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Spring 2025 Issue

Dear authors, reviewers, editors, and readers,

With the invaluable contributions of creative and dedicated music researchers, Rast Müzikoloji Dergisi is pleased to present Volume 13, Issue 1. This issue features five diverse and thought-provoking articles:

Muqam Transmission in the Xinjiang Uyghur Autonomous Region: Negotiating Artistic Individuality in Present-day Uyghur Muqam Performance Practices

A Harmonic-Based Musical Scaling Method with Natural Number Frequencies

Vernacular Culture of Gjakova: An Emic Approach to Musical Tradition

Dual Mirrors of Müller: A Comparative Study of Textual and Musical Narratives in Franz Schubert's Die schöne Müllerin (1823) and Edward Nesbit's Songs of Sorrow (2021)

A Study on the Importance of Instrumental Practice in Children's Cognitive Development

We would like to highlight that this issue includes contributions from five different countries: the United States, Türkiye, Kosovo, Malaysia, and Spain. We sincerely thank our authors for their patience during the peer review process, and we extend our heartfelt gratitude to the entire Rast Musicology Journal team for their efforts in bringing this issue to life.

Our journal is committed to providing the highest quality content for music researchers. Our editorial team and board actively encourage submissions that, alongside ethnomusicological studies, explore theoretical perspectives through interdisciplinary, metadisciplinary, intercultural, and transcultural approaches.

We also warmly invite researchers who wish to contribute to the promotion, visibility, and development of the policies of Rast Musicology Journal.

We wish you a pleasant and insightful reading experience.

Best regards,

Rast Müzikoloji Dergisi Editorial Team

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Research Article

Muqam transmission in the Xinjiang Uyghur autonomous region: negotiating artistic individuality in present-day Uyghur muqam performance practices[1] [2]

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Abstract

The Uyghur Muqam of Xinjiang, also known as the Art of Chinese Xinjiang Uyghur Muqam (Ch. 中国新疆维吾尔木卡姆艺术), was inscribed on the UNESCO Representative List of the Masterpieces of the Oral and Intangible Cultural Heritage (ICH) of Humanity in 2008, representing a dynamic interplay between tradition and contemporary influences. This paper examines the evolving dynamics of present-day Uyghur *muqam* transmission, focusing on the negotiation of artistic individuality in contemporary performance practices. Central to this discussion is the Uyghur concept of *puraq* (lit. scent/flavour), a term that describes the distinctive ornamentation and stylistic nuances in Uyghur music, yet remains underexplored in academic discourses both in China and the West. Drawing on ethnomusicological fieldwork conducted in Xinjiang in 2021 (Li, 2022), this research integrates insights from interviews with proficient *muqam* performers and scholars, offering a detailed analysis of how *puraq* manifests and is refined across different performance contexts, encompassing both vocal and instrumental practices. The study further explores the interdisciplinary connotations of *puraq* between music and linguistics, particularly highlighting the role of *shëwe* (En. vernacular accent) and its influence on the stylistic interpretation of the Uyghur *muqam*. The findings reveal that the multifaceted term of *puraq* is a crucial element in sustaining the living tradition of the Uyghur *muqam*, serving as a point of convergence for cultural continuity and transformation. By situating the discussion within the broader framework of the active transmission of ICH (Ch. 非遗活化传承), the study contributes to ongoing debates concerning the preservation of cultural heritage. It illuminates the ways in which authenticity and adaptation interact in a tradition deeply rooted in the historical cultural exchanges along the Silk Road, offering new perspectives on the evolving role of the Uyghur *muqam* in the contemporary cultural landscape of modern-day China.

Keywords

applied ethnomusicology, China, intangible cultural heritage preservation, puraq (flavour), Uyghur muqam transmission

Introduction

The classical Uyghur Twelve Muqam, being one of the four main regional performance traditions of the Uyghur Muqam of Xinjiang, is an ICH inscription encompassing all canonised repertoires of *muqam* performance in Xinjiang (Li, 2008). Consisting of a set of twelve suites of sung poetry of the Uyghurs, a texture of close heterophony where traditional Uyghur instruments imitatively follow the vocal melody is present throughout the repertory. The following section delves into the historical and cultural significance of the Uyghur *muqam* as a recognised masterpiece of Intangible Cultural Heritage (ICH). By contextualising its inscription on the UNESCO list, we can better understand how contemporary practices are shaped by both global heritage discourses and local cultural policies. This historical framework serves as a foundation for analysing the complexities of *muqam* transmission in present-day Xinjiang.

[1] This article is produced from my own Bachelor's dissertation submitted to King's College London.

[2] Note on Transliteration: The transliteration of Uyghur Arabic to Latin script remains contested within scholarship. This paper adheres to the Uyghur Latin Yéziqi (ULY); however, instances arise where non-standard transliterations outside the ULY system are employed, such as "Yarkand" instead of "Yeken." Terms are annotated as follows: Uyghur (Uy.); Chinese (Ch.); English (En.); Farsi (Fa.); and the corresponding literal meaning of a term is indicated as "lit.".

Current Context of Muqam Transmission as an ICH Masterpiece

Wang (2008) posits that the transmission ecology of the Uyghur *muqam* has remained inextricably linked to patronage since its initial compilation by Amannisa Khan in the 16th century. The government has consistently served as the most steadfast and influential patron in sustaining all forms of traditional Chinese music (Wang, 2008, p. 12). Following the Ministry of Culture's dispatch of musicologist Wan Tongshu to Xinjiang, who orchestrated the recording project of "the sole master capable of reproducing the full set of the Uyghur Twelve Muqam"—Turdi Akhun—in the 1950s, *muqam* has not only been rescued and preserved but, in recent years, the Xinjiang Muqam Ensemble (Ch. 新疆木卡姆艺术团) has embarked on international tours across 14 countries (Wang, 2008, pp. 12-13).

Since the convening of the 18th National Congress of the Chinese Communist Party in 2012, the most prominent Authorized Heritage Discourse (AHD) in contemporary China has been the "forging of a strong sense of community for the Chinese nation" (Ch. 铸牢中华民族共同体意识), within which a framework termed "pluralistic integration" (Ch. 多元一体) has been proposed (Pan et al., 2023, Chapter 1; Smith, 2006, pp. 29-34). The Uyghur *muqam*, akin to numerous other ethnic-minority heritage traditions in China, originates geographically along China's territorial periphery. Consequently, it is imperative to heritage agencies and practitioners that such traditions are preserved under the stipulation that they coexist and actively integrate with the Chinese nation—a collective identity continuum inherently diverse in geography, language, religion, folklore, and culture (Pan et al., 2023, pp. 29-32). The Uyghur Muqam of Xinjiang epitomises an intangible heritage masterpiece that not only demonstrates integrity through multiple canonised musical suites resulting from heritage inscription but also comprises diverse regional performance traditions encompassing a wide array of dialects, each possessing a unique framework for the expression of artistic individuality.

The improvised nature of Uyghur *muqam* performance and its implications have been frequently explored within Chinese ethnomusicological scholarship (Perhat, 2017, p. 124; Wang & Zhang, 2011, pp. 131-132). A Uyghur term, *puraq*, most accurately translated into Chinese as "韵味" and into English as "flavour," is ubiquitously employed in everyday discourse concerning the distinctive ornamentation patterns in traditional Uyghur music. However, this term has seldom been examined or systematically theorised in either Western or Chinese academic literature. In the following section of this paper, diverse conceptualisations of *puraq* will be discussed in relation to various facets of Uyghur *muqam* performance, encompassing both instrumental and vocal practices. Towards the conclusion, I will demonstrate that *puraq* also has an extra-musical dimension when it is considered alongside the concept of *shëwe* (En. vernacular accent). In doing so, I advocate for the theorisation of individuality in Uyghur *muqam* performance through an interdisciplinary approach that bridges music theory and linguistics. Given that the collection of oral histories from *muqam* heritage bearers has also been advocated as a crucial method for preserving the tradition (Wang, 2015, pp. 69-71), this paper juxtaposes the findings from my fieldwork (Li, 2022) with existing scholarly attempts to theorise Uyghur *muqam* performance over the years

In Search of a Puraqsiz (En. Without Flavour) Improvisatory Framework – Issues in Muqam Transcriptions and the Implications for Muqam Transmission

I observed during my 2021 ethnomusicological fieldwork that *puraq* represents the elaboration of ornamentation patterns, akin to microscopic decorations, based on the presumption that a bare melodic skeleton exists on a macroscopic level. My interviewees concurred, referring to the

basic framework of *muqam* improvisations using three Uyghur terms: *ustixan* (lit. bone, skeleton), *tüz* (an adjective meaning straight, leveled, or flat, implying a lack of meandering ornamentations), and *jaza* (lit. frame, a Chinese loanword). A thorough understanding of *puraq*, therefore, must be built upon a clear idea of what this basic skeleton exactly is in order to analyze the ways in which *puraq* contributes to the microscopic stylistic manifestation of the Uyghur *muqam*.

Sir Zhou Ji (Dec. 2008), an accomplished ethnomusicologist specialised in the Uyghur Muqam and former head of the Xinjiang Arts Research Institute (Ch. 新疆艺术研究所), argued that there exist "fluctuating tones" (Ch. 游移音) within the Uyghur Twelve Muqam repertoire, as well as "multiple tones possessing the same scale degree of a *muqam* mode" (Ch. 一级多音现象) (Zhou, 2016, p. 163). Based on these two phenomena, Zhou (2016) proposed two fundamental concepts pertaining to the construction of a *muqam* mode (p. 163):

- The manner in which a tone in a *muqam* mode is ornamented plays an essential role in defining the mode itself—a *muqam* is characterised by a pitch class that encompasses not only "stable tones" (within the twelve-tone equal temperament framework) but also "fluctuating tones" with specific idiosyncratic characteristics.

- Multiple "stable" or "fluctuating" tones can be attributed to the same scale degree of a *muqam* mode.

Zhou Jingbao (1983) was one of the earliest comparative studies that placed the Uyghur *muqam* in dialogue with various maqam traditions in the Middle East, featuring a lengthy discussion of the modal contrasts between Arabic *maqam* and Uyghur *muqam*. In contrast to Zhou Ji's account of "multiple tones possessing the same scale degree of a *muqam* mode," discussed above, Zhou attributed the "fluctuating tones" to be "uncommon tones" that are elaborations of "fixed" tones, which form a basic modal skeleton (p. 12). Such debates bear resemblance to the modal attributes of neighbouring musical traditions, such as the Indian Raga, wherein tones with specific ornamentation patterns may be attributed to the same scale degree in different contexts of melodic movements. The following extract, taken from the famous ethnomusicologist Joep Bor's (1999) *The Raga Guide*, is worth considering to improve the current modal theory of the Uyghur *muqam* (p. 1):

> "As Harold S. Powers puts it: "*A raga is not a tune, nor is it a 'modal' scale, but rather a continuum with scale and tune as its extremes.*" Thus a raga is far more precise and much richer than a scale or mode, and much less fixed than a particular tune."

The theorisation of the modal characteristics of the Uyghur *muqam* was facilitated in the 1980s when a Stroboconn electronic tuner was transported to Ürümchi, the provincial capital of the XUAR, for a conference at the Xinjiang Arts Research Institute from Beijing (Zhou 2016, pp. 158-159). Convened in October 1985, the conference utilised the Stroboconn tuner to detect and identify notes (Ch. 测音) from several *muqam* recordings, including those of Turdi Akhun (Zhou, 2016, p. 159).

Zhou (2016) highlights that the results obtained from the Stroboconn tuner demonstrated that the Twelve Muqam repertoire contains inconsistent pitch intervals of 51, 56, 66, 67; 132, 133, 134, 136, 141, 142, 143, 147, 150, 151, 152, 154, 155, 156, 158, 160, 162, 163, 165, 167, 168, 169, 170; 230, 232, 236, 240, 242, 250, 264, and 346 cents (1 semitone = 100 cents, 1 quarter tone = 50 cents) (pp. 158-159). Despite this, the conference participants collectively agreed on the necessity of introducing quarter-tone accidentals in future *muqam* transcription projects based on the aforementioned results. The "quarter-tonal phenomenon" (Ch. 四分音现

象) (Zhou, 2016, p. 163) of *muqam* modes can be translated into English as follows:

> "It is commonplace to observe the presence of several quarter-tonal pitches within a particular modal step, resulting from distinctive melodic movements."

Zhou Ji specifically advocated for the recognition of the "fluctuating-tone phenomenon" (Ch. 游移音现象) and the "quarter-tone phenomenon" as two distinct musical concepts:

> "Since individuals have scarcely encountered 'quarter tones' and 'fluctuating tones,' and given their significance in defining the unique style of the Uyghur *muqam*, I reaffirm that both 'quarter tones' and 'fluctuating tones' manifest at distinct scale degrees within a *muqam* mode (albeit, in certain instances, a tone may concurrently be both a 'quarter tone' and a 'fluctuating tone')."

Within the realm of *muqam* transmission, from a music learner's perspective, distinguishing between these two concepts is an impractical endeavour, particularly when one is occasionally required to produce a tone that juxtaposes both concepts. In Western ethnomusicological scholarship, Zhou Ji's (1993) detailed transcription of the Twelve Muqam has been regarded as a laborious effort, primarily seen as transcribing the music in an exceptionally exhaustive manner, rather than establishing it as a set of prescriptive improvisatory frameworks for performance. However, Zhou Ji (1994) explicitly clarified that "sophisticatedness was favoured over neglectfulness" to more effectively capture the stylistic particularities of a specific artist performing the Uyghur *muqam* (p. 29). Nevertheless, Zhou Ji's utilisation of quarter-tone accidentals does not consistently align with the *muqam* recordings, thus such transcriptions give rise to discrepancies and confusions in the realm of *muqam* transmission—they do not establish an unequivocal framework for improvisation that can be expanded into fluid ornamentations inherent in Uyghur music.

During my fieldwork in Ürümchi in 2021, my ustaz (En. master), YPA, travelled to the provincial capital to participate in a recording session I had organised to discuss the melodic skeleton (Uy. *tüz*/*jaza*, Ch. 即兴框架) of the free-metered, improvisatory *muqeddime* of Nawa Muqami. After recording his rendition of Nawa *muqeddime*, I enquired whether each *muqam* artist (Uy. *muqamchi*) would render their *puraq* differently from one another and whether he perceived the existence of an improvisational framework for the *muqeddime*. Enthusiastic about assisting me in transcribing what he regarded as a "*puraqsiz*" version (lit. one without *puraq*), I completed my transcription of four couplets of Nawa *muqeddime* (Fig. 1).

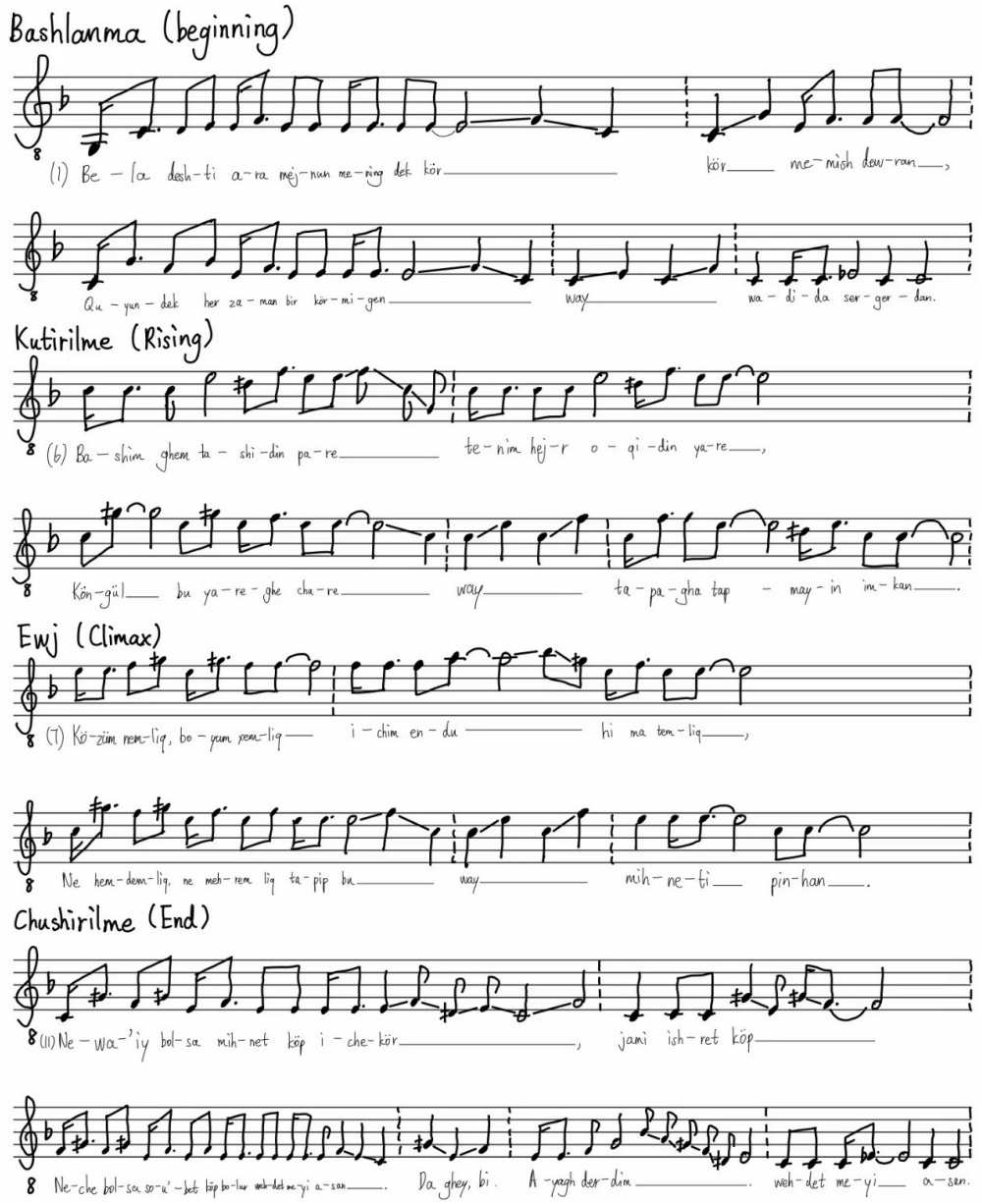

Figure 1. My *puraqsiz* transcription of YPA's rendition of Nawa *muqeddime*

Despite suggesting that a *puraqsiz* version would reflect the elementary stage of *muqam* learning, YPA struggled to produce such a version without taking numerous pauses to meticulously consider the bare melodic skeleton. Every note in my transcription was essentially reduced to theoretical, imaginary "stable tones", necessitating the addition of straight lines to indicate notes requiring ornamentation to articulate *puraq*. This demonstrates that *puraqsiz* is an abstract concept; however, it remains one warranting further attention to establish a theorised improvisational framework for the *muqam*. That being said, *puraq* constitutes a set of intrinsic vocal ornamentation patterns in Uyghur music that each *muqamchi* refines over their lifetime, rather than a subtle musical element inserted into the repertoire. Attempting to reduce ornamentations in

Nawa *muqeddime* to stable, pure tones found on the twelve-tone equal-tempered scale is impractical, as YPA himself believes that some tones are innately unstable even without the articulation of *puraq*. To account for these discrepancies in pitch, I adopted the quarter-sharp symbol in my *puraqsiz* transcription of Nawa *muqeddime*, in a similar way as demonstrated in Zhou Ji's (1993) transcription.

The *aruz* (Fa. عروض, the metrical system used in Chaghatay poetry) metre of Nawa *muqeddime* is: *Mafāʿīlun Mafāʿīlun Mafāʿīlun Mafāʿīlun*, where each line of the poetry repeats a short-long-long-long metrical rhythm four times. This is reflected motivically in the melody as a basic rhythmic pattern consisting of a reverse-dotted quaver rhythm followed by two straight quavers (Fig. 2), which is present and developed throughout Nawa *muqeddime*.

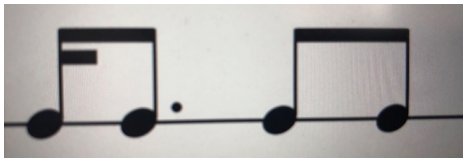

Figure 2. The fundamental motif of Nawa *muqeddime*, rhythmically parallel to its *aruz* poetic motif - *Mafāʿīlun*.

Certain long syllables are significantly elongated with elaborate melismas, whereas short syllables are never elaborated in such a manner. It is evident that the rhythmic improvisational framework for Nawa *muqeddime* is closely linked to, and informed by, the poetic metre. In the subsequent section, ways in which *puraq* could be effective articulated will be discussed alongside other notions and implications of this multifaceted term in Uyghur music.

Diverse Notions of Puraq in Muqam Performance - Ways in Which Instruments Could Articulate Puraq

Puraq is an omnipresent term among all performers of Uyghur music and is pivotal in determining the degree of authenticity in one's performance. Throughout my interviews with musicians in Yarkand and Ürümchi, I did not encounter a single musician who lacked an understanding of the term. In the preceding section, I argued that *puraq* is not merely a set of musical ornamentation patterns reducible to abstract, stable scale degrees for analytical purposes; rather, it is an intrinsic property tied to Uyghur music, without which a melody would not manifest its Uyghur-ness.

To further investigate the stylistic features of Uyghur music, I centred my fieldwork interviews on negotiating the various notions of *puraq* concerning the aspects of Uyghur music the term encompasses. I discovered that it is beneficial to consider *puraq*'s various notions among two primary classifications of Uyghur musicians: vocalists, and instrumentalists.

In the preceding section, I focused on the role of *puraq* in the vocal aspect of *muqam* performance. While *puraq* is inherently tied to human expression and is difficult to typologise—making the human voice the most natural medium for emotional conveyance—it is equally compelling to examine how Uyghur musicians express *puraq* through their traditional instruments.

Professor Abdusemi Abduraxman (2011), an ethnomusicology professor at the Xinjiang Arts Institute (p. 68), affirms Zhou Ji's theory that both "quarter tones" and "fluctuating tones" exist at specific scale degrees of a *muqam* mode. Concurrently, he indicates that *muqam* artists also introduce such ornamentations randomly on an improvisatory basis, thus articulating what the Uyghurs call *puraq* (Abduraxman 2011, 68). Intrigued by Professor Abdusemi Abduraxman's theory on the improvisatory nature of *puraq*, I interviewed a *muqam* enthusiast in Yarkand, ANA, in 2021, during which an insight into the roles of traditional Uyghur instruments in articulating *puraq* was offered:

> "The Uyghurs share similar musical terms with the Persians, such as *ahang* and

neghme. However, these shared musical terms usually refer to different musical concepts in the two cultures. In Uyghur music, folk songs are *ahang*, *muqam* is *neghme*, and music is *pede* (En. fret). The key to understanding Uyghur instrumental music is, therefore, knowing how Uyghur musicians tie frets on their lutes, e.g., the *satar*, *dutar*, etc. Nowadays, the frets on Uyghur instruments are all tied in twelve-tone equal temperament, correct? Over the years, the ingenious Uyghur instrumentalists have developed a set of distinct ornaments on twelve-tone equal-tempered frets, and tunes are named after each *pede*. For example, we have folk tunes called *üch pede* (lit. three frets) and *bom pede* (lit. bass frets). I believe that despite the inevitable imperfections and compromises made after Uyghur instruments underwent renovations in the mid-20th century, the authenticity of our instruments was retained, such as the sympathetic strings. This is also what has made the Uyghur *muqam* distinct from other traditional musics across the Silk Road. [...] The *muqam*, like any other practices of intangible heritage, is being actively transmitted through generations. Abdulla Majnun (dec. 2022) is a musician who composed numerous *muqam* and could virtuously articulate his distinctive *puraq*. However, at the same time, we cannot neglect the importance of canonised recordings since they exemplify the integration of different styles into a rich repertory. As a Uyghur *muqam* enthusiast who is optimistic about the future of *muqam* transmission, I ask if we could even shift our frets away from twelve-tone equal temperament into, for instance, the Persian modal system, or even completely remove them from our instruments."

ANA explains that *puraq* is articulated through a set of specialised ornamentation techniques developed on Uyghur lutes, which are fretted in twelve-tone equal temperament in their modern form. My interview with the renowned Uyghur ethnomusicologist MLY in Ürümchi in 2021 corroborates ANA's theory of articulating *puraq*. MLY adds that *puraq* comprises unique, stylistic finger movements on the strings of a Uyghur lute that bridge the gap between frets, and such movements should be explained as "fluctuating tones" within a *muqam* mode. This suggests that *puraq* is articulated as "fluctuating tones" based on twelve-tone equal-tempered Uyghur lutes. If Zhou Ji's (2016) theory on the quarter-tonal quality of *muqam* modes holds true, it implies that monophonic *muqam* melodies must have resulted from the vocal and instrumental parts compromising each other in terms of temperament, as well as ornamental patterns.

Although further exploration into the specificity of *puraq* as "quarter tones" or "fluctuating tones" would be valuable, it is necessary to investigate whether the improvisatory articulation of *puraq* still exists among *muqam* musicking communities in Yarkand and Ürümchi.

Returning to Yarkand for my final fieldwork visit, I had the opportunity to interview additional folk *muqam* artists. I conducted a thought-provoking interview with a *tembur* (Uyghur long-neck plucked lute) artist, YNN, who performs the *muqam* repertoire on his instrument but has never participated in the singing:

> "In our local terms, *puraq* is *mung*. We also have *yerlik* (En. local; vernacular) *puraq*. If a performance is *puraq*-heavy, it will be favoured by an audience, and vice versa. The articulated *puraq* determines the skills of a musician—since every *muqamchi*'s (vocal) range and timbre (Uy. *awaz tüsi*) is different, we adapt our *puraq* to our voice. However, because of how I was born, my vocal cords are not suited for *muqam* singing. Although my voice does come out, it doesn't produce the desired aesthetics because it is rough and hoarse. Even though I don't sing the *muqam* out loud, through studying the *muqam* via recordings and other masters,

> I was trained to sing silently in my head to play the music properly. However, when there are many instruments playing together in tutti, we can't add too much of our own *puraq*."

The Uyghur term *mung* (En. affliction, Ch. 伸冤) refers to the timbral quality that conveys a sense of sadness or sorrow through the Uyghur vocal style or instrumental timbre. Discovered during my later fieldwork in Ürümchi, the articulation of *puraq* in *muqam* performance is also connected to several other terms—starting from the bare melodic skeleton (Uy. *tüz/jaza*), factors including a performer's vocal or instrumental timbre (Uy. *awaz tüsi*), *mung*, and emotions (Uy. *hëssiyat*). Nathan Light (2008), through his interview with a *muqam* performer named Ömer Akhun, documented that mung is not only generated by the vocals but also by specific ways of tuning the 12 sympathetic strings of the Uyghur long-neck bowed lute—the *satar* (p. 199):

> "The *satar* is not a *ğejäk* (*ghëjek*), not a *tämbur* (*tembur*), not a *dutar*. Those play everything the same. Those cannot make *muñ* (*mung*) come out. [...] (On the *satar*) I play the main strings, and the rest go *uuuuu*, each note's string has its own tone [*šivä* (*shëwe*)], right? I tune each note, and it calls out (*qišqar-*) in response and helps the note. The strings on the *satar* are tuned according to each note. When you press on top of each fret, it makes a *muuuu* sound and calls to the string. The string makes a sound. [...] The new instruments such as *tämbur*, *ğejäk*, and *xuštar* have one kind of tuning [*pädä* (*pede*)]. They do not sound good. They have no sweetness (*mäzzilik*), no flavour (*puraq*), no beauty (*čiraylik*). They just play the music straight."

It is significant that both Ömer Akhun and ANA agree that Uyghur instruments themselves have the potential to articulate *puraq*—their unique timbral qualities are produced by specific tuning and playing techniques. Simultaneously, ANA pointed out during our interview that much of the *puraq* has waned over time due to the renovation of Uyghur traditional instruments in the mid-20th century, as well as the impact of canonisation largely based on Turdi Akhun's recording.

This prompted me to delve more deeply into exploring the impacts of canonisation on articulating *puraq*. Having interviewed the most versatile percussionist in Yarkand, MTT, I began to recognise the substantial role of the Uyghur *dap* (En. Uyghur frame drum) in *muqam* performance:

> "You have already interviewed many traditional lute players here in Yarkand, and their *puraq* is articulated by finger movements between the *pede* (lit. fret). When it comes to *dap* rhythms, except for the free-metered *muqeddime* section, they are present in all other sections of the *muqam*. In Uyghur *dap* performance, we have a basic rhythmic concept called *udar*, which is the fundamental rhythmic cycle of each subsection of a *muqam*, e.g., *te'ezze*, *jula*, etc. The *dap* plays a significant role in *muqam* performance since a *dapchi* (En. *dap* player) needs to familiarise themselves with the improvisational frameworks of other instruments and vocalists. It is considered shameful for a *dapchi* if other instruments take over the lead. If a *dapchi* is not familiar with an *udar*, then other musicians will become confused due to his failure. When it comes to articulating *puraq* on the *dap*, one needs to be 100% confident in playing the correct *udar* before making rhythmic variations on it. Articulating *puraq* (producing stylistically authentic rhythmic variations) on the *dap*, therefore, takes years to develop."

Thus far, we have observed that regardless of whether one is a vocalist, instrumentalist, or percussionist, the effective articulation of *puraq* not only requires a *muqam* artist's virtuosity with their own instrument but also depends upon their awareness of, and active compromise with, the stylistic

ornamentations of the other performers with whom they are collaborating. The sophisticated nature of *puraq* in *muqam* performance has consequently given rise to a grassroots discourse that a *muqam* apprentice needs to imitate their *ustaz* for years before they are permitted to freely express themselves in the *muqam* repertoire, much like Kippen's (2008) fieldwork notes on the hereditary traditions in Hindustani classical music (pp. 125-140).

Up to this point, I have demonstrated that the term *puraq* primarily encompasses and depends on two interconnected concepts in a successful *muqam* performance:

- The specific, authentic manner of melodic ornamentations, which is an extrinsic property.
- The exhibition of authentic timbral qualities of the vocal and instrumental parts, which is an intrinsic property.

An Extra-musical Facet of Articulating Authentic Puraq

After nearly two years of studying the tenth suite of the Uyghur Twelve Muqam—Nawa Muqami with *Ustaz* YPA, I was invited to perform what I had learned before an accomplished Uyghur composer, AMA. Despite being moved by my musical sensibility, he remarked:

- "I can tell that you have a good grasp of *puraq*, but your performance lacks authentic *shëwe*."

AMA's comment convinced me that I needed to seek instruction to refine my pronunciation by correcting my non-native realization of *muqam* texts. I interpreted that he was also trying to suggest the extent to which linguistic intonations, extra-musically, contribute to an authentic rendition of the Uyghur *muqam*. Here, I affirm that Professor Qian Rong's (2020) analytical theory on the "sonic, melodic dimensions of the articulation of a musical text" (Ch. 唱词音声解析) offers new avenues for studying the contributions of *shëwe* articulations in an authentic Uyghur *muqam* performance, although substantial preliminary acoustical and phonological studies of both Uyghur speech and music are needed to even begin such research. I was fortunate to receive *muqam* lessons from a senior lecturer of the *muqam* performance (vocal) major at the Xinjiang Arts Institute (Ch. 新疆艺术学院), MTA. Through these lessons, I realised that the acquisition of *puraq* in *muqam* transmission remains an essential component at the institution.

