that critiqued traditional forms of artistic expression and collaborated intensively to refine his own musical language, which he nurtured throughout his life in search of a more contemporary Mexican musical identity. As a result of these collaborations, Lavista composed *Canto del Alba* for amplified solo flute in 1979. This work marked a transition into a period of deeper exploration of instrumental sonic possibilities, a focus that continued into the early 1990's. *Canto del Alba* became a milestone in solo flute composition and the first work by a Mexican composer to employ extended techniques. These techniques play a pivotal role in the solo flute repertoire, enabling flutists to produce complex, layered sounds that push the boundaries of the instrument and enhance its expressive potential. From that point onward, Mario Lavista continued to craft music that explores a broader emotional and sonic spectrum, consolidating his legacy as a pioneer in contemporary Mexican composition.
Keywords: Lavista, flute, extended techniques, harmonics, multiphonics, whistle tones.

1. Introduction

By his own merit, Mario Lavista (1943-2021) is arguably the most influential Mexican composer of the second half of the 20th century and one of the creators who has guided a musical transition in Latin America towards the 21st century. Despite initiating his composition training with Carlos Chávez, one of the last representatives of the Mexican nationalist movement, Lavista developed a profoundly anti-nationalist discourse.

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This shift was largely motivated by his connection with European modernism, leading him to explore atonal languages and experiment with electronic music, along with extended techniques.

Before departing for Europe while still a student in Chávez's composition workshop, Lavista ventured into atonality with his *Cinco Piezas* for string quartet (1965) and *Seis Piezas* for string orchestra (1965). Influenced by composers from the Second Viennese School like Schoenberg, Berg and Webern, Lavista saw them as models for his own explorations of atonality, although without developing a specific interest in twelve-tone techniques. Nevertheless, the following year, Lavista published his first opus, *Monólogo*, a piece based on the twelve-tone row that Schoenberg employs in his *Variations for Orchestra*, Op. 31. *Monólogo* also incorporates a fragment from Nikolai Gogol's comedic tale *Diary of a Madman*, showcasing Lavista's passion for diverse artistic forms such as literature and painting, and indicating his early interest in their interdisciplinary relationship with music.[1]

Shortly after these initial premieres and feeling the need to familiarize himself with the most avant-garde composition techniques of the time, which would allow him to find his own style and languages, Lavista moves to Europe. There, the influence of personalities such as Jean-Étienne Marie and Iannis Xenakis in Paris, and Karlheinz Stockhausen in Darmstadt, permeates his musical ideals. In 1969, he brought these influences back to Mexico, where his ideas resonated within the atmosphere of the antagonistic movement of internationalization known as "*la ruptura*" (the break). This movement found its roots in the ideology of criticism that characterized the artistic and cultural life of the country in the late sixties and early seventies, opposing the old forms and particularly against nationalism.

As a result of exposure to the new techniques acquired during his stay in Europe, Lavista deepened his exploration through his early compositions. An interesting example from this period is his piece *Kronos* (1969), composed for 15 alarm clocks, revealing how Lavista successfully transformed the recently acquired influences into a highly personal compositional style. Guidance from well-established personalities like Luciano Berio and John Cage also led him to explore new timbres and textures produced by traditional instruments, employing extended techniques. This exploration includes the use of multiphonics in the woodwinds, while simultaneously experimenting with the manipulation of time and space.

[1] Vilar-Payá and Alonso-Minutti, "Estrategias de diferenciación en la composición musical: Mario Lavista y el México de fines de los sesenta y comienzos de los setenta", 271.

2. Mario Lavista's Vision of the Interpretative Phenomenon

In contrast to other composers who have an almost obsessive concern for strict adherence to the written musical text by performers of their works, Mario Lavista suggests that each piece of music inherently has, at least initially, two distinct interpretations. The first interpretation is found in the musical text authored by the composer, while the second is the rendition proposed by the performer. Lavista argues that the first interpretation remains static, imprinted in what the composer left for posterity: the score. Conversely, the second interpretation allows for numerous versions and variations as performers interpret his work. Even the same interpreter can present as many interpretations of a given work as the occasions on which they perform it.

Lavista emphasizes the intimate relationship between the performer and the original work of a composer as a crucial element for the work's survival. He does not relegate the interpreter to a mere "player" of the piece but rather recognizes them as an integral part of the creative process, incorporating their personal and cultural background when interpreting a piece. This ultimately contributes to the final result that we hear.

Lavista extends his perspective beyond the execution of a musical piece by the performer, also considering the listener as an integral element in the interpretative process. Unlike stereotypes that portray the listener as a passive participant in interpretation, Lavista views them as an active element interacting within their own context. Therefore, no two audiences experience the same interaction. The spectator brings their cultural background when listening to a piece of music, similarly to when appreciating a painting in a museum. Moreover, the interpretations that an individual spectator forms of the same work will differ based on the moment and various factors converging at that time. Lavista argues that comprehending the music within a composition requires the listener to delve deeper, revealing the multiple interpretative layers of the piece.