During our *muqam* lessons, I often questioned what Uyghur musicians meant when they described *puraq* as a "gene" that "flows in every Uyghur's blood." One day, MTA unravelled the extra-musical dimension of *puraq*—its connection to *shëwe* (En. vernacular accent):

> "*Puraq* is closely connected to the *shëwe*, and since the Uyghur Twelve Muqam originates from Kashgar (Uy. *Qeshqer*) in southern Xinjiang, its style reflects the nuances of the Kashgarian subdialect (Uy. *Qeshqer shëwisi*). When Kashgarians speak, the sound emerges from deep within their abdomen and resonates at the back of their oral cavity—a pompous-sounding tone indeed. Additionally, in the Kashgarian subdialect, the letter /a/ is pronounced as a diphthongised vowel [ɑᵒ] instead of just [ɑ]. This is reflected in *muqam* performance as well. [...] While we have all these refined linguistic nuances in the *muqam* repertoire, we need to respect the impacts of the renovations of traditional instruments and the most ideal tunings on those instruments for the most effective *muqam* performance. Since our voices are built differently, we must also explore how we can adapt a monophonic melody, conventionally performed in a high key suited to the vocal range of tenors and sopranos. I have, therefore, chosen to incorporate the piano into my *muqam* lessons so I can teach each student to sing in any key that best suits their voice."

Throughout her teaching career at the Xinjiang Arts Institute, MTA has sought ways to adopt scientific singing methods (primarily from the Western classical tradition, such as *bel canto* singing) into a set of techniques for vocal performance of the Uyghur *muqam*, commonly known as the "ethnic style" (Ch. 民族唱法) in Chinese academia. Although the Uyghur *muqam* may seem stylistically distant from *bel canto* singing, there is a consensus that the *bel canto* method is more "scientific" and better protects the voice than grassroots singing styles. This should not, in any way, imply that authentic articulations of *puraq* cannot be preserved.

The modern piano (excluding one modified in temperament through unconventional extended techniques in modern music) is significantly less versatile than an instrument like the violin, on which the player can freely glide across a fretless fingerboard without complying with discrete levels of pitch. Therefore, MTA's decision to utilise the piano in *muqam* pedagogy is, in itself, rendering a *puraqsiz* version of the *muqam* melodies. She firmly believes that every type of *puraq* can essentially be reduced to discrete scale degrees within the twelve-tone equal temperament system.

MTA's colleague at the Xinjiang Arts Institute, Abdukërim Osman, in his yet-to-be-published transcription of the full set of Uyghur Twelve Muqam, provides an alternative theoretical explanation for both the "quarter-tone phenomenon" and "fluctuating-tone phenomenon" proposed by Zhou Ji (2016). While Abdukërim Osman (forthcoming) adopted an accidental marker for quarter tones, he argues that all quarter tones in *muqam* performance are "fluctuating" in nature (pp. 380-385):

> "This transcription adheres faithfully to the theories of ethnomusicology, and every note is transcribed as closely to its authentic manner as possible. To fully reproduce the *puraq*, more accurately, the articulation of *shëwe* in Uyghur music, the 'fluctuating tones' (also referred to as 'quarter tones' in research) encountered in traditional Uyghur music are marked with quarter-tone accidentals of ↑ or ↓, representing a note sharpened or flattened by half of a semitone, respectively. This also signifies a note that would smoothly, silkily glide upwards or downwards. The *puraq-shëwe* symbol (i.e., the mordent symbol in western classical music) is also employed to illustrate the most widely encountered type of ornamentation in Uyghur music. However, the particularities of this type of ornamentation have not yet been theoretically established."

Contrasting the widely accepted quarter-tonal theory of Uyghur *muqam* modes established by Zhou Ji and most other Chinese ethnomusicologists (Meng et al., 2020, Chapter 2), Abdukërim Osman (forthcoming) argues that within a Uyghur *muqam* mode, there exists no scale degree that is innately quarter-tonal—all quarter-tonal pitches are, therefore, a result of "fluctuating tones" characterised by the articulation of *puraq* and/or *shëwe* (pp. 380-391). This analysis aligns more closely with Zhou Jingbao's (1983) arguments on the modal attributes of the Uyghur *muqam*.

The most significant contribution of Abdukërim Osman's (forthcoming) theorisation is the proposition of the term *puraq-shëwe*—a term that has shifted the analysis of the Uyghur *muqam* away from a monodisciplinary examination of musical modes, advocating for an interdisciplinary, musico-linguistic approach to further typologise the stylistic ornamentations that once existed solely within the aural-oral realm of Uyghur *muqam* performance. Future scholarship should, therefore, employ interdisciplinary methodologies, such as Qian Rong's (2020) theory on linguistic musicology, to uncover the enigma of expressing artistic individuality in Uyghur *muqam* performance.

Conclusion

To deepen our understanding of *muqam* transmission, it is crucial to consider the various institutional and grassroots mechanisms that influence this process. The multiple modes of transmission—ranging from professional ensembles to informal, community-based practices—offer a more nuanced view of how *muqam* is sustained and negotiated across diverse contexts. The following conclusion explores how these different transmission modes intersect and contribute to the evolving identity of Uyghur *muqam* in modern-day China.

Multiple Modes of Muqam Transmission in Dialogue

Throughout this paper, it has been demonstrated that the concept of *puraq* is crucial in determining both the effectiveness and authenticity of Uyghur *muqam* performance. In the first section, I outlined how *puraq* introduces ambiguities in the theorisation of the modal system in Uyghur *muqam*. Notably, there has been no consensus on the precise scale(s) or temperament(s) that underpin the modal structures of the Uyghur *muqam*, even in instances where artists like YPA attempt to produce a *puraqsiz* (lit. without *puraq*) reduction for the sole purpose of assisting my attempt of modal analysis. In the latter part of the paper, I explored the diverse applications of *puraq* in instrumental and vocal performance, revealing its engagement with a type of extra-musical nuance known as *shëwe* (En. vernacular accent). While Abdukerim Osman's (forthcoming) proposal of the composite, musico-linguistic composite term *puraq-shëwe* is somewhat ambiguous, it offers valuable insight into how future research into the theory of Uyghur *muqam* could benefit from an interdisciplinary approach, bridging music theory and linguistics.

The concept of "articulating authentic *puraq*" is also closely linked to various modes of *muqam* transmission. Zhou Ji (2005) identified four key modes of transmission in Xinjiang (p. 55):

- The "grassroots (authentic) transmission" (Ch. 原生态传承) of regional folk artists.
- The "professional transmission" (Ch. 专业传承) of state-established troupes.
- The "instructional transmission" (Ch. 教育传承) in academic institutions.
- The "textual and media transmission" (Ch. 文本传承和媒体传承) facilitated via technological media.

Throughout this paper, the current states, implications, and future prospects of all these modes of *muqam* transmission, except for media transmission, have been discussed. It has been demonstrated that different modes of *muqam* transmission have given rise to key, ongoing debates on the theorisation of both the modal theory and stylistic authenticity of Uyghur *muqam* performance. I once observed how a leader of a state-funded, professional song-and-dance troupe disdained the entirety of the folk *muqam* musicking communities, firmly believing that professional troupes are the more capable agents of *muqam* transmission:

> "Why do you bother? Nowadays, the folk culture (of grassroots muqam performance) is completely detached from professional ensembles. The folk artists are aging, illiterate (in reading music), and therefore nowhere near capable of joining an ensemble like ours. You should also question whether any of them could perform the *muqam* repertoire without making any mistakes! What I am rather interested in is how we could establish a new type of *puraq* through a set of brand-new staging aesthetics, choreographed dances, and re-composed *muqam*."

While it is challenging to establish meaningful dialogues directly between professional troupes and folk artists, I envision researchers in academic institutions as vital intermediaries in knowledge production and mediating controversial debates on *muqam*

transmission. However, this is contingent upon their deep immersion in various communities that hold disparate, often conflicting views on *muqam* transmission. Once such engaged ethnomusicological work has been undertaken, the Uyghur *muqam*, as a masterpiece ICH entity, would become a more distinctive exemplification of "pluralistic integration" in present-day China.

Recommendations

Recommendations for Future Research

This study introduces the multifaceted concept of *puraq* as a crucial element in Uyghur *muqam* performance, which opens new avenues for future research in several key areas. First, further interdisciplinary enquiry could explore the complex intertwined relationships between *puraq* and the *shëwe* (En. vernacular accent) within Uyghur dialects, examining how linguistic nuances inform stylistic interpretation. Incorporating advanced linguistic methodologies, such as phonetic and phonological analyses, would deepen the understanding of the *shëwe*'s role in shaping *puraq* across diverse linguistic regions of Xinjiang.

In addition, there is a need for deeper comparative studies that examine the unique stylistic ornamentations like the concept of *puraq* in Uyghur *muqam* across various classical musical traditions along the Silk Road, including Persian, Arabic, and Turkic repertoires. Such studies could contribute to a broader understanding of how ornamentation techniques and modal systems reflect cultural exchanges within these interconnected musical traditions.

Furthermore, the implications of temperament on the instrumental articulation of *puraq* warrant a more focused organological enquiry. Researchers could explore how contemporary modifications in traditional Uyghur instruments, particularly the establishment of twelve-tone equal temperament frets (Uy. *pede*), affect both the authenticity and evolution of Uyghur *muqam* performance practices. Future work should aim to document and analyse *puraq* in other linguistically-contrasting regional variants of the Uyghur *muqam*, such as those in Turpan and Qumul, to provide a more comprehensive understanding of its diverse manifestations.

Finally, as the current study focuses primarily on the musicological and linguistic aspects of *puraq*, future research could expand on the socio-political dimensions of *muqam* transmission. The intersection of Uyghur *muqam* with state policies on intangible cultural heritage (ICH) offers a fertile ground for investigating how cultural preservation initiatives influence the negotiation of authenticity and innovation within ethnic-minority musical traditions in China. In particular, studies could address the impact of digital media and contemporary staging ideologies on the transmission of *muqam*, considering how new technologies reshape the relationship between professional ensembles and grassroots musicians.

Recommendations for Practitioners

For muqam practitioners and pedagogues

This research provides valuable insights for Uyghur *muqam* practitioners, particularly in enhancing the pedagogical approach to *puraq*. Musicians and ethnomusicologists alike could benefit from a deeper engagement with the concept of *puraq* as both a theoretical and practical framework for performance. By adopting the interdisciplinary perspective of this study, musicians can refine their improvisational skills through a more conscious articulation of *puraq*, not merely as a type of "musical ornamentation" but as a core element of expressive individuality through vocal, instrumental, linguistic (poetic) improvisations.

For Uyghur *muqam* pedagogues, especially those in academic institutions like the Xinjiang Arts Institute, this research motivates reassessment of teaching methodologies. The integration of linguistic aspects of *shëwe* into *muqam* pedagogy, as proposed

in this study, could lead to more nuanced vocal training programs. Uyghur *muqam* pedagogues might also explore the potential of incorporating new tuning systems or even fretless, non-tempered instruments into *muqam* instruction, as a way to place the Uyghur *muqam* onto international dialogues with various performance practices across the Silk Road.

For heritage preservation specialists

Practitioners involved in the preservation of ICH will find this research particularly relevant in understanding the balance between innovation and authenticity in heritage transmission. By highlighting the adaptability of *puraq* within the framework of state-led heritage discourse, this study provides a roadmap for cultural policymakers and heritage specialists to develop strategies that support both the safeguarding and the dynamic evolution of the Uyghur *muqam*. It also underscores the importance of engaging local musicians in heritage preservation, encouraging practitioners to facilitate more meaningful collaborations between professional and grassroots transmission modes.

Limitations of this Study

While this study offers significant contributions to the understanding of *puraq* in performance practices of the Uyghur *muqam*, several limitations must be acknowledged. First, the research focuses primarily on fieldwork conducted in Ürümchi and Yarkand, leaving other important regional variations of the *muqam* less explored. The lack of ethnographic data suggests that future studies should incorporate a wider range of regional *muqam* traditions to capture the full diversity of *puraq* manifestations across Xinjiang.

Second, the analysis of *puraq* in this paper largely remains on the abstract level. Further research could integrate phonetical data transcribed into the International Phonetic Alphabet (IPA), which may provide a more granular understanding of how *puraq* interacts with specific regional linguistic variations.

Third, the study does not delve deeply into the technicalities of recording and transcription, especially in relation to the previously-proposed "fluctuating-tone phenomenon" and "quarter-tone phenomenon" within *muqam* modes. Although this paper references Zhou Ji's transcriptions, the absence of a thorough comparative analysis encompassing both musicological and linguistical theories of existing transcriptions limits the scope of this study's theoretical contributions to modal analysis. Future research could address this gap by comparing multiple transcription methods and investigating how they influence the pedagogical and performance aspects of *muqam* transmission.

Lastly, while this research draws on ethnographic data, it could be strengthened by a more extensive longitudinal approach to fieldwork. The short duration of the field visits, while valuable, may not fully capture the dynamic, evolving nature of *muqam* performance over time. Thus, future research might benefit from extended, participatory observation to better understand the long-term processes involved in *muqam* transmission and the role of *puraq* within it.

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Research Article

A harmonic-based musical scaling method with natural number frequencies

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Abstract

General acceptance arises from the most convincing method among the available options. Similarly, while the Western chromatic scale is the most widely used system today, it has limitations in representing harmonious intervals, microtonal performances, and the weak resonant effects of fractional frequencies This study introduces the Safir method, a novel approach to redefining musical note frequencies within an octave interval. Unlike traditional scales, Safir employs natural number-based values, ensuring more harmonious intervals and enhanced tuning consistency. A key strength of Safir lies in its ability to overcome the limitations of conventional tuning systems. The Safir method enhances spectral coherence by aligning note frequencies with the harmonic distribution of the Fourier series and strengthening the resonance effect through natural frequencies. This method has significant potential for various applications including music, speech and signal processing, spectral leakage reduction, and healthcare. Four key advantages of the Safir scale system are its its alignment with the harmonic series, , the strong resonant effect of note frequencies derived from natural numbers, the suppression of dissonant intervals in higher frequencies across the octave band, and its linear spacing within the octave, which ensures minimal deviation from compatible intervals even in microtonal divisions. This novel method represents a major advancement in tuning and musical scales. By providing a more precise, harmonious, and resonant frequency system, Safir addresses key shortcomings of traditional musical scales and opens new possibilities in both theoretical and practical domains.

Keywords

harmonic frequency analysis, harmonic scale intervals, healthcare, musical scale, Pythagorean tuning, temperament systems

Introduction

Sound is a wave motion generated by a vibrating object propagating through a material medium. The vibration of sound is described in terms of frequency, whereas its loudness is characterized by its amplitude. Music, on the other hand, is the art of shaping sound, dividing its formal properties into specific frequency regions called “notes,” and presenting them in a harmonious sequence that evokes emotional responses in listeners (Konar, 2019a; Moore et al., 2008).

In musical systems, the tuning system defines the note frequencies within a frequency range in which frequencies are double between octaves (the octave frequency range). This scaling system was applied uniformly across all octave layers. The selection of note frequencies that best reflect the harmony between sounds is critical to musical composition. The foundations of musical scales date back to the 600 BCE when the Greek philosopher Pythagoras discovered that a vibrating string of fixed length produces distinct sounds based on its tension and length (Konar, 2019b, 2019a). Pythagoras established the “pentatonic scale,” demonstrating the importance of ratios involving whole numbers such as 2:1, 3:2, 4:3, and 5:4 for harmonious intervals. While Pythagorean tuning is not widely used in modern Western music, the influence of its proportional relationships remains evident in the frequency ratios of notes like do, re, mi, fa, sol, la, and si. However, challenges such as the “wolf interval,” which occurs as the octave progresses or moves toward microtonal notes, highlight the limitations of certain tuning methods (Crismani, 2022).

Modern chromatic scales, particularly the 12-tone (12-TET) equal temperament, dominate Western music due to their versatility and consistent intonation across keys. The 12-TET system divides the octave into 12 equal logarithmic intervals, facilitating easy transposition and harmonic exploration (Brown, 2016; Hinrichsen, 2016). However, it sacrifices pure harmonic relationships, as natural frequency ratios like the 3:2 perfect fifth and 4:3 perfect fourth are only approximated, leading to a slight loss in harmonic clarity. Despite the widespread adoption of the 12-TET chromatic system, there is growing interest in exploring alternative tuning systems that achieve harmonic compatibility and reduced dissonance across octaves and microtonal regions. Musical tuning systems have evolved significantly over centuries, shaped by diverse cultural, mathematical, and auditory considerations (Isaacson, 2023).

The other scaling system, 53-tone equal temperament (53-TET), central to traditional Turkish music, divides the octave into 53 microtonal intervals of 22.64 cents each, allowing for a detailed representation of modal systems like the Turkish Makam. This finer division better approximates natural harmonic ratios, capturing the nuances of modal systems of Turkish Makam (Uyar et al., 2014). While 53-TET provides greater resolution for microtonal accuracy, it also introduces complexity in performance and notation, requiring specialized skills and familiarity with microtonal frameworks. Despite these challenges, 53-TET remains a valuable alternative for representing the subtleties of non-Western music, offering a closer alignment with natural harmonics than 12-TET. Recent psychoacoustic research suggests that human ears can detect pitch differences as small as 5-20 cents, indicating that 12-TET may struggle with microtonal accuracy (Smit et al., 2019; Yost, 2009). Additionally, cross-linguistic studies on speech and music suggest that microtonal scales, such as those in 53-TET, might better align with human auditory perception (Altun & Egermann, 2021; Bozkurt et al., 2014). However, the complexity of 53-TET presents challenges; its numerous intervals make tuning and performance more demanding, especially in live settings, and specialized training is often necessary for performers and composers. Despite offering greater microtonal flexibility, some intervals only approximate natural harmonic ratios, impacting harmonic purity. In practice, a 24-tone subset is frequently used, following the Arel-Ezgi-Uzdilek pitch system, but this system falls short of fully expressing the intricacies of Turkish music (Aktas et al., 2019; Bozkurt et al., 2014).

The coexistence of these systems raises critical questions about the intersection of tradition and innovation in music. For example, in Turkish Makam music, scales such as Rast and Segah rely on specific intervals that are not adequately captured by 12-TET. While the standardization of A4 as 440 Hz in both systems serves as a point of convergence, the methodologies for deriving other pitches diverge significantly. In 12-TET, pitch frequencies are determined by a constant ratio (2^(1/12)), whereas 53-TET employs a finer subdivision with ratios like 2^(1/53), which, despite its precision, may also present difficulties in terms of accessibility and ease of use.

The Just Intonation (JI) method refines the 12-TET scaling system by using whole number frequency ratios derived from the harmonic series, allowing for pure intervals such as the 5:4 major third and 6:5 minor third, which are more consonant than their counterparts in 12-TET. JI uses rational numbers, setting a prime number limit such as a 5-limit (primes 2, 3, and 5) or a 7-limit (primes 2, 3, 5, and 7) to define harmonic ratios. This results in harmonically pure chords that align with the natural overtone series, but the precision of JI limits its flexibility across different keys, posing challenges for compositions that require frequent modulation (Lindley, 2001).

While there are several alternative tuning systems like Pythagorean tuning, Just

Intonation, and even modern experiments with 432 Hz, they do not specifically employ natural numbers like the Safir method for harmonics and scale construction. Some systems, such as the 432 Hz tuning, draw inspiration from natural harmonic ratios and have been associated with claims of providing a more harmonious listening experience. However, these systems are still based on traditional temperaments or specific frequency values rather than an innovative use of natural numbers as a primary design principle for musical frequency scaling. Similarly, the octatonic scale, though systematic, remains confined within 12-TET's structure. This study introduces a novel scaling method where musical note frequencies are defined as natural numbers. After a detailed literature review, the proposed method of using natural numbers for frequency scaling (from now on referred to as 'Safir' to distinguish it from other methods) appears unique. The Safir method creates a more balanced frequency system that reduces the prominence of higher frequencies and offers new insights into harmonic tuning, especially in terms of auditory health. This also suggests a potential avenue for further research and development in music theory and sound therapy. This approach aims to enhance harmony and consistency while addressing the limitations of existing systems, offering potential benefits for both theoretical exploration and practical application in music composition and performance. By leveraging mathematical models and psychoacoustic principles, the proposed framework aims to redefine scale construction, enhance its adaptability to traditional and contemporary musical contexts, and offer new perspectives on integrating microtonal and equal-temperament systems.

Literature Review

An interdisciplinary approach to how everyday Western music works and why tones, melodies, and chords come together is presented in (Parncutt, 2024), whose theory on major-minor tonality is supported by evidence from psychoacoustic research, experiments, and mathematical models. He explores concepts like interval, consonance, chord root, leading tone, harmonic progression, and modulation, discussing the influence of biology and culture on music perception. Bailes and colleagues found that microtonal intervals are perceived differently from 12-TET intervals, noting that musical expertise enhances the ability to categorize microtonal intervals and shape their perception (Bailes et al., 2015). Additionally, Clader explores the mathematical construction of scales using Pythagorean tuning, suggesting that alternative tuning systems based on powers of prime numbers may offer new insights into music theory (Clader, 2018). A new method was introduced to model the geometry of 12-TET, simplifying its mathematical principles for better comprehension (Ashton-Bell, 2019). The limitations of 12-TET in representing microtonal music have led to the exploration of alternative systems, such as Just Intonation, which uses rational ratios to maintain pure harmonic intervals but limits flexibility due to its dependence on specific fundamental tones (Schwartz et al., 2003). Table 1 represents tonal frequencies [F(i)=440*(2^(i/12))] of the 12-TET chromatic scale system, in which indexes are between (i=-57 → 50).

Table 1. Note frequencies of the 12-TET chromatic scale system of Western music between [0-8] octaves

Octaves	Do	Do#	Re	Re#	Mi	Fa	Fa#	Sol	Sol#	La	La#	Si
m:octave index	Cm	C#m	Dm	D#m	Em	Fm	F#m	Gm	G#m	Am	A#m	Bm
index	-57	-56	-55	-54	-53	-52	-51	-50	-49	-48	-47	-46
Octave-0	16,35	17,32	18,35	19,45	20,60	21,83	23,12	24,50	25,96	27,50	29,14	30,87
index	-45	-44	-43	-42	-41	-40	-39	-38	-37	-36	-35	-34
Octave-1	32,70	34,65	36,71	38,89	41,20	43,65	46,25	49,00	51,91	55,00	58,27	61,74
index	-33	-32	-31	-30	-29	-28	-27	-26	-25	-24	-23	-22
Octave-2	65,41	69,30	73,42	77,78	82,41	87,31	92,50	98,00	103,83	110,00	116,54	123,47
index	-21	-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10
Octave-3	130,81	138,59	146,83	155,56	164,81	174,61	185,00	196,00	207,65	220,00	233,08	246,94
index	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2
Octave-4	261,63	277,18	293,66	311,13	329,63	349,23	369,99	392,00	415,30	440,00	466,16	493,88
index	3	4	5	6	7	8	9	10	11	12	13	14
Octave-5	523,25	554,37	587,33	622,25	659,26	698,46	739,99	783,99	830,61	880,00	932,33	987,77
index	15	16	17	18	19	20	21	22	23	24	25	26
Octave-6	1046,50	1108,73	1174,66	1244,51	1318,51	1396,91	1479,98	1567,98	1661,22	1760,00	1864,66	1975,53
index	27	28	29	30	31	32	33	34	35	36	37	38
Octave-7	2093,00	2217,46	2349,32	2489,02	2637,02	2793,83	2959,96	3135,96	3322,44	3520,00	3729,31	3951,07
index	39	40	41	42	43	44	45	46	47	48	49	50
Octave-8	4186,01	4434,92	4698,64	4978,03	5274,04	5587,65	5919,91	6271,93	6644,88	7040,00	7458,62	7902,13

Cross-disciplinary research, including psychoacoustic studies, has shown that natural frequency ratios resonate more effectively with human perception than equal-tempered systems. Just Intonation is discussed, with its strengths in harmonic purity highlighted, but its limitations in modulation between distant keys are acknowledged (Lindley, 2001). Moreover, understanding harmonic tonality at microtonal scales reveals the impact of musical signs and interpretations on cultures (Thoegersen, 2024).

In their study, Schwartz and colleagues used voice recordings from over 600 individuals in the TIMIT acoustic-phonetic speech database, containing English sentences, to obtain the probability distribution function of average frequency-amplitude behavior in speech signals (Schwartz et al., 2003). They also tested different spoken languages and found that while the resonance amplitudes of various languages varied, the resonance frequency ranges showed similar scaling patterns. The graphs revealed that the resonance frequency ranges within a two-octave interval in speech signals and the note frequency ranges specified in music signals for harmonics were parallel. The frequency resonance points in the statistical average amplitude-frequency distribution of the human voice demonstrate the ability of the human ear to perceive harmonic tone scales in music successfully. As listed in the article (1, 1.2, 1.33, 1.25, 1.4, 1.5, 1.6, 1.67, 1.75, 1.8, 2), these scales correspond to frequency ratios in the frequencies identified in Table 3.

Advancements in computational musicology, particularly through digital signal processing, have facilitated more nuanced analyses of traditional scales. Studies have shown the adaptability of microtonal systems like 53-TET in representing diverse musical traditions, although challenges remain in practical usage and musical interpretation due to the large number of intervals. The intervals of the 53-TET system, as applied in the current Arel-Ezgi-Uzdilek system, can be seen in Table 3 (Aktas et al., 2019; Bozkurt et al., 2014).

Despite advancements, significant gaps remain in integrating tuning systems across cultural and mathematical frameworks, leaving room for innovative approaches that balance harmonic accuracy and modular convenience.

Methodology

The Safir method introduces a new scale for musical note frequencies based on natural numbers, addressing the limitations in existing tuning systems. These systems often rely on fractional frequency values, resulting in inaccuracies and inconsistent harmonic intervals. The method aims to provide a more harmonious frequency scale for tonal intervals between octaves by transitioning from the intervals used in contemporary systems to a more harmonically consistent structure, with all frequency values expressed as natural numbers instead of fractional values. The primary objective is to construct a note frequency scale that defines tonal frequencies between two octaves, ensuring that the intervals between notes are harmonically aligned. By expressing the frequencies as integer-based ratios, the method eliminates the use of fractional values and ensures a precise and natural harmonic structure. Additionally, this scale serves as a reference template in digital signal processing for obtaining resonance frequencies, natural harmonics, and spectral amplitudes in signal spectrum analysis. This approach not only enhances musical coherence but also facilitates its application in signal processing, particularly spectral analysis, where resonance frequencies, natural harmonics, and spectrum amplitudes can be analyzed more accurately. The method involves the following key steps, for algorithmic steps for musical scale definition (Figure 1a):

Octave Layer Definition: The process begins by defining the tonal frequencies of octave layers (Kf). Here the Kf value is defined as a power of 2. Each octave layer is indexed by i, and the number of frequency segments within each octave (Sf) is also a power of 2. Together, these layers and segments form the structure of the musical scale. A frequency ratio (FR) is initialized as empty.

Frequency Calculation: A loop calculates the tonal frequencies of all layers (Kf) for each octave layer. Here, k=i-5 is used to match the octave band index numbers between 12-TET and Safir. Starting from a base frequency of 1 Hz, the frequencies for each segment within the octave are calculated. Fi=2^(i-1) represents the starting frequency of (i-1)-th layer and Fi2=2^(i) represents the first frequency of (i)-th layer. The frequency at the jth segment of the kth layer is given by the formula: FR(i,j) = Fi1 + (j−1) * DIV, where DIV is the division factor calculated as, DIV=(Fi2−Fi1)/Sf.

Frequency Adjustment and Repetition for Other Octave Layers: The process continues for each octave layer until the algorithm ensures that all frequencies between octaves and divisions are processed. Once all octaves are processed, the frequency generation process is completed. The content of the FR matrix represents the designed octave band frequencies.

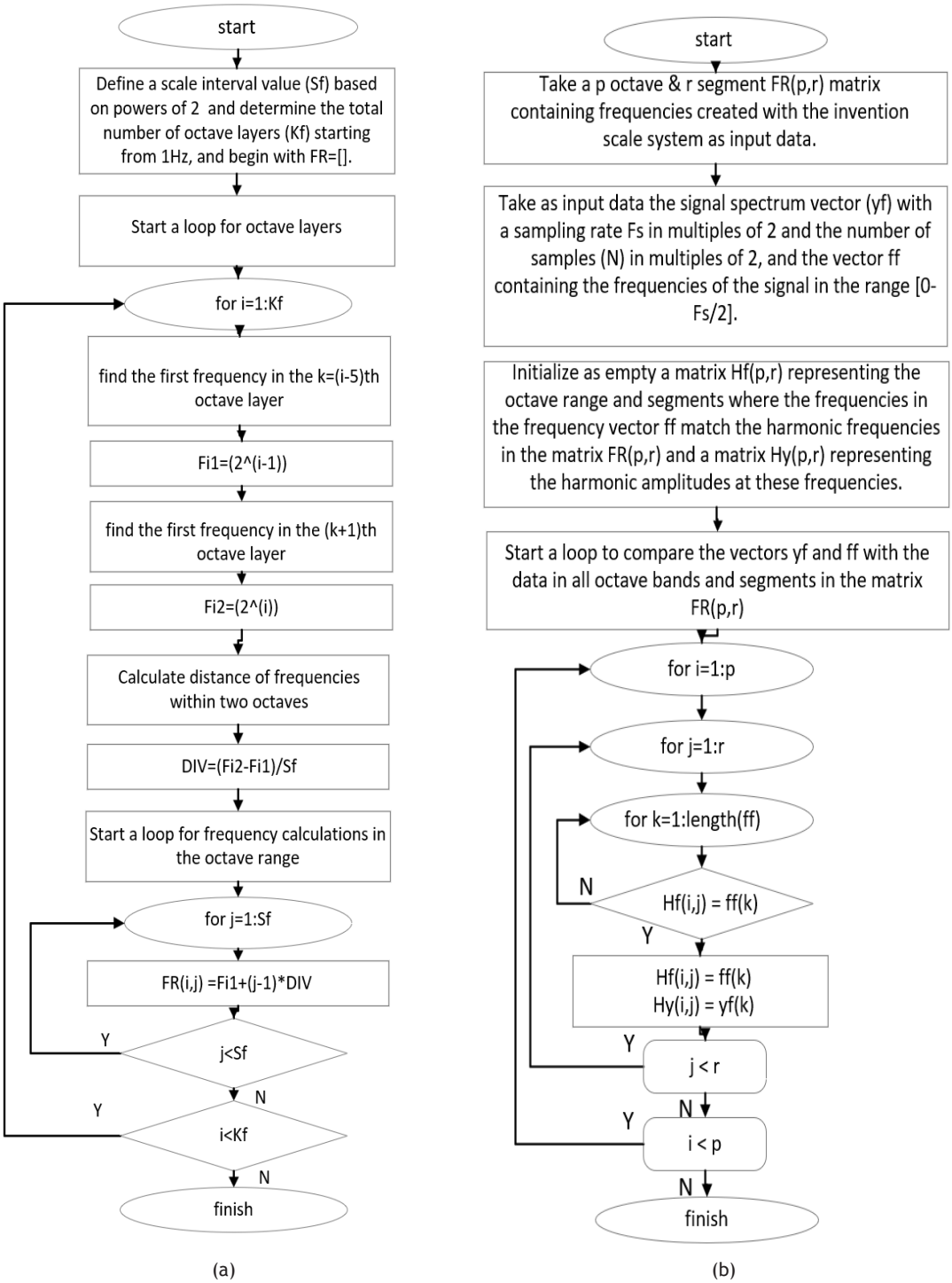

Figure 1. a). A representation of the Safir scale method workflow, in which musical note frequencies consist of natural numbers. b) Representation of the workflow of determining the spectrum amplitudes and harmonics of the signals appropriate to the scale system, by taking an FR matrix as a reference scale system which is produced by using the method in Figure 1a.

Table 2. Note frequencies of the 16-note scale system of the Safir method between [0-8] octaves

Note frequencies	f1	f1#	f2	f2#	f3	f3#	f4	f4#	f5	f5#	f6	f6#	f7	f7#	f8	f8#
Note Symbols	C (Do)	C#	D (Re)	D#	E (Mi)	E#	F (Fa)	F#	G (Sol)	G#	A (La)	A#	H (Ve)	H#	B(Si)	B#
octave-0	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
octave-1	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60	62
octave-2	64	68	72	76	80	84	88	92	96	100	104	108	112	116	120	124
octave-3	128	136	144	152	160	168	176	184	192	200	208	216	224	232	240	248
octave-4	256	272	288	304	320	336	352	368	384	400	416	432	448	464	480	496
octave-5	512	544	576	608	640	672	704	736	768	800	832	864	896	928	960	992
octave-6	1024	1088	1152	1216	1280	1344	1408	1472	1536	1600	1664	1728	1792	1856	1920	1984
octave-7	2048	2176	2304	2432	2560	2688	2816	2944	3072	3200	3328	3456	3584	3712	3840	3968
octave-8	4096	4352	4608	4864	5120	5376	5632	5888	6144	6400	6656	6912	7168	7424	7680	7936

Table 2 shows the note frequency table of the Safir method for the 16 notes in the octave ranges [0-8]. To create a 16-note musical scale system between the octave range [0-8] with the Safir method, Kf=13, and Sf=16 can be selected in the algorithm in Figure 1a, and the results in Table 2 can be obtained. It includes 7 whole-tone used today, accepts the number of notes containing multiples of the nearest 2 as a note sequence, and contains 8 whole-tone frequencies in an octave range (C, D, E, F, G, A, H, B) using

Table 3. Representation of frequency ratios of 16-tone spanning two octaves as both rational numbers and fractional values

Frequency rates (fi/fj)		C#	D	D#	E	E#	F	F#	G	G#	A	A#	H	H#	B	B#
		f2	f3	f4	f5	f6	f7	f8	f9	f10	f11	f12	f13	f14	f15	f16
C	f1	1,0625	1,1250	1,1875	1,2500	1,3125	1,3750	1,4375	1,5000	1,5625	1,6250	1,6875	1,7500	1,8125	1,8750	1,9375
	rate	17/16	18/16	19/16	20/16	21/16	22/16	23/16	24/16	25/16	26/16	27/16	28/16	29/16	30/16	31/16
C#	f2		1,0588	1,1176	1,1765	1,2353	1,2941	1,3529	1,4118	1,4706	1,5294	1,5882	1,6471	1,7059	1,7647	1,8235
	rate		18/17	19/17	20/17	21/17	22/17	23/17	24/17	25/17	26/17	27/17	28/17	29/17	30/17	31/17
D	f3			1,0556	1,1111	1,1667	1,2222	1,2778	1,3333	1,3889	1,4444	1,5000	1,5556	1,6111	1,6667	1,7222
	rate			19/18	20/18	21/18	22/18	23/18	24/18	25/18	26/18	27/18	28/18	29/18	30/18	31/18
D#	f4				1,0526	1,1053	1,1579	1,2105	1,2632	1,3158	1,3684	1,4211	1,4737	1,5263	1,5789	1,6316
	rate				20/19	21/19	22/19	23/19	24/19	25/19	26/19	27/19	28/19	29/19	30/19	31/19
E	f5					1,0500	1,1000	1,1500	1,2000	1,2500	1,3000	1,3500	1,4000	1,4500	1,5000	1,5500
	rate					21/20	22/20	23/20	24/20	25/20	26/20	27/20	28/20	29/20	30/20	31/20
E#	f6						1,0476	1,0952	1,1429	1,1905	1,2381	1,2857	1,3333	1,3810	1,4286	1,4762
	rate						22/21	23/21	24/21	25/21	26/21	27/21	28/21	29/21	30/21	31/21
F	f7							1,0455	1,0909	1,1364	1,1818	1,2273	1,2727	1,3182	1,3636	1,4091
	rate							23/22	24/22	25/22	26/22	27/22	28/22	29/22	30/22	31/22
F#	f8								1,0435	1,0870	1,1304	1,1739	1,2174	1,2609	1,3043	1,3478
	rate								24/23	25/23	26/23	27/23	28/23	29/23	30/23	31/23
G	f9									1,0417	1,0833	1,1250	1,1667	1,2083	1,2500	1,2917
	rate									25/24	26/24	27/24	28/24	29/24	30/24	31/24
G#	f10										1,0400	1,0800	1,1200	1,1600	1,2000	1,2400
	rate										26/25	27/25	28/25	29/25	30/25	31/25
A	f11											1,0385	1,0769	1,1154	1,1538	1,1923
	rate											27/26	28/26	29/26	30/26	31/26
A#	f12												1,0370	1,0741	1,1111	1,1481
	rate												28/27	29/27	30/27	31/27
H	f13													1,0357	1,0714	1,1071
	rate													29/28	30/28	31/28
H#	f14														1,0345	1,0690
	rate														30/29	31/29
B	f15															1,0333
																31/30

the new system. In the new scale method, the intervals between any two octaves are adjusted to cover all tones in the current 12-TET system, when the number of notes (tones) between two octaves is selected as 16, as seen in Table 2, 8 of which are main-tones. 16 note frequencies are created. Here, the missing note in the current notation systems is named as the letter 'H' and the name 'Ve' note.

To increase or decrease the note intervals, it is necessary to change the Sf value. Table 3 shows the frequency rates as both rational numbers and fractional values in the 16-tone scale spanning two octaves. In Table 2, the value of the frequencies in the upper octaves progresses as twice the frequencies in the previous octave (harmonics). In this method, although the ratio of adjacent frequencies is not equal, note frequencies in two octaves are equal distances. (Table 2 and Table 3). It is considered that the chromatic note frequency table presented in the method will be of significant benefit to both the music and the signal processing applications, as it contains strong sinusoidal signal examples representing resonance frequencies consisting of natural numbers. As seen in Table 3, whole-4th intervals and whole-5th intervals in music are formed with the invention. Another important advantage of the invention is that whole-5th intervals are formed between two different notes in the same octave range. (f9/f1 and f15/f5 frequency ratios). Table 4 represents a comparative representation of the tone scale ratios of different common musical scales in the 2-octave range with Safir.

In addition to the definition of musical scale with Safir, it can also be used as a reference scaling system for spectrum evaluation of the different signals. The method involves the following key steps for algorithmic steps for spectrum scale definition (Figure 1b). Algorithmic Steps for Frequency Calculation and Analysis as a spectrum scaling system steps are primarily based on the FR matrix calculated by using the steps in Figure 1a for selected octave bands and segment values. Below is a high-level breakdown of the algorithm.

Table 4. Illustration of tone scales-ratios in the 2-octave range for the Pythagorean scale, 12-TET equal temperament scale, 53-TET Turkish music, JI, and Safir scale with 16-Note.

Musical scale names	Octave 1	Minor2	Major2	Minor3	Major3		Perfect 4	Tritone	Perfect 5	Minor6	Major6	Minor7	Major7	Minor8	Major8		Octave 2
fi/f1 rates	f1	f2	f3	f4	f5	f6	f7	f8	f9	f10	f11	f12	f13	f14	f15	f16	f17
Notes	C1	C#	D	D#	E	E#	F	F#	G	G#	A	A#	H	H#	B	B#	C2
Pythagorean scale rates	1,0000	(3^7)/(2^9)	(3^2)/(2^3)	3^9)/(2^14	(3^4)/(2^6)		(2^2)/(3^1)	(2^10)/(3^6)	(3^1/(2^1)	(3^8)/(2^12)	(3^3)/(2^4)	3^10)/(2^15)			(3^5)/(2^7)		2,0000
Pythagorean scale rates	1,0000	2187/2048	9/8	9683/1638	81/64		4/3	1024/729	3/2	6561/4096	27/16	59049/32768			243/128		2,0000
Pythagorean scale(fractional	1,0000	1,0679	1,1250	1,2014	1,2656		1,3333	1,4047	1,5000	1,6018	1,6875	1,8020			1,8984		2,0000
12-TETscale rates	1,0000	2^(1/12)	2^(2/12)	2^(3/12)	2^(4/12)		2^(5/12)	2^(6/12)	2^(7/12)	2^(8/12)	2^(9/12)	2^(10/12)			2^(11/12)		2,0000
12-TETscale (fractional)	1,0000	1,0595	1,1225	1,1892	1,2599		1,3348	1,4142	1,4983	1,5874	1,6818	1,7818			1,8877		2,0000
53-TET Turkish Makaam	1,0000	2^(4/53) 2^(5/53)	2^(9/53)	2^(13/53) 2^(14/53)	2^(18/53)		2^(22/53)	2^(26/53) 2^(27/53)	2^(31/23)	2^(35/23) 2^(36/23)	2^(40/53)	2^(44/53) 2^(45/53)			2^(49/53)		2,0000
53-TET Turkish Makaam	1,0000	1,0537 1,0675	1,1249	1,1853 1,2009	1,2654		1,3333	1,4049 1,4235	1,4999	2,8714 1,6013	1,6873	1,7779 1,8013			1,8981		2,0000
Just intonation	1,0000	16/15	9/8	6/5	5/4		4/3	45/32	3/2	8/5	5/3	7/5			15/8		2,0000
Just intonation fractional	1,0000	1,0667	1,1250	1,2000	1,2500		1,3333	1,4063	1,5000	1,6000	1,6667	1,7500			1,8750		2,0000
Proposed Method Scale	1,0000	17/16	18/16	19/16	20/16	21/16	22/16	23/16	24/16	25/16	26/16	27/16	28/16	29/16	30/16	31/16	2,0000
Proposed Method Scale	1,0000	1,0625	1,1250	1,1875	1,2500	1,3125	1,3750	1,4375	1,5000	1,5625	1,6250	1,6875	1,7500	1,813	1,8750	1,9375	2,0000

Initialization: At first, produce an FR(p,r) matrix, containing harmonic frequencies, by using the steps in Figure 1a. The segment value r is defined as a power of 2, along with the total number of octave layers p.

Input Data for Harmonic Frequency Matching: Take input data consisting of a signal spectrum vector (yf), sampled at a specific rate, and a frequency vector (ff) within the range [0, Fs/2]. Matrices Hf(p, r) and Hy(p, r) are initialized to store matched harmonic frequencies and their corresponding amplitudes.

Matching Harmonic Frequencies: The algorithm compares each frequency in the ff frequency vector with those in the FR matrix. If a match is found, the frequency is stored in Hf(i, j), and the corresponding amplitude is recorded in Hy(i, j).

Repetition and Finalization: The matching process is repeated for all octaves and segments, ensuring that all frequencies are matched and stored. Once all frequencies are processed, the algorithm concludes and finalizes the frequency and amplitude data for all octave bands.

If the sampling frequency (Fs) and FFT sample length (N) of a signal are selected as multiples of 2 and the FFT is taken, the frequency resolution ($\Delta f=Fs/N$) and frequency distributions occur in terms of natural numbers. For this reason, for example, to obtain the spectrum distributions of musical signals composed and recorded with frequencies appropriate to the Safir scale system in Table 2 in integer values, the Fs and N values must be multiples of 2.

Test and Evaluation

Several tests were conducted to observe the distribution of spectrum amplitudes for note frequencies in the Safir method and the 12-TET chromatic scale system. Initially, the parameters were set to N=32 and Δ=32 for the tests. A sinusoidal signal, X(t), was created to represent 8 tonal frequencies (f_1 to f_8) over a two-octave range.

$$X(t) = \sin(2\pi f_1 t) + \sin(2\pi f_2 t) + \sin(2\pi f_3 t) + \sin(2\pi f_4 t) + \sin(2\pi f_5 t) + \sin(2\pi f_6 t) + \sin(2\pi f_7 t) + \sin(2\pi f_8 t) \quad (1)$$

The sinusoidal signal X(t), two different sets of frequency values were tested:

i) Proposed Method: The 8-tone frequencies in the proposed method, representing notes within the range of 8 Hz to 16 Hz (C, D, E, F, G, A, H, B), were assigned the values [8, 9, 10, 11, 12, 13, 14, 15] Hz. These values were substituted for the variables [f_1, f_2, f_3, f_4, f_5, f_6, f_7, f_8] in the X(t) function as defined in Eq.1. The FFT of the X(t) signal was then performed.

ii) 12-TET Chromatic System: In the 12-TET chromatic system, 7-tone frequencies within the range of 8 Hz to 16 Hz (C, D, E, F, G, A, B) were represented by the values [8.176, 9.177, 10.30, 10.913, 12.250, 13.750, 15.434] Hz. These were substituted for the variables [f_1, f_2, f_3, f_4, f_5, f_6, f_7] in the X(t) function as defined in Eq.1. The FFT of the X(t) signal was then performed. Since the 12-TET system does not have an 8th note within this range, f_8 was set to 0.

During the test, an FFT transformation was applied to the signal for a duration of t = 1s, resulting in the signal X(f) = fft(X(t), N). When plotted as a single-sided linear spectrum over the frequency range of [0-16 Hz], the results shown in Figure 2a were obtained. As seen in Figure 2a, in the first plot representing the proposed method with integer frequencies ranging from 8 to 15 Hz, each line in the frequency spectrum retained its amplitude without any spectral leakage to the sidebands. In contrast, the sinusoidal signal composed of 12-TET frequency samples exhibited spectral leakage across different signal frequencies, leading to changes in the linear spectrum amplitudes and visible leakage into the sidebands (Figure 2b). Therefore, the note frequency values in the 12-TET system appear to be far from being considered true resonance frequencies.

A simple test was conducted to observe the differences in spectrum distribution between integer and fractional frequency values of a sinusoidal signal. In this context, the FFT was applied to the function x1(t) = sin(2πft) with two different frequency values: f_1=16Hz (Figure 3a) and f_2=16.35Hz (Figure 3b). Sampling Frequency (Fs) for the signal in Figure 3 was chosen as Fs=64Hz to cover the signal nyquist frequency. The FFT amplitudes and frequency distribution for both sinusoidal signals are shown.

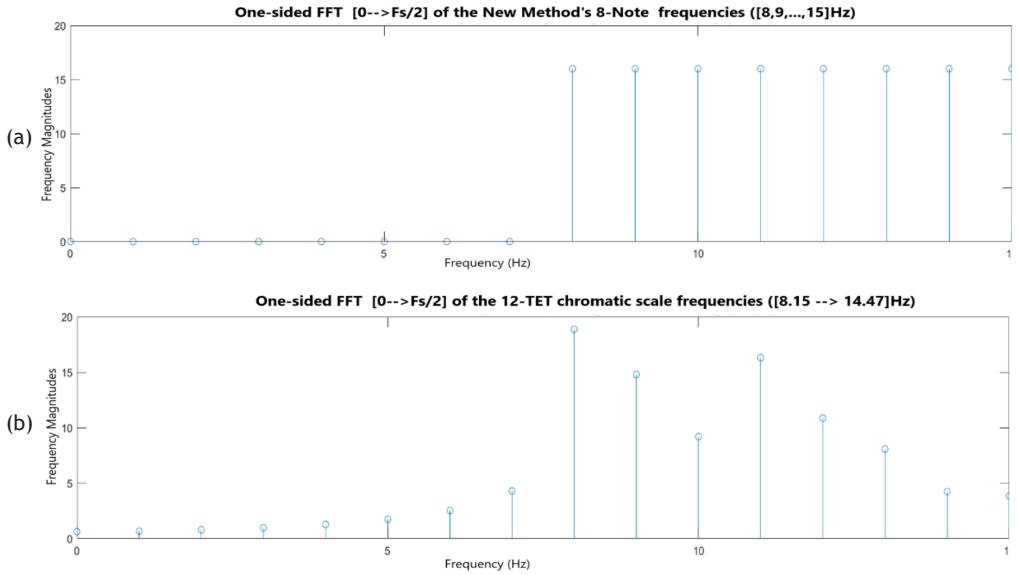

Figure 2. a) Representation of the single-sided FFT spectrum amplitudes for the x(t) signal, which was created by summing the 8-note frequencies of the proposed method (8 to 15 Hz) within the 8–16 Hz frequency range. b) Representation of the single-sided FFT spectrum amplitudes for the x(t) signal, created by summing the 7-note frequencies within the 8–15 Hz range in the 12-TET equal temperament system

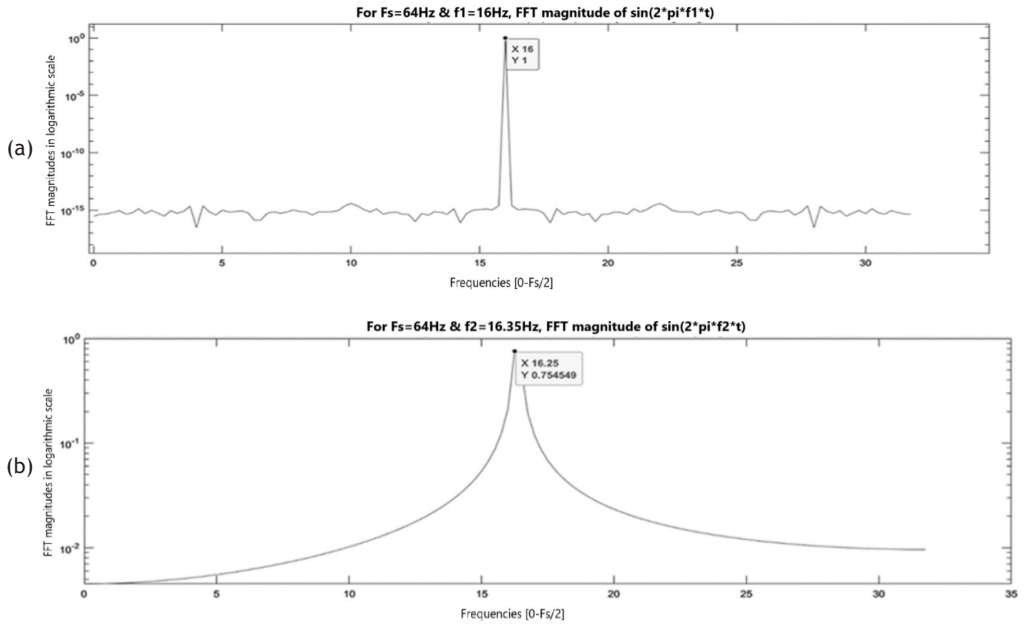

Figure 3. a) Representation of the FFT spectrum amplitudes for the signal x1(t) = Sin(2*π*16*t) sampled at Fs=64Hz. b) representation of the FFT spectrum amplitudes for the signal x2(t) = Sin(2*π*16.35*t) sampled at Fs=64Hz

As observed, the FFT behavior of the sinusoidal signal with f_1=16Hz closely aligns with the expected 'Delta' (δ) function behavior from Fourier transforms of sinusoids, maintaining its resonance even at logarithmic amplitude levels of $10^{(-15)}$. In contrast, the sinusoidal signal with f_2=16.35Hz exhibits both a reduction in harmonic amplitude and a dispersion of energy into side frequency bands. This demonstrates that sinusoidal signals with fractional frequency values lose the characteristics of being true resonance frequencies.

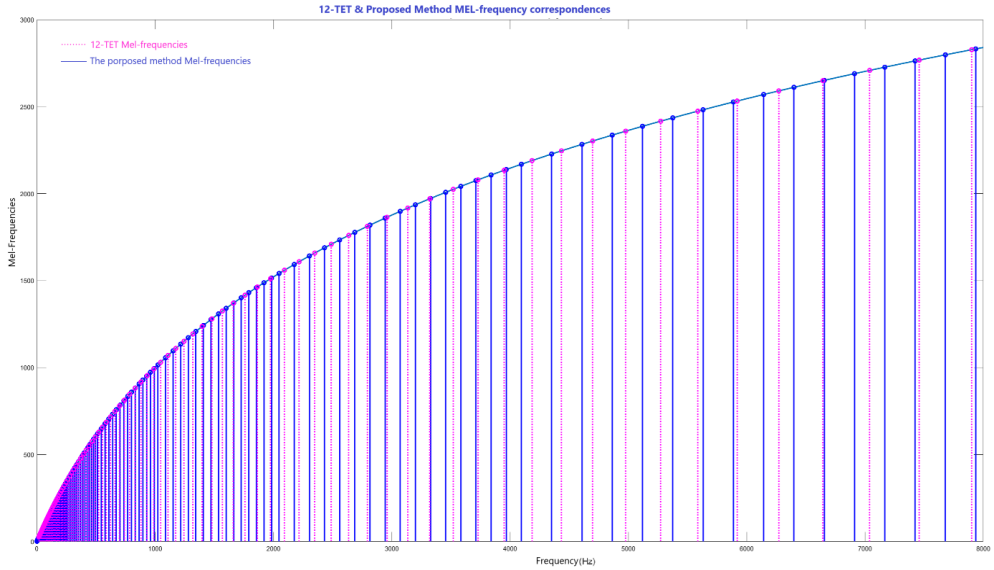

Figure 4. Graph of the Mel-frequency equivalents of frequencies between [1–8000 Hz] for both the 12-TET chromatic scale and the proposed 16-TET scale

In the current state of the art, the most common method for determining the relative frequency perception of a sound emitted from a source is the Mel-frequency calculation method (Alvarez et al., 2007). According to this method, the Mel-frequency equivalent of a sound at frequency f is calculated using the formula provided in Eq.2.

$$f = 2595.\log_{10}(1 + \frac{f}{700}) \qquad (2)$$

Figure 4 illustrates the Mel-frequency equivalents for frequencies in both the 12-TET scale system and Safir frequencies, calculated using the Mel-frequency formula. In the Safir system, frequencies are evenly spaced within each octave band. This linear scaling of the octave band reduces the impact of higher-pitched frequencies towards the end of the band. In contrast, the 12-TET equal temperament scale, due to its logarithmic scaling, results in wider frequency intervals towards the end of each octave band. Consequently, the differences in Mel-scale frequency equivalents between adjacent frequencies increase at the end of the octave band, making the selectivity of higher-pitched notes more distinct than Safir. When examining the regions in Figure 4 where the frequencies on the horizontal axis increase in multiples of 2 (indicating octave intervals), the Mel-scale frequency differences between adjacent frequencies in Safir octave bands favor the lower notes at the beginning of the octave. However, in the 12-TET system, the Mel frequency difference increases for adjacent notes at the end of the octave band, favoring the higher-pitched notes. In the Safir system, the balanced distribution of frequencies within each octave band results in a closer alignment

of high-pitched frequencies in the Mel scale towards the end of the octave, reducing their auditory prominence. This leads to a decreased selectivity of high-pitched frequencies in the ear, thus diminishing their dominant effect.

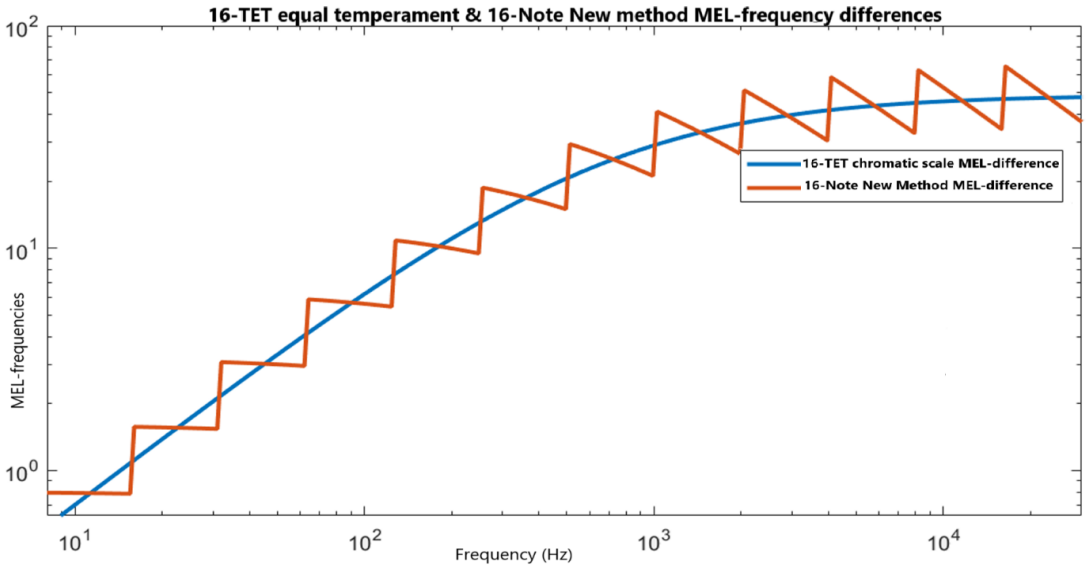

Figure 5. Representation of the 16-TET equal temperament scale system and the frequency differences of the 16-note invention adjacent frequencies in the Mel scale

Figure 5 presents the differences in Mel-frequency equivalents between adjacent frequencies for the 16-note scales in both the 16-TET equal temperament (using a multiplication factor of 2^(1/16) and Safir scale with 16-octave segments (Sf=16). As shown in Figure 5, the Mel-frequency intervals in the 16-TET scale progressively increase, enhancing the selectivity of high-pitched notes within the octave band. In contrast, in Safir, the Mel-frequency differences at octave transitions are higher compared to 16-TET, but decrease throughout the octave band as the notes become higher in pitch. This results in greater clarity at octave transitions in Safir, while selectivity within the band decreases as the pitch rises. This characteristic is considered beneficial for hearing health, particularly in high-frequency music signals.

Figure 5 illustrates that in the 16-TET equal temperament scale, the ratio of adjacent frequencies remains constant across the entire frequency range, while the Mel-frequency differences consistently increase across the octave bands. This implies that as one moves towards higher frequencies in the equal temperament chromatic system, particularly at high frequencies, the selectivity of higher-pitched notes within the band becomes more pronounced compared to lower-pitched notes. For instance, in a music signal composed using the equal temperament scale and sampled at 48 kHz, high-pitched notes are more distinctly perceived than lower-pitched tones in each octave band when compared to the Safir scale.

Based on the results in Figure 5, it can be said that the equal temperament scale is a system that enhances the auditory selectivity of higher-pitched notes over lower-pitched notes within an octave band. This phenomenon appears to apply to all musical scale methods that use a multiplicative factor to scale intervals within an octave band based on frequency ratios. In the Safir scale, however, the selectivity of lower-pitched notes is enhanced within the same octave band, while the Mel-frequency

difference decreases as one moves towards higher-pitched notes. Since the Mel scale represents the human ear's synthetic perception of frequencies, it is suggested that music signals composed with the Safir scale will emphasize the selectivity of lower-pitched frequencies in high-frequency regions of the octave band while suppressing the selectivity of higher-pitched frequencies.

Table 4 presents a comparative analysis of the tone ratios within a 2-octave range for the Pythagorean scale, 12-TET equal temperament scale, and the 16-note scale of Safir. As shown, both the 12-TET scale and the Pythagorean scale generate intervals based on a multiplication factor, resulting in similar interval values. In the 12-TET scale, the intervals between notes are scaled according to a base-2 logarithmic system, and as shown in Figure 4, the differences between note intervals continuously increase towards higher frequencies. In contrast, in the Safir system, the frequency intervals within the same octave are equal, but the frequency ratios decrease as the end of the octave band is approached. Table 4 illustrates the tone scales-ratios in the 2-octave range for the Pythagorean scale, 12-TET equal temperament scale, 53-TET Turkish music, JI, and Safir scale with 16-Note. As observed in Table 4, in the Safir method, adjacent frequency ratios narrow continuously toward the end of the octave band. Consequently, the Mel-scale frequency values of the notes near the end of the octave band become more distinct and are more readily perceptible by the ear. Towards the end of the octave band, the Mel frequency intervals shrink, as seen in Figure 4. In the Safir method, the scales marked in Table 4 overlap with those of other systems, while the unmarked frequency tones are either present at different frequency ratios within the octave band, as seen in Table 3, or can be divided into finer scaling intervals within 32-note or 64-note Safir scales. This can be seen in the frequency ratios for 16, 32, and 64 notes in Table 5. Comparing Table 3 and Table 4, it is evident that many of the consonant ratios in the JI (Just Intonation) system in Table 4 appear at different frequency ratios in Table 3. (Note: For the 'comma' intervals in the 53-TET system and the intervals in other scales that do not exactly match, two scale values are provided in the 53-TET system in Table 4.)

Innovative Effects of the Safir Method on Digital Signal Processing Applications

This method offers a variety of innovative ways to improve spectrum analyzers, from minimizing spectral leakage to improving harmonic resolution and supporting multi-octave analysis. These advances could have important applications in fields as diverse as audio engineering, speech processing, animal communication analysis, and signal processing in noisy environments. Providing more accurate, natural-sounding frequency analysis, this approach could pave the way for next-generation spectrum analyzers and provide a clearer, more precise understanding of complex signals.

This method could also provide breakthroughs in many areas of speech processing by providing more accurate pitch and harmonic analysis. Whether improving speech recognition, emotional analysis, synthesis, or improving voice clarity in noisy environments, this approach addresses limitations in existing systems that rely on less accurate or artificially constrained frequency representations. Each of these application areas offers significant potential to push the boundaries of current speech-processing technology by aligning more closely with natural speech and human auditory perception. The Safir method, which uses natural number-based frequencies and harmonic analysis, can potentially be used to study animal vocalizations and communication as it allows precise measurement of resonant frequencies and harmonics. By capturing these frequencies, we can analyze the sounds of different species with high accuracy and understand their unique frequency responses and harmonics. This method could be particularly

useful in bioacoustics, where understanding the frequency properties of animal sounds (such as sounds from whales, birds, or bats) is essential for studying animals' behavior, communication, and even environmental adaptations.

In bioacoustics, animal vocalizations generally cover a wide range of frequencies; Some of these are frequencies that humans cannot directly perceive but are vital for animal communication. With good frequency resolution and the ability to map resonance harmonics, this method can provide insight into these vocalizations in a way that traditional methods cannot. It can also reveal patterns that are more difficult to capture using traditional tools such as 12-TET or linear frequency scales and do not account for the perceptual nuances of nonhuman hearing. One of the state of the art study animal communication through frequency analysis is the Fourier Transform (FFT) approach which identifies the frequency components of sounds but cannot effectively provide the resolution or perceptual fidelity that the natural numbers-based approach in this article can offer. Another method, Mel-Frequency Cepstral Coefficients (MFCCs), again cannot provide an effective solution as the filter structure is not specifically designed for the study of non-human species (Ijaz et al., 2024).

The new natural numbers-based scaling method can produce effective models in converting bioacoustic sounds into speech by producing and comparing models based on resonance frequencies and harmonics in animal communication. For example, species-specific vocalizations such as echolocation calls in bats, whistles in dolphins, and songs in birds often contain frequencies that vary significantly between species. Using the Safir method, researchers can directly relate these frequencies to a natural harmonic structure that reflects biological resonance patterns, leading to more meaningful insights into species' communication strategies. Additionally, differences in resonance frequencies can be analyzed about environmental factors such as habitat acoustics or predator-prey dynamics, further deepening our understanding of animal behavior and communication.

Another usage of Safir can be to detect Pitch Frequency Differences in Speech, after taking FFT to extract the fundamental frequency (F0), these frequencies can then be mapped onto a natural-number-based scale for harmonic clarity. Statistical analysis categorizes speakers by pitch patterns, revealing correlations with gender, age, and emotion. Applications include speech therapy, personalized voice analysis, and improvements in speech.

Recommended Practical Applications of Safir

The new scale represents tone frequencies using natural numbers and presents each tone as a pure sine wave without harmonic distortion. This offers clear spectral representation with undistorted peak signals. The linear scaling of tone intervals ensures that microtonal shifts remain harmonically close to related notes, providing a more harmonious interval structure compared to traditional systems. Adjustments supporting low frequencies in the MEL scale reduce the impact of high-frequency sounds, offering a healthier listening experience.

Signal Processing and Natural Speech Analysis: By linking tone frequencies to spectrum magnitudes, this method simplifies the analysis of resonance frequencies in various signals and aids in evaluating complex waveforms. It supports the analysis of both organic and inorganic sounds, allowing connections between sounds like vocalizations or environmental noises and their harmonic relationships. The use of natural number frequencies eliminates fractional values, creating more harmonious intervals and increasing efficiency and accuracy in the analysis and synthesis of musical frequencies (Kellermann et al., 2023).

Speech Recognition and Emotional Analysis: Traditional speech recognition systems struggle with nuances like tone variations, accents, and emotional tones when using 12-TET or standard frequency representations. Safir frequency scale captures subtle tone changes and harmonics better, enabling more accurate transcriptions under noisy or variable conditions. Since emotional tones are often conveyed through pitch, this method can provide more natural and precise outcomes in emotional and sentiment detection applications (Liu et al., 2023).