In the specific case of contemporary music, Lavista emphasizes the existence of highly disparate styles as a challenge for the listener. This phenomenon arises from the absence of a unifying language, as there was in tonality, providing a common thread for the diverse styles developed through that language from the 17th century until part of the 20th century. Naturally, this challenge also extends to the performer, whose cultural and technical background must be very extensive to approach the interpretation of any contemporary piece. Lavista concludes that we live in times of uncertainty regarding musical language, which adds another layer of difficulty to the interpretive process.[2]

[2] Reina Jorrín, "Agobios, incertidumbres y contemporaneidad… Una conversación con Mario Lavista".

3. Aesthetics in the Music of Mario Lavista

After returning from Europe, Mario Lavista underwent a relatively extended period of experimentation and assimilation of the recently learned approach to using traditional musical instruments. On one hand, there was the language-related aspect, which suggested and encouraged the development of new forms of notation. Composers needed (and were expected) to provide detailed performance instructions, including diagrams, drawings and special fingering charts, all accompanied by captions and numbered references. Consequently, the scores of their compositions became increasingly complex to read and interpret.

On the other hand, however, was Lavista's need for a deeper exploration of instrumental sonic possibilities. It is interesting to note that, towards the end of his life, Lavista acknowledged the responsibility a composer faces when attempting to channel an instrument's new timbres and sound forms. This insight is found in one of his numerous literary texts published by El Colegio Nacional in Mexico, in 2016: "Instruments need to be listened to very carefully to discover the voices they hold. This is how astounding worlds of sounds are revealed, and it is up to both imagination and reason to give shape to that new sonic reality."[3]

This way of referring to his process of experimentation with the sonic and timbral capabilities of the instruments is probably one of the two main reasons why Lavista was able to develop a unique and personal, almost introspective compositional style. The other reason is undoubtedly due to his close collaboration with top-level musicians with whom he maintained an emotionally personal relationship, as he himself suggests in his book *Trece comentarios en torno a la música* (Thirteen Comments about Music): "Through my works for solo instruments and small chamber groups, I aim to provoke an encounter and establish a deeply affectionate – even loving – relationship between the instrumentalist and their instrument. I hope that the work configures a space within which an intimate conversation arises between them."[4]

Upon close analysis of his chamber music works, it becomes evident that, in order to create a space where the performer could intimately connect with their instrument, Lavista himself felt the need to develop a close bond with the performer – a relationship extending beyond the mere acts of composing or editing the scores of his own pieces. All of his chamber music compositions are dedicated to those performers with whom he worked closely, who were also his close friends. Consequently, much of the anticipated relationship between the performers and his pieces unfolded during the collaborative exploration of new sounds. As a result, these alternative sounds were deeply intertwined

[3] Alonso-Minutti, "Poetic Encounters and Instrumental Affairs."
[4] Lavista, *Trece comentarios en torno a la música*, 41.

with a profound understanding of the personality of each instrumentalist with whom he collaborated. Moreover, thanks to the remarkable technical proficiency of the instrumentalists collaborating with Lavista, he could seamlessly integrate these new sounds into his distinctive musical discourse and aesthetics, which are a cornerstone of his work.

It was precisely within the spirit of these intimate collaborations that, in 1979, Lavista composed *Canto del Alba* (for amplified solo flute). *Canto del Alba* marked a crucial moment in Lavista's compositional career, representing a transition to the exploration of new possibilities for traditional instruments – a period that would extend until the early 1990's. Having said that, *Canto del Alba* is also the opening piece of a triptych for solo flute, composed over a four-year period, which also includes *Lamento a la muerte de Raúl Lavista* (1981) and *Nocturno* (1982). Consequently, throughout this extensive period of intense experimentation and creativity, Lavista forged a close collaboration with the Mexican flutist Marielena Arizpe, with whom he also shared a romantic relationship.

Having studied in Paris under the guidance of personalities such as Pierre Boulez and Robert Dick,[5] Arizpe emerged as a pioneer in the study and application of extended techniques for the flute in Mexico. Both Lavista and Arizpe were avid readers, sharing an interest in medieval poetry and music – elements that manifested in the composer's later works. It was precisely this authentic shared interest that led them to title the piece marking their first collaboration *Canto del Alba* (Dawn song), referencing the medieval erotic poetry genre known as "alba."[6] Marielena Arizpe performed the world premiere of

[5] "Dick, Robert (b. New York, Jan 4, 1950). American flautist and composer. He studied composition and electronic music with Robert Morris, Bulant Ariel and Druckman and the flute with H. Henry Zlotnik, James Pappoutsakis, Julius Baker and Thomas Nyfenger, receiving the BA from Yale College in 1971 and a MM in composition from Yale School of Music in 1973. After a period in New York, during which he held a solo recitalist grant from the National Endowment for the Arts (1983), as well as two composer fellowships (1988, 1992) from the same body, he moved to Lucerne in 1992. He was awarded a Guggenheim Foundation fellowship in 1994. His first flute work was *Afterlight* for flute solo (1973), published by Dick's own Multiple Breath Music company in 1984. Subsequently he has composed some 70 pieces for the instrument, often using other members of the family (piccolo, A♭ piccolo, alto flute and bass flutes in F and C) and providing ensemble partners including the vibraphone, vibraharp, electric guitar, drums, non-Western woodwind instruments and live electronics. He is the author of a number of important treatises on contemporary extended flute techniques." Powell, "Dick, Robert".