Flexible Scale Production and Consistent Frequency Analysis: The system offers flexible octave divisions, from traditional 7-note scales to more complex microtonal scales (e.g., 16 or 32 notes per octave). This flexibility opens up a wider range of musical expression and allows for more precise signal analysis. The Safir method overcomes perceptual issues in 12-TET and 53-TET systems, providing a harmonious frequency representation across octaves, and creating a more universal harmony for both composition and scientific analyses (Guers, 2023).

Wideband Spectral Analysis and Frequency Accuracy: By scaling octaves with higher multiples, the Safir method provides more accurate results in wideband spectral analysis. This facilitates analysis over broad frequency ranges, especially in structural health monitoring, environmental noise analysis, or detailed music signal processing. The natural number-based method allows spectrum analyzers to provide exact frequency values for resonance-like frequencies, contributing to more precise frequency determination and analysis (Wang et al., 2021).

Harmonic Resolution and Spectral Leakage Reduction: The natural number-based method improves the resolution of harmonic content, especially in the analysis of complex signals like speech, music, or animal sounds. While traditional methods like 12-TET can lead to spectral leakage issues, the new system reduces such leakages, making spectral peaks sharper and more distinct. This leads to clearer and more accurate results, particularly in noisy signal analysis (Puche-Panadero et al., 2021).

Sound Therapy, Health Monitoring, and Hearing Health: The new system offers a more balanced listening experience by reducing the emphasis on high-frequency sounds, minimizing discomfort associated with prolonged exposure to high-frequency audio. This is particularly relevant in music production, hearing technology, and signal processing fields, contributing to long-term hearing health. The system enhances the detectability of low frequencies while suppressing excessive emphasis on high frequencies, creating a balanced auditory experience (Sereda et al., 2018).

Conclusion

The 12-TET system approximates consonant intervals like the perfect fifth (3:2 ≈ 1.49832) and perfect fourth (4:3 ≈ 1.33482), compromising harmonic purity, particularly in higher frequencies, which tend to sound increasingly sharp, reducing clarity, especially in sustained high notes. Although 12-TET simplifies transposition and versatility in musical expression, it introduces perceptual distortions due to logarithmic frequency divisions. In contrast, the Safir method uses linear scaling, which eliminates the sharp rise in higher frequencies and results in a more harmonious frequency distribution across the entire scale. By using natural numbers in frequency calculations, the method ensures consistent intervals based on fundamental ratios rather than logarithmic approximations. Similarly, while the 53-TET system offers greater harmonic precision and aligns more closely with natural harmonic ratios, it faces practical challenges, including the need for 53 notes per octave and the generation of fractional frequencies, complicating its application in traditional settings. These issues, along with the complexity of maintaining accurate

tuning across a wider tonal range, highlight the limitations of both 12-TET and 53-TET, with Safir offering a more accessible and harmonically coherent alternative.

The tests confirm that the natural number-based system of the study provides a more accurate and clearer frequency representation when subjected to FFT analysis, with well-defined harmonic content and no spectral leakage. This demonstrates that the system produces more natural-sounding tones with fewer artifacts compared to the 12-TET system.

The comparison between the 12-TET system and Safir scale using Mel-frequency calculations underscores the advantages of Safir scale in terms of natural frequency spacing and improved auditory perception, particularly for higher frequencies. The balanced frequency intervals within the octave band, along with the reduced emphasis on high-pitched sounds, suggest that the new system may offer a healthier listening experience, particularly in the context of long-term hearing health.

In summary, this novel method addresses the need for more balanced frequency scaling, enhancing the perceptibility of lower frequencies while suppressing the overemphasis on higher frequencies. This characteristic is especially beneficial for high-frequency sound analysis in fields such as music production, hearing technology, and signal processing. Compared to traditional systems like 12-TET, which can lead to imbalanced frequency distributions, the Safir scale system creates a more uniform auditory experience. Some systems, such as the 432 Hz tuning, draw inspiration from natural harmonic ratios and have been associated with claims of providing a more harmonious listening experience. The Safir method appears to be an original exploration into creating a more balanced frequency system that reduces the prominence of higher frequencies and could offer new insights into harmonic tuning, especially in terms of auditory health. This suggests a potential avenue for further research and development in music theory and sound therapy.

Acknowledgment

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Research Article

Vernacular culture of Gjakova: emic approach of music tradition

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Abstract

This paper aims to present the vernacular cultural development in general and and through it, the development of song's, presents the folkloric types of Gjakova's well known as Gjakova's Aheng (Party), and also his role for all Kosovo society in generally. On the other hand, this short study aims to shed light on music in the period from 1770 untill XX century, 1980 year. Due to this period of more than 250 years happened many changes of musicians, types of songs, styles of singing etc., aims of this paper is to elaborate social values and role of aheng as unique vernacular culture through which overcoming many musicians, songs and music instruments (not only from Gjakova) have paraded. During this period, many things have changed and many transformations have been made in the Jakova's culture especially at Aheng. The tradition of singing in Jakova was started with 'Tayfa' (the group of 5 to 10 musicians who playing music in family ceremonies). The main types of songs that were sung at that time (18th-19th century) were lyric, epic, boys and dilbers songs, ballads, song of migration and elegies. Through those songs, musicians show all hers virtuosity playing in instruments and also expressed their feelings towards loved or any dissatisfaction towards the leadership of the time that belonged to the Ottoman Empire as they were Albanians. The music practiced at that time at Jakova (completely vernacular) coincided with the music practiced in Shkodra-with same name-Heng (Shkodra)-Aheng (Gjakova). If we compare the age of Shkodra (2500 years), with the city of Jakova (less than 450 years), we can just imagine how much rapid development the city of Jakova has had. However, those more than 200 songs represents an imposing, a very large value, based on the fact that other cities in Kosovo had no tradition of ceremonial music. In this paper it will be precisely this type of ceremonial music, Aheng, Tajfa and the multiple types of songs that will be the powerful base of music tradition of Gjakova, will be supported.

Keywords

cultural heritage, Gjakova's Aheng, Gjakova's song, local music, lyrics, Urban music

Introduction

The City of Gjakova was founded as a settlement at the end of the 16th century in the middle of the Dukagjin Plain, in the middle of the vertical Prizren-Peja road which was a continuation of the old Athens-Dubrovnik road (Vala, 2015). In Antiquity and maybe even before that, a branch of the road "Via de Zenta" passed that started from the skeleton of the Southern Adriatic: Tivar, Budva and Kotor to Ribnica (today's Podgorica) and then to Plavë and Peja and indirectly connected the locality that today is known as the city of Gjakova(Osmani, 2003). Gjakova lies in the tectonic valley of the Dukagjin Plain, near of Accursed Mountain, Mount's Pashtrik, Mountain of Sharr and Mount of Mokna. The city lies between latitude 42.22 degrees and longitude 20.26 degrees, with an altitude of 365-385 m above sea level and belongs to the Drini i Bardhë (White Drini) river basin. It is well known that the geographical position of Kosovo is of special importance for Southeast Europe because, as an integral part of the central Southeast region, there are shorter routes to the Adriatic Sea and the Aegean Sea.

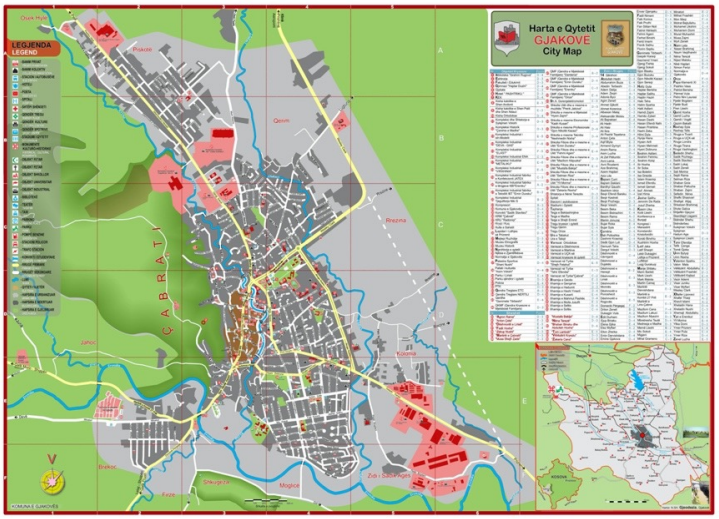

Photo 1. Map of Gjakova City (web 1)

As the gravitating, administrative-territorial, educational and cultural seat of Dukagjin, it never took the dominant role even though it was a center with city functions. In fact, the most suitable conditions for social, political, urban, economic, cultural-educational advancement, according to all criteria, the central city of the Dukagjin Plain would have to be Gjakova. This center has economic capacity, human resources, road traffic surveillance service, civil airport, city where the main roads of the Dukagjin Plain north-south intersect with other roads that end from the eastern direction and that connect Gjakova with the region of Prekorupa - the territories of Rahovec, Klina and Malisheva.

On the other side, the roads to the south and southwest that connect Gjakova with areas of the Republic of Albania such as: Has, Kruma. The highlands of Gjakova, Morina Pass, Prush Pass, Kukës, exit to the national highway and the connection with Shkodra, should have been a signal for Gjakova to rise to the level of the second metropolis in Kosovo. A part of the road "Via de Zenta" that started from Shengjin, continued to Shkodra, then in the valley of the white Drin in the direction of Prizren, and on the right side, through Kosovo, continues to Nish, Sofia, Constantinople (Istanbul), passed through the territory of the city of Gjakova.

This area was inhabited in ancient times by the Illyrians (Dardana), while the Roman element was in some command post. Traces of life in Gjakovë go back to the Illyrian period and we find them especially on the western side of the Erenik River, across the Tabake Bridge. It is thought that they belong to the ancient city of Gabuleo, a name that we find on the maps of the century. I-IV on the right bank of the Krena River where there is a single mound (Osmani, 2003). To be formed and established as a city, a mosque had to be built, which was named after its builder Sulejman Hadum Agha Mosque. According to legend[1], Sulejman Aga was a Christian who was crippled as he was deaf and dumb and sexually incompetent as his genitals were totally undeveloped. Sulejmani's father married a girl named Bjeshkë. When Bjeshka was pregnant, he clashed with other shepherds and in a fight with them, he was killed. Bjeshka gave birth to a son, apparently, in order, but later it was proven that he was severely handicapped. Widowed at a very young age Bjeshka married again. In order not to have problems with the future husband who might not accept Bjeshka to take her and her mute son with him when

[1] Based on the field collections made by Osman Koka (and not only him), who has left this legend-manuscript still unpublished. Also, those data is obtained from oral tradition.

he gets married, Bjeshka's brothers tried to keep the boy but Bjeshka resisted. She begged them to let her with her to the man she was going to marry. She begged also and her future husband to allow her to take the boy with her on the day of her marriage. Since her son was 5-6 years old and disabled, her future husband agreed. The little boy naturally had many abilities, but no one, not even her (young) husband, managed to understand the abilities he had. These abilities of Süleyman would only be realized as Süleyman grew up under the supervision of the Ottoman Empire (OE). However, in childhood that was, his mother used to send him to look after the sheep. Of course, the child was calm, did not cause any problems, did not ask for anything and followed what his mother told him. As a small child, he got tired quickly and often fell asleep, on the lawn which, in most cases, was exposed to the strong sun.

One day he falls asleep in the sun. Meanwhile, a falcon was chasing a mouse that was looking for a place to hide from danger. The mouse gets under the body of the sleeping child while the falcon began to hover in the air and the location of the falcon coincided with the shadow it cast on the child. Civil and military power used a one-man post. This man was called a Tatar (a type of courier) who went in all directions.

One Tatar went from Peja to Shkodra, while the other one went from Shkodra to Peja. By the way, at that time, Tatar who carried the mail, took notes and reported on what was happening in the command passed there first. When the Tatar sees the falcon hovering over the child and protecting him from the strong sun while the child sleeps, he immediately notes this unprecedented phenomenon and after a few days reports it as a case. Tatar kept a notebook where he recorded every event he saw; views, impressions, eventual suffering, atmospheric or any other character obstacles, conversations with the people, aid's, etc., were noted in the block in question. It happens eventually that someone attacked the Tatars, poor that country, person, or that population there. In Istanbul, the leaders were surprised to see this child who neither spoke nor heard nor had distinctive genitals. In any case, the boy began to learn the language and the necessary subjects while expressing an extraordinary interest in war strategy and leadership. Also, Sulejmani achieved high levels in the studies of astronomy, physics, mathematics, drawing and geometry. Even during his stay in Istanbul, he started innovating a Astrosyllabic Table with which he measured the time, the movements of the sun, the moon and other stars and which was actually a carefully crafted board that he also takes with him when comes to his villages. This Table is kept even today in the Collection of manuscripts in the National and University Library of Kosovo, and constitutes an added value for the city of Gjakova.

Photo 2. Astrosyllabic table (The final look, 1594) innovated and built by Sulejman Efendi Hadum Aga-Builder of the Hadum mosque, used in the Muvakit-hane[2] of Gjakova[3]

This Table had the shape of a quarter of a circle. As can be seen in the photo, there were many lines in different directions. There was also a note in the Ottoman language. This can also be considered as the first Astrosyllabic Table in the World according to which today the prediction of the stars-signs of the Horoscope is made. In Istanbul,

[2] Muvakit Hane (tur.)- Temporary household.
[3] Photo by Shkelzen Rexha-Collection of manuscripts and artifacts in the National and University Library of Kosovo.

he attended the "Enderum Humayun" school as a first step to obtain important positions, first the title 'Hadim' in the Royal Court of Sultan Murat III (according to Wikipedia he ruled during the years 1574-1595) and later the title Aga. According to Taraphane[4] (Dizdari, 2005) of Novoberda, Sulejmani was one of the first converts to Islam in Gjakova. The boy gradually acquires extraordinary skills in the field of negotiation strategy and reaches high positions. The Sulejman was already a leader after finished the "Enderum Humayun" school, the Sultan offered him to choose a property to become his and for him to lead. He chooses his place around the villages of Guskë[5], Meje, and Brekoc-his birthplace. Precisely in 1576, he returned to Gjakova and settled in the village of Guska. Now as a leader, Sulejmani (converted to Islam) arrives with his army in his homeland. He decides to set up tents at village Guska near the village of Meje. Local residents welcome him as he immediately distributed a lot of aid, knowing that those locals were once his fellow villagers. However, over time, from the large number of animals that were brought there, from the tents as well as the soldiers themselves, the field begins to be damaged and become useless. When the villagers express this concern, he immediately orders them to relocate. During this time of stay, none of the former fellow villagers manage to recognize him. Sulejman was very happy when he saw his relatives, his former friends who played, his fellow villagers... but he did not dare for a moment to tell them who he really was. This was gnawing at him from the inside but... he wondered who would believe him if he told them what he had achieved. But where to go and place all those tents, people and horses? Sulejmani decides to settle on a lawn by a swamp. There he finds a family who says that the land with the entire swamp was his. This was Jak Vula. Since Jaku had committed a crime and was hiding while food, etc., was brought to him by some church servants, Sulejman got the idea to enter into negotiations to buy this land so that Jaku could get rich and have his own money for living freely. Jak told the priests everything he talked to Suleiman and they advised him what to do. One day Suleiman said to him: "Would you sell me a piece of land as large as a buffalo hide"? - I will think about it - says Jaku and immediately consults with the priests. They say 'yes' not knowing Sulejman's mind. "But, whatever you build in that place, this space must bear my name"-says Jaku. Sulejman Hadum Agha agreed to the condition set by Jak Vula.

To make the space as large as possible, Sulejman slaughtered a very large bull, skinned it and left it to dry. After the skin is dry, it is cut into thin threads in a circular shape with sharp tools. After it is finished, the length of thread, as thick as a very thin rope, was too long, and in the presence of Yak and his family, Suleiman's officers begin to surround the land with the thread obtained from the buffalo skin. Jaku is stunned by Sulejmani's idea, but he can't oppose it since that's how they agreed. Finally, when the entire rope was finished, it was understood that Sulejmani had benefited from a very large space from Jaku, who had thought completely differently. Since the agreement was for this place to bear the name of Yak, Suleiman called this place 'Yakovasi' which meant Yak's Field in the Ottoman language. The field of Yak - Jakovasi-Jakova. In the field of Jaku - Jakova, Sulejmani will start work on the construction of the Mosque, which is still called the same today - Hadum Mosque. It was the year 1585. First he built a Hamam (Dizdari, 2005)[6] for the workers to bathe after the tiring construction work, then he built two Inns, one to sleep and the other to eat, and then he started building the Mosque. The mosque was completed in 1594. In order to make life easier and more affordable, Sulejmani built at least 500

[4] Taraphane - place where money was printed. The places where the money should be sent were also determined there. The city of Jakovo also appears there.

[5] The grave of Bjeshka, the mother of Sulejman Hadum Aga is In the village Guska-village of Gjakova city.

[6] Hamam- the Bath place. Big place-Bathroom- where can Bath many peoples at the sametime.

different shops and workshops around the mosque which came increasing in number as shops or as small family factories. Many of the builders, who were mainly from Dibra, decided to live here, in Jakova. Others came and rented shops while the payment of the tax called Haraç was also put into operation. Those who did this work was called Haraqì-a (Arllati & Rugova, 2015). In 1606, Jakova was constituted by the Ottoman Empire as Kasaba. From this year the very rapid flowering of this country begins. All the 17th and 18th centuries mark an extremely large development of the city in all aspects, such as: in terms of population, economic development, increase in the number of craft activities, trade development with different cities and countries dominated by Italy, Albania, Turkey. Croatia, France... or Shkodra, Venice, Trieste, Istanbul, Paris, Dubrovnik, Kotorr etc., without leaving out nearby centers, such as Prizren, Skopje, etc. During the 17th and 18th centuries, Jakova became one of the main Albanian manufacturing and commercial centers, having the city of Shkodra as its loyal supervisor and guardian. With the development of trade and economy, the well-being of the population that knew little poverty also increased. In the seventeenth century was born the first cultural "institution" of the time called Sofra. The table represented the gathering of several close people (max 12) who gathered for any family occasion, such as a birth, death, engagement, marriage, etc. In Sofra, they will also begin the tradition of singing in the city of Jakova.

Literature Review

It is already known that folklore in general and the music (in particular) that accompanies it has existed in every nation and at every time. "Folklore is a naturally occurring and necessary component of any social group. Folklore does not need to be old; it continues through the modern day. It is created, transmitted, and used to establish "us" and "them" within a given group (Schmidt-Lauber, 2012). Such a thing, of course, happened to the Albanians as one of the oldest peoples of the world. Consequently, also in various Albanian areas of which Kosovo and Gjakova as a city of Kosovo is part. It seems that in the case of the musical tradition of the city of Gjakova, the so-called Applied Folklore has been practiced through which other economic, social, etc. problems have been tried to be reduced to a minimum. In the musical tradition of the city of Gjakova, Folklore was related to the vernacular culture, it was part of that culture (Douillet, 2008). This vernacular culture was the way of life; it was the life of this people from an anthropological point of view. In the 17th, 18th and 19th centuries, there was no school institution, even elementary, let alone any school where music would be taught. Therefore, the customs and traditions handed down from generation to generation were a 'school' for the inhabitants here. They knew that a ritual (like that of the marriage where the bride gathered her female relatives on the eve of the marriage, for example) and that's what all the girls did a few days before the wedding.

So the oral transmission, the oral tradition of the type "this is what my mother (or my father) did, this is what I should do" was the only orientation on which life was built. As Shelemay (1996) notes, the "transmission of tradition" is a process of communication, where musical materials are passed down from one person to another, whether in oral, aural, or written forms. In the case of Gjakova's musical tradition, this communication occurred primarily through live performances and other oral forms of transmission. Over the years, this culture began to be enriched thanks to the arrivals within the city, in which case a cultural diversity began to be created which, gradually, became united as an alliance and was used by all or most of the inhabitants. When in the 20th century folklore began to be studied from different angles and fields because of this cultural diversity, then different researchers began to study the diverse alliance of folklore

studies with other academic fields offers a variety of theoretical vantage points and research tools to the field of folklore studies even as it continues to be a point of discussion within the field (Zumwalt, 1988). As Mostowlansky & Rota says, The emic approach aims to understand the cultural meaning and significance of a particular behavior or practice, as it is understood by the people who engage in it (Mostowlansky & Rota, 2020). Also a local music tradition like in this case-Jakova music tradition, based on Emic knowledge and interpretations are those existing within a culture, which are 'determined by local custom, meaning, and belief' and best described by a 'native' of the culture.

Research Importance

The research article "Vernacular Culture of Gjakova: Emic Approach of Music Tradition" is of particular importance for Kosovar society, as it focuses on the preservation and analysis of musical heritage, as a key element of local identity and culture. The folk music of Gjakova, as part of the overall tradition of Kosovo, has a profound impact on the formation of collective consciousness and can be used as a tool for understanding the cultural, social and historical development of the region. Using an emic approach, which emphasizes the internal perspective of the community, this article aims to explore musical meanings and practices as important elements of the social and cultural life of Gjakova. This is important as it can help preserve musical traditions at a time when globalization and external influences can threaten the authenticity of these practices. The analysis of these legacies can also contribute to developing a deeper understanding of cultural diversity in Kosovo and promote the cultural identity of the region at a broader level.

Research Problem

The primary aim of this research is to explore and analyze the development and social significance of Gjakova's unique musical traditions, particularly focusing on the Aheng and the role of the Tayfa ensemble within the community. Specifically, the study investigates the evolution of these traditions from the 18th to the 20th century, examining how they have transformed and been shaped by both local and external influences over time.

Key goals include:

- Analyzing the key musical forms of the Aheng tradition and their social, cultural, and political context.
- Investigating the evolution of folk music in Gjakova, tracing its historical and cultural roots.
- Examining how these musical traditions contribute to local identity, collective memory, and community resilience in the face of globalization.
- Exploring the preservation of these practices and their role in maintaining the cultural heritage of Kosovo, particularly in a contemporary context.

This research aims to fill a gap in understanding Gjakova's folk music and its influence on broader cultural practices in Kosovo, contributing to the preservation of these vital cultural traditions.

Method

Research Model

The research model applied in this study is primarily qualitative. The reason for this choice is that the study focuses on an in-depth analysis of historical documents, oral traditions, song texts, and melodies passed down through generations in the Gjakova region. These cultural elements, particularly folk songs, offer valuable insight into the vernacular music tradition and its societal significance. Since the time of the creation of these songs, formal state institutions did not exist, and as such, the cultural practices were passed down informally, primarily through oral traditions and gatherings like sofra (a traditional communal meal

setting where music was played and sung). As emphasized by Minbaeva, Ledeneva, Muratbekova-Touron, and Horak (2023, as cited in Owen-Smith & Powell, 2008; Padgett & Powell, 2012), informal institutions rely on informal networks, which provide cultural channels through which the 'rules of the game' are transmitted and transformed. In the absence of formal state institutions, such informal gatherings like sofra played a critical role in preserving and evolving these cultural traditions, reinforcing the social fabric and collective memory of the community.

The research methodology used is historical analysis followed by textual and musical interpretation, which enables us to view these traditions from a contemporary perspective, while also taking into account their historical, social, and cultural contexts. This approach allows for a detailed examination of how these songs were created, why they emerged at specific times, and how they reflect the social dynamics and collective memory of the Gjakova community during the 18th–20th centuries. This method of analysis is appropriate because it considers the cultural significance of these traditions in the absence of formal documentation or institutional support, instead focusing on the informal yet crucial role of communal gatherings in preserving these musical forms. By analyzing both the texts and melodies of the songs, the research provides a comprehensive view of the cultural heritage of Gjakova and its contribution to the broader Kosovo tradition.

Documents

The data for this research was primarily obtained through the collection of historical documents, handwritten manuscripts, old photographs, and musical notation manuscripts. These tools were essential for accessing the traditional songs and musical practices of Gjakova, as they serve as key sources that reflect the local culture and its transformation over time. The manuscripts include texts of songs, as well as musical transcriptions that document the melodies and musical scales used in the folk tradition. Additionally, tables of makams (musical scales) were included to understand the specific structures and modes in the songs. Other relevant literature was also used to approach the research from a broader historical and cultural perspective, including writings that contextualize the role of music and its evolution in the region. The reason for choosing these tools is that they offer direct insight into the vernacular culture of Gjakova, particularly in a period when the songs were passed down orally and not written down or institutionalized. These documents and materials are key to understanding how the tradition evolved and how the community preserved its cultural heritage.

Analysis

The analysis of the collected data was conducted through an anthropological approach, focusing on understanding how the traditional music of Gjakova developed over time and its role in the community. The analysis is centered on how these folk traditions transitioned from a vernacular form (informally passed down and practiced) to an institutionalized form (formalized and systematized). This shift was crucial to understanding the broader cultural and social changes in the region. In addition, the analysis looked at the historical context in which these songs and musical practices were created, exploring the socio-political conditions under which they emerged, especially during periods of Ottoman rule. Through this approach, the research uncovered how music and songs reflected the community's resistance, identity, and social values, providing an in-depth understanding of Gjakova's cultural evolution. The study also analyzed the texts and melodies of the songs to explore the relationship between the lyrical content and the musical structures, particularly in how they reflect the socio-cultural environment of the time.

Process

The research process began due to the lack of precise or detailed data on the topic, which spurred the decision to gather more information about the vernacular music of Gjakova and its historical significance. The collection of materials began several years ago, with the process spanning approximately 20 years. The primary sources were obtained from various archives, including family archives, state archives, and institutional archives such as schools and museums. These materials were preserved across generations, primarily in families of musicians, with some materials also found in public institutions in Albania, Kosovo, and parts of North Macedonia where Albanian communities live. Throughout the process, a thorough examination of the collected materials was conducted to ensure the validity of the research, considering the importance of the folk songs and their preservation. The location of the materials was mainly in Albania, Kosovo, and areas with Albanian populations in North Macedonia. The validity of the research was further strengthened by recognizing the historical value of the collected materials, which reveal an extraordinary and long-standing cultural creativity. These materials are invaluable for understanding how folk music and songs have contributed to the shaping of Gjakova's cultural heritage and how they have been passed down and transformed over the centuries.

Ethic

In conducting this research, ethical considerations have been carefully observed. Ethical sensitivities have been observed in obtaining the necessary permissions for the use of the documents selected as data within the scope of the research.

Results

The start of Tradition-When, Who … - Sofra's, Order's and Aheng

Since its foundation as a city until 1916, the city of Jakova[7] had no Albanian school. This means that for 422 years of existence (from year 1594), this city had no educational institution. In 1916, the first elementary school called "Skenderbeu" was opened, and Wilhelm zu Wied, German prince picture stood in the classrooms. There was no question of music schools, but this is where the official teaching begins, since one of the subjects was Music. This is where the breakdown of cultural vernacularism for the city of Gjakova begins. Since its foundation as a city until 1916, the city of Gjakova had no Albanian school. This means that for 421 years of existence, this city had no educational institution. In 1916, the first elementary school called "Skenderbeu" was opened, and Prince Wied's picture stood in the classrooms. There was no question of music schools, but this is where the official teaching begins, since one of the subjects was Music. This is where the breakdown of cultural vernacularism for the city of Gjakova begins. However, cultural vernacularism continues through three institutions founded by the people of Gjakova driven by the great desire for education. These three informal institutions were Sofra, Order's (Rendi) and Ahengu. All three of these will continue to function even after the opening of the first Albanian school in 1916.

Until that time, everything was done non-institutionally and based on the traditions of the ancestors and normal and natural human rules. From time to time there was a person who had the good fortune to study and finish a school in a European country or even in Egypt or Turkey, who, when he came to Gjakova, taught others how to advance in educational advancement. These people taught others how to form and establish an association, mainly humanitarian, then how such association's work, what was needed

[7] The early name of today's city is Gjakova.

for the formation and establishment of an association, a branch of an association, a club, etc.

Until 1946, cultural vernacularism continued after the Second World War had already ended. Until then, only three informal institutions were fully functional in terms of music: Sofra, Order's and Ahengu.

All three of these institutions, although informal, performed their function wonderfully and contributed to raising the masses, educating them, teaching and maintaining the habits of courtesy, humanity, job education and many other things. The oldest of those three institutions was Sofra.

Sofra's[8]

In Sofra, will begin the tradition of singing in the city of Jakova-(pseudo) institutionally but no one knows when the Party in Jakova started. What is known is that the song and music began in Sofra many centuries ago, before the city of Jakova was established, before the year 1585, when Sulejman Hadum Agha Mosque started to be built from the Masters of Dibra and finished in the year 1594. In 1630, the city of Jakova had a very first PhD (Doctor of Science). It was Osman Efendi, which, 25 years after Jakova was established as Casaba from the Ottoman Empire, in 1606. According to Evlia Çelebi, three hundred shops with a thousand kinds of craftsmen, where goods from the most diverse handicrafts were produced and sold, were a compelling base that this city would develop rapidly. After a few years, "Grand Bazaar of Jakova 'contained' 1100 shops, which almost all were filled with different wares" (Myller, 1838). Now, every guest who came to Jakova to stay a few days or to buy something tried to buy a house and shop for living and working there. Trade with more developed cities, such as Shkodra, Prizren, Corfu, Istanbul, and Dubrovnik, began to flourish.The city with the most commercial cooperation, exchange of goods, trade with raw materials for the production of final products or sales, was Shkodra, which can be figuratively called "the big sister of the city of Jakova". In all this cooperation, the so-called after-work part or the fun part of everyday life also played an important role, where music took the main place. For this reason, the first musical instruments, however primitive they were, began to be produced in the Grand Bazaar of Jakova. Very quickly, in the Grand Bazaar of Jakova started to establish a first institution's (with economic character) like Esnaf (Dizdari, 2005). Thus, the guilds (esnaf) of tailors (tailors), tanners (tanners), Kazaz's (silk yarn, silver and gold workers), shoemakers, clothiers, blacksmiths, bakers and many other handcrafts were formed and each Guild was very well organized. Guilds helped poor families, takes to work workless people for help etc. At every celebration, they distributed food aid, clothing, hygiene and helped families who had sons and daughters to marry. The guilds also helped in cases of death by sending aid to the family that had lost a loved one or in case if somebody was sick and need money to buy medics. This kind of help was something usually behavior for any of shop-owners at Big Bazaar. In case of celebrations, different musicians offer his music to play and sung at somebody's son's or daughter's marriage. According to Evlia Çelebi[9], "It is a beautiful city in

[8] A place for dining, a round wooden table with a height of about 30-35 cm and a diameter ranging from 1m-2.5m even 3m, where a certain number of people can sit depending on its diameter. The musicians were seated at the table and were served brandy and food. The other people are sitting on couches. It was in use almost throughout the Balkans almost until the 80s. Today it is used very rarely and in some deep and distant village from today's civilization.

[9] Evlija Çelebi Sejjahatnamesi (real name Muhammed Dhil-lí ibni Dervishi) was a tourist of c. XVII who walked and visited not only the lands of Ottoman Empire, but also more widely, as in Asia, Arabia, Egypt, Russia, Germany and Sweden. And wherever he went, he wrote about history, geography, economics, language, race, customs, agriculture, commerce, faith, industry, culture, character, social life, legends, architecture, fairy tales, legends, etc. of that country. So he wrote about everything he saw and heard. This work is important especially for Turkish literature in general, but also more for the countries for it which he wrote, since we are dealing with a document from the time-c. XVII. He visited Albania and Albanian cities in 1622.