[6] "Alba (Provençal: 'dawn'). A minor genre of troubadour lyric, of which 19 examples survive. Several are anonymous or of uncertain attribution; of those whose authorship is reasonably secure, only *Reis glorios*, by Giraut de Bornelh, is the work of a poet of the first rank. Few can be dated with any precision, but the period of composition appears to extend from the last quarter of the 12th century to the end of the 13th. Most have a refrain – a rare feature in the troubadour lyric – and this normally includes the word 'alba'. The dawn plays a number of different roles in these pieces. Six of the poems are religious, and use the dawn as a symbol of redemption or awakening from sin. The remainder are amorous, and most of these are concerned with the parting of lovers at daybreak, though in two cases the lover is looking forward to the dawn. Modern commentators have tended to assume that the dawn-parting scenario represents the original form of the alba, and that the other varieties arose later, but there is little evidence for this." Haynes, "Alba."

Canto del Alba during a concert held at the Pinacoteca Virreinal in Mexico City on April 28, 1979, as part of the first edition of the Foro Internacional de Música Nueva Manuel Enríquez[7] (Manuel Enríquez International Forum for New Music). The premiere was a resounding success, and as Arizpe recalls more than forty years later, the piece received an overwhelming reception from the audience, among whom were notable personalities in avant-garde music such as Luciano Berio.[8]

In Lavista's creative process, one can discern the significant importance and influence that establishing an emotional connection with *his* performers meant to him prior to engaging in professional collaborations. In other words, Lavista deemed it essential to develop a personal understanding of them, spending time together, exchanging ideas and delving into their individual sensibilities. Both the flutist Marielena Arizpe and the Mexican oboist Leonora Saavedra[9] (for whom Lavista composed *Marsias* for oboe and

[7] "Enriquez (Salazar), Manuel (b. Ocotlán, June 17, 1926; d. Mexico City, April 26, 1994). Mexican composer. He studied composition with Miguel Bernal Jiménez in Mexico and Stefan Wolpe in New York. He was the director of the National Conservatory of Music (1972-4), the National Center for Music Research (1977-85) and the Music Department of the National Institute of Fine Arts (1985-91) of Mexico. He received the Premio Elías Sourasky (1972), the Premio Nacional de las Artes (1983) and the Diosa de Plata for film music (1972). He received commissions from the Beethoven Orchestra in Bonn (*Trayectorias*, 1967), SWF (*Ixámatl*, 1969), ÖRTF (*Encuentros*, 1972; *él y…ellos*, 1972), the Inter-American Music Festival of the Organization of American States (*String Quartet no. 3*, 1974), the French Ministry of Culture (*Tlachtli*, 1976), and the Latin American Music Festival in Venezuela (*Raíces*, 1977). His compositions have been performed at music festivals in Donaueschingen, Warsaw, Havana, Bourges and other places. He received fellowships from the Guggenheim Foundation (1971) and the Deutscher Akademischer Austauschdienst (1982-3). He was a member of Mexico's Seminario de Cultura and the Academia de Artes, and of the executive committee of the Consejo Interamericano de la Música. He taught composition at the University of California at Los Angeles and San Diego (1991). Apart from his composing activities he was also active as a violinist and administrator, promoting Mexican contemporary music abroad. In Mexico he founded several associations of composers and organized contemporary music festivals, including the Foro Internacional de Música Nueva, which he ran from its foundation in 1979 until his death". Saavedra, "Enriquez (Salazar), Manuel".

[8] Alonso-Minutti, "Poetic Encounters".

[9] "Leonora Saavedra's research centers upon the strategic constructions of self and other in the Mexican musical imaginary, and upon the role of historiography in transmitting and sustaining such constructions. She is particularly interested in the ways in which nations negotiate internal and external relations of power through the representation of the national in music. She is also interested in the relations between music, social class and the state. Her work draws on Marxism, cultural studies, and post-colonial, coloniality, and subaltern studies. She is considered the leading expert on Mexican composer Carlos Chávez. Before moving to the U. S. A., Professor Saavedra was active – as a researcher, performer of new music, and cultural administrator in Mexico – where artists and intellectuals play public roles that aim at impacting society at large. In 1985-87 she was the director of the National Center for Music Research (CENIDIM) in Mexico City, and in 2016 she occupied the Jesús C. Romero Chair at that institution. She is the editor of *Carlos Chávez and His World* (Princeton, 2015), which was translated into Spanish and published by Mexico's Colegio Nacional. Her publications include 'Carlos Chávez and the Myth of the Aztec Renaissance', in that volume, 'Carlos Chávez's Polysemic Style: Constructing the National, Seeking the Cosmopolitan' (*Journal of the American Musicological Society*, 2015), and the book *La música mexicana de 1910 a 1930: conocimiento social y comunidad identitaria* (Mexico, Cenidim, 2019)". See "Leonora Saavedra."

eight crystal wine glasses in 1982) acknowledge the intellectual and spiritual affinity as indispensable elements during Lavista's creative process. They both concur that "Mario [Lavista] is the kind of person who establishes spiritual relationships with the people around him. There are certain indispensable conditions he is looking for in his muses, such as an intellectual, spiritual and physical. When he does not find that affinity, he does not write."[10]

Despite his meticulous approach, arriving at rehearsals well-prepared and organized with his compositions, Lavista remained open to any suggestions his performers might offer, especially in adapting to their individual capabilities and technical requirements. Lavista collaborated with them to explore harmonics, fingerings, and overall effects, considering their feasibility and purpose. Discussions included determining which effects were more accessible and how to notate them in the score. Consequently, these close collaborations not only influenced the composition itself but also its textual aspect and notation – crucial for the accurate interpretation of the complexity of contemporary music.

As mentioned earlier, Lavista's artistic interests extended beyond music. He had a deep passion for reading, especially ancient poetry, and held a great admiration for painting. Lavista was an accomplished aesthete who, throughout a significant portion of his musical output, sought to establish interdisciplinary relationships and connections between his three favourite realms of art – music, poetry, and the fine arts. An example of this interdisciplinary approach is the inclusion of epigraphs in the scores of his works for solo instruments or chamber music. *Canto del Alba* is no exception, as Lavista incorporates at the beginning of the score the following fragment of a poem written by the Chinese poet, musician, and painter Wang Wei:[11]

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[10] Alonso-Minutti, "Poetic Encounters".

[11] "Wang Wei (b. 701, Qi county, Shanxi province, China – d. 761, Chang'an [now Xi'an], Shaanxi province), one of the most famous men of arts and letters during the Tang dynasty, one of the golden ages of Chinese cultural history. Wang is popularly known as a model of humanistic education as expressed in poetry, music, and painting. In the 17th century the writer on art Dong Qichang established Wang as the founder of the revered Southern school of painter-poets, whom Dong characterized as more concerned with personal expression than surface representation. Wang was born and brought up during the Tang dynasty (618-907) when the capital, Chang'an, was a truly cosmopolitan city that enjoyed both wealth and security. He received the prestigious *jinshi* ("advanced scholar") degree in the imperial civil-service examination system in 721 – probably more for his musical talents than anything else, although he is said to have revealed his literary talents as early as age nine. Wang's art can only be reconstructed theoretically on the basis of contemporary records and surviving copies of his paintings. He undoubtedly painted a variety of subjects and employed various styles, but he is particularly renowned for being among the first to develop the art of landscape painting. He is best known for ink monochrome (*shuimo*) landscapes, especially snowscapes. The latter demanded the use of *pomo* ("breaking the ink"), a broader ink-wash technique with which he is typically associated. Wang Wei's paintings were both innovative and traditional, but certainly it was his combination of masterful painting and poetic skills that brought about his almost mythical status in later ages. Virtually every anthology of Chinese poetry includes his works, and he is mentioned alongside Li Bai and Du Fu as one of the great poets of the Tang dynasty". See T. Editors of Encyclopaedia Britannica, "Wang Wei".

Sentado solo entre los bambúes	Sitting alone among the bamboos
toco el laúd y silbo, silbo, silbo.	I play the lute and whistle, whistle, whistle.
Nadie me oye en el inmenso bosque,	Nobody hears me in the immense forest,
pero la blanca luna me ilumina.[12]	but the white moon illuminates me.

By incorporating epigraphs into his compositions, Lavista reveals a deliberate intention to establish an initial connection between the audience and the piece even before the performer starts playing it. It is possible that he aims to convey, through poetry, the desired atmosphere for listening. Consequently, the performer transforms into an interdisciplinary artist, where their diction and intonation during the recitation of the epigraph become crucial elements for the proper interpretation of the piece.

4. Mario Lavista's Meticulous Notation System

One of the initial aspects that draws attention in Mario Lavista's compositions is his precise and intricate system of musical notation (see Figure 1). Through his intimate collaboration with each of his performers, they allowed him to firsthand experience and learn the technical and expressive possibilities of the instruments for which he composed. In the case of *Canto del Alba*, flutist Marielena Arizpe's contribution was essential for his understanding of extended techniques on the flute. As mentioned earlier, Arizpe already possessed a solid background in interpreting contemporary flute music and its associated technical challenges. This foundation was established through her close collaboration with the American flutist Robert Dick and the seminars offered by Pierre Boulez during her stay in Paris.[13]

[12] Lavista, *Canto del Alba*.
[13] Alonso-Minutti, "Poetic Encounters".