Dukagjin Prefecture, there are two thousand elegant houses on a plain. There are two large mosques, many mosques and canteens covered with lead... There is a hammam to satisfy the heart and about three hundred shops with a thousand kinds of craftsmen; the climate is healthy and the inhabitants very loving and beautiful. This is where the ammunition and ammunition prepared in Kotor was unloaded... "(Celebi, 1967:338) . If such a description was made only 27 years after the foundation of the city, we can say that the city of Jakova must have had at least over a thousand houses before its foundation (16th century). So, there is no question that Jakova was a significant locality or settlement. And, in this Grand Bazaar where everything flourished, even music and humanity had their deserved place. All this thanks to the generosity of the citizens of Gjakova. Gradually, initiatives were launched to shape and concretize the ideas of entertainment for all those workers who were in the Grand Bazaar. The first way was Sofra gjakovare.

This form of after-work entertainment included a close, mostly family circle that, over time, grew. In time, entertainment was spent in a different way - in Rende (Orders). The orders constituted the second form of entertainment, more open than the Sofra because included members of the same craft, not just family members, e.g. guilds of leather workers, tailors, etc. They usually gathered together on a day of the week which was set in advance. Then everyone in turn did the same thing until they were all done. Aheng was a third way.

The party was the most inclusive. Friends, relatives, colleagues, other acquaintances were invited there - in a word, it was the most massive. Aheng (The party–Banquet) lasted even longer and was organized in cases of marriages, engagements, circumcisions, in cases when a young man returned from the army, courtship, etc. In these three ways (Sofra, Orders and Aheng) of entertainment and celebration, the entire set of songs called Aheng would be created and based. From ordinary people, Sofra passes and becomes the privilege of the rich. Consequently, now the table is laid only by the rich. This happens because the Guild starts organizing another meeting called Rend (Order).

Orders

Sofras, in most cases, had no music while they were among the common people. When Sofra passed as a privilege of the rich, they began to enrich it with a musical group, however small it was, one or two singers, one or two instruments, and now they were going to change the rules. Only the music group sat in Sofra. The other attendees, including the organizer, sat high up on couches. Only the musicians were served with raki and meze (Dizdari, 2005). Others around also drank, but with just few appetizers. The practice of the Order[10] had been organized in the city of Shkodra for many years before, but there were some additional rules that could not be applied in the city of Jakova. In addition, in Shkodër Rendet were called 'Rede', without 'n'.[11] As the number of crafts grew greatly, the respective Guilds of each craftsman began to organize some sort of entertainment held every Saturday after Sunday was off. First of all, was appointed an administrator named Qehaja (Dizdari, 2005). The Qehaja had his rights which he obliged everyone in the Order to enforce or, otherwise, punishment would follow. In fact, Qehaja kept some cigarettes cut in half and if someone broke the rules, he would throw half of the cigarette away and by this it was meant that that person was punished. Qehaja made the law and his decision was not discussed. Punishment was already predetermined for anyone who threw half a cigarette. The convicted person was forced to throw a certain amount of money into the container designated for this

[10] Alb. Rend-Eng.-Order-Turn; It's your turn; Turn Off. Each of the 12 appointed persons had the obligation to organize the ceremony according to the rules set in advance.

[11] From Serbo-Croatian Red-et- In the Albanian language it is written and pronounced Rende while in the Serbo-Croatian language it is written and pronounced Red-Rede.

job. At the very end of the evening, as soon as the party was over, the collected money was taken and sent to families who were in poor economic conditions. The orders had a maximum of 12 guildy heads. Everyone was obliged to organize the order on a Saturday, every week. The order was not held only in cases of celebrations (state, religious or family), the death of any member of the family of a member who was a participant in the order and in cases of illness that made it impossible to maintain the organization of the order. Who would hold it first, second and so on, was cast by lot, but this was not a problem.

Everyone who had the Order had the right to invite 2 guests. He had determined the types of meats, pies, salads, etc. to prepare. This 'obligation' was put in place so that no one would be put in an unenviable position if they did not have the economic opportunity. But, everyone had the right to prepare something else extra food if he wanted. Thus, after each order, there were at least 4-5 another families who benefited in money as well as food that was not used - intact food, and here the human aspect came to the fore. Each person who had the Order invited the musicians they knew and wanted. In those cases, music was something imperative. During the each round, the participants told different stories, mainly with a comic-entertaining connotation, but also played some typical Albanian games. Many traditional civic songs were born during the musical performances in these orders. This is how the sole of traditional Jakova songs was created.

Aheng

The party in the city of Gjakova had the character of a typical familiar organization on the occasion of family-not general social fun. In Aheng, which was later called Banquet, hundreds of members of the extended family from the father's side as the head of the family, as well as the mother's, including extended relatives, participated. Aheng could last up to 3 or more days and was organized in the bride's house-family, while the main celebration was held in the groom's house. More than at Sofra's and Orders, Jakova's songs were created at Aheng's. The party was organized by a family member who married the boy or circumcised one or more small boys. The party lasted much longer. They were attended by min. 100 people, women, men, children, etc. Until the end of the century XIX, women with children, etc. enjoyed separately from the men. From the beginning of the century XX (until today) for the first time among the Albanians in Kosovo, Ahengu begins to be held and organized jointly by men and women. There were the relatives of the person marrying the boy, relatives, colleagues and friends. The music started in the evening and in some cases lasted up to three days without interruption, of course with breaks. All the songs of the Party were sung there. In the century XIX Ahengu gjakovar numbered about 180 songs, which was an impressive number. The songs of Ahengu Gjakovar were not sung according to the Makams (Sokoli, 1965), as in Shkodra, with the rules of the Makams. In Jakova they were sung as they were heard and all non-Jakova songs received a new version. There are some that in the country of origin (e.g. Berat, Shkodër, Tirana, etc.) have changed over the years and decades, in the city of Gjakova they have been preserved and 'conserved' as initial variants from the cities of origin precisely because the Jakova's musicians have not known Makams. There are 12 Turkish Makams used in the city of Shkodra:

Table 1. Musical makams used in the city of Shkodra, Albania. This data was obtained from researcher Ramadan Sokoli (Sokoli 1965)

Nr.	Name	Type	Explanations of practice in Albania	Finalis
1	Dyqah Hümayun	Hiqaz	Start with Peshref – (Instrumental Piece)	La (A)
2	Zyl	Hiqaz Hümayun	First Cord of Violin tuned in Re (D). Also called Ziil Hava for the very high tones.	Re (D)
3	Gjys	Nikríz	Makam Gjys also has a Finalis Re grade but has a different construction structure.	Re (D)
4	Raas	Rast	Typicall 'Albanian' Makam, different of Turkish, Egyptian, Syrian or Persian Makam. Usually is bimodale with Major and Minor too.	Sol (G)
5	Sergjah	Segâh B	The interval from base to Gr. IV is Tritonus and also has F# in Grade V. Often the grade IV is altered downwards correcting tritonus but creating Hiatus Eb-F# sametime.	Si (B)
6	Huzam	Hüzzam	Except in grades 1-2, 3-4 and 5-6, there are semitones between gr. 7 and 1 for the subtonic support. Here also exist and a Hiatus between gr. 4-5. Gr. IV oscillates between B and Bb. while Gr. V between C and C#.	F#
7	Nevish	Evíç	8va of T is diminished so there are semitones in gr. VII-VIII.	F#
8	Hysejn	Bayati (in Asiran) Muhayyer	It's the same as natural minor with halftone in gr. II-III and V-VI.	Mi (E)
9	Sabah	Beyatí	It looks the same as Ziil and Gjyz as the final has the grade Re (D) but has a different structure. The order of tones is the same as natural minor, but the modal functions fluctuate between tones and semitones.	Re (D)
10	Leva	Rast	Same as natural Do-minor but with a different modal structure. Not infrequently it is inverted for the 4th below, based on G (G), but also based on A, where many Shkodra songs are found.	Do (C) (G) or (A) opt.
11	Nihavend	(Buselík-Nihavend)	The IV G degree is always raised by a semitone and the scheme is odd with two flattened 2nds and 4 semitones.	Re (D)
12	Divan	Zírgülelí-Hícaz (Zengüle)	There are two augmented 2s (gr. 2-3 and 5-6) as well as 4 semitones (gr. 1-2; 3-4; 5-6 and 7-8.	Re (D)

Another term used in Shkodra for Makamet is the term Perde[12]. The term Perde is also used in Jakova, perhaps more than in Shkodra, just as the term Makam is also used but with a special characteristic–no one of Jakova musicians has known ever the exact meaning of these terms except the first known musician, the musician the oldest one, about whom quite a bit is known-Hamez Kovaçi-Çarkaxhiu. Hamëz Kovaçi together with Haxhi Perolli (who was older than Hamza Kovaçi), Kola Qorri and Uka Vraniqi and Jahja Efendi Xharra (who was the youngest one), formed the Tajfa of Jakova[13] around 1850 after the assassination of Dah Polloshka against Reshit Pasha in 1845 and his heroic death. The Tajfa of Jakova operated until the first decade of the XX-th century when this group started to be called Circle (Alb. Rreth) or simply Group. Later it was called the Musical Group. Moreover, if the Shkodra's Heng have around 400 songs (The Academy of Albanological Studies (AAS), 1955), the Jakova's Aheng, at the end of the XIX century, had no more than 180-

[12] Tur. Perdé- Each of the divisions, each of the designated parts to be touched with the fingers in the chordophone musical instruments-positions in the Guitar, Sharki, Violin, Lute, Laud, Buzuki, Kanun, etc.

[13] Orienthal music group of 5-10 person's analogy of Trubadur and trouvères-performer, were historically consecutive and based in different regions of France while minnesingers and meistersingers were in Germany. Tajfa has the the same function. They played with wind instruments (Zurla), in percussion instruments (Tupan-drum), Def-Daire, Darabuk and string instruments (Sharki, bugari, etc.). Tajfa was led by Mehterbash who, in fact, was the chief musician. Jakova's Tajfa is the last Tajfa formed on Albanians cities and the only one in Kosovo.

200 songs. Among the first well known song in Shkodra is the song entitled "The Song of Brahim Gjoci" from 1769, not earlier. The first song found in Jakova dates back to 1770 and is titled "Rrahi teli për spahi" (Beat wire for spahi)[14], just a year after Shkodra's first song.

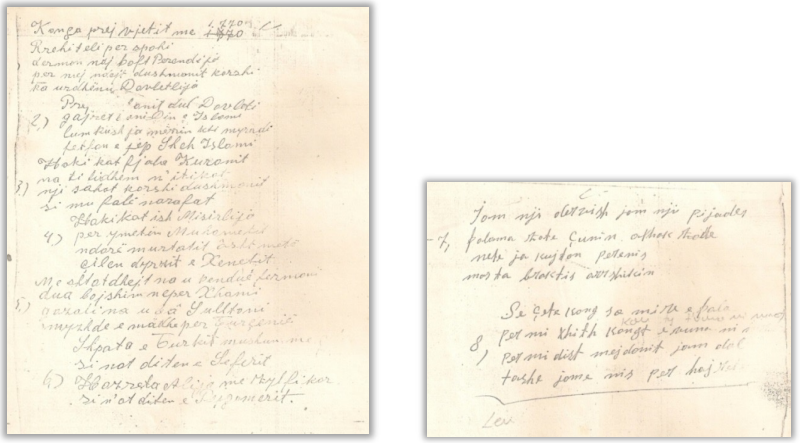

Photo 3. "Beat wire for spahi" of Haxhi Perolli, the oldest Gjakova's song-1770-year, pg.1

Original text[15]

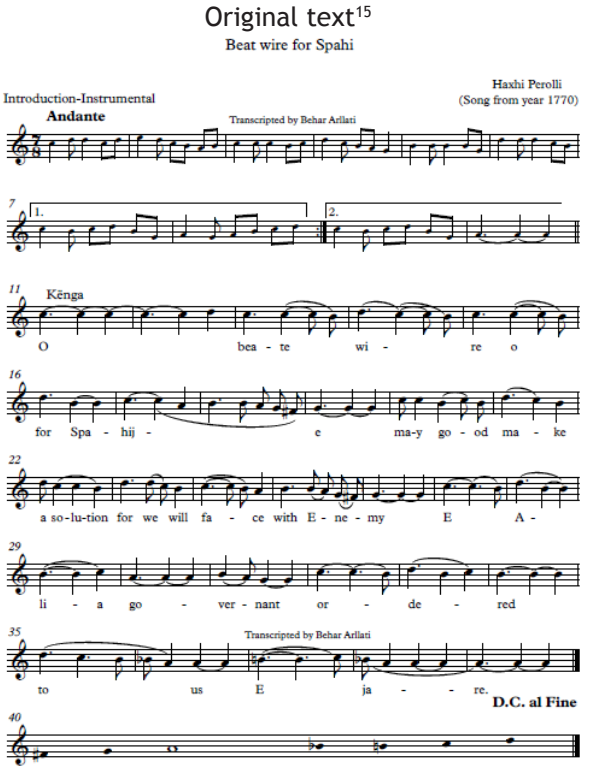

Figure 1. "Beat wire for spahi" of Haxhi Perolli, the oldest Gjakova's song-1770-year, notation

[14] Manuscript found and preserved by Qamili i Vogël. Spahi-cavalry formation at the time of the Bushatlli dynasty in Shkodra at XVIII-th century.

[15] There are only 5 stanzas in the handwriting-manuscript of the teacher of the patriot Ibrahim Kolçi (1888-1960) from 1930. The 6th, 7th and 8th stanzas is missing. In addition, there are and some minor changes in the 4th stanza.

Another song that goes deeper in time is the one entitled "Listen friends what Nezimi says" a song from the city of Berat. Since Nezim Berati (Frakulla), also known as Ibrahim Nezimi, died in 1760, he was born in 1670, this song must have been written and created at least around 1735 or even earlier, it turns out that Jakova musicians had knowledge of songs different and before 1770 when the first known Jakova song dates.

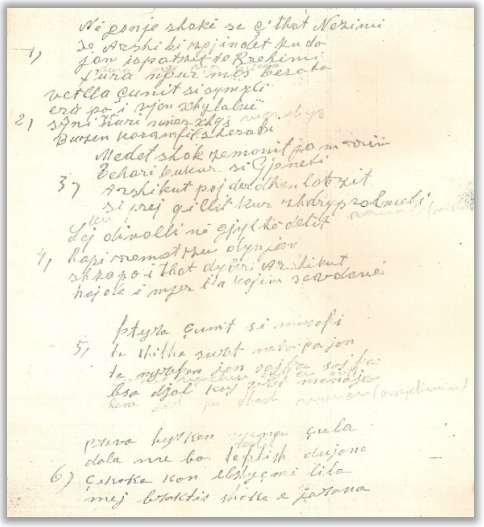

Photo 4. "Listen, friends, what Nezim says" – Lyric of the Song by Nezim Berati (1670-1760)

There are also many songs from Divani (Abazi-Egro, 2009)[16] i Nezim Berat that were sung and well known by musicians. Moreover, based on oral tradition, Hamëz Kovaçi-Çarkaxhiu knew all the songs of Ali Ufki Bey's Mecmua.[17]

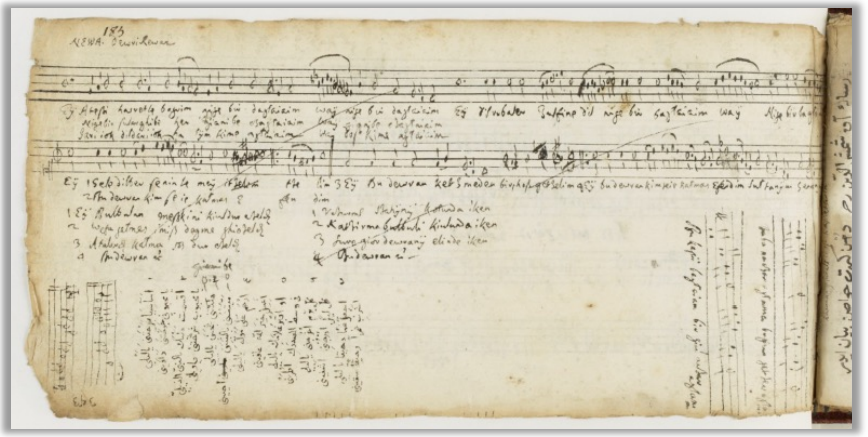

Photo 5. Page from Ali Ufki's Mecmua saz & Soz- Bibliothèque nationale de France (Ufki, 1650)

[16] In oriental poetics, Divan is a work of a poet according to a certain system, classical poems (Kaside, Gazele, etc.). Usually, the Divans were written by the so-called Bejtexhinj poets who wrote Albanian poems-songs with the Arabic alphabet. Besides Nezim Berati, there are many other Albanian poets who belong to this period, such as: Muhamet Kyçyku-Çami, Hasan Zyko Kamberi, Molla Hysen Dobraçi, etc.

[17] Vojtiech Bobowski-Converted Ali Ufki Bey (1610-1675) as the chief musician of the Sultan's Court collected and wrote various popular songs (with lyrics and music notes) in a collection that was published after his death (See also Cem Behar). He was the great master of the time who knew by heart the entire Mecmua of Ali Ufki as Hamëz Kovaçi knew it.

However, after the first found and preserved song that dates back to 1770, there follow many songs whose exact year of creation is unknown but, based on its content from the text, it can be said that they belong to those years and decades of the late 17th and early 18th centuries. From this period of time are the songs "With 1300 naze[18]", "That love entered me too much"-by Kol Qorri[19], "I crossed the door of Istanbul", "The thirty days in Ramadan" by Hamëz Kovaçi, "Dah Polloshka's song" of the year 1847 also by Hamza Kovaçi, "Bash te teqja e Shejh Salihi" (Manuscript-Haxhi Perolli year 1850), "30 days in Ramadan/ with three circle miserable like I am", "Bylbyl you are my tulip", Elif Adi Ibrahim" a both song created by Hamza Kovaçi[20], "Down there at the mill" created by Jahja Efendi Xharra after a sporadic battle between a 20-year-old named Rexhep Gërçari with the Turkish soldiers where, after the fight, Rexhep kills several Turkish soldiers and is finally killed-song of period of before Prizren Ligue, aprox. Year 1875; "May your hand become golden" of Dahim Patoku (1863-1939), "Elif se u marush" song which was recorded on a Shellac record by blind shkodra's singer Shtjefën Jakova-Blind Jakov (born between 1857-1862, died 1828), "A Vezir[21] comes to this land" etc.

Song after song, their number grew steadily as did the number of instrumentalists who, in most cases, also was the singer. This is how other musicians began to appear, among whom we must single out the instrumentalist in the sharkia Ramadan Ganga, Dahim Patoku, Abedin Din Bakija-sharkia, Ymer Tullumi-bugaria, the creator of lyrics and songs Beqir Baraku whose songs became more popular in Shkodra than in Gjakova and the iconic figure of the city in the field of music whose life is reflected in Albanological Researches-Ethnomusicology, Ymer Riza, the master of the 12-string sharkia. The musicians knowed even today and who belong to the 18th century are Haxhi Perolli (the oldest one) - birthday unknown, Hamza Kovaçi-Çarkaxhiu - around 1790, Uka Vraniqi – around 1795 and Kolë Çorri - around 1799-1800. The other members of Tajfa of Jakova Jahja Xharra and Ramadan Ganga, were born in the 19th century. All these musicians were born in the XIX-th century-Jahja Xharra-1835, Ramadan Ganga in 1852, Dahim Patoku-1863, Abedin-Din Bakija-1874, Ymer Tullumi-1884, Ymer Riza-1885, Beqir Efendi Baraku-1896 year.

[18] Naze, Tur.-Sqimatar (Arab.)- A person who has complaints and dissatisfaction about everything, especially food.
[19] Kol Qorri (around 1800-1870), Friend and co-musician with Hamëz Kovaçi, a few years younger, virtuoso singer and instrumentalist with whom Hamëz Kovaçi created Tajfa e Gjakova, the only one in Kosovar spaces.
[20] Hamza Kovaçi-Çarkaxhiu was born around 1790-1795 and died around 1865-1868 is considered the first known musician of the city of Gjakova.
[21] Vezir tur- The highest official in the administration of the Ottoman Empire.

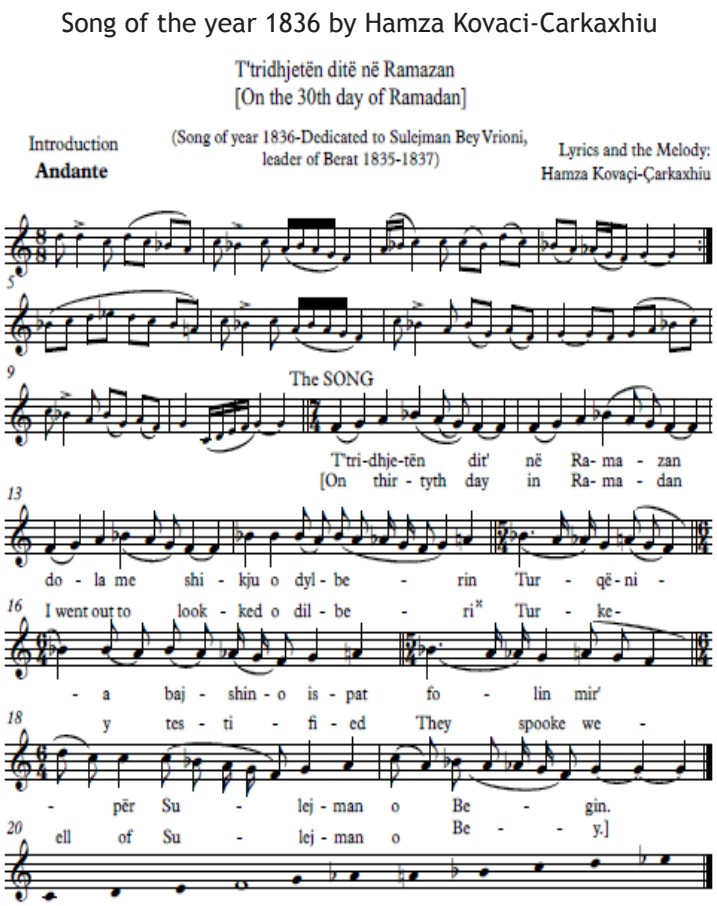

Figure 2. Song[22] of the year 1836 by Hamza Kovaci-Carkaxhiu

These musicians together, together with Qamil Muhaxhiri (known as Qamili i Vogël) and Mazllum Mejzini from 20th century (Qamil Muhaxhiri – 1923, Mazllum Mejzini – 1930), created the sole of the Gjakova song, a very powerful and unique sole not only for the cities of Kosovo but also wider.

The Era of Ymer Riza

Ymer Riza was born in 1885 and died in 1961. Since he was very rich, throughout his life he helped his fellow citizens both by entertaining them and by sending them food, clothing and hygiene items until he melted all the wealth he had. He died in deep misery, abandoned by his friends and co-musicians, and was buried in the presence of just few people. Today, when the name Ymer Riza is mentioned, the city of Gjakova is meant, and vice versa when the city of Gjakova is mentioned, in the musical sense, the name of Ymer Riza is meant. Ymer Riza establish the first new rules of singing, unlike Tajfa, he increased the authority and value of each singer and instrumentalist. With his authority, he even managed to penetrate the upper aristocratic layers of the city and

[22] X - Dilber-i (pers.) - From 'del': Heart, bear-bearer. Acquirer, stealer of hearts. Kënga këndohet në dy variante:
Pas secilës strofë, bëhet përcjellja e fillimit-hyrjes për të vazhduar strofa e dytë, etj., dhe. The song is sung in two variants:
a) After each stanza, there is the introduction, and b) The introduction is done only at the beginning. The other stanzas in a row are sung as in Shkodra beyts, with the singers changing according to a certain order. The second variant is much more preferred.

force everyone to appreciate every musician or singer. Ymer Riza is the only one who with his group managed to record a (one) song in a wax cylinder by the Slovenian anthropologist Matija Murko (Murko, 1951) his son Stanislav-Stanko Murko with his relative Dr.Vladimir Murko, ing. in the year 1930,[23] thus doing a rare service to the city of Gjakova and all of Kosovo. There are several authors of dictionaries, lexicons and encyclopedias who mention Ymer Riza as a creator, singer and virtuoso instrumentalist on the 12-string sharki. All Gjakova's instrumentalists in sharki since Hamëz Kovaçi-Çarkaxhiu until the 30s of the 20th century have played in 12-string sharki. Without a doubt, the greatest master of all time was and remained Ymer Riza. The number of songs that Ymer Riza has created is not great, but his songs are emblematic. One of them even reached the level of a folk Hymn "O lily, white lily".

Music, according to the rules established by Ymer Riza, prevailed until the early 60s and still continues today (with lower intensity). His rules were so strict that nobody dared to break them, not even the musicians from Peja[24] with whom he collaborated and who were not familiarized with the rules established by Ymer Riza. Under the leadership of Ymer Riza (and even after his death), his musical company had reached such a high level that it had managed to include Waltzes in the repertoire, as was the case with the waltz "Danube Waves" by the Romanian composer Ion Ivanovici[25]. Such high levels when completely amateur musicians play with folk instruments such waltzes are rarely encountered even to this day. This Waltz has been recorded and is a rare evidence of the musical level that the city of Gjakova had, without forgetting here also other musical works of the highest artistic level.

[23] The Phonography no. 152 in wax cylinders.

[24] The well-known Peja musicians of Ymer Riza's era (although younger in age) were Zija Tabaku, Make Sadiku, Hivzi Vokshi, etc.

[25] HIvanovici, I. (n.d.). Waves of the Danube. Archived 2011-09-30 at the Wayback Machine. johann-strauss. org.uk.

20th Century

Ymer Riza started and finished his musical activity in the 20th century. He continued to play music with musicians born later, in the 20th century very successfully keeping the leader's primacy until his death in 1961. During his time as well as after his death, the sole of the traditional Gjakova song was added with the songs of the creators Qamil Muhaxhiri-Qamili i Vogël and Mazllum Mejzini who both together created about 160 songs, significantly increasing the number of songs. The tradition and rules were preserved intact, as in the early 19th century, and this tradition and these rules did not change until the mid-80s of the 20th century, while many music groups were created, songs were recorded on vinyl discs, had dozens of young singers emerged who performed according to the new style and standards of music and not according to the standards of Sofra and Orders. The old type of music in Sofra and Orders continues even today but with a very low intensity and it can be said that this type of music is being abandoned as this way of music is now considered backward, very old and primitive.

The old songs that were sung 200 years ago continue to be sung today with new orchestras and arrangements, but the tradition of sitting in Sofra is still practiced today, already in all the cities of Kosovo, among which the name Sofra is jealously guarded mostly city of Peja[26]. The city of Peja should be mentioned for the preservation of typical Albanian songs, as the musicians of Gjakovare had done at least a century earlier. This is considered a success of Peja musicians who not only never forgot the songs but, moreover, constantly sang and renewed them. This preservation of the city of Peja of the songs that were first sung in the city of Gjakova has come about because of the visits that the musicians from Peja

[26] Having close proximity and close cooperation with the musicians of Gjakova, since the beginning of the 20th century, the musicians from Peja also adopted Sofra as a way of playing. So it can be said that even in the city of Peja, the tradition of Sofra goes back a century

made to the city of Gjakova invited by the musicians but also vice versa because of the invitations made to the musicians from them Peja. Other cities of Kosovo (Prizren, Prishtina, Gjilan, Mitrovica, Ferizaj or Vushtria where artistic music began in the second decade of the 20th century, etc.) learned these songs as "Gjakova's songs" spreading in this way the songs of authentic Albanian songs that stand as opposition to the creation of new styles that have nothing to do with the tradition of Albanian singing, or with the Gjakova's tradition of singing, or even with the authentic values of Albanian songs that transmit very humane and very positive messages.

Conclusion and Discussion

The city of Gjakova, although one of the youngest cities in Kosovo (among the larger cities), is part of the group of the most developed Albanian cities in the field of traditional folk song, alongside powerful cities such as Shkodra, Berat, Tirana, Elbasan and Korça. This idea is consistent with the study of Spiro J. Shetuni, where he emphasizes that the musical styles of cities such as Shkodra, Berat and Gjakova constitute an essential part of traditional Albanian urban music (Shetuni, 2019). He further emphasizes that these musical styles are deeply integrated into the lives of local residents, celebrated and known both nationally and internationally (Shetuni, 2019). In this context, Gjakova, despite being one of the youngest cities, plays a crucial role in the preservation and development of Albanian folk song, similar to the older and more well-known cities such as Shkodra and Tirana. With the first (and only) Tajfa in Kosovo, with the oldest documented songs, with the first after Tajfa music groups, with the first traditional song recorded on a wax cylinder, with the first recordings on vinyl records at the 60th year of 20th century, with the most of musicians in the 19th and 20th centuries, this city should be considered great and extremely important for all Albanian spaces in Albania, Kosovo, North Macedonia, Montenegro and diaspora. Moreover, this city has played an extraordinary role in preserving and 'conserving' the songs of other cities, such as: the cities of Shkodra, Berat, Elbasan and Berat, etc. In a casual conversation, I heard the renowned Albanian tenor Bashkim Pacuku say, "If you've lost any song, look for it in Shkodra." This phrase highlights the deep cultural significance of certain traditional songs that have transcended geographical boundaries. Shkodra, known for its rich musical heritage, serves as a key location where music—sometimes originating from other regions—has been preserved and cherished. Anyone may not believe it, but the old songs of these cities in Albania have been sung more in the city of Gjakova (and even in Peja) than in their countries of origin. These songs, continuously sung even during the period of dictatorial communism in Albania, have been appropriated and redefined in the eyes of others. They are now referred to as "old Gjakova songs," even though they do not originally come from Gjakova. However, these songs have deep historical roots that extend back to the Ottoman period, a time when the Balkans were significantly influenced by the music and culture of the Ottoman Empire. The music of the Ottoman Empire, particularly in its urban centers, flourished in cities like Shkodra, where many traditional songs were preserved. The songs themselves were built upon scales and maqamat (modes) derived from the Arab world, reflecting the deep influence of Arabic music on the Ottomans. This is consistent with the argument that the Ottoman Empire, during its reign, adopted musical structures from its Arab predecessors. As noted in the literature, "the longest-standing basic principles of music's structure in the documented history of the Persian-speaking world emerged and thrived within the context of dynastic rule that succeeded the waning Islamic Caliphate. With Islam underpinning the rise of Mongol and Turkic kingdoms in the thirteenth century, different versions of the same basic concept of the twelve-maqam system appeared on opposite sides of the

Caliphate's domain in West and Central Asia" (Lucas E. Ann, 2008). The influence of Arabic maqamat was then passed to the Ottomans, and with the Ottoman expansion into the Balkans, these musical traditions spread further, eventually making their way into Albanian cities like Shkodra and Gjakova.

Moreover, the spread of Ottoman-influenced music across the Balkans was not limited to traditional folk songs alone. In the late Ottoman period, a flourishing music café culture helped popularize Ottoman urban music, which was heavily based on the light classical and folk music that had originated in the Arab world. As noted in a study on the Ottoman legacy, "the music café repertoire in Greece before the Second World War consisted of Ottoman popular pieces and new compositions in that style," and similar influences were seen across the Balkans, including in Albania and Kosovo (Pennanen, 2008). These influences, particularly the incorporation of the twelve-maqam system and Ottoman modes, can be traced back to their Arab roots, shaping the traditional music of Albania and Kosovo. Thus, the songs of Gjakova, often referred to as "old Gjakova songs," are in fact products of this rich and complex cultural exchange. Although these songs were redefined and reappropriated by the people of Gjakova, their origins can be traced back to the Arab world, then to the Ottomans, and finally to their adaptation in the Balkans, particularly in Shkodra. The influence of the Arab maqamat system on Ottoman music provided the foundation for the songs that are now cherished as part of the cultural heritage of Gjakova.The role of the city of Gjakova is so crucial that it can be said that in terms of culture, this city has influenced the differences between the cities of Albania and the cities of Kosovo, North Macedonia, Montenegro and Southern Serbia to be much smaller. It seems unbelievable but it is more than true that the culture of this city (without denying the culture that existed in other cities of Kosovo) has influenced very positively and in favor of all Albanians who lived outside the official borders of Albania. This is related to the economic power, the broad culture that the citizens of Gjakova had, the humanitarian spirit, their early education as well as the development of the national identity so important for the Albanian people in general since no radical change has been made without the help of the people of Gjakova while many changes in the national aspect started exactly in this city (we remember on this occasion the battle of September 1878 in Gjakova where Mehmet Ali Pasha Maxharri or Maxharr Pasha was killed by the Albanian forces when the Albanians' need and demands for independence began).