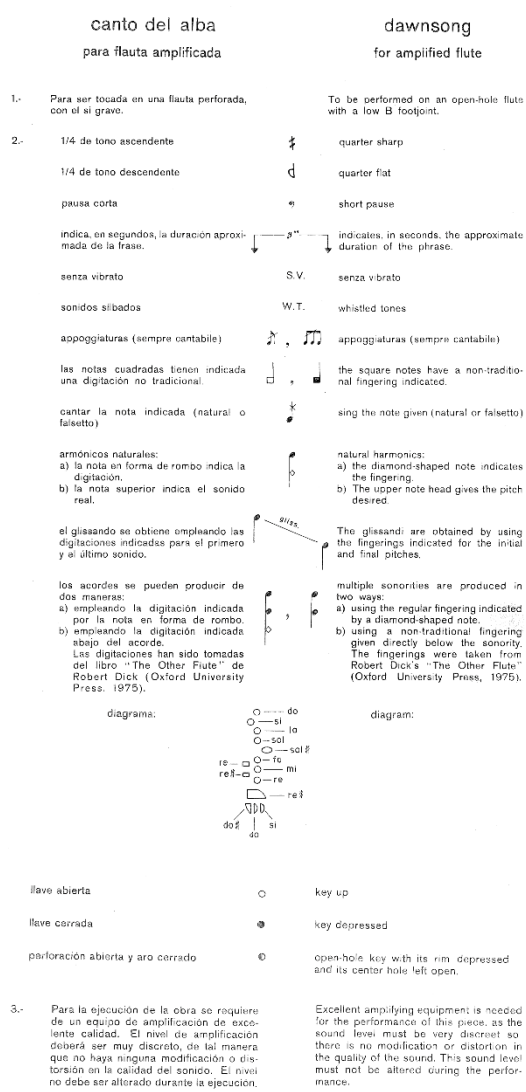
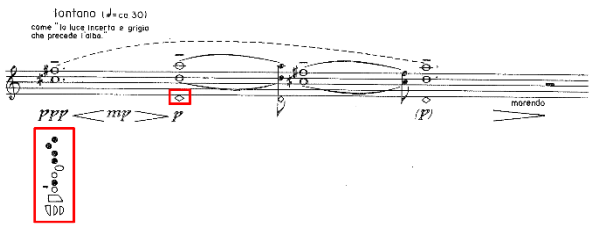


Fig. 1. Mario Lavista's performance instructions for *Canto del Alba*.[14]

[14] Lavista, *Canto del Alba*.

Upon her return to Mexico, Arizpe introduced Lavista to Robert Dick's pioneering work on extended flute techniques, notably through his book *The Other Flute*,[15] which had already been published since 1975. This exposure allowed Lavista to gain a deeper understanding of the technical possibilities of the instrument, including alternate fingerings, harmonics, multiphonics and more. The assimilation of this knowledge is evident right from the initial motif of *Canto del Alba*, where a sequence of two alternating multiphonics is introduced. For the initial multiphonics formed by the notes *C♯-F♯* (perfect fourth), Lavista provided a diagram below the staff detailing the exact fingering for the performer. In contrast, the second multiphonics, formed by the notes *D-A* (perfect fifth), is produced naturally by the harmonics generated simultaneously by the note *D* (an octave lower), using its regular fingering (see Example 1).



Ex. 1. Opening excerpt of Mario Lavista's *Canto del Alba*.

Lavista elaborates on the production of multiphonics in his detailed performance instructions, outlining two possible methods:

a) by using the regular fingering indicated by a diamond-shaped note;

b) or by using a non-traditional fingering provided directly below the corresponding sound.

He also specifies that all alternate fingerings were taken from Robert Dick's *The Other Flute*.[16] On the other hand, it is interesting to note that, in addition to the aforementioned initial epigraph, Lavista also incorporates the following performance indication regarding the nature of the piece: "*Come la luce incerta e grigia che precede l'alba*" (like the uncertain and grey light that precedes dawn).

Thanks to the ethereal sounds produced by the flute in *Canto del Alba*, the composer establishes a delicate atmosphere evoking great intimacy right from the beginning of the piece. Lavista, known for his meticulous attention to the smallest details, goes so far as to write a dotted slur that spans the entire initial motif. This suggests a uniform execution without edges on the part of the performer, ensuring that the linear and continuous

[15] Dick, *The Other Flute: A Performance Manual of Contemporary Techniques*.
[16] Lavista, *Canto del Alba*.

character of the piece's long phrases remains uninterrupted. The flute's sound transforms into a plastic phenomenon of space and time, resembling long strokes on the canvas of a painting.

4.1. Microtones

The use of microtones in music has ancient roots, tracing back to diverse civilizations and cultures, including the Greeks, Indians, Arabs, Persians, Turks and even the Byzantine Empire. Its incorporation into the rigid European tonal system of twelve sounds occurred mostly during the 20th century and was initially perceived as an exotic and adventurous incursion. However, towards the end of the 19th century, Mexican composer and theorist Julián Carrillo[17] had already embarked on experiments with a tempered quarter-tone system, which he named *sonido 13* (the 13th sound). His system primarily involved finer and equal divisions of the conventional twelve-tone tempered scale. While perfect-pitched instruments like the strings and the human voice can theoretically divide an entire tone into numerous parts limited only by the performer's hearing capacity, Carrillo's compositions required the construction of special instruments, such as pianos and harps capable of playing all integral divisions of the tone up to the sixteenth part.[18]

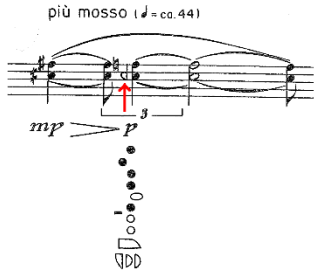
In the context of woodwind instruments, microtones can be achieved primarily through two methods: by adjusting the performer's embouchure and subsequently manipulating the air column or by introducing alternative fingerings that inherently

[17] "Carrillo(-Trujillo), Julián (Antonio) (b. Ahualulco, San Luis Potosí, Jan 28, 1875; d. San Angél, Sept 9, 1965). Mexican composer, theorist, conductor, violinist, inventor and teacher. Born to an American family during a seemingly peaceful period of Mexico's history, he received his early musical education at the National Conservatory in Mexico City, where he studied the violin with Pedro Manzano, composition with Melesio Morales and acoustics with Francisco Ortega y Fonseca. Between 1899 and 1905 he was in Europe, where he divided his time between the conservatories of Ghent and Leipzig; at Ghent he studied the violin with Albert Zimmer, and at Leipzig he was a pupil of Jadassohn (composition), Becker (violin) and Sitt (conducting), and led the Gewandhaus Orchestra under Nikisch. During these formative years he shaped his critical philosophy of the practical application and examination of all theoretical precepts. The results were revolutionary, and led him to a lifelong attempt at effecting greater accuracy among the discrepant postulates of physicists, mathematicians and music theorists, and at helping performers to apply, or at least understand them (see his *Pre-sonido 13*). As early as 1895, while he was experimenting on his own with the divisions of a string into multiple parts, he arrived at a 'new sound' (a note pitched in the mathematical ratio 1:1.007246), between *G* and *A* on the fourth string of his violin. Since this was the first ascending tone to break up the 'classical 12', he called it '*el sonido trece*' ('the 13th sound'). This single sound came to symbolize microtonality in general for Carrillo, and the many new theoretical and musical systems derived from it: scales, melodies, harmonies, metres, rhythms, textures and instruments (see his *'Sonido 13': el infinito en las escalas y en los acordes*)". Benjamin, "Carrillo(-Trujillo), Julián".

[18] Griffiths, Lindley, and Zannos, "Microtone".

produce intonations different from those achieved with standard fingerings. In some instances, a combination of both techniques is recommended.

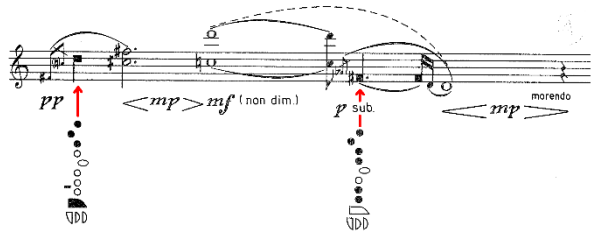
To distinguish between these two fundamental approaches to achieve the desired microtones, Lavista implements a simple yet clever notation system, explained in the performance instructions provided in the score. In the first scenario, alongside the note he wishes to modify, Lavista includes a slightly modified sharp symbol, indicating that the note should sound a quarter of a tone higher. Conversely, for the same note to sound a quarter of a tone lower, he uses an inverted flat symbol (see Example 2).



Ex. 2. Lavista's notation of microtones in *Canto del Alba*.

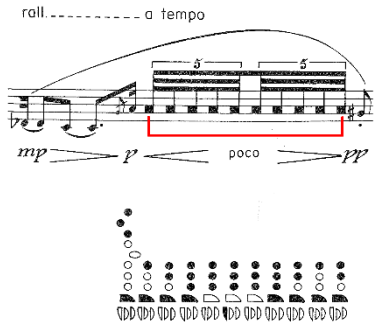
In the preceding example, the initial *C* note is altered by a modified sharp symbol, indicating that the resulting sound should be a quarter of a tone higher. Consequently, the interval within that multiphonics (with *F*♯) becomes slightly smaller than an augmented fourth (tritone). Later on, the same *C* is preceded by a modified flat symbol, suggesting that the produced sound should be a quarter tone lower. Therefore, the interval within this multiphonics (with *F*♭) is a quarter tone greater than a perfect fourth.

Another method Lavista employs to achieve the desired microtones involves the use of alternative fingerings applied to a specific note. This note is represented with a square shape, indicating that it should be produced using an alternative fingering as specified in the score. The corresponding fingering diagram is provided under the staff immediately below the affected note (see Example 3).



Ex. 3. Another way of obtaining microtones and its notation.

In contrast to the first method of obtaining microtones mentioned earlier, the latter approach has the unique feature of altering the colour of the modified note, thereby creating a more nuanced timbral texture. I personally refer to this variant of microtones as *colour microtones*. In certain instances, it is possible to achieve as many as five or more different variations of a single note, subdividing a semitone into as many parts as its variants permit, as illustrated in the following example (see Example 4).



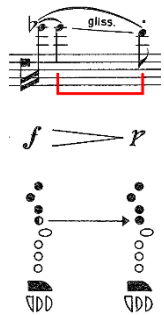
Ex. 4. Lavista's usage of colour microtones in *Canto del Alba*.