Even today in the 21st century, the city of Gjakova stands with the same views and ideas despite the lack of interest of all Kosovar governments after the war of 1999. The city of Gjakova already has its true civic values frozen for centuries and does not bow down easily. This is the strength that this city has transmitted for centuries, where, as a very important integral part, was the traditional music and civic songs of the city of Gjakova.

Gjakova, located in the heart of the Dukagjin Plain, has historically served as an important commercial hub in the region, surrounded by significant cities such as Peja and Prizren. This city has been a vital center for trade and business, particularly due to the Great Bazaar, one of the largest in the Western Balkans. Visitors to Gjakova seeking work in this bustling marketplace encountered a rich cultural and commercial environment, which facilitated the blending of diverse traditions. As highlighted, the Old Bazaar, covering an area of approximately 35,000 m^2 and housing 525 shops, has been the economic heart of Gjakova. This marketplace not only fostered economic activity but also provided a space for various individuals to integrate into the local community, embracing the customs and traditions of the Gjakovar people. In this context, it is evident that the Great Bazaar of Gjakova has played a crucial role not only in the economic development of

the city but also in strengthening its cultural identity, allowing newcomers to feel part of the community after many decades of integration.

Since the city of Gjakova had (and still has) one of the biggest bazaars in the Western Balkans, even the newcomers have challenged themselves to work in the Grand Bazaar of Gjakova. This has made this city accept different arrivals and consequently also people with different traditions and customs, who, then, have accepted the traditions of the Gjakovars and have become Gjakovars, after many decades. This can also be seen in the field-reality with the presence of songs from the cities of Albania (Tirana, Shkodra, Berati, Elbasan, etc.); of Turkey (mainly dominated by the cities of Istanbul, Bursa, Edrine, etc.); of Greece (Arvanite songs, Chameria area with the cities of Filati, Suli, Gumenica, then Thessaloniki, etc.); of Montenegro (Ulqin, Tivari, Kotor, etc.) or other European countries, such as: Italy, France, Austria, Russia, etc. Many songs from these states (cities) have become part of the tradition of singing in the city of Gjakova - part of the Gjakova's Aheng (Party).

Recommendations

For Further Studies

Given the findings of this study on the vernacular music culture of Gjakova and its transformation over time, future research could explore the following:

- A deeper comparative study of the folk music traditions of Gjakova with other regions in Kosovo and the broader Balkans, examining how regional identities influence musical practices.
- Research focusing on the impact of globalization and modernity on the preservation and evolution of folk music traditions in Kosovo, with a particular focus on how contemporary practices affect authenticity.
- Further ethnomusicological studies on how music serves as a tool for community cohesion and the transmission of cultural values in Gjakova and similar cultural contexts.
- A more extensive investigation into the role of "sofra" and other communal spaces in the development and perpetuation of musical traditions.

For Aplicants

For future applicants and researchers in this field, it is recommended that:

- You build on the foundation of historical and cultural documents, but also consider conducting oral interviews and fieldwork to gain a more comprehensive understanding of folk music traditions in contemporary contexts.
- Engage with communities directly involved in the musical practices of Gjakova to better understand how these traditions are perceived today and to bridge the gap between scholarly work and the living cultural heritage.
- Explore multidisciplinary approaches that combine ethnomusicology, history, anthropology, and sociology to offer richer analyses of cultural practices like the Gjakova "aheng.

Limitation of Study

Despite the thorough research, several limitations exist within this study:

- The study primarily relies on historical documents, written texts, and oral traditions, which may not fully capture the living, evolving practices of folk music in Gjakova.
- There is limited access to certain archival materials and folk music documents, as many valuable sources are not yet digitized or have been lost over time.

- The scope of this research was largely confined to written and oral documents from Kosovo and Albania; therefore, future studies might benefit from a broader geographic perspective, including the diaspora.

- A focus on Gjakova's specific "aheng" tradition may not fully represent the diversity of folk music practices across Kosovo, meaning further studies could look at other regions in more detail.

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Research Article

Dual mirrors of Müller: a comparative study of textual and musical narratives in Franz Schubert's *Die schöne Müllerin* (1823) and Edward Nesbit's *Songs of Sorrow* (2021)

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Abstract
Franz Schubert's *Die schöne Müllerin* (1823) and Edward Nesbit's *Songs of Sorrow* (2021) are two song cycles based on Wilhelm Müller's poetic work, *Die schöne Müllerin*. These compositions, created nearly two centuries apart, reflect how different historical and cultural contexts shape composers' engagement with the same text. By conducting a comparative analysis that considers both textual and musical narrative elements, this study examines the ways in which Schubert and Nesbit interpret and transform Müller's poetry into music, highlighting their creative attitudes and distinct approaches to musical aesthetics. Schubert's *Die schöne Müllerin*, a hallmark of the Romantic era, captures the intense focus on individual emotion and communion with nature, both of which are key themes in Müller's poetry. Through Schubert's melodies and harmonic choices, the original narrative and emotional essence of the text are preserved, providing listeners with a direct experience of Romantic ideals. Conversely, Nesbit's *Songs of Sorrow* reflects a contemporary reimagining of the Romantic spirit. While he retains elements that evoke Romanticism, Nesbit simultaneously reconstructs aspects of the narrative, incorporating diverse musical styles and techniques emblematic of a 21st-century sensibility. This adaptation reflects a broader trend among contemporary composers toward freedom of interpretation and a more eclectic musical language. Ultimately, this comparative study reveals how Schubert's and Nesbit's compositions illustrate different yet interconnected aesthetic values, providing insights into the evolution of song cycle composition across time.

Keywords
Edward Nesbit, Franz Schubert, music analysis, song cycle, Wilhelm Müller

Introduction
Wilhelm Müller (1794-1827) was a German Romantic poet and writer, renowned for his two notable works, *Die schöne Müllerin* and *Winterreise*, which were transformed into song cycles by the composer Franz Schubert, becoming integral components of German Romantic music (Cottrell, 1970, p. 1). In a general sense, song cycle is a musical composition consisting of three or more interconnected songs that form coherence through poetry, music, or their interaction (Bingham, 2004, p. 101). As a cultural product of 19th-century German Romanticism, it clearly embodies the experiential concept of Romanticism, revealing the contradictory movement between the simplicity required by the German artistic tradition—artlessness, noble simplicity—and cyclic form, which gradually unfolds and inspires reality, ultimately replacing classicalism's insistence on initial clarity (Daverio, 1996, p. 279; Rosen, 1995, p. 194).

As an early representative figure of Romanticism[1], Franz Schubert's *Die schöne Müllerin* is further regarded as the first great song cycle of the nineteenth century

[1] Gray argues that Schubert did not exhibit the radical tendencies of other "radical" romantic composers, but rather adhered to a balanced and formal structure that represented classicism, positioning him as a composer of late classicism and the last master of the Vienna School. See (Gray, 1971).

(Kimball, 2006, p. 63). The exact moment when Schubert encountered *Die schöne Müllerin* in Wilhelm Müller's poetry is uncertain. A widely circulated story suggests that Schubert discovered a poetic anthology titled *Seventy-Seven Poems from the Posthumous Papers of a Wandering Horn-Player* by Müller on the desk of Louis, Count Széchényi, and took it away (Youens, 1992, p. 1). Schubert likely commenced work promptly and completed the entire song cycle by 1823. At this time, Schubert was already suffering from a fatal venereal disease, and it is plausible that he perceived Müller's verses in a state of sadness and despair, finding resonance with his own situation (Reed, 1978, p. 414). In this cycle, aside from omitting the prologue and epilogue, Schubert also omitted three poems. Youens speculates that these omissions may have been due to their excessive length or lack of significant thematic content aiding in plot development (Youens, 1992, pp.43-65).

Both Wilhelm Müller's poetry and Schubert's song cycle continue to captivate readers, listeners, performers, and music enthusiasts with their poignant narratives and exquisite music. According to incomplete statistics, over thirty composers, including Josephine Lang, Ludwig Berger, and Karl Gottlieb Reissiger, etc., have chosen to create new works based on the poetry of Die schöne Müllerin. Josephine Lang re-composed eleven of the poems, while Ludwig Berger and Karl Gottlieb Reissiger each composed five (Müller, 2024).

Inspired by the writings left behind by Robert Falcon Scott from his Antarctic expeditions in the early months of 2021, Edward Nesbit composed *In Antarctica*, a song cycle celebrating human resilience and the willingness to sacrifice everything for idealism[2]. *In Antarctica* repeatedly references the solitary wanderer traversing icy landscapes, akin to the imagery found in Schubert's *Winterreise*, to depict Scott's solitary journey far from the comforts of urban civilization. Shortly after completing this work, Nesbit conceived the idea of creating another song cycle *Songs of Sorrows*, which based on Schubert's *Die schöne Müllerin*. As he delved deeper into this work, he quickly realized the broad metaphorical resonance of the miller's maiden figure within German cultural history, enriched by encounters with mythology and history, which provided him with a more nuanced and flexible understanding of the narrative. Ultimately, he reconfigured a three-part plot, omitting the hunter and certain mundane daily life scenes. Like Schubert, he chose to omit prologues and epilogues that did not lend themselves well to musical adaptation. Nesbit selected twelve poems from the original text and intentionally included the three omitted by Schubert, as part of a departure from Schubert's standard practice.

Against this backdrop, Schubert's *Die schöne Müllerin* (1823) stands as the most iconic musical setting of Wilhelm Müller's poetry and has been the subject of extensive scholarly inquiry. Researchers such as Susan Youens (1992), Gerald Moore (1975), Charles Rosen (1998), Christopher Howard Gibbs (1997), and Richard Taruskin (2010) have explored this work from multiple perspectives, including its compositional background, the relationship between text and music, stylistic features, and musical morphology. In contrast, Edward Nesbit's *Songs of Sorrow*, as a contemporary work, not only reinterprets musical language but also challenges conventional readings of textual narrative. Currently, there is a notable gap in the academic discourse surrounding this composition. In this study, the author seeks to address this gap by analyzing both the score and the textual framework while also drawing upon direct conversations with the composer to gain insight into Nesbit's creative intent. Unlike conventional notions of musical recomposition or borrowing,

[2] The description of Edward Nesbit's creative experience and practices in this paper is derived from a talk entitled "Die Schöne Mullerin, Songs of Sorrow, and Unrequited Love at the Mill," given by Edward Nesbit himself at the University of Malaya on December 11, 2023.

Nesbit's work presents a dual challenge, engaging with both musical language and textual narrative in ways that complicate traditional interpretations of the source material. This study, therefore, also offers a fresh perspective on the recomposition of canonical texts within contemporary music.

Problem of Study

It is widely recognized that composers have frequently reworked existing musical material as a means of creating new compositions. Charles Ives, Schoenberg, Stravinsky, and Webern all employed this approach, incorporating past musical elements into their own innovative works[3]. Peter Gregson's *Bach: The Cello Suites* and Max Richter's *Vivaldi: The Four Seasons*, both demonstrate how composers reinterpret classical music to breathe new life. J. Peter Burkholder (Burkholder, 1994) argues that borrowing existing musical material across time and tradition not only helps to clarify a composer's historical positioning but also allows us to distinguish between innovation and continuity within their work. However, current research has primarily focused on the adaptation of musical material, with relatively little attention given to the role of textual narrative in the process of musical recomposition.

Schubert's *Die schöne Müllerin* (1823) is widely regarded as one of the most significant works of German Romantic music. With its intricate musical narrative and delicate emotional expression, the song cycle not only maintains the structural balance characteristic of Classicism but also vividly embodies Romanticism's deep concern for individual emotions and natural scenery. Through this, Schubert successfully transforms Wilhelm Müller's poetic text into a seminal work of Romantic musical storytelling. However, nearly two centuries later, Edward Nesbit's *Songs of Sorrow* revisits the same poetic text from a postmodern perspective, engaging in a creative reinterpretation of Müller's original narrative. Nesbit not only reconstructs the song cycle's structure but also integrates contemporary musical elements, recontextualizing the work for a modern audience. What inspired Nesbit's reinterpretation? How does his distinctive musical language connect contemporary listeners with the Romantic literary tradition, revitalizing the timeless theme of the miller's journey?

Therefore, this study explores the following questions: How do Schubert's *Die schöne Müllerin* and Nesbit's *Songs of Sorrow*, both based on Wilhelm Müller's poetry, differ in narrative structure and musical transformation? And how does Nesbit's reinterpretation reconstruct musical storytelling to impart new historical and aesthetic significance to the text?

Aim and Significance of Study

To address these questions, this study focuses on three key aspects: (1) the differences in narrative structures between Nesbit and Schubert and how these structural choices shape their musical interpretations of Müller's poetry; (2) the distinct strategies employed in transforming textual narrative into musical narrative and their impact on emotional expression and auditory experience; (3) how both compositions, through their respective musical languages, interpret the central themes of Müller's poetry and imbue them with new significance in their respective historical contexts.

By conducting an in-depth analysis in *Die schöne Müllerin* and *Songs of Sorrow*, this study aims to reveal how Nesbit reconstructs textual and musical narratives to offer a contemporary recomposing of the work within a modern artistic framework. More broadly, this research seeks to explore the ways in which Romantic poetry has been reinterpreted in different historical periods through musical composition, highlighting how music, across temporal boundaries, breathes new life into the same textual material to reflect the evolving spiritual and cultural needs of its time.

[3] For a discussion of related research, see Burkholder (1994) and Straus (1986).

Methodology

According to Walter Gray (1971), the study of art song must consider text, melody, and accompaniment. The text constitutes one layer, the accompaniment belongs to the musical layer, and the melody serves as a crucial bridge between them. More broadly, art songs integrate text and music, forming a unified expressive medium. This study employs a comparative approach, integrating textual and musical narrative analysis to examine narrative construction in both works, see Figure 1.

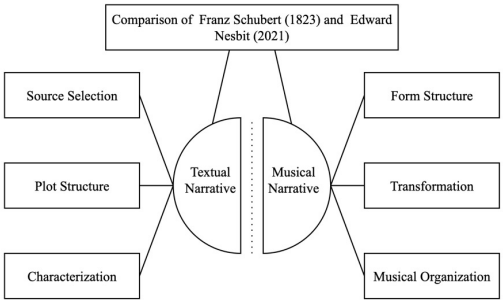

Figure 1. Comparative research design for song cycle analysis

The texts in art songs often serve a strong narrative function, particularly in song cycles, where they shape the storyline and convey characters' emotions. Zbikowski (1999), Rodgers (2014), and BaileyShea (2002) have highlighted the significance of text-music interactions, as well as the role of phrase and sentence structures in musical narrative. Building on Feil & Vollmann's (1988) and Youens' (1992) structural analyses of textual narration in *Die schöne Müllerin*, this study examines textual narrative through three key aspects:

- Source Selection: A comparison of the poetic texts in *Die schöne Müllerin* and *Songs of Sorrow* highlights differences in Schubert's and Nesbit's selection and adaptation of Müller's poetry.

- Plot Structure: Analyzing the narrative structures of both works reveals how additions or omissions in the storyline influence thematic expression.

- Characterization: Examining poetic diction, narrative perspective, and recurring motifs sheds light on character development, with a focus on emotional portrayal and psychological depth.

The narrative function of music has been widely explored in scholarship (Maus, 1991; Nicholls, 2007; Osmond-Smith, 1971; Reyland, 2016). Many scholars (Almén, 2008; Eyre, 2007; Levinson, 2004; Salleh & Razali, 2023) argue that music shares expressive functions with language, realized through musical organization, and advocate a structuralist approach to analysis. Based on this, musical narrative is examined through the following analytical steps:

- Form Structure: Analyzing how each composer structures the text musically, including phrase structures, sectional divisions, and overall form in relation to textual divisions.

- Transformation from Text to Music: Examining the adaptation of textual elements into musical material, with a focus on melodic contour, harmonic language, and rhythmic treatment. Special attention is given to prosody, word painting, and the reinforcement or transformation of textual meaning.

- Musical Organization: Comparing pitch materials, tonal relationships, and other structural elements to reveal the intrinsic logic of musical development and how different musical languages shape narrative across eras and styles.

Results

Section I: Textual Narratives

Source selection and polt structure

In Müller's poetry, a young miller freely wanders along a brook, eventually arriving at a watermill where he encounters the beautiful daughter of the miller and falls deeply in love with her. During his love affair, the miller becomes increasingly blinded and ensnared by fantasies, imagining that his affections are reciprocated. However,

he ultimately realizes that the object of his deep affection has chosen another, a huntsman. As the illusion of love shatters, he becomes overwhelmed by immense sorrow and despair, ultimately succumbing to the brook in an act of self-destruction, carrying with him disappointment in love and resentment towards the huntsman. Müller crafts a variety of intriguing images or entities in the poem, including the miller, the miller's daughter, the huntsman, a brook paralleling the miller's journey, the ever-turning waterwheel, and the flora that serve as vessels for the miller's emotions. The miller engages in constant dialogue with himself or non-living entities, scarcely experiencing genuine interpersonal communication, particularly with the beloved miller maid.

Table 1. The narrative structures of Müller's setting, Schubert's music, and Edward Nesbit's music[4]

Müller's Setting		Schubert	Nesbit	
N/A	No.1 Der Dichter, als Prolog	N/A	N/A	N/A
The miller goes wandering	No.2 Wanderschaft	♪	N/A	Part I: The arrival
	No.3 Wohin?	♪	♪	
	No.4 Halt!	♪	♪	
	No.5 Danksagung an den Bach	♪	N/A	
Life in the mill	No.6 Am Feierabend	♪	N/A	
The awakening of love	No.7 Der Neugierige	♪	♪	
Life in the mill	No.8 Das Mühlenleben	N/A	♪	
His hopes for love's realization	No.9 Ungeduld	♪	♪	Part II: Ambiguous fulfillment
	No.10 Morgengruß	♪	♪	
	No.11 Des Müllers Blumen	♪	N/A	
	No.12 Thränenregen	♪	♪	
The delusion that his love is reciprocated	No.13 Mein!	♪	N/A	
	No.14 Pause	♪	♪	
Before the crisis	No.15 Mit dem grünen Lautenbande	♪	N/A	Part III: Rejection and Death
Hunter's arrival and the miller maid's attraction to him	No.16 Der Jäger	♪	N/A	
	No.17 Eifersucht und Stolz	♪	N/A	
The self-struggle before his despair	No.18 Erster Schmerz, letzter Scherz	N/A	♪	
	No.19 Die liebe Farbe	♪	N/A	
	No.20 Die böse Farbe	♪	N/A	
	No.21 Blümlein Vergißmein	N/A	♪	
The miller's despair and death	No.22 Trockne Blumen	♪	♪	
	No.23 Der Müller und der Bach	♪	♪	
	No.24 Des Baches Wiegenlied	♪	N/A	
N/A	No.25 Der Dichter, als Epilog	N/A	N/A	N/A

[4] It must be noted that this division is also not entirely accurate, as a poem describing everyday life may also imply emotional elements.

Throughout the entire story, *Halt!*, is often regarded as a significant turning point in the plot (Feil & Vollmann, 1988, pp. 45–48). And Youens (1992, p. 32) broadly divides the plot into six parts: Part 1. The miller goes wandering, Part 2. The awakening of love, Part 3. His hopes for love's realization, Part 4. The delusion that his love is reciprocated, Part 5. Hunter's arrival and the miller maid's attraction to him, Part 6. The miller's despair and death (See Table 1).

However, this division, besides providing a rough narrative plot, does not accurately reflect the correspondence between the plot and the poetry. For example, in describing the awakening of the miller's love and the process of fantasizing about love being realized, there is a substantial amount of description of the miller's life at the mill. After the fantasy of love being realized, there is an implication of a crisis in love approaching. Similarly, after describing the relationship between the hunter and the miller maid, the miller's inner emotions begin to move towards despair and death only after undergoing a series of conflicting struggles. Therefore, based on Youens's narrative division, I attempted to add these three parts and establish corresponding relationships with Müller's poetry, as it is beneficial for both narrative considerations and further analysis.

Schubert's textual narrative omits three poems from the original work: *Das Mühlenleben*, *Erster Schmerz, letzter Scherz*, and *Blümlein Vergißmein*. It is evident from the table that this omission has little impact on the plot of the original. Many poems in the original depict mill life, such as *Am Feierabend*, which shares similarities in narrative but is slightly longer. As for *Erster Schmerz, letzter Scherz*, it represents the initial struggle of the heart after the disillusionment of love, with lines like "Willst du den Müller wieder" hinting at the last glimmer of hope. Such inner conflicts are represented in *Die liebe Farbe*, *Die böse Farbe*, and *Blümlein Vergißmein* with the same psychological contradictions. Schubert's omission of these three poems may be because they do not alter the original plot of original text. However, it cannot be ruled out that these three poems were omitted due to their length, which may not have suited the composition.

In *Songs of Sorrow*, Edward Nesbit selected twelve poems from the original work and restructured the musical narrative into three parts: Part 1. The arrival, it depicts the miller strolling along the stream and encountering a beautiful miller's maid whom he falls in love with, Part 2. Ambiguous fulfillment, it portrays the miller consumed by his love for the maid, convincing himself that his feelings are reciprocated, Part 3. Rejection and death, the miller's despair and eventual suicide after the miller's maid rejects him (See Table 1).

Nesbit explained his decision not to choose *Am Feierabend*, expressing his attempt to avoid mundane scenes of mill life and instead opting for *Das Mühlenleben* as a supplement to the plot[5]. Additionally, *Wanderschaft* and *Halt!* were excluded, as *Wohin?* could easily replace them to complete the narrative of the stroll. Furthermore, any narrative related to the hunter, including the *poems Die liebe Farbe* and *Die böse Farbe*, was unequivocally excluded. Many poems were also modified for the same purpose. However, apart from repetitive narrative elements and those related to the hunter, most of the original content was inherited to construct the new narrative.

Nesbit's decision was well-founded, as he questioned the necessity of the "hunter" figure when examining the portrayal of the miller's suitors. The role of the "suitor" in mill-related narratives has long been

[5] "There's another one that Schubert set when the day's work is done which is all about the miller sitting in a barn, I think with the other workers and it's a kind of a mundane scene so I was getting rid of all of that if I could". This content comes from Edward Nesbit's presentation titled "Die Schöne Mullerin, Songs of Sorrow, and Unrequited Love at the Mill" held at the University of Malaya on December 11, 2023.

ambiguous and multifaceted. For instance, in Giuseppe Palomba's libretto for the Italian opera buffa *La Molinara*, the three suitors consist of the nobleman Don Calloandro, the governor Don Rospolone, and the notary Pistofolo (Lazarevich, 2002, p. 1). Additionally, inspired by an *opera buffa* and a French poem, Goethe composed the dialogic poetry cycle *Müllerin-Romanzen* between 1797 and 1798 (Moering, 2008). This cycle consists of four poems: *Der Edelknabe und die Müllerinn*, (*Der Junggesell und der Mühlbach*, *Der Müllerinn Verrath*, and *Der Müllerinn Reue*. In this dialogic poetry cycle, two new suitors emerge—an unidentified nobleman and a solitary traveler lost in unrequited love, who continuously converses with the brook. Notably, the depiction of the solitary traveler and his dialogue with the brook in *Der Junggeselle und der Mühlbach* was seamlessly inherited by Wilhelm Müller. The brook's presence, which plays a crucial role in Goethe's poem, is widely regarded as a key source of inspiration for Müller's later work, manifesting most explicitly in *Der Müller und der Bach* (Youens, 1991).

Nesbit was undoubtedly aware of the polysemy inherent in the concept of the "suitor," as reflected in his introduction to *Songs of Sorrow*:

> *Die schöne Müllerin* is but one manifestation of the story of the miller maid and her suitors, a story which has been told and retold in the German-speaking world over centuries. *Songs of Sorrow* is intended as a modest contribution to that tradition (Nesbit, 2021).

This statement not only acknowledges the long-standing history of the theme but also implies Nesbit's careful consideration of the various narrative adaptations that have emerged over time. Rather than merely replicating the storyline of *Die schöne Müllerin*, Nesbit adopts a more essentialist approach, seeking to return to the spiritual origins of the narrative—namely, Goethe's *Der Junggeselle und der Mühlbach*. In doing so, he not only reaffirms the central dialogue between the wanderer and the brook but also deliberately minimizes external influences that might disrupt the narrative's introspective essence, thus bringing the work closer to Müller's initial creative vision.

With this perspective, Nesbit completely omits the character of the hunter. This modification not only shifts the narrative focus but also fundamentally alters the audience's perception of the work's thematic core. In *Die schöne Müllerin*, the presence of the hunter heightens the dramatic tension of the love triangle, making jealousy, rivalry, and despair key emotional drivers for the wanderer. In *Songs of Sorrow*, however, the hunter's absence renders the protagonist's emotional turmoil more intrinsic—his loneliness and despair no longer stem from external provocations but rather emerge as a result of self-reflection and an immersive interaction with the brook.

Furthermore, this adaptation enhances the symbolic dimension of *Songs of Sorrow*. The brook functions not only as a listener but also as a mirror reflecting the wanderer's psychological state, thereby establishing a more profound and unmediated connection between the two. This approach imbues the work with a poetic atmosphere more closely aligned with Goethe's original vision and underscores Nesbit's attentiveness to lyricism and symbolism. Therefore, Nesbit's work should not be regarded as a mere adaptation of *Die schöne Müllerin* but rather as a reimagining that, through strategic omissions and modifications, seeks to return to the essence of Goethe's spiritual world, offering a new interpretative framework and internal logic for this classic narrative.

Characterization: the reinforcement and diminishment

In terms of characterization, Schubert chose to use the repetition of the text to enhance the expression of emotion, both within entire stanzas and of specific phrases. Such repetitions may occur at any point within a

stanza, whether at the beginning, middle, or end; however, repetition of the concluding phrase of a stanza is more common. For instance, in *Das Wandern*, Müller's original text is substantially expanded in Schubert's music, from the original five lines of poetry to ten lines (See Example 1).

Müller:	Shchubert:
Das Wandern ist des Müllers Lust, Das Wandern! Das muß ein schlechter Müller sein, Dem niemals fiel das Wandern ein, Das Wandern.	Das Wandern ist des Müllers Lust, Das Wandern! Das Wandern ist des Müllers Lust, Das Wandern! Das muß ein schlechter Müller sein, Dem niemals fiel das Wandern ein, Das Wandern. Das Wandern. Das Wandern. Das Wandern.

Example 1. Müller and Schubert's text in Das Wandern

The repetition creates an image of leisurely strolling through its variations in music. A similar approach can be easily identified in *Des Baches Wiegenlied*, both emblematic of textual repetition. In *Am Feierabend*, Schubert opts to conclude the piece with a complete repetition of the first stanza, forming a recapitulation to create a ternary musical structure. Youens (1992, p. 80) interprets this repetition as evoking a superhuman desire when the beautiful miller's maid bids everyone goodnight with fairness, stirring emotions of both disappointment and yearning.

In Nesbit's work the author sees more content omitted than emphasized. For instance, in *Halt!*, Nesbit omits the final stanza from the original poem, which includes praises for the sun and questions about the brook. In *Das Mühlenleben*, nearly all details describing mill life are omitted, including hints about the hunter's presence and the miller's maid's praise for another worker, retaining only the first two stanzas depicting the miller's maid weaving nets by the brook and gathering flowers and berries in the garden. It appears other people and events in mill life are too mundane, or perhaps Nesbit considered they would interfere with the pure introspection he sought. The omission of the fifth and sixth stanzas in *Thränenregen* is similar; these stanzas describe the brook, sandwiched between scenes depicting the miller's daughter, creating a disjointed feeling. As for the omission of the final stanza in *Pause*, the answer lies in the narrative sequence.

In *Erster Schmerz, letzter Scherz*, where only two stanzas remain out of the original ten, it is clear why six stanzas were omitted—they contained scenes involving the hunter, which evidently should not exist in the new narrative. The third and fourth stanzas depict a static temporal and spatial description parallel to the miller's sadness, imbued with a romantic flavor. The reason for the deletion of these stanzas is unclear. Although the contrast in this temporal and spatial context may seem somewhat uninteresting, it would not have harmed the narrative. *Der Müller und der Bach* represents the miller's final "dialogue" with the brook. Nesbit has expressed his desire for the miller to be the sole singer, not wishing the brook to assume an additional role[6]. Indeed, it can be misconstrued from Schubert's musical work that the brook is a character in the

[6] "So for almost all of the song cycle the singer is identified with the miller and then suddenly right at the end you're expected to identify the singer with another character which I don't actually find very satisfactory, so I omitted the narration by the brook so that the singer is always the miller." This content comes from Edward Nesbit's presentation titled "Die Schöne Mullerin, Songs of Sorrow, and Unrequited Love at the Mill" held at the University of Malaya on December 11, 2023.

narrative. However, it must be emphasized that this so-called voice of the brook does not exist; its voice should be understood as an auditory hallucination resulting from the miller's extreme sadness. Nesbit recognized that retaining the brook's dialogue could potentially produce a strange character outside of the miller and effortlessly avoided this possibility with the simplest and most effective method.

After a comparison of the choices and treatments made by the two composers reveals that Nesbit employs a strictly first-person narrative perspective in his storytelling, focusing solely on the narrator's experiences, with no extraneous characters or potential dialogues. This approach aligns closely with Müller's theme of the miller's inner thoughts as a "monologue," as asserted in the preface. Youens (1992, p. 31) also comments on this description, stating, "The less we see and hear of the miller maid, the more the miller can worship her, unimpeded by actuality." This observation highlights a prevalent theme in both texts: a sense of self-focus that conveys a solitary and melancholic demeanor. This may also explain why Nesbit chose to use *Songs of Sorrow* as the title for the entire work, intending to express the sadness of the miller rather than that of anyone else. In this context, even the inanimate entities in the poem are imbued with color and change in accordance with the miller's emotional fluctuations. In contrast, Schubert's musical works preserve the roles found in Müller's poetry, including the hunter, the brook, the sky, the plants, and the green ribbon. Notably, in his composition *Der Müller und der Bach*, Schubert directly incorporates dialogues from the poem[7], compelling the performer to navigate a continually shifting narrative perspective.

[7] Youens also considers this to be a monologue narrated by a single speaker, although Kimball suggests that the brook sings a lullaby for the miller. However, I still interpret it as a hallucination with a deathly undertone, more fitting for a schizophrenic episode. See (Kimball, 2006, p. 64; Youens, 1992, p. 31).

Section II: Musical Narratives

Formal structure: from text to music

In Schubert's work, nearly half of the pieces, nine out of twenty, are presented in the strophic form (See Table 2). Another significant portion of the compositions exhibit a ternary structure, reflecting Schubert's adherence to classical compositional aesthetics of balance. In contrast, at least half of Nesbit's components diverge from traditional musical forms, instead evolving from variations based on common structures, lacking the rectilinear characteristics of traditional structures.