4.2. Glissandi

Another distinctive feature of *Canto del Alba* is the specific requirement for using a flute built with an open-hole system. In this system, the keys covering the tone-holes of the notes *A*, *G*, *F*, *E*, and *D* are perforated with a hole in the middle. Originally designed by the renowned flute makers based in Boston to enhance the ventilation of the tone-holes and, consequently, achieve a more open and projecting sound, the open-hole system also

offers an incidental benefit: the possibility of executing *glissandi* between certain intervals. Needless to say, this extended technique is not inherent to the flute since it requires a specific type of system that is not standard across all variants of the instrument.

In the following example, Lavista introduces, for the first time in his score, a descending glissando between the notes *E♭* and *D*, providing specific fingerings for both notes. It is crucial to emphasize that both notes are produced using alternative fingerings, requiring the player to make the necessary embouchure adjustments to achieve the desired pitches effectively. Additionally, the first fingering indicates that the *G* key must be open in its keyhole with only the rim depressed (illustrated by a half-full circle figure), and the finger pressing that key should smoothly slide until the key is completely covered, completing the second illustrated fingering and thus achieving the glissando effect (see Example 5).



Ex. 5. Lavista's inclusion of glissandi in *Canto del Alba*.

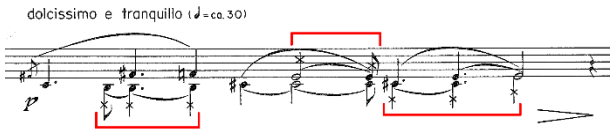
The advantages of the open-hole system on the flute extend beyond the production of *glissandi*; as this system also opens the door to obtaining certain multiphonics sounds through specific fingerings (see Example 6) that would be impractical on a flute with a closed-hole system, such as those commonly found on beginner flutes. Consequently, it is logical and conclusive to assert that addressing the contemporary flute repertoire today would not be possible without an instrument capable of effectively executing all the extended techniques demanded by composers. This is another example of how technology serves as a tool to expand and refine the technique.

Ex. 6. Multiphonics obtained with an open-hole system flute.

In the example presented, the initial note is a *C♯* harmonic produced by its fundamental, *F♯*, denoted by a diamond-shaped note. Following this, there is a multiphonics forming a diminished fifth (tritone) with the notes *F♯* and *C♮*. Lavista provides an alternative fingering for this multiphonics, involving uncovering the keyhole of the *F* note and keeping only the rim of that key depressed.

4.3. Humming

Up to this point, we have explored two fundamental forms of polyphony: a simulated polyphony, as exemplified by the technique employed by Luciano Berio discussed earlier, and a more "authentic" polyphony achieved through the production of multiphonics using alternative fingerings. However, in *Canto del Alba*, Lavista employs a third polyphony technique that involves the simultaneous use of the human voice along with the sound of the flute, commonly known as "humming", and which comes from the vocal technique called *bocca chiusa*. While the humming technique is originally employed in certain passages of vocal literature, any wind player, including flutists, can effectively adopt it to generate polyphony on a monodic instrument such as the flute without disrupting the production of natural sound. Lavista indicates the use of this technique by placing a cross on the stem of the intended note and specifies that the note can be sung either in a natural voice or with a "falsetto" (see Figure 1). He employs the humming technique in only two passages, with the first one being notably more significant (see Example 7).



Ex. 7. Lavista's use of the "humming" technique to create polyphony.

In this excerpt, Lavista develops a short counterpoint featuring a blend of dissonant and consonant intervals, intertwining the natural sound of the flute with the reverberation produced by the "humming" effect, resulting in a distinctive timbre. The dissonant character of the passage is established from the beginning with the first *appoggiatura* of *F♯*, a non-harmonic note forming a tritone with *C♮*. Lavista's deliberate use of this appoggiatura is not coincidental, as among all non-harmonic notes, appoggiaturas represent the most expressive category. Subsequently, the movement of both voices introduces intervals such as a minor second, and a perfect fifth resolving to a tritone (*B♮-F♮*). Following this, a minor third (*C♯-E♮*) emerges with the voices inverted – the "humming" effect serving as the upper voice, while the natural sound remains the fundamental voice. Eventually, an apparent consonance appears in a unison between both voices played simultaneously, yet it produces a dissonance due to the clash of different timbres. From a stylistic perspective, Lavista's contrapuntal interplay and resulting timbre of the mixture between the flute and the human voice, passing through various intervals and their associated reverberations, evoke a reminiscent quality of the Gregorian chant.

4.4. Whistle Tones

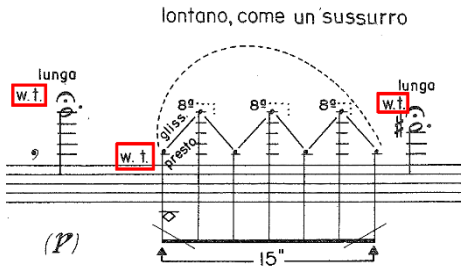
Whistle tones are an extended technique widely known in the contemporary flute repertoire that focuses on producing the highest possible range of overtones of a given note. Due to their ethereal and quiet character, these delicate sounds are also referred to as "whistle sounds" or "whisper tones" by some composers. However, in most scores, including Lavista's *Canto del Alba*, composers commonly use the acronym W. T. to indicate the use of this technique.

While mastering this technique may prove challenging for many non-experienced flutists, it requires achieving a controlled relaxation of the lips and throat, enhanced control over the muscles in the central part of the embouchure, and improved control of the support for the air column. In his book, *Music and the Flute*, American flutist Thomas Nyfenger accurately describes how to obtain whistle tones:

> If we begin by fingering third octave *A*, we find if the embouchure opening used for a sustained *mezzo-forte* can be maintained or held stationary while sending up less and less air – difficult because our old habit is to close the lip opening gradually, as in a diminuendo –, the note will "fall" through a number of nebulous, unusable tones and finally result in the emission of a miniature version of the original A. This is a whistle tone.[19]

In general, as a standalone technique, whistle tones are relatively easy to produce when a random sound is required. The challenge increases when maintaining a specific tone, producing different notes with a single fingering, and swiftly alternating with traditional sounds. Higher whistle tones are generally easier to generate compared to lower ones. Due to their quiet nature, these sounds may not be as effective in a large room or hall unless the flute's sound is amplified, as in the case of Lavista's requirements for *Canto del Alba*.

Lavista incorporates whistle tones only once toward the end of the piece in a reflective, lyrical section (see Example 8).



Ex. 8. Lavista's inclusion of whistle tones in *Canto del Alba*.

In this passage, Lavista employs whistle tones with precision and restraint, using only two high-register notes – *B* at the beginning and *F♯* at the end. These two sustained pitches are connected through techniques such as harmonics and glissando, creating a seamless and evocative musical line. Additionally, a low *B*, depicted with a diamond-shaped note, serves as a fundamental tone to generate the harmonics while also acting as a pedal note, anchoring the texture and enriching the sonic landscape.

This passage demands meticulous handling of the embouchure and a high degree of flexibility to produce two resulting *B* notes, each two and three octaves above its fundamental, allowing for quick alternation (*presto*) as stipulated by the score, and connecting them through a glissando. To convey the character of this section, Lavista

[19] Zook, "Whistle Tones".

provides an Italian indication: *lontano, come un susurro* (distant as a whisper). Accompanying the entire section is a diagram beneath the staff, suggesting a duration of approximately fifteen seconds (15''). This delicately lyrical passage evokes the whispering sound of the wind among bamboo leaves, as suggested by the epigraph at the beginning of the score.

Beyond the widespread acclaim that *Canto del Alba* has consistently received from the public since its premiere, its importance primarily lies in being the piece that marks the beginning of the exploration of new timbres and sounds of the flute by a contemporary Mexican composer. As discussed earlier, this is achieved through the utilization of a wide array of extended techniques, like microtones, multiphonics, glissandi, whistle tones and alternate fingerings. Lavista intertwines the sounds and timbres obtained through these extended techniques to obtain from the flute a lyrical, luminous, and delicate chant, demanding absolute mastery of these techniques from the player.

Conclusions

Mario Lavista's *Canto del Alba* stands as a landmark in contemporary Mexican composition, redefining the sonic possibilities of the flute through an intricate integration of extended techniques. Lavista's exploration of multiphonics, microtones, glissandi, whistle tones, and alternative fingerings reflects not only his deep understanding of instrumental capabilities but also his aesthetic vision, which prioritizes an intimate, expressive dialogue between performer and instrument. His meticulous notation system, enriched by close collaborations with musicians like Robert Dick and Marielena Arizpe, allowed for a precise yet fluid interpretation of his work, ensuring that each performance retained both technical rigor and personal expression.

Beyond its technical innovations, *Canto del Alba* embodies Lavista's broader artistic philosophy – one that blurs the boundaries between composition, performance, and interpretation. His approach, which acknowledges the performer as an active creative agent, challenges the conventional composer-performer hierarchy, making each rendition of his work a unique, evolving experience. Additionally, the inclusion of poetic elements, such as the epigraph from Wang Wei, underscores his belief in interdisciplinary artistic synthesis, where literature, music, and visual imagery converge to deepen the listener's engagement.

The legacy of *Canto del Alba* extends far beyond its immediate reception, as it sets a precedent for contemporary Mexican composers to embrace extended techniques and experimental sonorities. Lavista's influence, rooted in his European avant-garde training and his rejection of traditional nationalist tendencies, helped shape a new musical identity in Latin America – one that values individual artistic exploration over prescribed stylistic boundaries. His ability to synthesize modern techniques with a uniquely introspective,

lyrical voice solidifies his place as a pivotal figure in 20th-century and contemporary music.

Ultimately, *Canto del Alba* is more than just a work for solo flute – it is a testament to Lavista's relentless pursuit of new sounds, his dedication to performer collaboration, and his commitment to expanding the expressive potential of music. Through this piece, he not only redefined the flute repertoire but also left an enduring impact on the evolution of contemporary Mexican music.

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