Table 2. Musical form in the works of Schubert and Edward Nesbit

Wilhelm Müller	Franz Schubert	Edward Nesbit
No.1 Der Dichter, als Prolog	N/A	N/A
No.2 Wanderschaft	Strophic	N/A
No.3 Wohin?	Ternary	Ternary*
No.4 Halt!	Ternary	Strophic*
No.5 Danksagung an den Bach	Ternary	N/A
No.6 Am Feierabend	Ternary	N/A
No.7 Der Neugierige	Binary	Binary*
No.8 Das Mühlenleben	N/A	Ternary*
No.9 Ungeduld	Strophic	Strophic*
No.10 Morgengruß	Strophic	Ternary*
No.11 Des Müllers Blumen	Strophic	N/A
No.12 Thränenregen	Strophic	Ternary*
No.13 Mein!	Ternary	N/A
No.14 Pause	Ternary	Binary*
No.15 Mit dem grünen Lautenbande	Strophic	N/A
No.16 Der Jäger	Strophic	N/A
No.17 Eifersucht und Stolz	Ternary	N/A
No.18 Erster Schmerz, letzter Scherz	N/A	Monothematic
No.19 Die liebe Farbe	Strophic	N/A
No.20 Die böse Farbe	Ternary	N/A
No.21 Blümlein Vergißmein	N/A	Ternary
No.22 Trockne Blumen	Binary	Strophic
No.23 Der Müller und der Bach	Ternary	Monothematic
No.24 Des Baches Wiegenlied	Strophic	N/A
No.25 Der Dichter, als Epilog	N/A	N/A

* The variants corresponding to the musical forms

This difference in form structure reflects the difference in composers' understanding of structure. The strophic form has the advantage of simplicity and clarity, which is good for the unity and cohesion of the musical image, but it also has many limitations. The primary challenge lies in the internal structure of each stanza within the text, as they are not strictly equivalent.

Germany	English	T
Guten Morgen, schöne Müllerin!	Good morning, beautiful miller-maid!	A
Wo steckst du gleich das Köpfchen hin,	Why do you so promptly turn your little head,	B
Als wär dir was geschehen?	As if something has happened to you?	B
Verdreiss't dich denn mein Gruss so schwer?	Do you dislike my greetings so profoundly?	B
Verstösst dich denn mein Blick so sehr?	Does my glance disturb you so much?	B
So muss ich wieder gehen.	Then I may go again.	C
O laß mich nur von ferne stehn,	Oh let me only stand from afar,	A
Nach deinem lieben Fenster sehn,	Watching your dear window,	A
Von ferne, ganz von ferne!	From afar, from quite far away!	A
Du blondes Köpfchen, komm hervor!	Your blonde little head, come out!	B
Hervor aus eurem runden Thor,	Come out from your round gate,	B
Ihr blauen Morgensterne!	You blue morning stars!	C

T: Text

Example 2. Textual form of Müller's *Morgengruß*

Nesbit expresses dissatisfaction with Schubert's excessive use of sectional songs, with *Morgengruß* serving as a prime example (See Example 2). In the first stanza, the initial line depicts a scene of the miller greeting the miller maid, constituting the first narrative content of this stanza. This is followed by three consecutive questions, wherein the miller expresses concern that his greeting might cause trouble, reflecting a conflicted inner emotional state, which forms the second narrative content of this stanza. The stanza concludes with "then I must go on again". The second stanza continues the narrative from the first stanza, with the miller temporarily departing and standing at a distance, gazing at the miller maid's window, constituting the first narrative of this stanza. This is followed by his hope to see the miller maid peeking out from the window to look at him. The content of these two stanzas, or all four stanzas, is not entirely identical in structure.

Germany	English	T	T	T
Guten Morgen, schöne Müllerin!	Good morning, beautiful miller-maid!	A	A	A
Wo steckst du gleich das Köpfchen hin,	Why do you so promptly turn your little head,	B	A	B
Als wär dir was geschehen?	As if something has happened to you?	B	A	B
Verdreiss't dich denn mein Gruss so schwer?	Do you dislike my greetings so profoundly?	B	B	B
Verstösst dich denn mein Blick so sehr?	Does my glance disturb you so much?	B	B	B
So muss ich wieder gehen.	Then I may go again.	C	C	C

T: Text, **S:** Schubert, **N:** Nesbit

Example 3. The treatment of text by Franz Schubert and Edward Nesbit in *Morgengruß*

The first stanza of *Morgengruß* as an example (See Example 3), Schubert's music clearly indicates that the first three lines of the poem constitute the first section, blending the greeting and questioning together. It must be acknowledged that there is a distinct difference between the miller's first question and the subsequent two questions. This difference lies in the object of inquiry: the first question, asking

why the miller maid quickly turned her head, can be interpreted as the poet or character expressing surprise or confusion at the miller maid's sudden action. The subsequent two questions, however, involve the miller reflecting on his own behavior. He doubts whether his greeting or gaze might have made the miller maid uncomfortable, reflecting his concern about his role and influence in interacting with her. Therefore, Schubert may have been more concerned with musical structure rather than textual structure during the composition process, leading to this phenomenon. Nesbit noticed this structural issue in the text, choosing to abandon the sectional song form found in Schubert's music and making efforts to align the musical structure with the original text structure in his composition.

Transforming: convert texts into music

Nesbit and Schubert's works overlap in nine pieces, drawing attention to the inevitable similarities or differences in their compositions. Before delving into a more detailed analysis, it's important to clarify the criteria for similarity and difference in this study. Undoubtedly, similarity in composition should not be interpreted as mere copying or replication, and differences should not solely aim for individuality without purpose, as such works would either waste resources or confuse the audience. With the premise of narrative text, a connection is established between the music and the text, and different composers reinterpret the text through their own musical language based on their understanding. In this process of re-narration, there will be some degree of similarity or individual temperament in the depiction of scenes and emotional expressions in the text, resulting in both similarities and distinctions in the compositions. By examining the musical appearances, we can identify similarities or differences between the two, which will better reflect the composers' understanding of the text, rather than simply being completely identical or opposite in meaning.

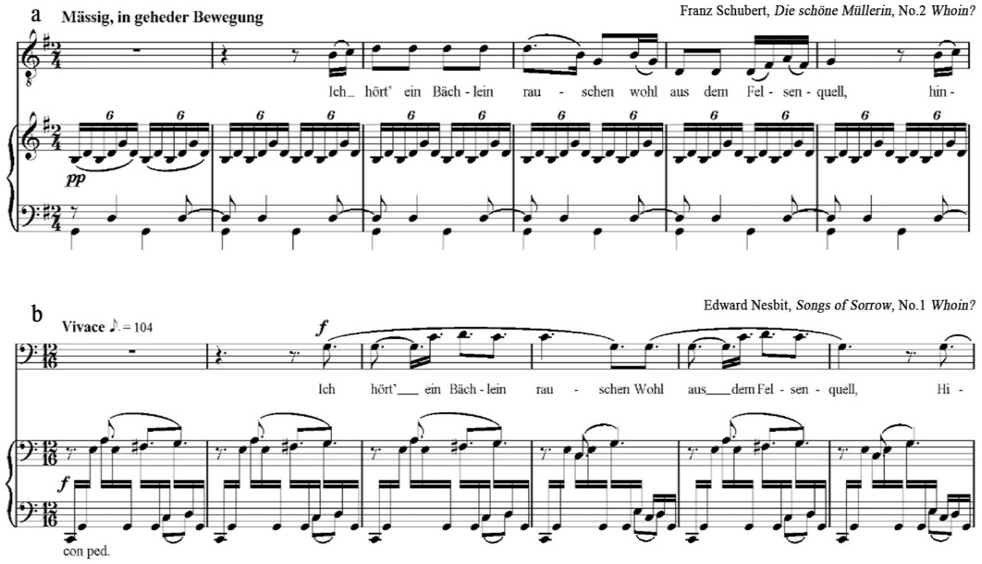

Figure 2. The texture symbolizing the brook in Franz Schubert and Edward Nesbit's *Wohin?*

After acknowledging this subtle relationship, the analysis can initially focus on those pieces that clearly exhibit similar qualities, such as the contributions of both composers to Müller's *Wohin?* (See Figure 2a and 2b). Nesbit explicitly stated in his work that the arpeggiated texture in this piece pays homage to Schubert's work, with a plethora of sixteenth notes maintaining nearly identical contours, symbolizing the murmuring of a

brook[8]. It can be safely assumed that when both composers approached the text for their compositions, they reached a consensus at some moment or on some level based on a shared understanding of narrative text and musical language. However, some differences in detail, such as the registers, which cannot be overlooked: Schubert's accompaniment tends to be slightly higher in pitch, lending stability to the G major triad harmony and making the sound of the brook seem lighter and smoother, akin to a shallow stream flowing beside a meadow, exuding a sense of clarity, as described in the poem, "So frisch und wunderhell" (So fresh and wonderfully bright). In contrast, Nesbit's texture contains multiple layers, with the upper A-F#-G trichord forming a passing relationship with the lower C-D, which is obscured, with E-G acting as a bridge and background. This interplay between the melodic patterns creates a sense of vertical space, causing the brook to exhibit some fluctuations and echoes, more closely resembling the depiction of "Wohl aus dem Felsenquell, Hinab zum Thale rauschen" (Surely from the rock spring, rushing down to the valley). This demonstrates the composers' tendencies in selecting the same text and ultimately showcasing their understanding of narrative text and personality through musical forms.

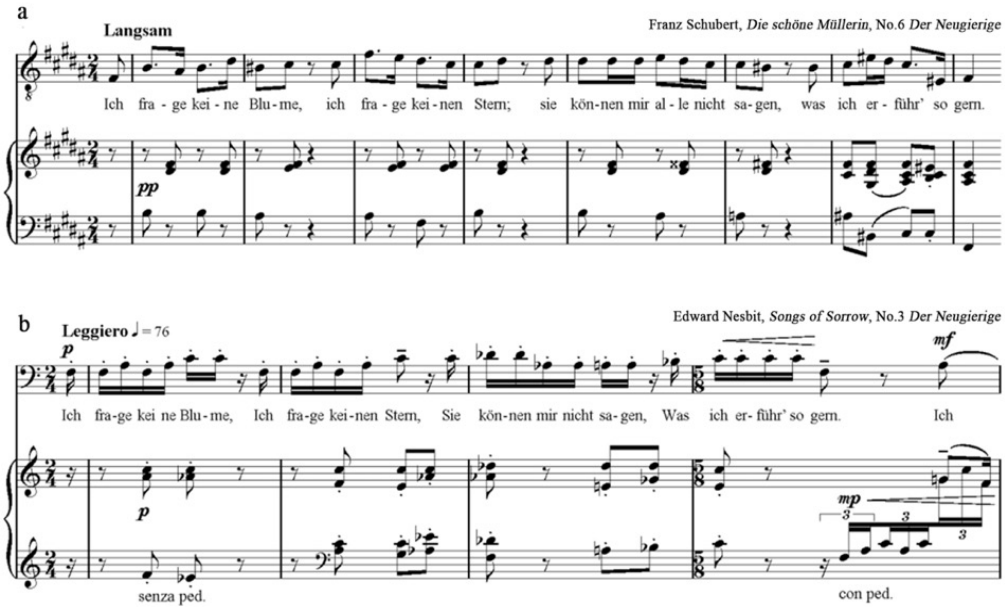

Figure 3. The texture symbolizing the miller in Franz Schubert and Edward Nesbit's *Der Neugierige*

Der Neugierige clearly demonstrates the contrasting attitudes of the two composers (See Figure 3a and 3b). In this passage, Schubert is evidently inspired by the first two lines of the poem, "Ich frage keine Blume" (I ask no flower) and "Ich frage keinen Stern" (I ask no star), which imply that the miller believes that these elements of nature cannot provide him with the answers he seeks. The miller's assumption that only nature knows the workings of his innermost self and the truth of what happens in the mill, he trusts nothing except the brook. Schubert's music here exhibits a feminine element in the miller, as Youens (1992, p. 33) emphasizes the literary trope of women longing to be noticed by their indifferent lovers, lamenting loudly their pain and begging for their return in a submissive manner. The image of the

[8] "... the first song of the Songs of Sorrow has those arpeggios which is meant to be water and is a direct reference to the schubert songs in which have that kind of arpeggio, which is represented." This content comes from Edward Nesbit's presentation titled "Die Schöne Mullerin, Songs of Sorrow, and Unrequited Love at the Mill" held at the University of Malaya on December 11, 2023.

miller in the poem is influenced by this feminized perspective, lacking the charm of a masculine figure. Schubert's musical language clearly amplifies this emotion; the marking "Langsam" with a soft expression restrains the display of masculinity, and the melodic strength appears prematurely in the seventh bar, making the longing somewhat subdued in the end. In contrast, Nesbit's music shapes a completely different image, enhancing the miller's masculinity, which appears confident and eager in the light and pulsating melody. The melody in the first two bars is entirely composed of an F major triad, rendering the image of the miller brighter. In the fourth bar, the melody transitions from four repeated sixteenth notes C to F, creating a sense of dynamism with a downward leap of a perfect fifth.

Musical organization: beyond the romanticism

In this section, given the abundance of existing research on Franz Schubert's Die schöne Müllerin (Gibbs, 1997; Moore, 1975; Rosen, 1995; Taruskin, 2010; Youens, 1991, 1992), the analysis focuses solely on the compositional techniques and stylistic features exhibited in Edward Nesbit's musical work, espacially the application of polytonality and symmetrical set.

As one of the modernist compositional techniques, the polytonality means that the simultaneous presentation of more than two tonalities in a polyphonic texture (Latham, 2002, p. 979; Whittall, 2001). In *Danksagung an den Bach*, this juxtaposition between different tonalities can be observed (See Figure 4). The melody is based on F, with F, B-flat, and C almost entirely comprising the melodic material. In the accompaniment, the piano's two voices distinctly create a tonal juxtaposition, which begins from the first measure of the music. The right hand is unequivocally in F minor, but in the sixth measure, it suddenly shifts to C major, continuing until the tenth measure. The left hand presents a different situation, emphasizing B-flat instead of B, creating a sense of the B-flat Dorian mode, ultimately resolving in the fifth measure. Starting from the sixth measure, the left-hand substitutes A and E for B-flat A and B-flat E, guiding the tonality back to F major.

This situation undergoes some changes in the latter part of the piece: mm. 10-14, there remains a juxtaposition between F harmonic

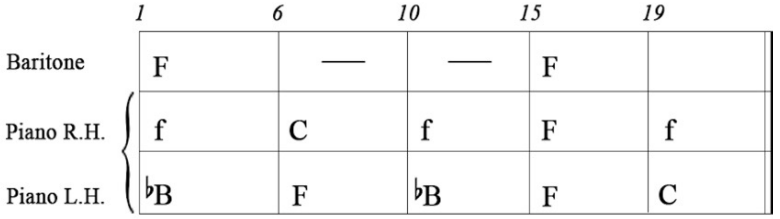

Figure 4. Tonal layers in Edward Nesbit's *Danksagung an den Bach*

minor and the B-flat dorian mode, yet starting from m. 15, the right hand abruptly shifts from F minor to F major, surprisingly supported by the tonality of the left hand, persisting until m. 18. Here, for the first time in the entire music, a complete unity of tonality is achieved. However, this unity does not persist until the end of the piece, as the recapitulation of the main material causes them to quickly differentiate again into the two polymodal musical forms observed at the beginning. Eventually, the left hand unexpectedly ends on C instead of B-flat, leaning towards the C Phrygian mode in terms of tonality. However, collecting all the tonalities that have appeared, it could be observed that F, B-flat, and C happen to comprise almost all the melodic material throughout the piece.

Since the 20th century, composers have extensively used pitch sets other than

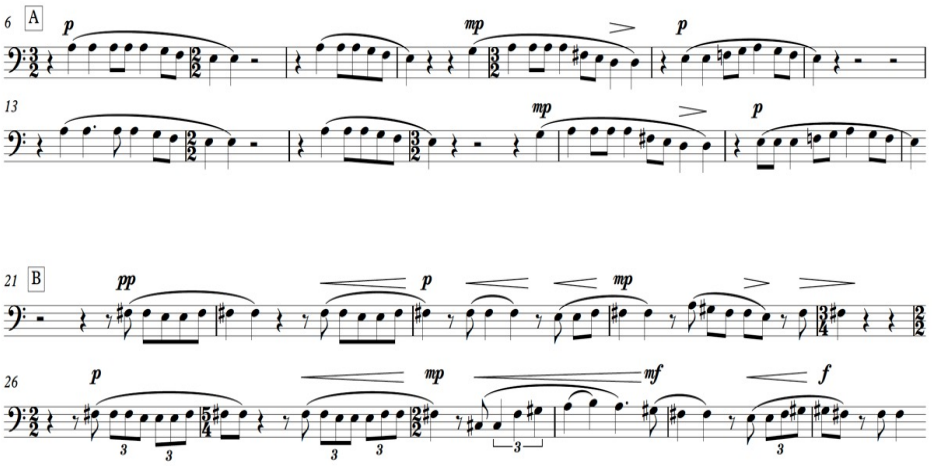

Figure 5. The melody structure of Edward Nesbit's *Thränenregen*

diatonic scales in their compositions. These pitch collections may have already existed or could have been created by the composers themselves (Kostka & Santa, 2018, p. 17). A symmetrical set is a set that can map onto itself under transposition or inversion (Roig-Francolí, 2021, pp. 102–110; Straus, 2016, pp. 107–112). Although the use of symmetrical sets may not necessarily have been the composer's original intent, the discovery of Edward Nesbit's use of pitch material revealed a peculiar phenomenon, which has been retained as part of the analysis. The melody of *Thränenregen* reveals the structure of the work (See Figure 5). *Thränenregen* is a piece with a ternary structure, where, in addition to the melodies of sections A and B listed in the figure, the material of section A is repeated at the end.

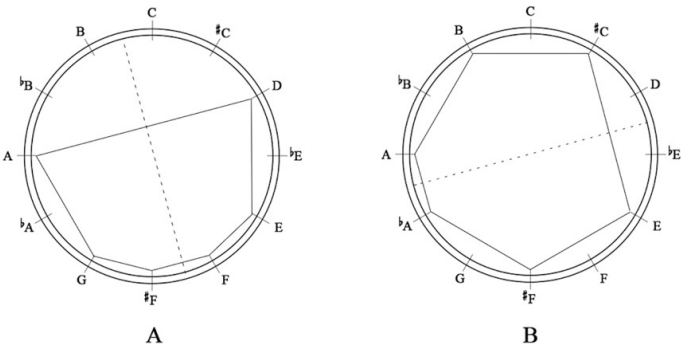

Figure 6. Symmetric scales in Edward Nesbit's *Thränenregen*

The variation in motifs indeed serves as a distinguishing feature between the A and B sections; however, unlike the changes in tonality typical of traditional music, this does not inherently indicate their independence. Upon closer examination of the musical material, we observe that the pitch content in section A comprises a symmetrical hexachord: D-E-F-F#-G-A; similarly, the pitch content in section B, E-F#-G#-A-B-C#, also forms a symmetrical hexachord. Notably, the symmetry axes of these two symmetrical scales lie between the pitches (See Figure 6).

Discussion

The attitudes of Edward Nesbit and Franz Schubert towards Wilhelm Müller's texts reflect the complex relationship between music and text. Should music composition

respect the text, or should the music take precedence? Undoubtedly, composers' sensibility could initially find resonance with the poet, serving as the prerequisite for transforming text into music. In this transformative process, Nesbit made significant reductions to Müller's texts, whereas Schubert's chosen poems retained almost all their original lines, with only some repetitions. Does this indicate that Schubert's musical compositions respect Müller's original text more? Certainly, Nesbit himself acknowledged that such reductions might be seen as disrespectful to the poetry, especially the omissions related to the huntsman, daily life, and certain stanzas[4]. Yet, Schubert's use of strophic song forms, despite differing poetic structures, often simplifies Müller's texts in a manner that can be perceived as making them more passive[5]. For Nesbit, actions that make musical narrative more ideal are justified, and Schubert likely would not compromise a satisfying melody for the sake of textual structure.

In fact, the relationship between music and text in songs has long been a central topic of discussion. Some scholars argue that the music in songs often swallows those important elements initially present in the text, marginalizing them to a certain extent (Cone, 1992, p. 184; Langer, 1953, p. 152; Rodgers, 2017). However, Randall Thompson, Citkowitz, and Louis Gruenberg have also emphasized the importance of adhering to poetry without sacrificing musical form, advocating for adjustments based on the musical form (Upton, 1938). Schubert adhered to Müller's narrative from the outset, telling a traditional German folk story. In contrast, Nesbit sought to achieve simplicity, modernity, and a distinct creative space within his music, projecting Müller's poetic text through the lens of modernist musical language while simultaneously reflecting the spiritual tradition of Goethe's more concise poetry.

Conclusion

A comparative study of Edward Nesbit's *Songs of Sorrow* and Franz Schubert's *Die schöne Müllerin* reveals that, despite sharing the same poetic text, the two composers adopt fundamentally different approaches to textual narration and musical expression. These differences manifest primarily in two key aspects:

Divergent Treatment of the Poetic Text

Unlike Schubert's *Die schöne Müllerin*, which preserves the structure and integrity of Wilhelm Müller's poetry, Nesbit's *Songs of Sorrow* omits certain key characters and passages, significantly reconstructing the original narrative framework. This adaptation not only reflects Nesbit's personal artistic vision but also signals a return to the spiritual world of Goethe's *Der Junggeselle und der Mühlbach*. In this reimagining, Nesbit removes the figure of the hunter, simplifying the narrative relationships and shifting the dramatic focus entirely onto the emotional interplay between the miller and the miller's daughter. This revision also has a profound impact on the characterization and psychological depth of the figures in the story. By eliminating the element of external rivalry, Nesbit presents the miller's unrequited love as an intense yet singularly obsessive emotion, free from the resentment and bitterness that arise in Schubert's setting. In Schubert's interpretation, the protagonist's emotional turmoil is heightened by jealousy, culminating in a tragic descent shaped by both internal despair and external conflict. In contrast, Nesbit's protagonist undergoes a more introspective transformation, wherein sorrow is a product

[9] "So, in any way that the text is just to keep the vehicle to the mood that you're trying to capture in a way, right exactly, instead of the specific words to and in that... Anything that seems too mundane I just cut out, so I wasn't respecting the poetry in that sense, I was quite happy to reshape the individual poems to meet what I wanted to do." This content comes from Edward Nesbit's presentation titled "Die Schöne Mullerin, Songs of Sorrow, and Unrequited Love at the Mill" held at the University of Malaya on December 11, 2023.

[10] John Reed addressed Richard Capell's critique of strophic songs, asserting that such simplicity could also represent a form of greatness, See (Reed, 1978, p. 419).

of internal emotional exhaustion rather than relational antagonism.

Furthermore, this adaptation reconfigures the role of the miller's daughter. No longer positioned as an active agent making choices between competing suitors, she becomes an abstract entity—less a concrete character and more a projection of the protagonist's emotional state. In this sense, *Songs of Sorrow* does not rely on narrative tension to drive the story forward; instead, it focuses on the gradual intensification and refinement of emotional expression, crafting a more introspective and psychologically nuanced portrait of love and loss.

Contrasting Approaches to Musical Narration

Beyond textual adaptation, Nesbit and Schubert also diverge significantly in their musical narration, though moments of convergence can be observed. In *Der Müller und der Bach*, both composers employ harmonic repetition to evoke a sense of stagnation and inescapable sorrow. However, in *Der Neugierige*, Nesbit's miller is musically rendered with a greater degree of assertiveness and resilience, exuding a distinctly more masculine character compared to Schubert's interpretation. Likewise, in *Wohin*, both composers utilize arpeggiated textures to depict the flowing water, but with differing emphases: Schubert's music conveys the clarity and serenity of a gentle stream, whereas Nesbit's composition captures the dynamic and layered movement of water cascading through a mountainous valley.

These musical similarities and differences reveal both a shared interpretative sensibility and the distinct artistic priorities of each composer. While both engage with Müller's text in ways that reflect their respective musical languages, their aesthetic choices ultimately shape divergent expressive outcomes. Schubert's *Die schöne Müllerin* constructs its musical narrative within a Classical-Romantic tonal framework, characterized by fluid melodic lines and rich harmonic progressions that prioritize emotional continuity and natural expressivity. In contrast, Nesbit's *Songs of Sorrow* integrates modernist compositional techniques—such as linear counterpoint, polytonality, and symmetrical scales—alongside traditional formal and tonal elements, resulting in a more eclectic and exploratory sound world. This contrast not only differentiates the auditory experiences of the two works but also underscores how compositional style influences the construction of musical meaning.

As a conclusion, Wilhelm Müller's poetry finds two distinct musical realizations in the works of Schubert and Nesbit, each shaped by the stylistic and aesthetic concerns of its respective historical period. Schubert's *Die schöne Müllerin* stands as a quintessential example of Romantic music, embodying the era's fascination with nature, individual sentiment, and the complexities of human emotion. Through its lyrical melodies and sensitive harmonic treatment, the song cycle encapsulates the Romantic ethos of deep engagement with personal and natural worlds. Nesbit's *Songs of Sorrow*, by contrast, reimagines both the textual and musical narrative structure, departing from Schubert's established framework while drawing inspiration from Goethe. By incorporating modernist musical language and reconstructing the poetic narrative, Nesbit not only challenges conventional expectations but also offers a renewed interpretative space for Müller's text. His composition merges contemporary harmonic and textural innovations with an introspective, symbolic approach to storytelling, ultimately creating a more abstract and psychologically immersive experience. This conclusion illustrates how composers from different historical periods reinterpret a common textual source through their own musical idioms. Schubert, within the Romantic tradition, emphasizes melody and harmony to articulate an emotional and narrative arc, while Nesbit

employs modernist techniques to craft a musical landscape that is both structurally innovative and thematically introspective. This contrast not only highlights the diversity of musical storytelling but also offers broader insights into the processes of textual reimagination and stylistic evolution in art song composition.

Recommendations

Recommendations for Further Research

This study opens avenues for further exploration into the interpretative and adaptive strategies composers use when engaging with Romantic poetry. Future research could examine additional adaptations of *Die schöne Müllerin* by other composers, including those from diverse musical traditions and genres, to highlight how narrative and musical techniques evolve in response to cultural and historical shifts. Moreover, a comparative analysis of text-to-music transformations in non-Western adaptations of Müller's poetry could provide insight into how global musical idioms reshape Romantic texts.

Another promising direction would involve listener perception studies focused on Schubert's and Nesbit's works, exploring how modern audiences interpret and emotionally connect with each composer's treatment of the text. A mixed-methods approach incorporating both analytical and reception-focused methodologies could offer a holistic view of the interpretative impact of different musical settings on audiences over time.

Recommendations for Applicants

Applicants interested in this field are encouraged to develop a strong foundation in musicological analysis, particularly in textual and narrative analysis, to effectively engage with the unique intersections of music and poetry. Familiarity with comparative analysis techniques and historical research skills would be beneficial in exploring the thematic and stylistic evolutions of song cycles across eras. Additionally, applicants with knowledge in interdisciplinary methods, such as combining music theory with cultural studies or reception theory, may find these tools advantageous in uncovering nuanced interpretations of works like *Die schöne Müllerin*. A proactive approach to exploring both Romantic and contemporary musical idioms will also enable applicants to make meaningful contributions to the field of music analysis.

Limitations of Study

This study is limited by its focus on two specific adaptations of *Die schöne Müllerin*, restricting a broader examination of the song cycle genre across different composers and time periods. By centering on Schubert's and Nesbit's works, the analysis may overlook other stylistic nuances, and compositional approaches present in alternative adaptations of Müller's poetry.

Also, this research primarily employs textual and musical narrative analysis, which may limit its perspective on the broader reception and performance practices of these works. Audience reception and interpretive practices across diverse cultural settings, which could add further insight into each work's impact, were not within the scope of this study.

Finally, this study does not account for the influence of live performance or varying interpretations by performers, factors that significantly contribute to the experiential aspect of song cycles. As each performer brings their own interpretative nuances to these compositions, future studies could incorporate performance analysis to explore how interpretive choices influence the reception and understanding of these works.

Acknowledgement

We would like to express our heartfelt gratitude to Edward Nesbit for all the invaluable assistance and support he provided throughout this research. His generous sharing of his creative experiences and insights greatly enriched this study. This paper would not have been possible without his help.

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Research Article

A study on the importance of instrumental practice in children's cognitive development

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Abstract

This study investigates the benefits of early-age musical instrument learning through a systematic literature review and an observational pilot study involving students aged 5–14 from a private school in Barcelona. Building on prior studies linking musical training to cognitive development, the study examines how structured music programmes influence practice habits, cognitive performance and musical progression. The participants were divided into two groups: Liceo students preparing for conservatory exams and non-Liceo students with limited practice. Data collection combined the use of standardized tests (e.g., WISC-IV) and observational instruments validated by experts. The results revealed that Liceo students practiced an average of 1.5 hours weekly compared to 20 minutes for non-Liceo students. They also completed significantly more musical pieces and performed better in working memory-related subtests, such as Picture Span and Digit Span ($p<0.05$). These findings underscore the role of structured programs in fostering discipline, technical proficiency and cognitive growth, aligning with existing literature that emphasizes the transformative impact of music education on brain function and skills acquisition. While the study highlighted significant benefits, limitations included a small sample size, reliance on self-reported practice data and short-term focus. Future research should therefore be focussed on increasing participant diversity, incorporating objective practice metrics and exploring the long-term effects of musical training. An examination of teaching methodologies, cross-disciplinary benefits and parental involvement could also enhance understanding. Recommendations emphasize increasing curricular weight for music education, promoting sustained practice and leveraging music's holistic developmental benefits. This study reaffirms the importance of integrating structured musical training into educational curricula for comprehensive child development.

Keywords

children's cognitive development, instrumental practice, music, music education

Introduction

It is well known that numerous studies have highlighted the benefits of music education, particularly learning a musical instrument, for young children in cognitive, affective, and psychomotor domains. In light of research conducted worldwide and in Spain on this subject, we present this study with the belief that observing, analyzing, and drawing conclusions from a sample of children attending a private school in Barcelona who have had the opportunity to learn a musical instrument from the age of three will provide significant contributions to this field.

Music and Cognitive Development

It has been suggested that cognition in the human brain is achieved through the integration of activity from functionally distinct neural populations (Tononi, Sporns & Edelman, 1994) across multiple timescales (Aminoff, Kveraga & Bar, 2013). Musical experiences require the integration of a rich perceptual environment with internal representations. The complexity introduced by music training is most reliably observed at broader temporal scales, which are frequently linked to global brain communication across different regions. Following music training, an increase in

brain signal complexity has been noted in the right temporal areas associated with music and language perception (Aust et al., 2014). It is important to emphasize the significance of this connection.

Music is a discipline that promotes learning, transmits knowledge, generates pleasure and promotes social relationships (Blackwell, 2022). When we listen to music, both the right hemisphere, in charge of creativity, emotions and feelings, and the left hemisphere, the logical part that we use when we study music, are activated (Velecela, 2020). Musical practice positively influences the anatomical-functional organization of the brain (Benítez et al., 2017). Some brain regions are influenced by prior musical training, as previous studies have shown that musical abilities can alter the distribution of functional networks and the neuroanatomical features associated with their processing (Okamoto, 2009).

Music also promotes ethical and aesthetic values. Artistic education stimulates creativity and the ability to manage difficulties (López & Salcedo, 2021). Gardner (1999) included music as one of the multiple intelligences children are able to develop.

Instrument Use and Cognitive Development

Music is currently given little curricular weight as a subject within the Spanish primary education system (or that of the autonomous community of Catalonia), with only one hour allocated to its study per week and theoretical classes prioritized above practical study.

There is universal consensus among theorists that musical practice positively influences children's cognitive development in different areas: verbal, spatial and logical-mathematical thinking (Benítez et al., 2017; Vilchez, 2009). Some authors even suggest that children who systematically practice a musical instrument obtain better scores in IQ tests (Schellenberg, 2006; Norton et al., 2005; Bregman, 1990). It is also important to consider the fact that each child's individual cognitive characteristics influence their musical abilities; students with stronger cognitive skills will find learning a musical instrument easier (Neville et al., 2008).

Throughout history, music has held an importance comparable to that of philosophy and mathematics. Electroencephalogram recordings evaluating the effects of music on the brain have shown that it produces alpha-type electrical activity leading to: a) improved memory, attention and concentration in children; b) improved mathematical problem-solving and complex reasoning skills; c) better learning outcomes by introducing children to sounds and the meanings of words; d) increased interaction between children and their peers, as well as adults; e) stimulation of children's creativity and imagination; f) when combined with movement, sensory stimulation, balance and muscle development (Overy, 2002). Rauscher and LeMieux (2003) also found that a group of vulnerable children who were given two years of individual piano instruction performed better in an arithmetic exam.

Stubley (1992) states that musical knowledge integrates different types of knowledge: listening, performance and composition. Rusinek (2003) relates three types of cognitive processes - auditory cognition, cognition in execution and compositional cognition - to the types of knowledge proposed by Stubley (1992). According to Rusinek (2003), when a student interprets a melody, several factors must be taken into account: maintaining a good posture to ensure a natural and balanced interaction with the instrument, decoding the symbolic notation with the right hand, and, in the case of the piano, also using the left hand to interpret the notation in different keys. The student is sending instructions to their fingers to articulate the different notes, with each finger applying a different pressure to control the intensity, duration and articulation technique. Additionally, the student decodes

the rhythmic figures to execute the relative length of the sound, internalizing a steady beat, adjusting the note lengths relative to this beat to determine the absolute length of each sound and translating the absolute note lengths. The student also relies on their intuition to take breaths at appropriate moments in the musical phrase thereby listening and self-regulating as they play (Costa-Giomi, 2000).

In relation to aspects of speaking, writing and reading, Overy (2002) conducted a study with nine children who had dyslexia which showed that musical instruction improved rapid temporal processing skills, as well as phonological and orthographic skills, but did not improve reading skills. Ho et al. (2003) conducted another study with 90 children aged between 6 and 15 and concluded that the children's verbal memory improved after musical instruction.

Importance of Study

Musical training is frequently associated with improvements in linguistic and mathematical abilities and recent studies have emphasized the potential advantages of bilingualism for lifelong executive functions. However, the neural mechanisms driving these effects are still not fully understood. The aim of this study was to gain a deeper understanding of the whole-brain functional effects of music on children, which could help clarify the cognitive transfer effects that have been observed in previous research.

Based on our initial hypothesis - that learning a musical instrument at an early age offers a variety of benefits to children - we believe that this ongoing study, which is intended to continue over several academic years, holds significant importance for both the scientific community and society at large. It has the potential to provide valuable insights into how structured musical education not only influences cognitive development, but also emotional, social, and neurological growth.

To that end, we have conducted a review of the previously published literature as a basis for our ongoing research study. This study underscores the critical role of integrating music into educational curricula, advocating for its practical and theoretical inclusion. By investigating both the short- and long-term effects of structured musical training, this research contributes to addressing gaps in existing knowledge about the interplay between music, cognition and educational outcomes. Although the study is still ongoing, we can already draw significant conclusions based on our scientific knowledge, observations and analysis of the results obtained to date, even if these conclusions are not yet definitive. These findings could have profound implications for educational policy-making and highlight the broader cognitive and cultural value of music as a tool for holistic child development.

Problem of Study

This study seeks to investigate the extent to which musical training influences brain network diversity, with an emphasis on enhancing, not only music-specific skills, but also fostering cognitive and behavioural transfers to other domains. The central problem lies in the limited understanding of how structured music education contributes to neuroplasticity, particularly in areas such as working memory, attention and problem-solving. While previous studies have highlighted a correlation between music training and cognitive benefits, the underlying neural mechanisms remain unclear. By addressing this gap, the research aims to demonstrate how the integration of musical practice within educational settings could serve as a model for improving general cognitive abilities. The study also explores how individual differences, such as prior cognitive characteristics, impact the effectiveness of music training in promoting skills transferable to academic and social contexts. Ultimately, this research underscores the potential of music as a tool for holistic education and seeks to advocate for its increased integration into curricula.

Method

Research Model

To conduct this research, a bibliographic review of 30 scientific articles was carried out to establish a foundation based on the current situation. The selected studies aimed to empirically demonstrate that learning to play a musical instrument enhances the cognitive abilities of both children and adults. In addition to the bibliographic review, an observational case study was also conducted to obtain qualitative data through direct observation of the 30 participants in a classroom context, as well as quantitative data based on systematic records evaluating a small group of actively participating students. The children's progress was documented using an evaluation instrument specifically designed and validated by five experts holding PhDs in Music from the University of Barcelona. This instrument systematically recorded the number of pieces studied, the amount of weekly study time and the performance level for each piece. The validation process consisted of sharing the instrument (shown below) with different university experts from public universities and conservatories in Spain, all specialists in the field. The different items evaluated by the external evaluators were as follows:

Table 1. Items evaluated by external evaluators

No	Objectives	Indicators	0	1	2	3
O1	Improve hand position	He/she places his/her hands well				
O2	Improve body position	He/she sits correctly and has good body posture				
O3	Follow the notated fingering	He/she plays following the notated fingering				
O4	Articulates correctly[1]	He/she articulates correctly				
O5	Work on the reading agility of notes	He/she reads the notes with ease				
O6	Work on rhythm reading agility	He/she reads the rhythm with ease				
O7	Improve interpretation phrasing and dynamics	He/she interprets phrasing and dynamics well				
O8	Work memory	He/she is able to memorize sentences and songs				
O9	Improve technique (scales, arpeggios, exercises, book: A Dozen a Day 1-3)	He/she plays scales, arpeggios and exercises correctly				
O10	Hours of weekly study					
O11	Completed songs					

Observations: (note any observations made to the student). Table created by the authors

[1] legato, staccato, accents, sforzando, ligatures of expression between two or three notes, phrasing ligatures, breathing comma

Participants

The participants included a total of 30 students enrolled to learn piano, ranging in age from 5 to 14 years old. All participants had prior exposure to piano lessons as part of their curriculum. However, the sample was divided into two distinct groups based on their level of commitment and participation in structured instrumental preparation.

Liceo Group (n=17): These students were actively preparing for the official external exams at the Liceo Conservatory in Barcelona. Their preparation involved studying on a formal programme that included works from the Baroque, Romantic and Contemporary periods, technical exercises (e.g., scales, arpeggios), sight-reading and composition. These students dedicated an average of 1.5 hours per week to practice outside of their piano lessons.

Non-Liceo Group (n=13): These students attended the same piano lessons but did not engage in structured preparation for the Liceo exams[2]. Their practice was limited to the 20-minute weekly one-to-one class sessions, with minimal or no additional practice outside of class.

Data Collection Tools

A combination of standardized tests, observational instruments and student records were used to gather both quantitative and qualitative data for this study. These tools were carefully selected to provide a comprehensive understanding of the impact of instrumental practice on cognitive, musical and behavioural development.

Standardized Test (WISC-IV)

The WISC-IV[3] (Wechsler Intelligence Scale for Children) was employed to evaluate specific cognitive abilities, including working memory, assessed through the Picture Span and Digit Span subtests, processing speed, evaluated using the Symbol Search subtest, and verbal comprehension and reasoning, assessed using subtests, such as Vocabulary, Similarities and Comprehension. These subtests were employed to compare the cognitive performance of students preparing for the Liceo exams with that of students not engaged in these activities.

Observational Records

The Evaluator's Questionnaire was designed and validated by five experts with PhDs in music from the University of Barcelona. This questionnaire served as a record-keeping tool for tracking the students' weekly progress. The questionnaire included 11 points to assess various aspects of musical performance, such as: hand and body position, fingering accuracy, articulation techniques (e.g., legato, staccato, phrasing), agility in reading notes and rhythms, memory skills in retaining and reproducing musical phrases, technical abilities (e.g., scales, arpeggios), repertoire progression (number of pieces completed) and hours of weekly study.

All the qualitative observations were carried out by means of the questionnaire (Appendixe 1) where, in addition to technical aspects, student motivation and teacher feedback were also noted. This evaluation tool provided a comprehensive approach for the collection of student data.

Data Analysis

All the data collected, including the WISC test results and questionnaire responses, were analysed to determine whether a relationship exists between the time and effort dedicated to studying the instrument and the development of cognitive skills in children preparing for the official Liceo exams compared to those not engaged in in-depth piano study. The descriptive statistics, mean, median, standard deviation and range were calculated for all quantitative variables, including: weekly practice hours, number of pieces completed, Scores

[2] The Liceo Conservatory is a professional and higher-level music school located in Barcelona. It welcomes external students for official piano exams.

[3] WISC-IV (Wechsler Intelligence Scale for Children) is known for its well-documented validity and reliability, making it a trusted tool for standardized intelligence assessment.

on WISC-IV subtests (e.g., Picture Span, Digit Span, Vocabulary and Symbol Search) and performance metrics recorded via the Evaluator's Questionnaire (e.g., hand position, rhythm reading, articulation). Descriptive statistics provided a clear overview of the differences between the Liceo and Non-Liceo groups.

The nonparametric Mann-Whitney U Test was used to compare the performance of the two groups across the cognitive scores from WISC-IV subtests. This test was selected due to the relatively small sample size and the potential for non-normal data distribution.

Statistical significance was set at $p<0.05$ and results with $p<0.1$ were interpreted as marginal trends warranting further investigation.

To ensure the results were significant, the two groups were compared across all metrics, including the WISC-IV tests, weekly study time devoted to the instrument, pieces completed and interpretation skills as assessed through the questionnaire (Table 1).

Remarkable differences were found across all the variables. The SPSS program was used to analyse the WISC test, which allows the data to be studied with different tests. In this case, we opted for Mann-Whitney U tests that allow descriptive statistics. The Microsoft Excel program was also initially used to organize the data obtained from both the WISC test and the evaluative questionnaire. Both programs were essential for presenting clear, rigorous work that would ensure reliable interpretation.

Procedure

The research was carried out at the British International School in Llinars del Vallès (Barcelona). It is a unique centre, with a student body of just 63 students spanning kindergarten through to secondary education. It operates as a rural school where students are grouped flexibly.

Thus, all the students between the ages of 5 and 14 who were enrolled to learn piano formed part of both the experimental and control groups with the informed consent of their parents.

The school is located in the middle of a forest, offering the opportunity for many of the classes to be held outdoors so that students can enjoy the unique environment. The flexible grouping of students into cycles, with classroom ratios of 12 to 15 students, allows for a highly personalized and comprehensive educational approach.

The results presented in this study relate to the 2023-24 academic year. Although the objective is to analyse the benefits of instrumental practice and the preparation of pupils for Barcelona's Liceo Conservatory exams over several years, some conclusions can already be drawn based on previous research and using the data obtained and analysed to date.

All research was conducted at the same school and involved the participation of the piano teacher and the school psychologist. Attention, memory and mental agility in decoding symbols were assessed to evaluate the impact of learning the piano on the students. The sample consisted of 30 children, all of which study piano, but with one important distinction - 17 of the children were scheduled to take the Liceo Conservatory's official external exams in June 2024. This involved preparing for a programme that included specific works, studies and pieces from the Baroque, Romantic and Contemporary periods, as well as technical exercises such as scales, arpeggios, sight reading and composition. The remaining 13 children in the sample have piano lessons as part of their normal school week but do not show an interest in instrumental practice beyond the 20 minutes of weekly class.

All students of the International Rural School benefit from having two hours of lessons dedicated to the arts every week as part

of their regular school timetable. During these two hours, the students have the opportunity to explore various plastic arts, as well as having piano lessons. On average, students have one hour of instrumental instruction per week. Access to a number of Yamaha keyboards means these classes can be conducted in small groups, with the teacher attending to one student at the piano, while the rest practice and study the tasks set on the various keyboards. Actual one-to-one class time is twenty minutes per week but students are able to continue learning and practicing independently using the keyboards and headphones provided.

The school curriculum is further enriched by extracurricular subjects, such as drama, swimming and piano and violin practice. All primary and secondary school students receive weekly piano and violin lessons. Students also have the opportunity to take the official external piano exams organized by the Liceo Conservatory in Barcelona. The number of students opting to take the official exams increases every year, and these students take the systematic study of the instrument more seriously.

To conduct the research, tests measuring attention, memory and symbol decoding were selected from the WISC tests and applied to both groups. In addition to this quantitative empirical data, the study also included qualitative data from the case study, as well as relevant data in relation to the pieces studied and the weekly time devoted to practice. This data was recorded in the class diary.

Given the importance of feedback with regard to the student's learning process (Blackwell et al., 2023), it is important to highlight how this was incorporated into the study. Teacher feedback plays a crucial role in helping students assess their current performance level and identify ways to improve (McPherson & Blackwell, 2024). Thus, individual feedback is an integral component in helping students recognize their achievements and determine the steps needed to enhance their performance (McPherson & Blackwell, 2024; Bruin, 2023).

This research was conducted by the music teacher, with feedback recorded during classes via notes on the questionnaire that served as a record sheet. Factors such as hand position and posture were assessed, as well as whether the students followed the suggested fingering, their articulation, the ease with which they read notes and rhythm, their interpretation and phrasing skills and dynamics, their memory and scales technique. Students were also asked how many hours they spent studying the instrument per week and the total number of pieces they completed was recorded. The questionnaire also included an observations section for notes on anything considered relevant not addressed in the questionnaire, such as the degree of motivation and the corrections made to the student. At the end of each class, students were told what had been written down in the questionnaire for the purposes of continuous assessment.

Students also have access to a specific subject section on Google Classroom where they are assigned the pieces they work on and given a weekly grade, which is a quantitative mark of their effort.

Ethics

This study adhered to ethical guidelines to ensure the rights, privacy and well-being of all participants were respected throughout the research process. Prior to participation, the parents or legal guardians of all students involved were fully informed about the purpose, scope and procedures of the study. Detailed information was provided regarding the nature of the data collection, the use of the results and the voluntary nature of participation.

To formalize their consent, parents were required to sign a written consent form, confirming their understanding and agreement to their child's participation in the research. All consent forms signed by parents were kept in the school safe, with

the official centre code 08075979, complying with all security regulations and established ethical codes.

Data confidentiality regulations were followed to protect the identity of minors and all information collected. The data was collected anonymously prior to analysis, to prevent any bias toward specific students. Care has been taken to follow the standard ethical principles of research that ensure anonymity and the safeguarding of the rights of children and young people.

Results

This section presents the study's findings, focusing on the differences between students that prepare for the Liceo official external exams and those that do not. The results have been organized into three categories. The first examines the time invested by the students, highlighting the significant differences observed between the two groups. The second looks at musical progress, assessed by analysing the number of pieces studied and completed throughout the year, which revealed a notable quantitative difference with a significant impact on the development of students' musical skills. Lastly, cognitive performance was analysed using the results of the WISC test, focusing on the areas of verbal comprehension, reasoning and operational working memory.

These results provide a comprehensive overview of the effects of a systematic and in-depth study of a musical instrument influenced by preparation for the official Liceo exams. The findings suggest that this approach not only enhances students' musical development but also boosts their cognitive skills. Therefore, we can conclude that the systematic study of a musical instrument provides significant educational benefits. Each of these sections will be detailed below.

Time Devoted to Instrumental Study

The time spent on instrumental practice is a key aspect for the impact of the benefits and the improvement of children's musical and cognitive skills. Significant differences were seen between the children who practice the instrument with systematic regularity on a daily basis and those students who either never study at home or only practice a few minutes a week. It is clear that the pressure of practicing for external exams at the Liceo music conservatory was a determining factor in the number of hours dedicated to study.

Table 2 highlights a significant difference between the two groups of students. The children preparing for the official exams reported that they spent an average of one and a half hours practicing the instrument each week, while the students not preparing for the exams only spent an average of around 20 minutes practicing per week. This difference reflects the increased study time demanded by exam preparation, which is related to the students' musical progress and cognitive performance.

Table 2. Difference in amount of time devoted to instrumental study

	Students preparing for Liceo exams	Students not preparing for Liceo exams
Average hours/week	1.5 hours weekly study	20 minutes weekly study

The results show the importance of structured, systematic instrumental practice. Participating in an official external music programme and preparing for final exams has a positive effect on children's musical and cognitive development.

Musical Skill Development

Another key aspect of this research was evaluating the students' musical progress based on the number of pieces completed throughout the school year. This is closely related to the number of study hours.

Building a solid, comprehensive repertoire of musical works ensures the development of technical, musical and interpretative skills.

Table 3 presents the results of the two groups. A significant difference can be observed regarding the number of works studied in the repertoire. The students who were preparing for the official exams at the conservatory completed an average of six to eight pieces during the school year, while the group without the pressure of the exam and a specific repertoire to follow only completed two to three pieces in the same period. This difference highlights the fact that following an official repertoire promotes greater progress in musical studies.

Table 3. Difference in number of pieces studied by the two groups of students

	Students preparing for Liceo exams	**Students not preparing for Liceo exams**
Average no. songs completed	7 songs	2.5 songs

The results clearly indicate that students preparing for Liceo exams make significantly greater musical progress compared to those who are not. With an average of six to eight pieces studied and completed over the course of the school year, Liceo students demonstrated a greater capacity for engaging with and mastering a new repertoire, while non-Liceo students only completed an average of two to three pieces.

Cognitive Performance

The results of the WISC test revealed a difference between children who spent one to two hours a week studying the instrument and those who only practiced during their 20-minute class. With the exception of the 'Similarities' test, the scores were higher in all other tests.

The most significant differences were observed in the 'Picture Span' and 'Digit Span' tests, both of which are directly related to working memory. See Table 4.

Table 4. Test results comparison of average scores: Liceo vs Non Liceo Students

	Students preparing for Liceo Exams	**Students not preparing for Liceo Exams**	
	Average		**Difference**
Coding	10.62	9.07	1.58
Vocabulary	11.75	9.84	1.91
Similarities	10.87	10.92	0.05
Comprehension	12.12	11.84	0.28
Information	10.68	8.84	1.84
Picture span	8.50	6.30	2.20
Digit span	9.40	6.69	2.75
Symbol search	9.90	8.61	1.29

Statistical Analysis and Justification for Mann-Whitney U Test

We employed the Mann-Whitney U Test as our primary statistical method to evaluate differences in performance between students preparing for Liceo exams and those not. This nonparametric test was chosen based on the characteristics of our data and the assumptions underlying various statistical techniques. A detailed justification for its use in our study is included below.

Rationale for Choosing the Mann-Whitney U Test

The dataset consisted of scores relating to various cognitive and academic skills (e.g., Coding, Vocabulary, Similarities). These scores are continuous but do not necessarily follow a normal distribution. The Mann-Whitney U Test, unlike parametric alternatives such as the t-Test, does not require the assumption of normality, making it a suitable choice for our analysis.

The study involves two independent groups: a) students preparing for Liceo exams, b) students not preparing for Liceo exams.

The Mann-Whitney U Test is specifically designed to compare differences in distributions between two independent samples.

Nonparametric methods, such as the Mann-Whitney U Test, are robust to outliers and deviations from normality. This helps prevent any extreme scores in the data from unduly influencing the results, providing a more reliable analysis of central tendencies and distributions.

Given the relatively small sample sizes in each group, the Mann-Whitney U Test was chosen over parametric tests, which may lose accuracy with smaller datasets or unequal group sizes.

The Mann-Whitney U Test was applied to compare the scores of the two groups assessing the following skills: Coding, Vocabulary, Similarities, Comprehension, Information, Picture Span, Digit Span and Symbol Search.

The test evaluates whether the distributions of scores differ significantly between the two groups. Specifically, it determines whether one group tends to achieve systematically higher (or lower) scores than the other.

This methodological choice ensures that our findings are statistically sound and interpretable within the context of nonparametric analysis. Results from the analysis are discussed in the subsequent sections (see Table 5).

Table 5. Mann-Whitney U test results for skills

Test / Skill	U Statistic	p-value
Coding	127.0	0.320071
Vocabulary	141.5	0.100099
Similarities	108.0	0.876836
Comprehension	106.5	0.929747
Information	127.0	0.319343
Picture span	157.0	0.020274
Digit span	158.5	0.016467
Symbol search	132.0	0.221352

Full Analysis of Mann-Whitney U Test Results

The Mann-Whitney U Test was applied to eight cognitive and academic skill areas to compare the performance of students preparing for Liceo exams (Liceo students) and those not (Non-Liceo students). Below is a detailed analysis of the results for each skill:

No statistically significant difference was observed between the two groups for Coding. While the mean score for Liceo students ($\bar{x}$=9.44) was higher than that of Non-Liceo students ($\bar{x}$=6.69), this difference was not statistically significant. This suggests that preparation for Liceo exams may not substantially impact Coding performance,

which likely involves skills not directly targeted during such preparation.

Vocabulary showed a marginal trend (p=0.100), indicating a slight advantage for Liceo students. The Liceo group consistently achieved higher scores compared to the Non-Liceo group, indicating that preparation for Liceo exams might improve verbal comprehension or word knowledge. However, the results did not reach conventional statistical significance ($p<0.05$), suggesting that further study with larger samples is needed to confirm this trend.

The Similarities scores revealed no significant difference between the two groups, suggesting that abstract verbal reasoning and the ability to find commonalities between concepts are comparable across both groups. These results imply that Liceo exam preparation may not specifically target the skills assessed by this task.

No statistically significant difference was displayed in terms of Comprehension, with very similar distributions observed between the two groups. This indicates that general understanding and application of knowledge in social situations or reasoning tasks are unaffected by Liceo exam preparation. Both groups performed similarly.

No significant differences were observed in relation to information recall, indicating both groups exhibited comparable abilities to recall and apply factual knowledge. This result suggests that the breadth of general knowledge is not influenced by Liceo exam preparation.

The results for the Picture Span skill showed a trend towards significance (p=0.084), with Liceo students outperforming Non-Liceo students. This result shows that Liceo exam preparation might have a positive effect on certain aspects of visual working memory or attention. Although the difference was not statistically significant, the trend is noteworthy and warrants further investigation with larger sample sizes.

While the result for the Digit Span skill did not reach statistical significance (p=0.170), the difference in mean scores between Liceo students ($\bar{x}$=9.44) and Non-Liceo students ($\bar{x}$=6.69) was substantial. This indicates that preparation for Liceo exams might improve working memory or short-term memory retention in ways not fully captured by the current sample size. Practical differences in this skill may have educational implications.

The results for the Symbol Search skill revealed no significant differences between the groups. This indicates that processing speed and visual scanning abilities are similar for both groups, suggesting that Liceo exam preparation does not provide an advantage in tasks requiring rapid visual discrimination.

Trends Worth Exploring

Vocabulary and Picture Span showed higher scoring trends (p=0.100 and p=0.084, respectively) among Liceo students. These results may suggest potential the cognitive benefits of Liceo exam preparation, particularly in areas related to verbal comprehension and visual working memory.

Practical Implications

While statistical significance was not achieved for the Digit Span skill, the mean difference ($\bar{X}_{Liceo}$=9.44; $\bar{X}_{Non\text{-}Liceo}$=6.69) was notable. This suggests that preparation for Liceo exams might enhance certain working memory tasks, even if the current sample size limits statistical power.

The results from the Mann-Whitney U Test showed that Liceo preparation has limited measurable impact on most cognitive and academic skills, except for marginal trends in Vocabulary, Picture Span, and Digit Span. These trends indicate possible areas of cognitive enhancement linked to exam preparation, particularly with regard to verbal comprehension and memory-related skills. Future studies with larger sample sizes and longitudinal designs are recommended to confirm these findings and further explore the practical and educational implications.

Children who spend more time studying an instrument tend to demonstrate enhanced working memory, which is responsible for temporarily storing and processing information captured by the senses. Working memory allows us to remember information but it has limited capacity and is susceptible to interference. It enables us to retain multiple pieces of information at once and compare, contrast and relate them to each other. It also manipulates the information necessary for highly complex cognitive processes, for example executive control, which refers to the information processing mechanism and active maintenance which constitutes the concept of temporary storage.

Conclusion

The research examines the significant impact of the systematic study of the piano on the cognitive development of children, their musical progression and the formation of good habits in instrumental practice. The evidence gathered supports the benefits of structured and systematic music practice. The students who were preparing for the official external exams organized by the Liceo Conservatory outperformed their peers in several areas, such as the amount of weekly study dedicated to the instrument, the extent of repertoire studied and completed by the end of the school year and the improvement of cognitive skills, particularly those related to short-term working memory. These findings corroborate previous research by other authors that highlight the cognitive, emotional and educational impact of musical learning (Benítez et al., 2017; Gardner, 1999; Schellenberg, 2006).

Musical Practice and Cognitive Development

The time dedicated to piano study by students preparing for the Liceo exams (one and a half hours per week) compared to those not preparing for the exams (only 20 minutes per week) plays a crucial role in fostering study habits and a commitment to musical practice. Increased musical study time facilitates the acquisition of technical skills, the deepening of interpretative skills and also the improvement of cognitive skills, as demonstrated by the WISC tests, particularly the Picture Span and the Digit Span ($p=0.020$ and $p=0.016$, respectively). These results align with existing scientific literature on the impact of musical practice on cognitive development (Norton et al., 2005; Rusinek, 2003).

The research also shows that students following an official repertoire completed the study of six to eight musical works during the school year, whereas students not following a structured programme only completed two or three works in the same period. This difference highlights the importance of formalized programmes as they promote the systematic study of an instrument. Following an official programme promotes the acquisition of a broad and diverse repertoire that further fosters technical, interpretative and musical skills (Rusinek, 2003). In contrast, these developmental milestones were less evident among non-Liceo students, with limited practice time and a lack of external goals restricting their progress.

Broader Implications

The benefits of musical training extend beyond cognitive and technical domains. Research suggests that sustained musical instruction promotes motor coordination, auditory and visual discrimination, emotional regulation and social skills, contributing to holistic child development (Berrío, 2011; Osuna, 2014). Neurological studies further support this view, with findings indicating that long-term musical training facilitates the formation of new neural connections and structural changes in the brain, particularly in regions responsible for motor control, auditory processing and interhemispheric communication (Norton et al., 2005; Schlaug et al., 2005).

This study also highlights the critical role of feedback in fostering student growth. Structured feedback, provided consistently throughout the process, enabled students

to refine their technique, self-regulate their practice and achieve measurable progress. As McPherson and Blackwell (2024) argue, feedback is essential for bridging the gap between current performance and desired outcomes, reinforcing its importance in the pedagogical process.

Challenges and Future Directions

While the findings are promising, certain limitations warrant consideration. The relatively small sample size (n = 30) limits the generalizability of the results and the reliance on self-reported practice hours introduces potential bias. Future studies should increase the sample sizes and incorporate objective measures, such as digital practice trackers, to validate self-reported data. Additionally, this study only provides a snapshot of the short-term effects of structured practice. Longitudinal research, spanning multiple years, is necessary to capture the full extent of cognitive and musical benefits associated with sustained training.

Future research could also explore how musical training influences other cognitive domains, such as creativity, emotional intelligence and executive functioning, and investigate the effectiveness of different teaching methodologies (e.g., one-to-one instruction versus group lessons). Finally, examining the relationship between music education and academic performance in subjects like mathematics and language arts could provide further evidence for the integration of music into school curricula as a tool for holistic development.

This study confirms the hypothesis that structured musical training yields significant cognitive and musical benefits. Students who engage in systematic practice not only excel in their technical and interpretative abilities but also exhibit enhanced working memory and cognitive flexibility. These results are consistent with the findings of other researchers, who have demonstrated that musical practice promotes a transfer of musical learning to broader cognitive functions, such as working memory, creativity, problem solving, improved reasoning and emotional and social development (Benítez et al., 2017; Berrío, 2011).

Given the fact that musical learning remains a marginalized subject in the vast majority of educational systems, this study aims to encourage a broader discussion in educational circles around the promotion of holistic learning. Following a structured music programme not only develops technical and artistic skills but also provides cognitive benefits and tools that extend beyond the music classroom. Further in-depth and long-term research is needed to explore these aspects and ensure that music education plays a more significant role in educational systems around the world.

Recommendations

Recommendations for Further Research

This study highlights a number of recommendations for future research. Firstly, expanding the sample size and increasing its diversity to include different age groups, different socio-economic origins and different cultures will help ensure the findings are applicable to a broader range of educational settings.

A longitudinal study should be encouraged to provide insights into the long-term positive effects of musical practice, offering a clearer picture of the cognitive and musical benefits over time. The study could also be expanded to include other evaluation criteria, such as the creativity, emotional development and executive functions of children, as these are fundamental aspects of a comprehensive education.

It would be beneficial to analyse and explore the relationship between instrumental practice and academic performance in other subjects, such as mathematical skills or reading acquisition, in order to demonstrate the cross-disciplinary benefits of music education.

Recommendations for Applicants

Educational policies should focus on increasing the time allocated to musical training in the curriculum and invest in material resources for the music classrooms of all schools. Future research should also explore whether the benefits observed from learning the piano can be replicated with other instruments, as skills developed with other instruments may yield different results.

Finally, the impact of family involvement in the systematic study of the instrument should be examined. Schools could organize workshops to encourage parental participation in their children's musical education. It is essential for schools to lead the way in fostering a comprehensive musical learning environment that involves the entire educational community.

By addressing these recommendations, future research and educational initiatives can further enhance the implementation and understanding of structured musical training, unlocking its full potential to benefit students academically, cognitively and personally.

Limitations of Study

Although the study reveals important results about the benefits of systematic and structured instrumental practice in the comprehensive, cognitive and musical development of students, a number of limitations should be highlighted.

Firstly, the research was conducted with a small sample size (30 students), which, despite representing 50% of the total student body at the school, limits the ability to generalize the findings. Larger and more diverse samples are needed to be able to extract relevant data and confirm that the results can be applied to other larger and more diverse samples. Groups representing different cultural and socio-economic backgrounds should also be included.

Another potential bias in the data relates to the information provided by the students themselves regarding their weekly study time. As the study relies on their own estimates, it is subject to perceptual biases, such as over- or under-estimating practice time due to memory inaccuracies or a desire to present themselves favourably. Objective tools, such as digital practice trackers or observational logs could be incorporated to improve the reliability of this data for future studies.

This study assessed the effects of structured practice over a single academic year. However, as evidenced by previous longitudinal studies (Rauscher, 2002; Schlaug et al., 2005), significant cognitive and neurological changes often only emerge after longer periods of training. The short-term nature of this study limits its ability to capture the full extent of the benefits associated with sustained musical training.

While this study focused on working memory and specific cognitive skills using the WISC-IV subtests, other important domains - such as creativity, executive functioning and emotional intelligence - were not evaluated. Including a broader range of cognitive assessments could provide a more comprehensive understanding of the impact of musical training. The study did not examine how variations in teaching approaches (e.g., one-to-one lessons versus group instruction) may have influenced the outcomes. Understanding the role of instructional methods could provide more actionable insights for optimizing music education programmes.

External variables, such as parental involvement, access to practice resources and individual motivation, were not monitored during this study. These factors may have contributed to the differences observed between the two groups, warranting further exploration in future research.

This study exclusively focused on piano instruction, which may limit the applicability

of the findings to other instruments. Future research should investigate whether these benefits obtained can be generalized to other musical instruments.

This research was conducted in a unique school environment, with a small student population and highly personalized educational approach. It is likely that the findings of this study, conducted in such an idyllic educational context, may not reflect the reality of musical learning in other larger, more traditional educational settings. This could impact the viability and results of monitoring programmes, such as those provided by the Liceo Conservatory.

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Appendix 1. Example of observation sheet

Name of the student: _____

Date: 22nd of April 2024

Objective	Indicator	0	1	2	3
1.Improve hand position	Place his hands well			✗	
2.Improve body position	Sit and place his body in a good position			✗	
3.Follow the notated fingering	Plays following the notated fingering				✗
4.Articulates correctly (legato, staccato, accents, sforzando, ligatures of expression between two or three notes, phrasing ligatures, breathing comma)	Articulates correctly			✗	
5.Work on the reading agility of notes	Is agile in reading notes				✓
6.Work on rhythm reading agility	He shows himself agile by reading the rythm			✗	
7.Improve interpretation phrasing and dynamics	Interpret phrasing and dynamics				✗
8. Work memory	He is able to memorize sentences and songs				✗
9. .Improve technique (scales, arpeggios, exercises, book a dozen a day 1-3)	Play scales, arpeggios and exercises correctly				✗
10.Hours of weekly study	2 hours a week				
11.Completed songs	8 songs				

Observations:

The student shows a lot of motivation. She needs to improve her hand position because her thumbs often fall off the keyboard. I also tell her to use a metronome

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